2009 Archaeological Investigations at the Slocan Narrows Pithouse Village (DkQi 1, 2, and 17), Southeastern British Columbia

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Table of Contents

Acknowledgements 2

Chapter One: 2009 Excavation of Slocan Narrows 8
Nathan Goodale, Alissa Nauman, Anna M. Prentiss, and Ian Kuijt
  Research Design 12
  Chronology 12
  Formation Processes 12
  Hunter-Gatherer Economy 12
    Seasonality and Mobility 13
    Subsistence Pattern 13
    Storage 14
    Hunter-Gatherer Social Organization 15
  Project Methodology 16
    Field Excavation 16
    Laboratory Analyses 17
  Report Outline 18

Chapter Two: Hunter-Gatherer Socioeconomic Systems 19
Nathan Goodale
  Hunter-Gatherer Socioeconomic Systems 20
    Settlement Pattern 20
    Living Structures 20
    Foragers and Collectors 21
    Population Aggregation/Packing 22
    Social Organization 23
  Summary 23

Chapter Three: Environmental and Cultural Background of the Upper Columbia/Interior Northwest 25
Nathan Goodale
  Environmental Context 26
    Physiographic and Geological Context 26
    Climate and Vegetation 27
    Ecology of Edible Roots 27
    Fauna 28
    Ecology of Anadromous Fish 29
  Paleoenvironment 33
    13,000-10,000 BP (Postglacial Environment and Geomorphology) 33
    10,000-7,000 BP (Xerothermic Environment) 34
    7,000-4,500 BP (Mesothermic Environment) 35
    4,500-2,800 BP (Pre-Modern Environment) 35
    2,800-Present (Modern Environment) 36
  Cultural Chronology 37
    Canadian Plateau Regional Sequence 37
      Middle Period (7,000-3,500 BP) 37
      Nesi kep Tradition (7,000-4,500 BP) 37
      Early Nesi kep Phase (7,000-6,000 BP) 37
      Lehman Phase (6,000-4,500 BP) 38
      Lochmore Phase (5,500-3,500 BP) 38
    Late Period (3,500-200 BP) 39
      Shuswap Horizon (3,500-2,400 BP) 40
      Plateau Horizon (2,400-1200 BP) 41
      Kamloops Horizon (1,200-200 BP) 42
Columbia Plateau Sequence
  Period II (7,000/6,400-3,900 BP) 44
    Cascade Phase (6,800-5,000/4,400 BP) 44
    Pithouse I (4,400-3,700 BP) 44
  Period III (3,900-200 BP) 45
    Hiatus (3,700-3,300 BP) 46
    Pithouse II (3,300-2,200 BP) 46
    Ethnographic Plateau Pattern (2,200-200 BP) 46
Upper Columbia Drainage/Arrow Lakes Sequence
  Deer Park Phase/Winlaw Phase (3,500-24,50 BP) 47
  Vallican Phase (2,450-12,50 BP) 48
  Slocan Phase (1,250-Contact) 48
The Kettle Falls Sequence
  Pre-Takumakst Period (3,500-2,700 BP) 49
  Takumakst Period (2,700-1,600 BP) 50
  Sinaikst Period (1,600-600 BP) 50
  Shwayip Period (600-200 BP) 50
Adaptive Settlement Pattern Model for the Upper Columbia
  Upper Columbia Forager (6,200-4,200 cal BP) 52
  Hiatus (4,199-3,800 cal BP) 53
  Upper Columbia Collector I (3,799-2,000 cal BP) 53
  Transition 53
  Upper Columbia Collector II (1,999-600 cal BP) 54
  Upper Columbia Collector III (599-0 cal BP) 55
Ethnography and Ethnohistory of the Syngaytskstx, Sinixt, or Lakes (the Lakes Salish) 56
History of Archaeological Research 58

Chapter Four: Stratigraphy, Features, and Dating 60
Alissa Nauman, Nathan Goodale, Anna M. Prentiss, Ian Kuijt
Geologic Sediment Formation Processes 61
  Surface Humic Layer 61
  Podzol Formation 61
  B Horizon 62
  Gleyed Deposits 63
  Natural River Terrace 63
Stratigraphic Descriptions for DkQi 1 64
  Housepit 3, DkQi-1 64
  Housepit 6, DkQi 1 64
  Housepit 7, DkQi 1 65
  Housepit 9, DkQi 1 65
Stratigraphic Descriptions for DkQi 17 70
  Housepit 5, DkQi 17 70
  Housepit 6, DkQi 17 70
  Housepit 7, DkQi 17 71
  Housepit 8, DkQi 17 71
  Housepit 9, DkQi 17 72
  Housepit 10, DkQi 17 72
  Housepit 11, DkQi 17 72
  Housepit 12, DkQi 17 73
  Housepit 13, DkQi 17 73

Chapter Five: Lithic Technology of Slocan Narrows 74
Nathan Goodale and Alissa Nauman
Debitage Analysis 75
Lithic Analysis of DkQi-1
   Housepit 3
   Housepit 6
   Housepit 7
   Housepit 9
   DKQi-1 Surface Collection

Lithic Analysis of DkQi-17
   Housepit 7
   Housepit 8
   Housepit 9
   Housepit 11
   Housepit 6
   DKQi-17 Surface Collection

Analysis of Lithic Technological Organization at DkQi-1 and DkQi17

Chapter Six: Radiocarbon Dating Slocan Narrows
Nathan Goodale and Alissa Nauman
   14C Patterns at Slocan Narrows
   14C Regional Patterns

Chapter Seven: Fauna Analysis of Slocan Narrows
Lisa M. Smith
   Materials and Methods
   Faunal Summary
      Easting 42.024 Northing 222.062
      Easting 42.302 Northing 222.43
      Easting 43.383 Northing 220.818
      Easting 43.383 Northing 221.818
      Easting 43.454 Northing 221.236
      Easting 43.682 Northing 220.42
      Easting 43.703 Northing 221.173
      Easting 43.739 Northing 220.853
      Easting 43.809 Northing 221.237
      Easting 44 Northing 220
      Easting 44.187 Northing 220.527
      Easting 44.617 Northing 220.621
      Easting 45.139 Northing 220.621
      Easting 45.139 Northing 220.795
      Easting 45.684 Northing 220.917
      Easting 45.934 Northing 221.045
   Discussion and Conclusion

Chapter Eight: Conclusions from the 2009 excavation of Slocan Narrows
Nathan Goodale and Alissa Nauman
   Chronology
   Housepit Architecture
   Mobility and Subsistence
   Future Research

References Cited
Appendix A: Profiles Drawings DkQi-1
Appendix B: Profile Drawings DkQi-17
List of Tables
Table 3-1. Common and scientific names of trees found in the Upper Columbia Region. 29
Table 3-2. Common and scientific names of trees and shrubs found in the Upper Columbia Region. 30
Table 3-3. Common and scientific names of herbaceous plants found in the Upper Columbia. 31
Table 3-4. Common and scientific names of terrestrial mammals and fowl and aquatic fish found in the Upper Columbia Region. 32
Table 3-5. Time period characteristics of the Upper Columbia Region Chronology. 55
Table 4-1. Whonnock Stratigraphic sequence form Mckeeague and Sprout 1975. 62
Table 4-2. 2009 General Stratum Legend for DkQi 1 and DkQi 17 63
Table 5-1. Debitage Typology for DkQi-1, 2, and 17. 77
Table 5-2. Lithic artifacts recovered from Housepit 6. 78
Table 5-3. Lithic artifacts recovered from Housepit 9 Unit 44E 220N. 79
Table 5-4. Lithic artifacts recovered from Housepit 9 Unit 44.682E 220.42N 79
Table 5-5. Lithic artifacts recovered from Housepit 9 Unit 43.383E 220.818N 80
Table 5-6. Lithic artifacts recovered from Housepit 9 Unit 43.109E 221.196N 80
Table 5-7. Lithic artifacts recovered from Housepit 9 Unit 42.829E 221.672N 82
Table 5-8. Lithic artifacts recovered from Housepit 9 Unit 42.532E 222.084N 82
Table 5-9. Lithic artifacts recovered from Housepit 9 Unit 44.178E 220.527N 83
Table 5-10. Lithic artifacts recovered from Housepit 9 Unit 42.532E 222.084N 84
Table 5-11. Lithic artifacts recovered from Housepit 9 Unit 45.139E 220.795N 85
Table 5-12. Lithic artifacts recovered from Housepit 7. 86
Table 5-13. Lithic artifacts recovered from Housepit 8. 87
Table 5-14. Lithic artifacts recovered from Housepit 8. 87
Table 5-15. Lithic artifacts recovered from Housepit 6. 87
Table 6-1. \(^{14}C\) results from the 2000 and 2009 excavations of the Slocan Narrows Pithouse Village. 94
List of Figures

Figure 1.1. Location of the Slocan Narrows Pithouse Village, Southeastern British Columbia. 10
Figure 1.2. Map of the Slocan Narrows Village concentration. Note changes in the river bank since the site was originally recorded in the late 1970’s. 11
Figure 3.1. Regional and sub-area cultural chronology comparisons. 51
Figure 3.2. The calibrated radiocarbon dates and the adaptive chronology. Adapted from Goodale 2000. 52
Figure 5.1. MSRT assignment. 76
Figure 5.2. View 1 of late Plateau Horizon corner notched chert projectile point from HP9. 81
Figure 5.3. View 2 of late Plateau Horizon corner notched chert projectile point from HP9. 81
Figure 5.4. View 1 of late Plateau Horizon projectile point recovered from Stratum III level 3 of Housepit 9. 84
Figure 5.5. View 2 of late Plateau Horizon projectile point recovered from Stratum III level 3 of Housepit 9. 84
Figure 5.6. Raw material by stratum. 89
Figure 5.7. MSRT by raw material. 90
Figure 5.8. Size by raw material. 90
Figure 6.1. Map of Slocan Narrows Pithouse Village with the results of radiocarbon analysis. 93
Figure 6.2. Calibrated radiocarbon data for the Upper Columbia Drainage and for the smaller subregion of the Slocan Valley, British Columbia. Note that the Slocan Valley appears to be a miniature representation for the whole region. Data from Table 6.1 and compiled by Goodale (2001). 95
Chapter One: 2009 Excavation of Slocan Narrows

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Archaeological evidence for ancient human occupation of the Slocan and adjacent Kootenay and Columbia River valleys is disappearing rapidly due to destruction brought about by land development, resource extraction, site looting, and modification of waterways through damming, bridge construction, and other activities. Only a few of the formerly many large First Nations villages remain in this region. One of these is the Slocan Narrows Village, located just north of Lemon Creek and south of Slocan City in the Slocan Valley (Figures 1 and 2). This is a large village consisting of at least 60 pithouses stretching some 2km of both sides of the Slocan River in the vicinity of DkQi-1, 2, and 17 and identified by a series of site designations. The 2000 and 2009 investigations focused on three portions of the village known as DkQi-1, DkQi-2, and DkQi-17 (Figure 2). In 2009 excavation was restricted to DkQi-1 and DkQi-17.

The objective of this project was to collect data on the distribution of houses and to explore through limited excavation the stratigraphy of a select group of houses and exterior areas. The priority was given to excavating small .50x.50 meter units in areas where it would be likely to find radiocarbon datable materials. In contrast to some other areas of British Columbia, yet steps towards a better understanding have continued with ongoing research at Slocan Narrows. While numerous descriptive reports have recorded the location of individual archaeological sites, to date only Turnbull’s (1977) excavation along the Arrow Lakes, excavation by Mohs (1982) at the Vallican site, and Prentiss et al. (1999) and Goodale 2001 from their work at Slocan Narrows have provided detailed consideration of this region. Only two peer reviewed publications have been written specifically addressing the archaeology of this region (Goodale et al. 2004 and 2008). These studies have highlighted that pithouse occupations extend back at least 3500 years and there is clear evidence for First Nation groups inhabiting this area on a year-round basis for many thousands of years before this time.

The 2000 investigations at the Slocan Narrows village consisted of a single four week session of excavation and mapping at DkQi-1 and 17. Excavations at DkQi-1 focused focused on limited trench excavations of Housepit 9 as salvage work due to increased water levels of the Slocan River. Water levels are rising due to increased sediment loads being deposited by Lemon Creek, a small tributary of the Slocan River. Excavations at DkQi-1 also included .50x.50cm units in Housepits 3, 6, and 7. Work at DkQi-17 focused on excavation of .50x.50cm units in
Housepits 5, 6, 7, 8, 10, 11, 12, and 13. Results suggest early Housepit establishment at c. 3,000 cal BP, a period of limited occupation or abandonment and intensive reoccupation after 850 cal BP.

Figure 1.1. Location of the Slocan Narrows Pithouse Village, Southeastern British Columbia.

The 2009 investigations focused on expanding the number of houses that could be radiocarbon dated as well as salvage excavation in Housepit 9. This resulted in dating 10 houses, eight with one evident occupation and one house with two occupations. Three additional houses were dated at DkQi-1 (Housepits 3, 6, and 9) and seven
housepits at DkQi-17 (Housepits 5, 6, 7, 8, 10, 11, and 12). The patterns of the 2009 season confirmed those that were hypothesized from the 2000 results in that there is an early occupation ca. 3,000-2,600 cal BP comprised of very large houses and a single small house. There are intermittent small occupations until the final large occupation with small, medium, and large houses occupied from 850-250 cal BP. This report details the results of the 2009 excavation.

Figure 1.2. Map of the Slocan Narrows Village concentration and location of each excavation unit. Note changes in the river bank since the site was originally recorded in the late 1970’s.
Research Design

The 2009 Slocan Narrows excavations were designed to address archaeological problems in several distinct areas: (1) chronology of housepit occupations; (2) taphonomic factors involved in the formation of archaeological deposits; (3) variability in hunter-gatherer economies between components; and (4) changes in social organization.

Chronology

The archaeological study of occupation chronology is fundamental for understanding the history of land-use in any locale. Research at Slocan Narrows emphasized careful stratigraphic excavation, collection of dating materials, and subsequent radiocarbon dating. The primary goal was to build on the 2000 field season results and $^{14}$C date more houses.

Formation Processes

An important component of some previous housepit excavations in British Columbia has been the study of site formation processes (Hayden 1997; Lepofsky et al. 1996). A primary focus of the 2000 excavation was to collect data on variability in site stratigraphy in order to distinguish between different forms of natural versus cultural sediments and to develop chronology of sedimentation. From 2000 we discovered that the acidic soils poorly preserved fauna material. In 2009 as part of a salvage mission to recover information from Housepit 9 that was rapidly being eroded by the Slocan River, we uncovered a hearth feature containing a large assemblage of burnt fauna material. This is promising that future studies regarding the subsistence strategies used by the prehistoric inhabitants of the Slocan Narrows Pithouse Village will be better understood.

Hunter Gatherer Economy

The primary research questions driving the ongoing investigations at Slocan Narrows are of an anthropological nature. As noted above, little archaeological research has been conducted into the nature of occupation variation and human adaptation in the Upper Columbia drainage of southeastern British Columbia. This study sought to explore issues of seasonality, mobility, subsistence, storage, and technological organization.
**Seasonality and Mobility**

The later prehistoric and historic collector system appears to have been typically organized on the Plateau in a biseasonal pattern of mobility: a high degree of warm season residential and logistical mobility followed by cold season sedentism in a housepit village (Hayden 1992; Richards and Rousseau 1987). Middle Holocene Pithouse I occupations on the Columbia Plateau were often sedentary during both warm and cold seasons, while later Pithouse II and Late Prehistoric “winter-village pattern” peoples relied on winter sedentism (Chatters 1995). Shuswap and Plateau horizon occupations of the Canadian Plateau often feature housepit occupations with storage features. Some of these, such as Housepit 12 at Keatley Creek, contain unused stored salmon implying, minimally, late warm season residential occupation. Shuswap and Plateau housepits rarely have extensive rim deposits, however (Richards and Rousseau 1987). This implies a lowered degree of residential stability compared to later Kamloops horizon times where winter sedentism, residential stability, and housepit reoccupation rates are very high. In general, many questions still exist regarding Lochnore, Shuswap, and Plateau mobility. The 2000 Slocan narrows investigations are designed to begin addressing issues of mobility type, frequency and occupation stability and seasonality (cf. Chatters 1987). Although the goal of addressing seasonality was maintained during the research process, it was hampered severely by poor preservation conditions for faunal and floral remains due to highly acidic sandy soils. Although, as discussed in Chapter Seven, materials found in Housepit 9 encourage that mobility and seasonality will be better understood in the future.

**Subsistence Pattern**

Subsistence strategies have varied to a high degree through time on the Plateau. Chatters (1989, 1995) has demonstrated that Pithouse I broad spectrum predation resulted from a seasonally variable “search-type” strategy. Conversely, later collectors (Pithouse II on the Columbia Plateau) employed a narrow spectrum of resources, and tended toward a “pursuit predation of few taxa, and strict resource scheduling” (Chatters 1995:375). Chatters characterization of the distinction between the Pithouse I subsistence system and that of Pithouse II parallels Hayden’s (1981; Hayden et al. 1985) arguments regarding the distinctions between generalized and complex hunter-gatherers. While generalized hunter-gatherers may have been typically opportunistic exploiting a variety of resources, complex hunter-gatherers tend to be resource specific, often mass harvesting a
limited array of resource types such as salmon in the Pacific Northwest region (Hayden 1992), eels on the coast of Australia (Lourandos 1991), or wild wheat and barley in the eastern Mediterranean (Bar-Yosef and Meadow 1995). Although Richards and Rousseau (1987) correctly posit a distinct salmon oriented subsistence strategy for Shuswap-Kamloops horizon populations in the Fraser and Thompson drainages, we still have a weak understanding of subsistence strategies in the Upper Columbia area. While salmon and camas roots were likely very important, it is equally likely that larger game may have been critical human survival in this area. A number of research questions can be addressed with subsistence data from pithouse sites. As populations increase and village become “fixed” do subsistence strategies change? Does the advent of the big village pattern in the late prehistoric period mark the beginnings of intense use of spring and sockeye salmon? Are there parallel changes in non-fish resource acquisition and processing strategies? While these remain critical research topics, data from Slocan Narrows are minimal for addressing these in any detail due to preservation conditions. The primary research goal is to address types of resources used during the different occupations phases on the village.

Storage

A fundamental distinction between systems grading between the “forager” versus “collector” end of the hunter-gatherer spectrum (Binford 1980) lies in the role of storage. Though storage is used to varying degrees in all systems, typically it is collector systems which rely on storage and a “delayed-return” subsistence strategy. In the latter case, storage strategies often take two roles: (1) caches containing staple foods to be used at a later date (e.g. winter storage); and (2) insurance caches with backup foods or other items intended as a fallback in cases of shortages elsewhere (e.g. Binford 1978, 1980, 1982; Hayden 1992; Testart 1982). Interestingly, Columbia Plateau Pithouse I components contain very little evidence for use of stored resources, in contrast to Pithouse II and Shuswap Horizon components with abundant evidence of storage including storage pits and storage processed salmon (Chatters 1995; Richards and Rousseau 1987). Storage was likely a fundamental component of the adaptive strategy employed by occupants of the houses at Slocan Narrows. Establishment of the role of storage to early housepit occupants at Slocan Narrows will depend on several lines of evidence: (1) resource processing strategies based upon documentation of faunal taxons, elements present and type and placement of processing marks; (2) nature of storage facilities within and external to housepit floors; and (3) ratio of storage pit volume to floor area.
Because of the limited nature of excavation area opened up at Slocan Narrows it is unclear if storage features were subfloor, above floor, or in the rafters of the houses. While some material from the 2000 and 2009 excavations bears on this issue, it is clear that further research will be necessary.

**Hunter Gatherer Social Organization**

A hallmark of Plateau and Northwest Coast peoples is the presence of stratified societies featuring hereditary status organization. The evolution of social complexity is an important topic for anthropological archaeology in this region (Hayden 1995, 1997; Hayden et al. 1985). Hayden (1997) has argued that archaeologists need to address issues of social organization using archaeologically meaningful concepts, avoiding concepts, theories, and terms best used by social anthropologists. Rather, Hayden suggests that archaeologists place attention on recognition of such cultural entities as communities, activity groups, large multifamily residences or residential corporate groups, domestic groups, institutions, and ritual feasting groups. An important study emphasis in these excavations is on documenting indications of different forms of residential groups. Pithouse I and Canadian Plateau Middle period occupations show no evidence for the emergence of any socio-economic entities more complex that the domestic group. However, there are limited indicators of greater social complexity on the Northwest Coast after 4,500 BP. Charles Culture sites in the Gulf of Georgia and Lower Fraser Valley contain some evidence for larger more internally diversified houses (Schaepe 1998) and burials with more diverse grave goods and labrets (Matson and Coupland 1995). Early Graham Tradition materials, particularly burials, suggest organized warfare and status differentiation after 4,500 on the Queen Charlotte Islands (Fladmark et al. 1990). Recognition of variation in social organization will rely on a variety of analytical tactics. One productive approach at other sites such as Keatley Creek has been to use the distribution of activities on house floors as an indicator of residential and occupation organization: (1) repeated redundant domestic activities suggest differentiated multifamily domestic units within a single house; or (2) communal activity organization suggesting undifferentiated domestic units. Once the organization of domestic labor is identified through spatial analysis of housepit floor debris, then differential discard and caching of prestige versus nonprestige items (Hayden 1998) can be examined. Hayden (1997) has effectively explored distributions of (1) elite trade items such as lithic eccentricities, elaborately carved doffing stick handles, marine shells such as dentalium and fround stone such as nephrite adzes; (2) food
items such as pink versus sockeye and Chinook salmon; and (3) hide processing implements as markers of differential status of domestic units on housepit floors and between houses. The large and complex houses of the Slocan narrows village will ultimately provide indicators of complex social organization. The 2000 and 2009 excavations provide a first look into variability between houses in reference to dating, artifact and feature contents, and household architecture. A very interesting development as we have begun to understand periods of village formation and abandonment is that the earliest occupation is comprised of four very large housepits (20-23 meters in diameter) that date to ca 3,000-2,600 cal BP. This is the first direct evidence that there may have been some form of an experiment in complex social organization, as large architecture such as this are usually associated with this form of organization in the interior Pacific Northwest (Hayen 1997).

**Project Methodology**

**Field Excavation**

Excavation of many pithouse sites has demonstrated that the most productive excavation strategy is complete horizontal exposure of individual floors and sampling of housepit rim strata. To insure comparability, this project employed the same basic excavation methods as have been used elsewhere. The primary focus of the 2009 excavation was in the form of 50 cm wide trenches and test units. Excavation and subsequent laboratory analysis was designed to produce data to address research questions outlined above requiring an examination of areas within and between pithouses.

A baseline was established from which excavation units were identified with unit datum stakes identified on southwest corners. Each excavation unit was individually excavated using trowels and dustpans and where necessary, smaller tools such as spoon and dental picks. All sediments were sieved through 1/8 inch mesh screens. Sediments were excavated in natural strata with arbitrary 5cm levels within each stratum. Profiles of all subsquare walls were also drawn prior to excavation to indicate locations of natural strata and contexts for arbitrary level excavation. Black and white and/or color photographs were taken of each profiled wall and exposed floor. All mapping and unit placement was accomplished using a survey instrument (EDM Total Station) and prism. Elevations and UTM data were taken with a Trimble GeoXh GPS with a Hurricane antenna.
Laboratory Analyses

Analyses emphasized five fundamental areas: dating, features, lithic artifacts, faunal remains, and soils. All radiocarbon samples were wood charcoal and were identified before they were sent to Beta Analytic for dating. Features recognized in previous excavations on the Plateau include housepits, storage and refuse disposal pits, postholes, fire hearths, and roasting pits. Previous feature analyses have focused on size (measured variously as diameter, volume, and area), morphology, content and context. Contributions of feature studies have included population estimates; ranking of houses by size and potential socio-economic power; and recognition of domestic units within houses floors and food preparation and house construction procedures. Features encountered in 2009 included a single fire hearth, although other feature-like artifacts recovered include a housepit floor and roof in Housepit 9. Data were collected to permit dating, size/volume estimation, and functional inference.

Lithic analysis methods and techniques used in study of housepit assemblages have been described in depth in various places (Hayden 1997; Prentiss 1993). Briefly, emphasis has been placed on defining reduction strategies through technological analysis of debitage, cores and tool forms. This study emphasizes production of descriptive data on technological and functional variation between stratigraphic units. Analyses focus on definition of similarity and differences between these units, and subsequent preliminary inference on major behavioral patterns. The primary area of interest is on the relationship between the organization of lithic technology and mobility and subsistence strategies.

Zooarchaeological research has emphasized establishment of taxonomic variability and taphonomic history at other sites such as Keatley Creek and Bridge River (Hayden 1997; Lepofsky et al. 1996, Prentiss 2008). The study of taphonomy at Keatley Creek and Bridge River has been oriented towards establishing the formational history of each housepit floor. A major contribution in this area has been the recognition that the house floors reflect activity variation little disturbed by cleanup and no cultural processes. Animal bone distributions were then taken to be indicative of domestic hearth unit subsistence strategies compared between domestic areas on larger housepit floors and between housepits. These data suggest status differences are present between domestic units on larger housepit floors and between larger and smaller houses (Hayden 1997). Faunal remains from Slocan Narrows are in Poor condition due to acidic soils and soil abrasion. Although only a small portion were identifiable,
the 2009 discovery of a hearth feature containing over 12,000 fauna fragments have contributed some interesting patterns.

Soil studies were important to the 2009 research and while not completed for this report, X-Ray Fluorescence to obtain elemental data has begun. Elements such as phosphorus can provide the extent to the intensity of the occupations. This work is ongoing and will be the subject of future study.

Report Outline

This report details results of the 2009 excavation at Slocan Narrows. It begins with an over view of current and past environments and cultural patterns in this region. Then, all data and analyses are presented emphasizing stratigraphy, dating, lithic artifacts, dating, and faunal remains. The concluding chapter attempts to bring all lines of evidence together and offer conclusions and hypothesis for further investigations. Profile and plan maps are presented in Appendicies A and B.
Chapter Two:
Hunter-Gatherer Socioeconomic Systems

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This chapter is intended to explore variability in the socioeconomic systems of hunter-gatherer groups. This is facilitated by defining key terms associated with settlement patterns of hunter-gatherers in the Interior Northwest, exploring the differences between forager and collector economic systems, and providing a prospectus of complex social organization among hunter-gatherers.

**Hunter-Gatherer Socioeconomic Systems**

**Settlement Pattern**

A settlement pattern refers to the landscape positioning of human groups in their traditional environment and how that positioning, and as a consequence, the use of local resources changes through time (Kelly 1983). A settlement pattern, as defined here involves many aspects of the archaeological record including: living structures, types of resources procured and processing techniques used to obtain them or convert them into an edible food source, features that are directly associated with storing procured resources, structures that may be defined as "defense" mechanisms, and non-residential sites that are associated with procuring other resources such as lithic raw materials. A settlement pattern is based on year-round occupation and seasonal migration throughout a given territory.

**Living Structures**

Semi-subterranean dwellings (pithouses) initially appeared between 4500 and 4000 BP in the Columbia Plateau and around 3000 cal. BP in the Canadian Plateau (excluding the Baker Site at nearly 4500 BP). These dwellings indicate that the hunter-gatherers in these regions adopted a semi-sedentary lifestyle.

The terms pithouse and housepit are not used interchangeably. “Pithouse” refers to the semi-subterranean dwelling that was occupied in prehistoric times; it includes the floor, rim deposits, superstructure, and roof of the lodge. It refers to a standing, occupied lodge. “Housepit” refers to the collapsed remains of a pithouse. These remains typically include the floor, rim, collapsed roof deposits, and superstructural elements. These latter two components of housepits are discovered often lying directly upon floor deposits. Pithouses were
occupied by “households” that can be defined as “people who co-reside under one roof” (Coupland 1985: 41). A “housepit site” is defined as one or more housepits situated in a specific locale on the landscape.

Pithouse sites are believed to represent the winter habitations of Plateau groups (Richards and Rousseau 1987). During the cold season, people spent most of their time in semi-subterranean lodges living off of stored resources and then emerged from them at the onset of the warm season to begin a period of resource collecting. These groups later returned to over-winter in the lodges at the end of the warm season.

Sizes of dwellings varied greatly through time in the Plateau regions. Some scholars link the transition in the sizes of residential structures to aspects of social organization (i.e. Hayden 1992, 1997; Richards and Rousseau 1987; Goodale 2000). Differences in pithouse size also may reflect (1) ranking in a village (the large houses may have been occupied by “noble” / wealthy families), and (2) permanency of a family within a winter social group (the more “stable” households reside in the large dwellings) (Stryd 1973: 83).

Foragers and Collectors

The concepts of foragers and collectors derive most prominently from the work of Binford (1980, 1982). Forager adaptations characteristically “map-on” to new resource patches and generally utilize an immediate-return subsistence tactic (Kelly 1983). Foragers are defined as residentially mobile and rarely stay in a given place for more than a few weeks. Group populations are usually low, food sharing is mandatory, and social systems are egalitarian (Hayden 1981, 1995). Collectors are defined as residentially less mobile while employing logistical mobility. Resources are usually mass harvested and stored for delayed consumption, and this economic system typically requires forms of technology, labor organization and task specialization that is unknown to forager systems (Binford 1980, 1982).

During the past two decades Plateau researchers (Ames 1995; Chatters 1995; Hayden 1992, 1997; Matson and Coupland 1995) have dedicated considerable studies on the shift from forager to collector-type systems on the Northwest Coast as well as the Interior. The shift in these economic systems has been argued to lay in a continuum of hunting and gathering subsistence and mobility adaptations which link patterns of hunter-gather behaviors to the archaeological record (Binford 1980, 1982; Bamforth 1991, 1997, Chatters 1987; Kelly 1983, 1992). Three major theoretical models seek to explain the shift from forager to collector-type systems. First,
Cohen (1981), Schalk (1981), Croes and Hackenberger (1988) and Lohse and Sammons-Lohse (1986) suggest based on arguments by Binford (1968), Boserup (1966), and Cohen (1977) that climatic change leads to resource stress. The collector system with traits characteristic of resource intensification and storage emerged out of necessity. Second, environmental opportunity models link the rise of collector systems to optimal environmental conditions (Fladmark 1975; Carlson 1998; Carlson and Hobler 1993; Cannon 1998). These researchers argue that the environment was sufficient for development of the ethnographic collector-type system in the Interior Northwest prior to 4,000 BP. The final group of researchers argue that technological advancements play a key role in the transition to collector systems (Burley 1980; Hayden 1981, 1990; Maschner 1991). This model takes into account hunter-gatherer behavioral characteristics that implies a semi-sedentary community relying on resource intensification and storage will inherently develop social inequality and hierarchical social relations which assume control of resource processing and then lead to the eventual advent of a(n) aspiring elite individual or group (Hayden 1990, 1995: Maschner 1991).

**Population Aggregations/Packing**

An increase in the number, diversity, frequency, and size of archaeological sites associated with logistical collectors, particularly after 2,500 BP, is presumed to reflect increases in prehistoric population aggregation in the Interior Northwest; this period is typically viewed as one of population growth (Peacock 1998: 296). By illuminating trends in the frequency of radiocarbon dates and the percentage of occupied sites during specific intervals of economic adaptations, this study provides a window for observing changes in human population densities. It should be noted that this analysis is structured to obtain relative differences in populations not to seek absolute estimates. Small, nuclear families probably inhabited small pithouses, and multiple families probably resided in medium and large dwellings (Hayden 1997). Inferences concerning population “packing” rely on identifying changes, if any, in the occupation of pithouse sites through time. Hypothetically, the appearance of medium and/or large dwellings may denote higher local population densities. Also, a high frequency of pithouses being occupied within a given interval at a specific locale may represent aggregated communities in the Interior.
Social Organization

Recently there have been significant developments in the way that archaeologists view hunter-gatherers that utilize a hierarchical social system. These hunter groups have been termed complex hunter-gatherers because they utilize social systems that posit some members in the group in social positions over the others. Most researchers suggest that social complexity is linked to some form of labor organization (Arnold 1996; Hayen 1997; Goodale et al 2004). Some researchers rely on a wide definition to distinguish a complex group from an egalitarian group while others define the concept very narrowly (Arnold 1996; Hayden 1990, 1995, 1997). The definition that most explicitly and easily defines a complex hunter-gatherer is given by Arnold (1996) and refers to the institutionalized control by some individual(s) over non-kin labor with that individual(s) position being hereditarily ascribed. I endorse this definition however, for the purpose of this thesis I define complexity as incorporating both wealth achieved status as well as ascribed status individual(s). I expand on Arnold’s definition because I believe that archaeologically it would take an extremely detailed analysis to recognize a system with elite(s) based on wealth achieved status between a system with elite(s) based on hereditarily ascribed status. In short I use a combination of Arnold’s (1996) definition that incorporates institutionalized labor control over kin and non-kin individuals that are either ranked because of wealth or ranked because they are ascribed to that position (these are characteristically numbers 6 and 7 in Binford’s (2001:334) systems states rankings). Egalitarian hunter-gatherer groups have been referred to by many different terms (i.e. simple, generalized, or generic). This system, as defined in this thesis, includes groups from Binford (2001: 334) (rankings 1-5 in the system state) as mounted hunters, mutualists, egalitarian without leaders, and egalitarian with leaders. Leaders refer to knowledgeable people that can aid in subsistence acquisition but don’t have any formal political control or elite status based on wealth.

Summary

With 6,000 years of archaeological record available for the Upper Columbia, the region provides researchers with a unique opportunity to examine the forager to collector transition and the emergence of complex social organization. The region consists of a variety ecological zones which provide a range of subsistence staples and the prehistoric settlement patterns have produced an extensive variety of sites including residential and
logistical locales. As will be discussed later, there is also evidence of a system utilizing hierarchical social organization that comes about after 1,200 cal BP. The concepts introduced in this chapter referring to hunter-gatherer settlement patterns and social and economic systems will be utilized throughout this thesis to examine the evolution of the socioeconomic adaptations for the past 6,000 cal years BP in the Upper Columbia and the Interior Northwest.
Chapter Three:
Environmental and Cultural Background of the Upper Columbia and Interior Northwest

Nathan Goodale
Hamilton College
This chapter provides an environmental and cultural context for prehistoric occupations of the Upper Columbia Region. This is accomplished through an introduction to the local environment and a review of the Plateau paleoenvironment. Second, this section covers the proposed sub-region chronology for the Upper Columbia system, the Kettle Falls, and the larger regional Canadian Plateau and Columbia Plateau sequences. Third, this chapter presents ethnographic research on the Sinixt Salish people whose traditional territory encompasses the Upper Columbia drainage.

Environmental Context

Topography, climate, and water drainage have always affected the demography and economy of human populations in the Interior Northwest (Nelson 1973). The Upper Columbia system is situated in the southeastern boundary of the Canadian Plateau. The northern portion of this region is located in the Interior Western Hemlock biogeoclimatic zone in the Interior Wet Belt of British Columbia (B.C. Department of Lands, Forests, and Water Resources n.d.). Mild temperatures with high precipitation characterize this climatic zone. The southern part of the study area is relatively dryer, however, precipitation levels still support vast forests.

Physiography and Geological Context

The Upper Columbia Region is within the Selkirk Mountains, the larger Columbia Mountains and Southern Rockies Physiographic Region (Mohs 1982). Great vertical relief and intermittent narrow valleys characterize the northern environmental setting. The southern portion of the study area contains wider valleys with significant flood plains and glacial outwash terraces. Rivers drain the northern Slocan, Arrow, and Kootenay Lakes and numerous creeks originating in the Valhalla and Slocan Mountains. These rivers drain into the Upper Columbia River and flow south with the Columbia and Pend Oreille Rivers splitting on the British Columbia and Washington border.

Prehistoric settlements in the northern part of the Upper Columbia cluster in three different areas: 1) on the Lower Arrow Lake, 2) the Slocan River Valley, 3) and at the confluence of the Slocan and Kootenay Rivers (Eldridge 1981). The local topography in the area undoubly had a major factor in restricting human settlement to
these areas. In the southern part of the study area, human settlements occur in the Kettle Falls area and Calispell Valley in northeastern Washington.

The mountain ranges in the Upper Columbia Region are comprised primarily of folded sedimentary and metamorphic rocks with granite stocks and batholiths (Ryder 1981). Bedrock outcrops are common on the steeper slopes above 1800 meters, while the lower slopes and the valley floor are covered by till deposits and fluvioglacial gravels.

**Climate and Vegetation**

The northern portion of the Upper Columbia is in the most productive forest zone in the Interior of British Columbia (Jones and Annas 1981). Western hemlock (*Tsuga heterophylla*) and western red cedar (*Thuja plicata*) are the dominant tree species. In sites susceptible to constant water seepage, western red cedar and western hemlock stands are very common. Where water saturation is close to the surface, cedar-hemlock-devil's club shrubs are present. The southern portion of the study area, with relatively less precipitation, *Pinus ponderosa* is the dominant tree species. Tables 3-1–3 give the common and scientific names of plants found in the Upper Columbia Region.

**Ecology of Edible Roots**

The ethnographic record attests to the wide ecological availability of camas which grows in wet meadow microenvironments within most environmental zones in the Interior Northwest. Camas was important to groups living in the sagebrush and grassland environments of the northeastern Great Basin and to those living in the dense hemlock and cedar forests along the Northwest Coast (Thoms 1989). The regular used of camas as a supplement and intensified resource by groups inhabiting diverse ecological zones provides an indication that climatic changes may not have affected camas exploitation as adversely as previously thought (Thoms 1989). It does not seem likely that paleoclimatic changes in a given region would effectively eliminate the potential for camas to be an important supplement or staple. Therefore, productivity of camas in a given region is related to the nature and distribution of wet meadows than it is to climatic conditions. Because wet meadows are found in all regions of the Interior Northwest it does not seem likely the climatic changes on the order of those during the
last 10,000 years would have done much more that cause wet meadows to be less productive in some areas, while more productive in others (Thoms 1989).

*Claytonia lanceolata* Pursh (mountain potato) is ecologically found in dry sagebrush foothills to damp alpine meadows and is often abundant near snowdrifts in the Canadian Plateau (Turner 1997). *Calochortus macrocarpus* Dougl (sweet onion) grows west of the Cascade Mountains in the Canadian Plateau and prefers rocky crevices with sandy soil in exposed areas (Turner 1997). The mountain potato and sweet onion are also documented ethnographically as playing a role in dietary calories for the hunter-gatherers in the Canadian Plateau. Thoms (1989) argues that camas was not significantly affected by climatic changes during the past 10,000 years BP, and it appears the availability of other edible roots have been severely affected since the end of the Pleistocene.

**Fauna**

The Upper Columbia Region lies within a rich environment to support a diversity of habitat for a wide range of fauna. Hydrologic Dam construction has greatly restricted the anadromous sockeye and chinook salmon migrations up the Columbia River. The villages in the Upper Columbia are located in optimal locales for mass harvesting of fish and this points to a possible rich prehistoric salmon migration in this area. Today the Upper Columbia River supports a wide variety of fish that include: dolly varden char, rainbow trout, whitefish, kokanee, suckers, squawfish, chub, sculpins, and crayfish (Mohs 1982).

The lower elevations in the valley support wintering grounds for white-tailed deer, mule deer, elk and black bears. Small populations of caribou, mountain goat, and grizzly bear can be found in the higher elevations in the Selkirk Mountain Range. Smaller mammals are common in the river valleys and include: beaver, mink, otter, marten, wolverine, coyote, squirrel, raccoon, fisher, lynx, bobcat, and weasel.

Marshlands in the river valleys provide habitat for various migrating waterfowl that include: grebes, mallards, Canada geese, and whistling swans. Game birds in the area include: ruffed grouse, spruce grouse, blue grouse, and ptarmigan. Figure 3-4 gives the common and scientific names of terrestrial mammals and fowl and aquatic fish found in the Upper Columbia Region.
Ecology of Anadromous Fish

The Interior Northwest prehistoric inhabitants are often linked with intensification of anadromous fish, especially salmon. The cold clear waters of the Columbia and Fraser Rivers do not produce high populations of resident fish, but do provide optimal conditions for anadromous fish species. Salmon require cold, clear, gravel-bottomed streams for hatching and rearing, and an annual pulse of snowmelt runoff to wash young to the sea (Chatters 1995). Fish runs are highly productive near the coast in the Fraser and Columbia Rivers and decrease as they go to the eastern Plateau. Warm conditions will negatively affect salmon with prolonged residence in increased temperatures which can increase the probability of infection in adults and fungal attacks on eggs. Increased temperatures may also reduce snow pack which will produce an earlier freshet, and in turn diminish the out-migration success of the young.

Table 3-1. Common and scientific names of trees found in the Upper Columbia Region.

<table>
<thead>
<tr>
<th>Tree Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ponderosa Pine</td>
<td><em>Pinus ponderosa</em></td>
</tr>
<tr>
<td>Western White Pine</td>
<td><em>Pinus monticola</em></td>
</tr>
<tr>
<td>Lodgepole Pine</td>
<td><em>Pinus contorta</em></td>
</tr>
<tr>
<td>Douglas Fir</td>
<td><em>Pseudotsuga menziosii</em></td>
</tr>
<tr>
<td>Black Cottonwood</td>
<td><em>Populus balsamifera</em></td>
</tr>
<tr>
<td>White Birch</td>
<td><em>Betula papyrifera</em></td>
</tr>
<tr>
<td>Chokecherry</td>
<td><em>Prunus virginiana</em></td>
</tr>
<tr>
<td>Douglas Maple</td>
<td><em>Acer glabrum</em></td>
</tr>
<tr>
<td>Western Red Cedar</td>
<td><em>Thuja plicata</em></td>
</tr>
</tbody>
</table>
Table 3-2. Common and scientific names of trees and shrubs found in the Upper Columbia Region.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trees</strong></td>
<td></td>
</tr>
<tr>
<td>Ponderosa pine</td>
<td>Pinus ponderosa</td>
</tr>
<tr>
<td>Western white pine</td>
<td>Pinus monticola</td>
</tr>
<tr>
<td>Lodgepole pine</td>
<td>Pinus contorta</td>
</tr>
<tr>
<td>Douglas fir</td>
<td>Pseudotsuga menziesii</td>
</tr>
<tr>
<td>Black cottonwood</td>
<td>Populus balsamifera</td>
</tr>
<tr>
<td>White birch</td>
<td>Betula papyrifera</td>
</tr>
<tr>
<td>Chokecherry</td>
<td>Prunus virginiana</td>
</tr>
<tr>
<td>Douglas maple</td>
<td>Acer glabrum</td>
</tr>
<tr>
<td>Western red cedar</td>
<td>Thuja plicata</td>
</tr>
<tr>
<td><strong>Shrubs</strong></td>
<td></td>
</tr>
<tr>
<td>Devil's club</td>
<td>Oplopanax horridus</td>
</tr>
<tr>
<td>Bebb willow</td>
<td>Salix bebbiana</td>
</tr>
<tr>
<td>Hazelnut</td>
<td>Corylus cornuta</td>
</tr>
<tr>
<td>Thinleaf alder</td>
<td>Alnus tenuifolia</td>
</tr>
<tr>
<td>Common Juniper</td>
<td>Juniperus communis</td>
</tr>
<tr>
<td>Oregon grape</td>
<td>Berberis nervosa</td>
</tr>
<tr>
<td>False-box</td>
<td>Pachystima myrsinites</td>
</tr>
<tr>
<td>Poison ivy</td>
<td>Rhus radicans</td>
</tr>
<tr>
<td>Snowbush</td>
<td>Ceanothus velutinus</td>
</tr>
<tr>
<td>soopolallie</td>
<td>Shepherdia canadensis</td>
</tr>
<tr>
<td>Saskatoon berry</td>
<td>Amelanchier alnifolia</td>
</tr>
<tr>
<td>Ocean spray</td>
<td>Molodiscus discolor</td>
</tr>
<tr>
<td>Columbian hawthorne</td>
<td>Crataegus columbianum</td>
</tr>
<tr>
<td>Wild rose</td>
<td>Rose woodsii</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Rubus parviflorus</td>
</tr>
<tr>
<td>Flat-top spirea</td>
<td>Spirea lucida</td>
</tr>
<tr>
<td>Syringa</td>
<td>Philadelphus lewisi</td>
</tr>
<tr>
<td>Bilberry</td>
<td>Vaccinium myrtillus</td>
</tr>
<tr>
<td>Black mountain huckleberry</td>
<td>Vaccinium membranaccum</td>
</tr>
<tr>
<td>Kinnickinnick</td>
<td>Arctostaphylos Uva-ursi</td>
</tr>
<tr>
<td>Twinberry</td>
<td>Lonicera utahensis</td>
</tr>
<tr>
<td>twinflower</td>
<td>Linnea borealis</td>
</tr>
<tr>
<td>Waxberry</td>
<td>Symphoricarpus albus</td>
</tr>
</tbody>
</table>
Table 3-3. Common and scientific names of herbaceous plants found in the Upper Columbia.

**Herbaceous Plants**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken fern</td>
<td><em>Pteridium aquilinum</em></td>
</tr>
<tr>
<td>Wild ginger</td>
<td><em>Asarum caudatum</em></td>
</tr>
<tr>
<td>Meadow buttercup</td>
<td><em>Ranunculus acris</em></td>
</tr>
<tr>
<td>Meadow rue</td>
<td><em>Thalictrum occidentale</em></td>
</tr>
<tr>
<td>Stonecrop</td>
<td><em>Sedum spp.</em></td>
</tr>
<tr>
<td>Alumroot</td>
<td><em>Heuchera cylindrica</em></td>
</tr>
<tr>
<td>Sweet-scented bedstraw</td>
<td><em>Galium triflorum</em></td>
</tr>
<tr>
<td>Dawson's angelica</td>
<td><em>Angelica dawsonii</em></td>
</tr>
<tr>
<td>Rockcress</td>
<td><em>Arbis spp.</em></td>
</tr>
<tr>
<td>Sulphur paintbrush</td>
<td><em>Castilleja sulphurea</em></td>
</tr>
<tr>
<td>Fireweed</td>
<td><em>Epilobium angustifolium</em></td>
</tr>
<tr>
<td>Yellow penstemon</td>
<td><em>Penstemon cofertus</em></td>
</tr>
<tr>
<td>Wild strawberry</td>
<td><em>Fagaria virginiana</em></td>
</tr>
<tr>
<td>Wild sarsaparilla</td>
<td><em>Aralia nudicaulis</em></td>
</tr>
<tr>
<td>Prince's pine</td>
<td><em>Chimaphila umbellata</em></td>
</tr>
<tr>
<td>Pinedrops</td>
<td><em>Pterospora andromeda</em></td>
</tr>
<tr>
<td>Dutch clover</td>
<td><em>Trifolium repens</em></td>
</tr>
<tr>
<td>Spreading dogbane</td>
<td><em>Apocynum cannabinum</em></td>
</tr>
<tr>
<td>Bluebell</td>
<td><em>Campanula rotundifolia</em></td>
</tr>
<tr>
<td>Yarrow</td>
<td><em>Achillea millefolium</em></td>
</tr>
<tr>
<td>Silver-green</td>
<td><em>Adenocaulon bicolor</em></td>
</tr>
<tr>
<td>Pussytoes</td>
<td><em>Antennaria spp.</em></td>
</tr>
<tr>
<td>Golden aster</td>
<td><em>Chrysopsis villosa</em></td>
</tr>
<tr>
<td>Wolly thistle</td>
<td><em>Cirsium undulatum</em></td>
</tr>
<tr>
<td>Western hawksbeard</td>
<td><em>Crepis occidentalis</em></td>
</tr>
<tr>
<td>Large purple feabane</td>
<td><em>Erigeron speciosus</em></td>
</tr>
<tr>
<td>False sunflower</td>
<td><em>Heliopsis helianthoides</em></td>
</tr>
<tr>
<td>Hairy hawkweed</td>
<td><em>Hieracium scouleri</em></td>
</tr>
<tr>
<td>Common groundsel</td>
<td><em>Senecio vulgaris</em></td>
</tr>
<tr>
<td>Dandelion</td>
<td><em>Taraxacum officinale</em></td>
</tr>
<tr>
<td>Threeleaf foamflower</td>
<td><em>Tiarella trifoliata</em></td>
</tr>
<tr>
<td>Bluejoint</td>
<td><em>Calamagrostis canadensis</em></td>
</tr>
<tr>
<td>Prairie sandgrass</td>
<td><em>Calamovlfa longifolia</em></td>
</tr>
<tr>
<td>Orchard grass</td>
<td><em>Dactyliis glomerata</em></td>
</tr>
<tr>
<td>Californi oatgrass</td>
<td><em>Danthonia californica</em></td>
</tr>
<tr>
<td>Foxtail fescue</td>
<td><em>Fastuca megalura</em></td>
</tr>
<tr>
<td>Timothy</td>
<td><em>Phleum pratense</em></td>
</tr>
<tr>
<td>Tiger lily</td>
<td><em>Lilium columbianum</em></td>
</tr>
<tr>
<td>Queen cup</td>
<td><em>Clintonia uniflora</em></td>
</tr>
<tr>
<td>False spikenard</td>
<td><em>Smilacina racemosa</em></td>
</tr>
<tr>
<td>Rough-fruited fairy bells</td>
<td><em>Disporum trachycarpum</em></td>
</tr>
<tr>
<td>Spotted coral root</td>
<td><em>Corralorrhiza maculata</em></td>
</tr>
<tr>
<td>Rattlesnake plantain</td>
<td><em>Goodyera oblongifolia</em></td>
</tr>
</tbody>
</table>
Table 3.4. Common and scientific names of terrestrial mammals and fowl and aquatic fish found in the Upper Columbia Region.

**Land Mammals**  
White-tailed deer  *Odocoileus virginianus ochrourus*  
Mule deer  *Odocoileus hemionus*  
Elk (wapiti)  *Cervus canadensis*  
Mountain caribou  *Rangifer tarandus*  
American black bear  *Ursus americanus*  
Mountain goat  *Oreamnos americanus*  
Grizzly bear  *Castor canadensis*  
Coyote  *Canis latrans*  
Bobcat  *Lynx rufus*  
Mink  *Mustela vison*  
Wolverine  *Gulo luscus*  
Otter  *Lutra canadensis*  
Short tailed weasel  *Mustela ermineae*  
Marten  *Mertes americana*  
Fisher  *Martes pennanti*  
Raccoon  *Procyon lotor*  

**Birds**  
Mallard  *Anas platyrhynchos*  
Canada goose  *Brata canadensis*  
Whistling swan  *Olor columbianus*  
Grebes  *Podiceps spp.*  
Blue grouse  *Bdendragapus obscurus*  
Spruce grouse  *Canachites canadensis*  
Ruffed grouse  *Bonasa umbellus*  
Ptarmigan  *Lagopus spp.*  

**Fish**  
Dolly varden  *Salvelinus malma*  
Rainbow trout  *Salmo gairdneri*  
Whitefish  *Prosopium williamsoni*  
Kokanee  *Oncorhynchus nerka*  
Suckers  *Catostomus spp.*  
Squawfish  *Ptychocheilus oregonesis*  
Northern chub  *Couesius plumbeus*  
Sculpin  *Cottus spp.*  
Sockeye Salmon  *Oncorhynchus nerka*  
Chinook salmon  *Oncorhynchus tschawytscha*  

**Shellfish**  
River pearl mussel  *Maragaritifera margaritifera falcata*
Paleoenvironment

Significant climatic and geomorphologic variations have occurred in the Upper Columbia Region since the end of the Wisconsin glaciation at ca. 13,000 BP (Handly et al. 1996). These variations caused fluctuations in the floral and faunal resources available to prehistoric inhabitants of the area. Moreover, these resource restrictions had a major impact on archaeological site distribution. The placement and abundance of such resources and the effects this had on human settlement patterns is discussed in this section.

13,000-10,000 BP (Postglacial Environment and Geomorphology)

The Rocky Mountain system, Cascade glacier system, and the Cordilleran Ice-Sheet of the Wisconsin glaciation covered most of British Columbia and reached its last maximum ca 15,000 BP. This glacial system extended into the northern portions of Washington, Idaho, and Montana (Clague et al. 1980). During the terminal Pleistocene (ca 13,000 BP) the ice sheets began to retreat and vegetation with associated fauna entered the area. The geomorphologic effects that occur during the deglaciation however, were considerable and involved complex inter-relationships between the retreat and occasional advance of individual glaciers. These retreats and advances caused individualistic processes in specific river valleys due to aeolian, glaciofluvial, and glaciolacustrine conditions. These conditions constructed the localized climatic fluctuations, underlying geology, and resulted in the contemporary water shed systems and land forms present today (Ryder 1971, 1982; Clague 1975, 1989; Holland 1976).

The depth of the Cordilleran ice-sheet was approximately 2,400 m in the northern section of the Selkirk Mountains (Holland 1976, Clague 1989). Generally the northern Selkirk Mountains are typically higher in elevation, have sharp peaks, and deep, steep-sided, connecting valleys. These higher peaks escaped the erosional and scouring effects of glaciation. Clague (1989), Fulton (1971, 1984), Fulton and Smith (1987) suggest that deglaciation began at ca. 15,000 BP and was complete at ca. 10,000 BP.

Glacial meltwaters resulted in the formation of numerous glacial and proglacial lakes above current water levels and developed raised terraces and deltas at the mouths of tributary valleys. Non-glacial lakes replaced these glacial and proglacial lakes with near-modern water levels by 10,000 BP (Anderton n.d.). This suggests that major
Geomorphological processes underwent during the time period between 10,000 and 11,000 BP. These proglacial and glacial lakes in the Columbia River system would have cut through approximately 100 m of glacial till.

During the initial postglacial time period at ca. 10,000 BP the climate was significantly colder and moister than present. This caused significant erosional effects to take place until significant land-stabilizing vegetation could aggregate (Handly et al. 1996).

10,000-7,000 BP (Xerothermic Environment)

During the xerothermic environmental stage (defined by Hebda 1995), starting around 10,500 BP, the environment began to warm rapidly and the final stages of deglaciation took place. The xerothermic is considered to be warmer and dryer than the present climate, especially during the peak at ca. 7,500 BP (Hebda 1995). The tree line advanced in latitude and grass species reached their greatest extensions. Lake levels most likely declined from the previous period due to the increased aridity. Erosional downcutting continued through the glacial till in the Columbia River system until 6,700 BP when modern levels were reached.

Shrubs such as juniper, soopolallie, willow, birch and alder dominated the floral landscape. Lodgepole pine was common in sheltered and well-developed soil areas, while relatively high percentage of sage pollens show that significant open grasslands existed (Handly et al. 1996).

Chance and Chance (1982), Schalk and Cleveland (1976) and Choquette (1985) propose that the effects of the xerothermic climate upon aquatic resources could have been significant. These authors predict that in times of higher temperatures and lower discharge rates, anadromous fish would have had a more limited range and population density. Because of poor preservation, fish remains are rare if not totally absent in most archaeological contexts in this region and this causes speculation for salmon being a significant portion of the diet in prehistoric populations in the Upper Columbia. The warm and dry climate during this time would have caused water temperatures to increase as well. Salmon eggs have a hard time surviving if water temperatures exceeded 20°C for an extended time. This hostile environment for salmon spawning could have made it difficult for mass harvesting salmon like in other areas of the Canadian Plateau such as the well documented trends in the Mid-Fraser area.
7,000-4,500 BP (Mesothermic Environment)

During the mesothermic there is extensive evidence for cooling temperatures beginning between 6,500 and 6,300 BP. Timbers began to descend and there was development of a small glacier on Mount Garibaldi in the Coast Range (Ryder and Church 1986). The cooling temperatures brought an increase in moisture and vegetation density in the Plateau region. Precipitation continued and rose between 5,400 and 5,000 BP under continued cooler conditions and glaciers started to advance in the North Cascade Range. Pine forests reached elevations of 400-600 meters around the rim of the Columbia Basin and forests of the Thompson Plateau closed, eliminating the last of the northern grasslands (Chatters 1998). Although this time period is associated with cooler temperatures than the xerothermic, temperatures remained relatively warm. Evidence for this can be found in the existence of trees typical of the upper montane forest and the more xeric subalpine forests on the southwest flank of Mount Rainer and in the Arrow Lakes area where a mountain hemlock forest now grows. These relatively warm temperatures kept mussel growth rates relatively high, similar to the xerothermic, and temperatures still had severe effects on the anadromous fish populations.

4,500 - 2,800 BP (Pre-Modern Environment)

The climate cooled dramatically between 4,500 and 4,100 BP and remained unusually wet (Chatters 1998). Alpine glaciers advanced in all higher mountain ranges, mussel growth rates decline dramatically, subalpine forests moved downslope to 1,100 meters in what is now hemlock-cedar forests like the Upper Columbia. Gonidea mussel is rare in assemblages and the decline in growth rates indicate clear, cold, gravel bottomed streams that produced optimal conditions for salmonid populations and would have meant punctuated intense, fish runs in the Columbia system (Chatters 1998).

The climate of this period can be interpreted as the coldest and wettest of the Holocene. The continued existence of shrub steppe, further expansion of evergreen forests, and high rates of ground-water indicate that precipitation remained winter dominant and low timber lines, and reduced evaporation rates show that both summer and winter temperatures were low (Chatters 1998).
2,800-Present (Modern Environment)

Glaciers receded as relatively stable temperatures continued between 2,800 and 1,900 BP and modern vegetation distributions appeared. Subalpine forests again moved upslope and grass invaded the ponderosa pine woodland on the valley floors (Chatters 1998). Geologic evidence in the form of erosion in alluvial fans and small basins throughout the Columbia Basin and surrounding highlands and an absence of ground water dates for the period between 2,800 and 1,600 BP are indicative of severe drought and summer dominated precipitation (Chatters 1998; Chatters and Hoover 1992). Rivers began aggrading a final Holocene floodplain and mussels increased in the Columbia River (Chatters 1998).

The Little Ice Age which caused alpine glaciers to advance worldwide between 600 and 150 BP brought cooler temperatures and glacial advances in the mountain ranges although, it is thought to have had little effect on the flora of the Northwest. There is also evidence of more flooding episodes during 1000 and 600 BP, a drought in the central Columbia Basin round 600 BP and subsequent less flooding after 600 BP (Chatters 1986).
Cultural Chronology

This section reviews the culture history of the regions discussed in this thesis by summarizing time period from 6,000 BP through the duration of the ethnographic pattern. The cultural historical sequences presented herein have been established for the Canadian Plateau and Columbia Plateau regions as well as the Arrow Lakes and Kettle Falls sub-areas. This section is intended to present the data that is tested and compared in Chapter Five by the inter-site calibrated radiocarbon data and the subsequent Upper Columbia adaptive model that is established in this thesis. It should be noted that the sequence derived by the calibrated radiocarbon data does not fully agree with the settlement pattern characterizations that have been outlined by past regional and sub-area cultural chronologies; these differences are discussed in Chapter Five.

Canadian Plateau Regional Sequence

Middle Period (7,000-3,500 BP)

During the Middle Period cooler and wetter conditions with expanded mesic grasslands existed in both the high and low elevations (Hebda 1982). The Middle Period contains one tradition and three cultural phases as outlined below.

Nesikep Tradition (7,000-4,500 BP)

The Nesikep tradition is comprised of two cultural phases: the Early Nesikep and Lehman phases (Pokotylo and Mitchell 1998; Stryd and Rousseau 1996). The Nesikep tradition may be a result of multiple human adaptive patterns that appeared at the onset of the cool and wet conditions of the Neoglacial (Pielou 1966) and the Middle Period. Sanger (1969, 1970) concludes that regional occupants focused their subsistence economy on deer and elk; rabbits, rodents, small birds, mollusks, salmon and plants were of secondary importance.

Early Nesikep Phase (7,000-6,000 BP)

The Early Nesikep phase is hallmarked by a type a corner-notched lanceolate hafted biface that is barbed in plan, and exhibits curved or straight margins and a lenticular cross section (Stryd and Rousseau 1996). Other phase defining technologies include microblades and wedge-shaped microblade cores, ground rodent incisors,
bone needles and points, and antler wedges (Stryd and Rousseau 1996). The most frequently recovered faunal remains include large mammal deer and elk.

**Lehman Phase (6,000-4,500 BP)**

The Lehman phase is hallmarked by the Lehman point which is pentagonal in shape and obliquely oriented with distinct v-shaped corner or side-notches (Pokotylo and Mitchell 1998). This phase lacks microblade technology and is characterized by a relatively greater reliance on aquatic resources however, a focus still exists on terrestrial fauna.

**Lochnore Phase (5,500-3,500 BP)**

Plateau researches offer various interpretations concerning the Lochnore phase. Stryd and Rousseau (1996) suggest that Lochnore is represented by a river and forest-oriented adaptive pattern that developed as a result of the movement of Salish peoples from the Northwest Coast to the Canadian Plateau via the Fraser River. Availability of increased numbers of salmon at the onset of the Neoglacial climate may have catalyzed this interior migration of Lochnore People (Pokotylo and Mitchell 1998).

The Early Lochnore phase overlaps with the Lehman phase in time and space, and there is evidence that indicates the two phases coexisted in the Canadian Plateau ca 5,500-4,500 BP (Pokotylo and Mitchell 1998). Some researchers hypothesize that the Lehman phase inhabitants were Non-Salish speakers, while the Lochnore phase peoples were ancestral Salish (Stryd and Rousseau 1996). Hayden (2000) argues that the Lochnore phase represents the advent mass exploitation of salmon and associated storage technology. Hayden believes that this technology was later refined during the Plateau Pithouse Tradition of the Late Period. He also asserts that storage and harvesting technologies originated in the interior with Lochnore groups and these technologies may have spread from the interior to the coast (Hayden 2000).

Stryd and Rousseau (1996) argue that the Lochnore phase can be defined by the presence of residentially mobile foragers who exhibit relatively diverse diets. Lochnore foragers used a mapping on approach to obtain resources, which requires frequent residential movements to place the groups near productive resource patches. These groups employed a food-gathering and consumption tactic that appears to have been primarily immediate-
return with the occasional use of storage features (storage features are only present at the Baker site during this time). Evidence interpreted by Stryd and Rousseau (1996) suggests that Lochnore groups maintained two residential modes. Some lived in non-pithouse sites indicative of game processing locales, and others appear to have occupied pithouses such as those recovered at the Baker site which date to ca 4,500 BP. Stryd and Rousseau (1996) suggest that the Baker site represents the start of the Plateau Pithouse tradition (PPT) and is carried on and in direct relation to the Shuswap horizon. While Prentiss and Kuijt (2001) and Pokotylo and Mithcell (1998) feel that the Baker site is a separate cultural entity than the Shuswap and PPT and instead relates to the Nesikep tradition. For the purpose of this study, the Baker site and Lochnore phase will be grouped into the Nesikep tradition.

Late Period (3,500-200 BP)

The Late Period contains three cultural horizons of the Plateau Pithouse tradition: the Shuswap, Plateau, and Kamloops horizons (Richards and Rousseau 1987). The tradition is characterized by logistically-organized, semi-sedentary, hunter-gatherers who lived in pithouses. Evidence indicates that salmon caught in the Fraser River and its tributaries played a role in the subsistence and social economies of these groups and may have caused the evolution of complex hunter-gatherers.

Kuijt (1989) and Stryd (1973) argue that the changing environmental conditions during the Neoglacial maximum, 4,000-3,200 BP, initiated the adaptive response of semi-sedentism and a heavier reliance on salmon in the Mid-Fraser region at the start of the Plateau Pithouse Tradition. Kuijt (1989) postulates that the ungulate population was adversely affected by this colder higher precipitation climatic shift and the numbers of available deer decreased causing hunter-gatherers to intensely rely on salmon to offset the negative impacts on ungulates. Prentiss and Chatters (2001) offer that semi-sedentism, the intense subsistence focus on marine resources, and the emergence of logistical collecting were not unique to the Mid-Fraser, and that hunter-gatherer groups throughout the Northwest Coast and Plateau regions exhibit similar survival responses on the regional scale.
Shuswap Horizon (3,500–2,400 BP)

The earliest cultural horizon belonging to the Plateau Pithouse Tradition is the Shuswap horizon. The Shuswap horizon represents the first major distribution of pithouse sites in this region. Richards and Rousseau (1987) suggest that the average size of pithouses in the Shuswap Horizon is 10.7 meters in diameter. However, new data from Lenert (2000) suggests that pithouses were on average smaller than 10 meters in diameter during this time. The houses have side entrances, central hearths, and internal storage and cooking pits. The presence of large postholes indicates that there was a substantial wooden superstructure that provided roofs to the structures (Hayden 1997, 2000; Richards and Rousseau 1987).

Lithic assemblages associated with the Shuswap horizon are less complex in workmanship, composition, and technological sophistication as compared to the later horizons of the Plateau Pithouse Tradition (Richards and Rousseau 1987). Low to medium quality materials were used to make many of the tools and this resulted in their crude appearance. Finely made tools out of vitreous trachydacite (a form of fine-grained basalt), jasper, and chalcedony appear in the Shuswap horizon. Shuswap horizon projectile points have a mean length of 4cm, width of 1.8cm, and an average neck of 1.10cm. These points were most likely used as atlatl or spear tips (Richards and Rousseau 1987). Shuswap point variations resemble Hanna, Duncan, McKeen, and Oxbow points of the Northern Plains and may indicate some form of contact between the two regions (Richards and Rousseau 1987).

Other lithic items associated with the Shuswap horizon include: key-shaped unifaces and bifaces, unformed unifacial and bifacial tools, microblades, and cores. Lithic technology that requires more hours to produce such as groundstone, formal scrapers, and artwork is very rare in the Shuswap horizon. The lithic technology during this horizon represents a more expedient organization.

Subsistence was logistically organized (per Binford 1980) in the Shuswap horizon and was focused on deer, elk, black bear, sheep, muskrat, beaver, snowshoe hare, red fox birds, fresh water mussels, trout and salmon, and trumpeter swans (Richards and Rousseau 1987). There is evidence that salmon procurement was becoming more important during the Shuswap horizon than in earlier horizons. The relative importance of various species is in some question, although salmon was most likely an important dietary component.
Trade with the coastal regions becomes evident in the Shuswap horizon with the presence of *Dentalium* shells. Shuswap horizon lithic assemblages consisting of expedient tools, wedges, adzes, and stemmed projectile points also suggest a strong link to the Charles Culture and Lacarno Beach Phase in the Northwest Coast.

**Plateau Horizon (2,400-1,200 BP)**

The Plateau horizon is the next cultural component of the Plateau Pithouse Tradition and relates to a time period that reflects a climatic shift from cool and moist conditions to warmer and dryer conditions that are still present today (Hebda 1982). Richards and Rousseau (1987) characterize the housepits of the Plateau horizon as smaller than those of the previous Shuswap horizon with an average diameter of 6.14 meters. During the end of the Plateau horizon the first architecturally large housepits are employed. Lenert and Goodale (2001) suggest that small pithouses (5-10 meters in diameter) as well as medium houses (10-14 meters in diameter) were occupied at this time. Lenert (2001) agrees with the argument that large houses were occupied late in the Plateau horizon at 1,600 cal BP and add that the time period from 1,600 to 800 cal BP contains the most housepit radiocarbon dates for small to large sized houses. The Late Plateau into the Early Kamloops time period provides the most substantial evidence for population aggregations in pithouse village communities in the Canadian Plateau. Houses are circular to oval in plan, they lack a raised earth rim, they have a central hearth feature, and a few small cooking, storage, and refuse pits (Richards and Rousseau 1987). The walls tend to be steep and the floors are flat with a basin shaped profile. There is evidence for large postholes, earth roofing insulation, and benches lining the edges. Eldridge and Stryd (1983) and Hayden (1997) give evidence for both side entrances and roof entrances being employed at this time.

The lithic technology employed during the Plateau horizon shares characteristics with the Northern Plains and Northwest Coast. The Plateau horizon projectile points were most likely used as dart and arrow points. The dart points have an average of 4.10cm in length and an average width of 2.60cm. Arrow points have an average length of 2.48cm and an average width of 1.73cm (Richards and Rousseau 1987). The larger dart points were used continually throughout the Plateau horizon. However, the smaller arrow points were only used after ca 1,500 BP (Richards and Rousseau 1987). Plateau points have convex bases, small barbs, and corner notches and are similar
to Pelican Lake corner notched points suggesting continuing contact between the Plateau and Northern Plains (Dyck 1983).

Incised and groundstone tools are uncommon during this time with chipped stone tools making up the significant percentage of lithic assemblages. Chipped unifacial and bifacial implements are the most common during this time and an increase in the use of key-shaped scrapers is also evident.

There is an increase in bone, antler, and tooth artifacts recovered in contexts associated with Plateau horizon occupations when compared to the earlier Shuswap horizon. Richards and Rousseau (1987) caution that the elaboration and increased frequency of perishable industries may be illusionary, related to artifact preservation or sampling. Multi-barbed unilateral and bilateral bone and antler harpoons, composite harpoon valves made of bone, and tubular beads or gaming pieces made from sections of small mammal or bird bones have been recovered in Plateau horizon deposits.

There is a paucity of available data on the subsistence economy for the Plateau horizon with the most significant change over the preceding Shuswap horizon is the commencement of intensive exploitation of mid-altitude root resources (Pokotylo and Froese 1983). Salmon intensification seems to be heightened during the Plateau horizon, and based on a small sample size of human skeletal remains, stable carbon isotope analysis suggests that 60-40% of all dietary protein had a marine origin (Chisholm 1986).

The evidence for a Trans-Rocky Mountain exchange network involving the Plateau, the Northern Plains, the Eastern Kootenay, and Rocky Mountain Regions is represented by the presence of nephrite, argillite, top of the world chert, *Dentalium*, and *Olivella* shells. These artifacts represent prestige or trade goods coming into the Plateau from their respective places of origin.

**Kamloops Horizon (1,200-200 BP)**

The Kamloops horizon is the final segment of the Plateau Pithouse Tradition on the Canadian Plateau. Architecturally, the housepits in this phase have an average diameter of 8.66 meters, but range in size from 5 meters to 22 meters in diameter. The housepits are oval, round, rectangular, and square in plan and usually have raised earth rims. Central hearths, storage pits, and both side and roof entrances are associated with Kamloops housepits (Richards and Rousseau 1987). There are two arguments about the occupation of housepits after 1,000
BP in the Canadian Plateau. First, Hayden and Ryder (1991) argue for a "cultural collapse" at 1,000 BP and incorporates the dispersion of pithouse communities and the end of complex societies in the Canadian Plateau. Second, Richards and Rousseau (1987) argue that pithouses continued to be occupied during this time and Lenert and Goodale (2001) suggest that the height of population aggregations and socio-complexity comes about during the later stages of the Plateau horizon, lasts briefly until the early Kamloops horizon and ends at roughly 800 cal BP. This hypothesis provides evidence for the abandonment of large pithouses after 800 cal BP and human groups return to relatively egalitarian social system with small and medium pithouses used between 800 and 0 cal BP.

Kamloops side-notched points are the most common projectile points employed during this time period. These points are small and triangular and have small, narrow, opposing side notches with straight to slightly convex or concave basal margins. The points have an average length of 2.04 cm, and an average width of 1.32 cm (Sanger 1970). In the later stages of the Kamloops horizon (ca. 400-100 BP) multi-notched points are found, but rare. These points have up to four additional notches along one lateral blade margin and is slightly larger than Kamloops side-notched varieties (Richards and Rousseau 1987).

Lithic technology during the Kamloops horizon which employed bifacial reduction that is similar to the earlier cultural traditions. It is dominated by fine, pressure-finishing of both points and knives. There is an increase in the quantity, quality, and variety of ground stone artifacts made of nephrite, slate, and steatite and these raw materials were often carved into anthropomorphic and zoomorphic forms. These items are representative of a high degree of workmanship, craft specialization and may have been trade goods.

Non-lithic artifacts that are associated with the Kamloops horizon include: birch bark containers and woven blankets (Teit 1909). There is an increase in the variety and frequency of antler, bone, and tooth artifacts. These items were often highly decorated using a series of geometric patterns.

Subsistence strategies during the Kamloops horizon were logistically organized with a focus on aquatic resources in addition to terrestrial resources including deer, roots and berries. Stable isotope analysis, from a limited number of human remains, indicates that 40-60% of the dietary caloric intake was from salmon (Chisholm 1986).
The Columbia Plateau Sequence

The cultural chronology of the Columbia Plateau is complex due to the fragmentation of research caused by hydrologic reservoirs; each investigated by a different group of archaeologists (Chatters 1995). This section presents the culture history of the Columbia Plateau and is facilitated by presenting the regional synthesis of Ames et al (1998) with adaptation divisions based upon the model proposed by Chatters (1986, 1989, 1995) and a combination of sub-regional chronologies based on Salo (1985), Galm et al (1981) and Grabert (1971).

Period II (7000/6400-3900 BP)

Period II marks important changes from the earlier Period I (Paleoindian occupation) in the Columbia Plateau. This period contains evidence for the shift from highly mobile to semi-sedentary (residentially mobile foragers) hunter-gatherers and this transition is represented by two cultural phases: the Cascade Phase and Pithouse I (Ames et al 1998; Chatters 1989, 1995).

Cascade Phase (6,800-5,000/4,400 BP)

The Cascade phase adaptation characteristics consist of highly mobile foragers that employed simple, uniform, and expedient lithic technologies. Groundstone technologies include tool types for processing small seeds that include slab milling stones, manos, and edge-ground cobbles (Chatters 1995). Dwellings consisted of small, temporary surface structures (Draper 1986) and there is little evidence to suggest that storage had an impact on the economy of the groups in the Cascade Phase. Site location, assemblage variability, and subsistence availability suggest that these groups employed a “mapping on” adaptation to seasonal and geographic resource variability (Chatters 1995). The Cascade phase is contemporary to Early and Middle Kartar phase in the Chief Joseph Dam area (Salo 1985), the Middle to Late Okanagan phase (Chatters 1986; Grabert 1971) and the Middle to Late Vantage phase in the Mid-Columbia (Galm et al 1981).

Pithouse I (4400-3700 BP)

During Pithouse I, the first use of pithouses occur in the Columbia Plateau. Pithouses are shallow, seven to eight meters in diameter, and appear to have been occupied year round. Pithouse I sites reflect a foraging
adaptation and most closely resemble Binford’s (1980) residential mobility and there are three types of sites that exist for Pithouse I occupations including: pithouse base camps, meat processing locations or short term residential camps around animal kills, and residence camps provisioned by the gathering of diverse resources (Chatters 1989; 1995). There is little evidence for storage and this phase is believed to be associated with an immediate consumption adaptation (Chatters 1989, 1995).

During this time there is evidence for increased levels of exploitation of certain edible roots and salmon, projectile points decline in frequency among lithic artifact assemblages, milling stones increase in size and are often found in association with stone pestles, and less investment was made in working chipped stone tools (Ames et al 1998). Dominant projectile point styles include side-notched with deeply convex bases that have been termed Hatwai-eared points and corner notched with expanding stems and barbed shoulders that have been termed Snake River corner-notched points. Associated faunal remains include freshwater mussels, large and small mammal bones from elk, deer, and pronghorn. Fish remains include small numbers of salmon and other resident fish. This time period and the associated presence of pithouses is generally regarded as a region-wide shift in settlement patterns that is represented in the transition from high mobility to some form of sedentism (Chatters 1986, Ames 1991). The Pithouse I adaptation is contemporary with the late Hudnut phase (Salo 1985), the late Cassimer Bar Phase (Grabert 1971; Chatters 1986), and the late Frenchman Springs and early Cayuse Phases (Galm et al 1981).

**Period III (3900-200 BP)**

This period is first marked by a 400 year hiatus in radiocarbon dates and then an abrupt reappearance of pithouse occupations around 3,300 BP (Chatters 1989, 1995). The reemergence of pithouses after the Pithouse I occupations during Pithouse II, is characterized as the advent of the collector-type system in the Columbia Plateau (Chatters 1995). This period contains extensive evidence for the mass exploitation and storage of salmon (Chatters 1998) and camas (Thoms 1989). Settlement patterns include seasonal (winter-spring) villages and logistical camps in resource producing locales (Ames et al 1998).
**Hiatus (3700-3300 BP)**

Given that this hiatus is nearly as long as the Pithouse I duration, Chatters (1995) argues that this “hiatus” is indicative that sedentism occurred twice in the Columbia Plateau. Moreover Chatters suggests that the “hiatus” provides evidence that the rise to semi-sedentism and the collector type system was not a gradual evolutionary process and in fact, the adaptive characteristics of each Pithouse I and Pithouse II are fundamentally different.

**Pithouse II (3300-2200 BP) (Chatters 1989; 1995)**

After a 400 year hiatus very limited evidence for human occupation, the Pithouse II adaptation appears with single or small groups of pithouses distributed along the major streams, supported by activities at field camps in areas suitable for fishing, hunting, and root gathering. This settlement pattern coupled with the appearance or greatly increased frequency of processing and storage features indicates a logistically organized, delayed return, collector-type system (Chatters 1995). By 3,000 BP pithouse settlements contain faunal evidence that supports the assumption that salmon was a major dietary staple for Pithouse II. Pithouse II is contemporary with the cultural phases of the Hudnut phase in the Chief Joseph Dam area (Salo 1985), the Cassimer Bar phase in the Okanogan area (Grabert 1971; Chatters 1986) and the Late Frenchman Springs phase in the Mid-Columbia (Galm 1981).

**Ethnographic Plateau Pattern (2200-200)**

By 2,200 BP people had begun to reorganize their settlement systems, taking increasing advantage of upland settings and subsequently the number of lowland riverine villages declined. Camas and salmon exploitation declined and there is an increase in bison hunting (Chatters 1992, Schroedl 1972). Storage facilities had become wide spread in caves and rockshelters and in extramural to pithouses. Cemeteries and rock art mark the landscape, and may be indicators of territorial ownership (Chatters 1995; Reid 1991 a, b). Non-residential sites were functionally diverse as they were in Pithouse II; root gathering, fishing and hunting camps are common and show signs of repeated use. Chatters (1995) argues that this is the ethnographic Plateau Pattern and that it had fully developed after 2,200 BP. The Ethnographic Pattern is contemporaneous with the Coyote Creek phase (Salo 1985), the Chiliwist phase (Grabert 1971; Chatters 1986), and the Cayuse and Historic phases (Galm et al 1981).
Upper Columbia Drainage/Arrow Lakes Sequence

The sequence developed for the Upper Columbia Drainage/Arrow Lakes area is representative of CRM projects conducted for hydrologic dam and road construction projects. Excavations in the 1970’s by Turnbull and the 1980’s by Mohs, and previous work by Prentiss et al. (1999), Goodale (2001), and Goodale et al. (2004 and 2008) proved the basis for the literature that has been previously available for the area. This section presents the chronology from Turnbull (1977) with revisions by Mohs (1982) and Eldridge (1984), and expansions by Prentiss et al. (2001). Follows is an adaptive chronology for the Upper Columbia provided by Goodale et al. 2004 and 2008.

Deer Park Phase/Winlaw Phase (3500-2450 BP)

The first substantial evidence of settlement in the Arrow Lakes Region has been assigned the Deer Park phase (Turnbull 1977) or the Winlaw phase (Mohs 1982; Eldridge 1984). The pithouses contained in this phase follow a distinct distribution along the immediate river and lake shores in a linear fashion. The housepits excavated by Turnbull and Mohs assigned to this phase are small in size ranging from 7-10 meters in diameter. However, the Slocan Narrows Site (DkQi 1) has revealed a large 16 meter in diameter house, which has an initial occupational component that dates to this time period. These housepits are circular to oval in plan and Mohs (1982) describes them lacking raised earth rims. This may be a characteristic of the small sized pithouse because the large house in DkQi 1 has an obvious raised rim. Mohs (1982) also notes that this cultural phase is not well represented at the Vallican site. This early occupation at the Slocan Narrows site reveals the most detailed knowledge of pithouse architecture from this early phase.

The lithic tool assemblage of the Deer Park/Winlaw phase is marked by the presence of medium-sized stemmed and shouldered projectile points and is characteristically similar to Shuswap horizon points. The most frequently recovered raw materials include: Kootenay argillaceous chert, siltstone, schistose mica-quartzite, and basalt. The lithic assemblage at the Slocan Narrows site associated with this cultural phase is very limited.

Faunal remains are limited to unidentifiable mammal remains with fish and shell completely absent. This is likely due to high acidic properties of the soils in this region.
Vallican Phase (2450-1250 BP)

The housepits associated with the Vallican phase average 11 meters in diameter from the Vallican site (Mohs 1982). No pithouses associated with this time period have been discovered at the Slocan Narrows site or in the Turnbull (1977) excavations.

Lithic assemblage diagnostic artifacts for this time period include corner and basal notched points and crescent or key-shaped scrapers/perforators. This stylistic variation in the lithic technology is similar to the later Takumakst and early Sinaikst periods at Kettle Falls, the Okanagan Chiliwist phase, and the Plateau horizon. The Vallican phase artifacts differ from the Takumakst in quality of stone working. The Takumakst period in the Kettle Falls Region contains hastily made lithic tools where the Vallican phase contains the presence of high quality tools and exotic goods such as nephrite adzes. Although no housepits dating to this time period were found at the Slocan Narrows site an abundant number (relative to the lithic assemblage size) of Plateau style projectile points were recovered and one key-shaped scraper. Other lithic artifacts from the Deer Park phase include categories such as simple flake tools that continue in use during this phase.

Faunal remains are rare for reasons discussed previously. However, when they are recovered, assemblages include mammal bones and the shells of freshwater mussels (Mohs 1982).

This phase is coeval with the Plateau horizon in the Canadian Plateau (Richards and Rousseau 1987), the last two thirds of the Takumakst period, and the first one third of the Sinaikst period in the Kettle Falls Region (Chance and Chance 1982). Parts of the Chiliwist phase in the Okanagan (Grabert 1974) and the Harder phase in the Lower Snake Region (Leonhardy and Rice 1970) also correspond to the Vallican phase.

Slocan Phase (1,250-Contact)

The housepits that date to this time period have been excavated at the Slocan Narrows and Vallican sites. The houses excavated at the Vallican site that date to this time period are both linearly and non-linearly arranged and they average 8.7 meters in diameter. However, there is great variability with medium and small sized pithouses occurring together. This average is determined by the data set provided by Mohs (1982) and only includes those cultural depressions with a diameter greater than 5.0 meters. The second occupational phase of Housepit 1 at the Slocan Narrows site (DkQi 1) dates to this time period and shows a large house of 16 meters in
diameter dating to this phase. Housepit 5 at DkQi 1 also dates to this time period, is 10 meters in diameter, and considerably one of the smallest housepits at the site. This phase employs a wide variety of housepit styles including circular, oval, and rectangular matlodge structures with top and side entrances. Cache pits are also used during this time and are external to the housepits along with extramural hearths and activity areas.

Lithic technological characteristics for assemblages of the Slocan phase include small side-notched points, occasional Columbia corner-notched points, and frequent groundstone items (Mohs 1982 and Eldridge 1984). These points are characteristic of the Kamloops horizon in the Canadian Plateau and the small triangular and side-notched varieties are prominent in the assemblages. However, the Kamloops multi-notched variety has remained undiscovered in the Slocan Valley and Upper Columbia. The material culture during this time also closely resembles materials recovered in the Kettle Falls area.

The Slocan Phase is comparable to the Shwayip period at Kettle Falls (Chance and Chance 1982) the Piquin Phase on the Lower Snake River (Leonhardy and Rice 1970), and both the Cassimer Bar Phase in the Okanagan (Grabert 1971) and the Kamloops Horizon in the Canadian Plateau (Richards and Rousseau 1982 and 1987).

The Kettle Falls Sequence

The Pre-Takumakst Period (3500-2700 BP)

This time period in the Kettle Falls region is not well understood at this time. There is evidence for low densities of human populations at the Fishery, Ksunku, and Kwilkin sites. Currently, no pithouses have been discovered in this region that date to this time. However, two hearths from the Fishery site have been excavated that date to the Pre-Takumakst period (Chance and Chance 1982).

Lithic assemblages of this time period contain high frequencies of cryptocrystalline artifacts and detritus, some contracting and square stemmed projectile points, and a few cobble cutting tools. Based on limited aquatic faunal remains the Kettle Falls area seems to be used for limited fishing activities during this early time period (Chance and Chance 1982).
**The Takumakst Period (2700-1600 BP)**

This time period is characterized by a quartzite technology that is "clumsy" when compared to the later periods of occupation in the Kettle Falls. However this raw material can be expediently flaked along the dominant cleavage planes (Chance and Chance 1982). The most diagnostic element of this assemblage is the "Takumakst chopper" which functionally may actually have been a core (Chance and Chance 1982). Flakes removed from this core would probably have been intended for fish butchering or to aid in the construction of fish traps (Chance and Chance 1982). The first extensive period of occupation at the Fishery site seems to be during the Takumakst Period by Salish peoples.

The lithic assemblages that Chance and Chance (1982) associate with this time period were excavated at the China Bend site. This site does contain pithouses, however, none of these houses have been dated at this time. The use of pithouses during the Takumakst period is unknown at this time.

**The Sinaikst Period (1600-600 BP)**

This time period shows large variations in projectile point styles and Chance and Chance (1982) suggest that the variation in the assemblage at the Fishery site is a consequence of many different groups of people using the site. Exotic lithics began to come into the Kettle Falls in significant quantities and then increase very rapidly in frequency until a peak at 1150 BP. This peak in exotics corresponds to peak trade in the area (Chance and Chance 1982).

During the Sinaikst period, deep pithouses were occupied at the Ilthkoyape and Chaudiere sites. A medium sized house (10-14 meters in diameter) at the Ilthkoyape site was dated with multiple occupations at 770+/−90 and 1190+/−70 BP. Chance and Chance (1982) argue that these pithouses were occupied during the summer months based on botanical data. Chance and Chance (1982) also argue that this time period reflects the largest population densities in the Kettle Falls area.

**The Shwayip Period (600-200 BP)**

This time period is dominated by side-notched projectile points and miniature quartzite knifes (Chance and Chance 1982). These assemblages are found at the Fishery, Ksunku, Ilthkoyape, Chaudiere, Shonitkwu,
Kwilkin and Nancy Creek sites. Chance and Chance (1982) argue that this time period reflects a reduction in human populations in the area. The Ilthkoyape site also produced a medium sized pithouse that produced a date of 370+/-70 BP.

Figure 3.1. Regional and sub-area cultural chronology comparisons.

Adaptive Settlement Pattern Model for the Upper Columbia

Goodale (2001), Goodale et al. 2004 and 2008, posit an adaptive chronology for the Upper Columbia established based on shifts in adaptive behavior through time rather than a chronology based on artifact variation. The calibrated radiocarbon evidence posits an interesting picture of the evolution of hunter-gatherer groups in the Upper Columbia Region. Goodale 2001, Goodale et al. 2004 and 2008 develop six intervals that characterize the
past 6200 cal years of occupation for the Upper Columbia Region. Their data set suggests a bimodal distribution for two major phases of prehistoric occupation. The intervals include: 6200-4200 cal BP, 4199-3800 cal BP, 3799-2200 cal BP, 2199-1800 cal BP, 1799-600 cal BP, and 599-0 cal BP.

Figure 3.2. The calibrated radiocarbon dates and the adaptive chronology. Adapted from Goodale 2000.

**The Upper Columbia Forager (6200-4200 cal BP)**

The Upper Columbia Forager represents a high mobility forager adaptation that is suggested by the lack of evidence for any permanent residential structures. This period contains dates for the first use of root processing in the Upper Columbia Region and dates are represented by six dates in the Calispell Valley: five dates from 45PO139 and one date from 45PO141 in northern Washington State. Roots seem to have been a fairly stable resource base during this time and were probably used in a limited manner. The Upper Columbia Forager period also contains one date from the Fishery site in the Kettle Falls area that is in association with a non-residential site. This period represents a "forager" adaptation similar to the Middle Holocene Nesikep tradition of the Canadian Plateau and the Cascade phase in the Columbia Plateau.
**Hiatus (4199-3800 cal BP)**

Currently this interval lacks calibrated radiocarbon evidence and represents a brief archaeological gap that separates the forager to collector adaptation. This hiatus temporally corresponds to a similar lack of archaeological data in the Canadian and Columbia Plateaus.

**Upper Columbia Collector I (3799-2000 cal BP)**

The Upper Columbia Collector I represents the first of two peak occupational horizons and the advent of the collector-type system in the Upper Columbia. The first semi-subterranean pithouses were established and occupied during this interval and vary in size from small to large. Pithouses dating to this time are found in single or low density clusters in the Upper Columbia landscape and is representative of dispersed collector adaptation. The first extensive root processing occurs with an intensified focus on camas root. Storage pits appear at this time and correlate with mass harvests of camas. This time period indicates the start of a delayed consumption tactic and a narrowed spectrum diet on specific resources to create food surplus for the cold season. Hearths appearing in association with non-residential sites increase in frequency during this period. This tradition likely marks the beginning of the "collector" adaptation in the Upper Columbia and is concurrent to similar behaviors at the advent of Pithouse II and the Shuswap horizon.

**Transition**

Between the Collector I and Collector II adaptations there is a decline in radiocarbon dating. Goodale et al. 2004 argued, based on later discussion, that there is a lower radiocarbon date frequency and site density during this transition between dispersed and aggregated collectors. They also argued that this is somewhat over amplified in figure 5-7 and the absence of dates during 1,999 and 1,800 is due to sampling bias. This transition period is still evident based on the 2009 Slocan Narrows dating. It maybe that this represents a large scale abandonment of this area due to reasons unknown at this point in time.
**Upper Columbia Collector II (1999-600 Cal BP)**

The Upper Columbia Collector II corresponds to a second major occupation of the Upper Columbia. Housepit occupations occur in small, medium and, large sized houses, and the greatest abundance of pithouses are found to date to this time. The calibrated evidence suggests that if aggregated communities existed in the Upper Columbia, it was during this time period. Moreover, this time period reflects the most probable evidence for aggregated complex villages, which appear at 1,200 cal BP and lasts until 600 cal BP. This period also corresponds to the late peak in root processing and storage pits for mass harvested resources. Hearths associated with non-residential sites also peak at this time. Fish and mammal assemblages from 45PO137 in the Calispell Valley, show a continuous use of both fish and mammal resources during this time with a relatively more intensive use of mammals over of fish.

**Upper Columbia Collector III (599-0 cal BP)**

The beginning of this interval corresponds to the start of the "Little Ice Age" and marks the maximum extent of glaciation since the end of the Pleistocene. This interval is indicated by a decline in radiocarbon dates; however, pithouses remain occupied at this time and medium sized structures dominate the record. The use of root processing ovens appear to decline and may be consequent to the onset of the "Little Ice Age" and the associated effects on the availability of resources. During this time cultural earthworks appear in the archaeological record. The appearance of these features may be due to a decrease in the resources that were stressed by cooling temperatures. Subsequently, previously reliable resources declined in availability and may have spurred hunter-gatherer groups to defend locales where resource acquisition was possible under the climatic change.
Table 3.5. Time period characteristics of the Upper Columbia Region Chronology. Based on Goodale et al. 2004.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Upper Columbia Forager</td>
<td>Limited root processing and non-residential sites. High mobility forager adaptation.</td>
</tr>
<tr>
<td>6200-4200 Cal BP</td>
<td></td>
</tr>
<tr>
<td>Hiatus</td>
<td>Hiatus in the archaeological record with a 400 year lapse of radiocarbon dates.</td>
</tr>
<tr>
<td>4199-3800 Cal BP</td>
<td></td>
</tr>
<tr>
<td>The Upper Columbia Collector I</td>
<td>Small, medium, and large pithouses are occupied, extensive root processing, storage pits appear, and non-residential site use rises in frequency. Advent of semis-sedentary dispersed collector system.</td>
</tr>
<tr>
<td>3799-2000 Cal BP</td>
<td></td>
</tr>
<tr>
<td>The Upper Columbia Collector II</td>
<td>Small, medium, and large pithouses are occupied, extensive root processing, storage pits are used, non-residential site use rises in frequency, and fish and mammal resources seem steady throughout the interval. The advent of the aggregated collector adaptation and complex hunter-gatherers existed from 1,200-600 cal BP.</td>
</tr>
<tr>
<td>1999-600 Cal BP</td>
<td></td>
</tr>
<tr>
<td>The Upper Columbia Collector III</td>
<td>Onset of the &quot;Little Ice Age &quot;, only medium sized pithouses are occupied with a decline in root processing, storage pit frequencies, and non-residential sites. Cultural earthworks appear during this interval as a possible defense mechanism. Fish and mammal remains stay constant throughout this interval. Dispersed complex collectors. Revisions to this time period based on the 2009 season includes the addition of small and large house pits also occupied at the Slocan Narrows Housepit Village.</td>
</tr>
<tr>
<td>599-0 Cal BP</td>
<td></td>
</tr>
</tbody>
</table>
**Ethnography and Ethnohistory of the Syngaytskstx, Sinixt, or Lakes (the Lakes Salish)**

The Treaty of Washington in 1846 divided the Okanagan territory and moved people in both Canada and the U.S. to the Colville Reservation. In 1872 the reservation boundaries were determined however, by 1880 fewer than half of the Okanagan, Sinixt, and Colville had migrated to the reservation. In the late 1800's a steady influx of gold seekers came into the area. This aided in the push from the government to relocate Natives into the reservations. By 1900 most of the Sinixt Interior Salish resided on the Colville Reservation. However, some of the Sinixt continued to travel seasonally throughout the Arrow Lakes area (Pryce 1999).

In 1902, an Indian reserve near Oatscott on the west side of the Arrow Lakes was set aside by the Canadian government for a small previously scattered group comprised mostly of Sinixt peoples. In 1935 only one woman of this group remained. When this woman died, the Department of Indian Affairs officials concluded that the Arrow Lakes Band had become extinct (note that the Sinixt Nation was not pronounced extinct). The Oatscott reserve in 1953 reverted back to the Canadian Government, becoming the first Indian reserve in British Columbia to be reverted back to governmental land due to the "extinction" of an Indian Band. At this time, there were 257 people registered as Sinixt who were living on the Colville Indian Reservation in the United States (Bouchard and Kennedy 1985).

Ethnographic evidence shows that hunting various sized land mammals provided the main staple of the traditional Sinixt diet and the organizational skills were particularly important to their society. Hunting grounds were located in the upper part of Old Arrow Lake, and the area to its north around Revelstoke (Bouchard and Kennedy 2000). The section near Revelstoke was noted by Teit (1909) to also be used by the Shuswap as a productive hunting territory. Deer was the most important food to the Sinixt and the most plentiful food source in the region. Teit (1930a) recorded that the Okanagan-Colville had four great hunts: in the spring for deer and mountain sheep, in late fall for deer, sheep, elk, and bear, in mid-winter for deer, and in late winter for mountain sheep (Teit 1930b: 247; Bouchard and Kennedy 2000: 267). The Sinixt employed the use of dogs in the hunt for deer in tracking strategies and in river game drive traps. Hunts were usually lead by a spiritually gifted person in tracking the seasonal movements of animals.
Ethnographically the Sinixt diet was supplemented by a significant amount of fish (Bouchard and Kennedy 2000). Major fishing locales could be found in the northern parts of their territory at the Arrow Lakes, Trout Lake, Slocan River, Slocan Lake, and the mouth of the Kootenay River, and in the southern portion of the territory at Kettle Falls (Bouchard and Kennedy 2000). During the summer the Sinixt would travel south on the Columbia River about 45 Km below the present day international border in Washington State and join the Colvilles and other aboriginal groups from the Plateau Region to catch chinook and coho salmon which ascended the falls (Teit 1930b; Kennedy and Bouchard 1985). The Chinook salmon run in June through August on the Columbia River provided the most economically valuable fish resource. The sockeye salmon, which came in July, and the coho, which came in October and November, were also fished, however, were considered less economically valuable (Bouchard and Kennedy 2000). Fish were caught with spear, basket, and weir methods. William Kittson noted the presence of a Sinixt weir at the mouth of the Slocan River in 1826 (Bouchard and Kennedy 2000). Ray (1975) reports that basket traps and weirs were individually owned and that any fish caught in that trap was kept by the owner. Teit (1930b) also describes boat-fishing techniques with a weighted line that is very similar to methods employed by the Shuswap.

Plants gathered by the Sinixt included camas roots, tiger lily bulbs, huckleberries, Saskatoon berries, Oregon grape berries, wild strawberries (*Fragaria vesca*), and Native tobacco (*Nicotiana attenuata*). These items could be found in various regions of their territory (Bouchard and Kennedy 2000). Black tree lichen (*Bryoria fremontii*) was gathered from Lodgepole pine and ponderosa pine trees, also the larch and the Douglas-fir (Bouchard and Kennedy 2000). These lichens were apparently made into a sort of bread cake in times of scarce food (Wilks 1959).

Ethnographic dwellings are described as semi-subterranean pithouses. These structures were occupied as late as the first part of the nineteenth century. They were usually quite small with one to two families living in them. The pit was dug in dry, sandy soil to a depth of one to two meters and the entranceway was at the top (Teit 1930b). The structures were usually roofed with mats made of cedar bark during the summer months. During the winter the structures would be covered with greater insulating materials such as layered poles, brush, and large sheets of bark. These structures were also used as a storage facility for dried salmon and other meats.
The social and political organization is described ethnographically as having one chief for all of the Sinixt with each village having a sub-chief (Bouchard and Kennedy 2000). Teit (1909) stated that “I found no trace of division among the Lakes. They were divided in small bands each having a chief and a main headquarters (like the bands of the Shuswap and Thompson)”. Status was ascribed along patrilineal lines and the term of office was the same time as the life of the individual. Chiefs were usually male, however, could be female. If the next person in line for chief was considered unsuitable, then the tribal council would deem the new chief. There were also task specific leadership roles for subsistence activities like salmon fishing and hunting; leaders were appointed based on skill, knowledge, and guardian spirit power.

The demographic population for the entire Sinixt society during the late 1700’s and early 1800’s (including Washington State and British Columbia villages) ranges between ethnographic description with: Mooney (1928) estimated population at 500, Ray (1952) estimated population at 800, Teit (1930) estimated population at 2000. These populations are based on pre-epidemic devastation from small pox in 1820 when the Sinixt population was reduced to less than 150 people.

History of Archaeological Research

Presently, while more consistent research is being conducted in the Upper Columbia, it is still very under researched when compared to other areas in the interior Pacific Northwest such as the Mid-Fraser. Archaeological research in the Kootenay region west of Nelson, British Columbia started in 1961 with Peter Harrison and surveyed 24 pithouse, 30 non-pithouse, 11 burial, 4 pictograph, 4 sweathouse, and 4 historic sites (Harrison 1961). Harrison noted that the majority of the sites (49 sites) were located on the Lower Arrow Lake (Harrison 1961). Between 1966 and 1969, Turnbull conducted excavations at 9 pithouse sites: DiQj 5, DiQm 1, DiQm 4, DiQl 6, DkQm 2, DkQm 5, DiQm 14, DiQm 18, and EbQl 1. A total of 23 housepit depressions were tested; one (EbQl 1) located on the Upper Arrow Lake, one located in the Slocan/Kootenay River Junction (DiQj 5), and the rest are located in the Lower Arrow Lake area (Turnbull 1977). In addition to excavation, Turnbull recorded 43 new archaeological sites within the region, with the majority located along the Kootenay and Slocan Rivers. Based on the information recovered from these excavations, Turnbull (1977) produced a tentative cultural chronology. French (1972), conducted further excavations at a stratified campsite (DiQi 1) on the lower Kootenay River. Galvin (1977)
conducted limited excavations at the Taghum pithouse village site (DiQi 2). Mohs (1977) conducted an assessment of archaeological sites within the Arrow Lakes region. It was noted that of the total 152 sites recorded on the Upper and Lower Arrow Lakes only 8% remained intact and above the high water level (Mohs 1977). The Vallican site excavated in the early 1980’s represents the first comprehensive excavation of a pithouse village site in the Upper Columbia drainage (Mohs 1982). The excavation at the Vallican site expanded and modified the cultural chronology for the area. Eldridge (1984) and Rousseau (1982) have conducted other research that refined the cultural chronology for the area based on the Vallican data. Choquette (1985) undertook salvage excavations at a pithouse village (DiQi 18) located on the lower section of the Slocan River Valley.

This summary includes all of the archaeological investigations in Arrow Lakes Region. The 2000 and 2009 field excavation of the Slocan Narrows Pithouse Village represents the most current work in the Upper Columbia Drainage. This work was conducted as a joint effort between the University of Montana, the University of Lethbridge, the University of Notre Dame, and most recently Hamilton College. This excavation focused on testing a large pithouse village (at least 60 recorded pithouses) in the Slocan Valley (Prentiss et al 2001).

The southern portion of the study area has received two thorough archaeological excavations. From 1984 to 2009 survey, testing, and excavations were conducted for the Calispell Valley Archaeological Project headed by the Anthropology Department at Washington State University. This project tested nine sites near Usk, Washington and the sites include various camas processing, non-residential, and residential sites (Andrefsky et al 2000). Chance and Chance conducted excavations at numerous sites in the Kettle Falls and Lake Roosevelt areas during the late 1970's and early 1980's. Excavated sites include fisheries, camas production sites, and residential pithouse villages (Chance and Chance 1982).
Chapter Four:
Stratigraphy and Features

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This section provides an overview of stratigraphy on a unit by unit basis. The presentation of this information is divided into larger sections based on site and house number. Strata were excavated in arbitrary 5 cm levels until a new stratum was encountered, at which time the new stratum was named. Profile drawings and located in Appendices A and B.

Six distinct strata were recognized during the 2009 field season (Table 4-1). However, many variations of these strata are present at both the DkQi 1 and DkQi17 sites. These variations are designated with a hyphenated number and are summarized for the unit in which it occurs. The deposits at the sites have been divided into several basic types, including: surface humic layer, podzolic formation, B-horizon without cultural modification, B-horizon with cultural modification, gleyed deposits, and the natural river terrace. The following is an introduction to the major stratigraphic designations associated with our excavations at DkQi 1 and DkQi17.

**Geologic Sediment Formation Processes**

**Surface Humic Layer**

In classifying soils, organic matter is normally divided into an undecomposed component that consists of remains of leaves, roots, branches, and living biomass and a decomposed component. The undecomposed component makes up this surface humic layer at the Slocan Narrows site.

**Podzol Formation**

The decomposed component of the humic layer is considered the podzolic layer. This component is comprised of low molecular weight carboxylic acids, carbohydrates, amino acids, and sugars. This component at the Slocan Narrow site is gray in color, ver fine-grained, and is easily recognizable.

The term “podzol” originated in Russia and was used to define the ashy gray surface, or near surface, layer of the Ae horizon (Muir 1961). It was not thought to be related to the underlying darker colored layer, B-horizon, until near the end of the nineteenth century. Since 1900 the term podzol and podzolic soils, as used in Russia, have included several kinds of leached soils including: those with B horizons of humus or humus-sesquioxide accumulation, those with B-horizons of clay accumulation, and acidic soils with weakly developed B-horizons (Mckeague et al. 1978). In Canada, the term “podzol” has been used to include: a soil with an Ae horizon and a B horizon of humus-Fe accumulation, gray-brown podzolic soils that contain a B-horizon of clay accumulation, and brown podzol, acidic soils, with brown
B-horizons and no Ae horizon. By the Canadian Taxonomic system for classifying Canadian soils, the pozolic soil encountered at the Slocan Narrows site is named a Humo-Ferric Podzol. The characteristics of this podzol include an underlying Bf horizon (less that 5% organic aterial with concentrations of Al and Fe) and at least a thickness of 5cm (NSSC 1955). The Whonnock Series (McKeague and Sprout 1975) best resembles this podzolic formation and the relating substrata sequence found at the Slocan Narrows site. This soil is representative of many areas at lower to mid elevations in high precipitation sections of British Columbia. The parent material for this podzol is a sandy loam composed of glacial till. A brief description of a Whonnock stratigraphic sequence is outlined in Figure 4-1 per Mckeagye and Sprout.

Table 4-1. Whonnock Stratigraphic sequence form Mckeague and Sprout 1975.

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-H or A</td>
<td>Undecomposed leaves, twigs and moss at the surface grading into black humic material</td>
</tr>
<tr>
<td>Ahe (podzol)</td>
<td>Dark gray, sandy loam, high concentration of organic material, and friable.</td>
</tr>
<tr>
<td>Bhf</td>
<td>Dark reddish brown grading to yellowish brown with depth, sandy loam, platy, friable with common roots.</td>
</tr>
<tr>
<td>Bfgi</td>
<td>Grayish brown, sandy loam, platy, friable to firm, mottled.</td>
</tr>
<tr>
<td>BCc</td>
<td>Olive gray to gray, sandy loam, strongly cemented, platy and mottled.</td>
</tr>
<tr>
<td>C</td>
<td>Gray, sandy loam, amorphous, very firm, and cemented.</td>
</tr>
</tbody>
</table>

**B Horizon**

The B-horizon identified at the Slocan Narrows site represents a Bhf horizon by the Canadian Taxonomic system (McKeague et al. 1975). Characteristically this soil substratum contains at least 5% organic material associated with aluminum and iron. The Bhf horizon at the Slocan Narrows site is dark yellowish brown colored coarse-grained sand with common roots growing into it. Various natural fluvial and alluvial processes laid down this sediment. Anthropogenic alteration processes that change the B horizon soil color from yellowish brown to black occur inside housepits and are a result of the structure being burned after occupation.
Gleyed Deposits

In a soil horizon in which gleying has occurred, iron has been converted to a reduced state as a consequence of water saturation (Waters 1992). Water saturation is a consequence of high ground water tables and this substratum usually lies more of less vertically. These may appear at varying depths in a soil profile and have been formed in swampy areas by precipitating iron rich ground water (Tamm 1950). The precipitation is brought about by oxidation (i.e. it takes place where the ground water, rich in ferro ions, meets descending oxygen from the air) and when this level alternates the gleyed formation occurs (Tamm 1950). Commonly gleyed sediments have a neutral color such as gray, and strongly gleyed sediments are blue to green.

Natural River Terrace

The natural river terrace has been laid down on the Slocan Valley floor through ever changing water levels of the Slocan River. This substratum contains graded bedding, with granule to cobble clasts in a sandy coarse grained matrix.

Table 4-2. 2009 General Stratum Legend for DkQi 1 and DkQi 17

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td><strong>Surface Humic Layer</strong>: The modern surface sediment that is very dark gray to black silty sand with high organic content.</td>
</tr>
<tr>
<td>II</td>
<td><strong>Podzolic Development</strong>: Very fine grained silty sand that is composed of decayed organic material.</td>
</tr>
<tr>
<td>III</td>
<td><strong>B-Horizon</strong>: Yellowish brown silty sand that was during the occupation of the site. This stratum contains all of the occupations for DkQi 1 and DkQi17.</td>
</tr>
<tr>
<td>IV</td>
<td><strong>Gleyed Deposit</strong>: Olive gray sediment that is a consequence of water saturation converting iron in the original sediment to a reduced state.</td>
</tr>
<tr>
<td>V</td>
<td><strong>The Natural River Terrace</strong>: yellowish brown silty sand that was deposited under high energy stream conditions. Culturally sterile deposit.</td>
</tr>
</tbody>
</table>
Stratigraphic Descriptions for DkQi 1

Housepit 3, DkQi 1

120 North 35 East:
Datum: 538.75 meters above sea level
Excavation: SW corner 53-118 cmbd

This unit is 0.5 x 0.5 meters in size and located on the eastern rim of Housepit 3 and was excavated to a maximum depth of 65 cm below surface in the SW quadrant. Stratum I was excavated from 0-5 cm below the surface (Strat. I, Lvl. 1). Mottled Stratum II and III excavated from 5-10 cm below surface (Strat II, Lvl. 1). Stratum III was then excavated from 10-40 cmbs in six 5 cm arbitrary levels (Strat. III, Lvl. 1-6). A charcoal sample was gathered in Stratum III, Level 1 at approximately 14 cm below surface. Stratum IV was encountered at 40 cm below surface and was excavated in five, 5 cm arbitrary levels (Strat. IV, Lvl. 1-5). A small amount of lithicdebitage was identified in Stratum IV, Level 1.

Housepit 6, DkQi 1

128 North 42 East
Datum: 535.46 meters above sea level
Excavation: SW corner 26 - 89 cmbd

This unit is 0.5 x 0.5 meters in size and located on northern of Housepit 6 and was excavated to a maximum depth of 63 cm below surface in the SW quadrant. Stratum I was excavated from 0-5 cm below the surface (Strat. I, Lvl. 1). Stratum II excavated from 5-15 cm below surface (Strat. II, Lvl. 1-2). Fire cracked rock was identified in Stratum II, Level 1. Stratum III was then excavated in seven 5 cm arbitrary levels (Strat. III, Lvl. 1-7). Fire cracked rock was identified throughout Stratum III. A charcoal sample was gathered from Stratum III, Level 7 at approximately 50 cm below surface. Stratum III-1 was excavated in the NW, NE and SE quadrants of the unit in two 5 cm levels (Strat. III-1, Lvl. 1-2). A charcoal concentration was excavated in the NW, NE and SE quadrants of the unit in (Strat. VI, Lvl. 1-2) and was Identified as DkQi-1 Feature 6. Stratum VI became mottled with Stratum III-1 in Strat. VI, Lvl. 2. A small amount of lithic debitage was identified in this level.
Housepit 7, DkQi 1

160 North 49.5 East
Datum: 539.33 meters above sea level
Excavation: SW corner 51.5 - 86 cmbH

This unit is 0.5 x 0.5 meters in size and located on northern rim of Housepit 7 and was excavated to a maximum depth of 34.5 cm below surface in the SW quadrant. Stratum I was excavated in the NW, NE & SE quadrants from 0-5 cm below the surface (Strat. I, Lvl. 1). Stratum III was then excavated in five levels (Strat III, Lvl. 1-5). No artifacts or C14 were identified. Stratum V was encountered 21.5 cm below surface in the SW corner and excavated in three levels (Strat. V, Lvl. 1-3) and determined culturally sterile.

160 North 50 East
Datum: 539.33 meters above sea level
Excavation: SW corner 38.5 - 78 cmbH

This unit is 0.5 x 0.5 meters in size and located on northern rim of Housepit 7 and was excavated to a maximum depth of 39.5 cm below surface in the SW quadrant. Stratum I was excavated from 0-1 cm below the surface (Strat. I, Lvl. 1). Stratum II was excavated in the NE, SE & SW quadrants from 1-3 cm below surface (Strat. II, Lvl. 1-2). Stratum III was then excavated in eight arbitrary levels (Strat III, Lvl. 1-8). Stratum V was encountered and excavation ceased. No artifacts or C14 were identified in this unit.

Housepit 9, DkQi 1

220 North 44 East
Datum: 541.80 meters above sea level
Excavation: SW corner 41- 75.6 cmbH

This unit is 0.5 x 0.5 meters in size and located on south rim of Housepit 9 and was excavated to a maximum depth of 34.6 cm below surface in the SW quadrant. Stratum I was excavated from 0-8.5 cm below the surface (Strat I, Lvl. 1-2). Stratum II was excavated from 8.5-13 cm below surface (Strat. II, Lvl. 1). Stratum III-2 was then excavated in two 5 cm arbitrary levels and one natural level (Strat III-2, Lvl. 1-3). Stratum III was encountered approximately 23 cm below surface and excavated in two 5 cm
levels and one natural level (Strat III, Lvl. 1-3). Culturally sterile Stratum IV was encountered and excavation ceased. Several lithics and fauna were identified in Strataums III and III-2.

**220.42 North 43.682 East**
*Datum: 541.80 meters above sea level  
Excavation: SW corner 48.4-78.9 cmbd*

This unit is 0.5 x 0.5 meters in size and located centrally in Housepit 9 and was excavated to a maximum depth of 30.5 cm below surface in the SW quadrant. Stratum I was excavated from 0-7.5 cm below the surface (Strat I, Lvl. 1-2). Stratum II was excavated from 7.5-8.5 cm below surface in (Strat. II, Lvl. 1). Stratum III-2 was then excavated in three levels (Strat III-2, Lvl. 1-3). Stratum III was encountered 10.3 cm below surface and excavated in five levels (Strat III, Lvl. 1-5). Several lithic and faunal artifacts were identified in Stratum III and III-2. Culturally sterile Stratum V was encountered 30.5 cm below surface and excavation ceased.

**220.818 North 43.383 East**
*Datum: 541.80 meters above sea level  
Excavation: SW corner 51.2-78.6 cmbd*

This unit is 0.5 x 0.5 meters in size and located centrally in Housepit 9 and was excavated to a maximum depth of 27.4 cm below surface in the SW quadrant. Stratum I was excavated from 0-3.5 cm below the surface (Strat I, Lvl. 1). Stratum II was excavated from 3.5-13 cm below surface (Strat. II, Lvl. 1). Stratum III was then excavated in three levels (Strat III, Lvl. 1-3). Several lithics, fauna and charcoal were identified in Stratum III. Stratum IV was excavated from 24.8-27.4 cmbs, whereupon culturally sterile Stratum V was encountered.

**221.196 North 43.109 East**
*Datum: 541.80 meters above sea level  
Excavation: SW corner 51-80.5 cmbd*

This unit is 0.5 x 0.5 meters in size and located centrally in Housepit 9 and was excavated to a maximum depth of 29.5 cm below surface in the SW quadrant. Stratum I was excavated from 0-4.7 cm below the surface (Strat I, Lvl. 1). Stratum II was excavated from 4.7-6.6 cm below surface (Strat. II, Lvl. 1). Stratum III was then excavated in three levels (Strat III, Lvl. 1-3). Several lithics, fauna and charcoal were identified in Stratum III. Stratum IV was excavated from 25-29.5 cmbs, whereupon culturally sterile Stratum V was encountered.
221.672 North 42.824 East
Datum: 541.80 meters above sea level
Excavation: SW corner 35-78 cmbd

This unit is 0.5 x 0.5 meters in size and located centrally in Housepit 9 and was excavated to a maximum depth of 43 cm below surface in the SW quadrant. Stratum I was excavated from 0-5 cm below the surface (Strat I, Lvl. 1). Stratum II was excavated from 5-15 cm below surface (Strat II, Lvl. 1-2). Stratum III was then excavated in three levels (Strat III, Lvl. 1-3). Several lithics, fauna and charcoal were identified in Stratum III. Stratum IV was excavated from 38-43 cmbs, whereupon culturally sterile Stratum V was encountered.

222.084 North 42.532 East
Datum: 541.80 meters above sea level
Excavation: SW corner 35-71 cmbd

This unit is 0.5 x 0.5 meters in size and located centrally in Housepit 9 and was excavated to a maximum depth of 36 cm below surface in the SW quadrant. Stratum I was excavated from 0-5 cm below the surface (Strat I, Lvl. 1). Stratum II was excavated from 5-10 cm below surface (Strat II, Lvl. 1). Stratum III-1 was excavated from 10-15 cmbs (Strat III-1, Lvl. 1). Stratum III was then excavated in three levels (Strat III, Lvl. 1-3). Several lithics, fauna and charcoal were identified in Stratum III. Stratum IV was excavated from 31-36 cmbs, whereupon culturally sterile Stratum V was encountered.

222.43 North 42.302 East
Datum: 541.80 meters above sea level
Excavation: SW corner 24-67 cmbd

This unit is 0.5 x 0.5 meters in size and located centrally in Housepit 9 and was excavated to a maximum depth of 43 cm below surface in the SW quadrant. Stratum I was excavated from 0-3 cm below the surface (Strat I, Lvl. 1). Stratum II was excavated from 3-5 cm below surface (Strat. II, Lvl. 1). Stratum III-1 was then excavated in six levels (Strat III-1, Lvl. 1-6). Several lithics, fauna and charcoal were identified in Stratum III-1. Stratum IV was excavated from 38-43 cmbs, whereupon culturally sterile Stratum VI was encountered.
220.527 North 44.187 East
Datum: 542.42 meters above sea level
Excavation: SW corner 48.5- 77.4 cmbd

This unit is 0.5 x 0.5 meters in size and located near the south rim of Housepit 9 and was excavated to a maximum depth of 28.9 cm below surface in the SW quadrant. Stratum I was excavated from 0-12.2 cm below the surface (Strat I, Lvs. 1-3). Stratum II was excavated from 12.2-14 cm below surface (Strat. II, Lvl. 1). Stratum III-5 was encountered approximately 14 cm below surface and was then excavated in four pocketed levels (Strat III-5, Lvs. 1-4) to 28.9 cm below surface in sections of the unit. This stratum was comprised of loose, fine yellowish and red sediments (distinct from cultural Stratum III) with few artifacts and identified as DKQi-1 Feature 5, possible roof collapse. Stratum III was excavated in two pocketed levels from 18.7-24 cmbs (Strat III, Lvs. 1-2). Stratum III-2 was excavated in two pocketed levels from 24-28.9 cmbs (Strat III-2, Lvs. 1-2). Several lithics, fauna and charcoal were identified in these stratums.

220.621 North 44.617 East
Datum: 542.42 meters above sea level
Excavation: SW corner 48.6- 81 cmbd

This unit is 0.5 x 0.5 meters in size and located near the center of Housepit 9 and was excavated to a maximum depth of 32.4 cm below surface in the SW quadrant. Stratum I was excavated from 0-14.4 cm below the surface (Strat I, Lvs. 1-2). Stratum II was excavated from 14.4-17.8 cm below surface (Strat. II, Lvl. 1). Stratum III-5, III and III-2 and were excavated in six pocketed levels between 17.8 and 32.4 cm below surface and comprised DKQi-1, Feature IV. Stratum III-5 consisted of loose, fine yellowish and red sediments with few artifacts and a large amount of FCR excavated from approximately 17.8 to 22.8 cm below surface (Strat III-5, Lvl. 1). Level 1 of Stratum III-2 was excavated from 22.8- 28 cm in the southernmost quadrants of the unit. Feature IV, a distinct pit like feature in the NW and NE quadrants of this unit was distinguished by dense amount of bone and FCR in Stratum III. This feature spanned this Unit and 220.795 North 45.139 East. The Feature IV sediments were excavated in natural and 5 cm levels and the heavy fraction bagged for laboratory analysis (Strat III, Lvs. 1-3). Stratum III-2 Level 2 was excavated from 28-32.4 cm below surface where Stratum V was encountered and excavation ceased.
220.795 North 45.139 East  
Datum: 542.42 meters above sea level  
Excavation: SW corner 48.6- 86 cmbd  

This unit is 0.5 x 0.5 meters in size and located near the center of Housepit 9 and was excavated to a maximum depth of 37.4 cm below surface in the SW quadrant. Stratum I was excavated from 0-7.4 cm below the surface (Strat I, Lvl. 1-2). Stratum II was excavated from 7.4-8.4 cm below surface (Strat II, Lvl. 1). Stratum III-5, possible roof collapse, was excavated from approximately 8.4 to 11.4 cm below surface (Strat III-5, Lvl. 1). This level was severely disturbed by tree roots and some mottling had occurred between Stratum III-5, III-2 and II. Feature IV, a pit like feature spanning this Unit and 220.621 North 44.617 East, was distinguished by reddish brown sandy silt with high density of burnt and unburnt fauna, some FCR and lithic debitage. The Feature IV sediments were excavated from 16.4-31.4 cmbs in natural and 5 cm levels and the heavy fraction bagged for laboratory analysis (Strat III, Lvl. 1-4). Located in the westernmost quadrants of the Unit, Stratum III-2 sediments contained fewer artifacts and were also excavated in natural and 5 cm levels from 19.4 to 29.4 cmbs (Strat III-2, Lvl. 2-3). Feature VII, a possible postmold was situated in the northwestern most corner of the unit was excavated from 21.4 to 31.4 cmbs (III/ III-2, Lvl. 1-3). Stratum V was encountered at approximately 32 cm below surface and excavated 5 cm until sterile sediments were confirmed.

220.917 North 45.684 East  
Datum: 541.80 meters above sea level  
Excavation: SW corner 45.5- 83.5 cmbd  

This unit is 0.5 x 0.5 meters in size and located near the north rim of Housepit 9 and was excavated to a maximum depth of 38 cm below surface in the SW quadrant. Stratum I was excavated from 0-11.5 cm below the surface (Strat I, Lvl. 1-2). Stratum II was excavated from 11.5-18.5 cm below surface (Strat. II, Lvl. 1-2). Stratum III-5 consisted of loose, fine yellowish and red sediments with few artifacts and a large amount of FCR excavated from approximately 18.5 to 21.5 cm below surface (Strat III-5, Lvl. 1). Stratum III and III-2 were mottled from 21.5- 38 cm below surface excavated in six additional natural and arbitrary levels (Strat III, Lvl. 1-2 and Strat III-2, Lvl. 1-3). Feature VI, a small pit like feature and possible posthole was located directly beneath Stratum III-5. The Feature VI sediments (Stratum III) were excavated in natural and 5 cm levels and no artifacts were identified. Stratum V was encountered at 38 cm below surface and excavation ceased.
Stratigraphic Descriptions for DkQi 17

**Housepit 5, DkQi 17**

**193.222 North 184.143 East:**
*Datum: 544.78 meters above sea level*
*Excavation: SW corner 20-71 cmbd*

This unit is located on the southeastern rim of Housepit 5 and was excavated to a maximum depth of 51 cm below surface in the SW quadrant. Stratum I was excavated from 0-12 cm below the surface (Strat. I, Lvls. 1-2). Stratum III was then excavated from 12-51 cm below the surface in six levels (Strat. III, Lvls. 1-6). Stratum V was confirmed at 51 cm below surface and excavation ceased.

**185.839 North 185.504 East:**
*Datum: 548.44 meters above sea level*
*Excavation: SW corner 12-60 cmbd*

This unit is located on the southeastern rim of Housepit 5 and was excavated to a maximum depth of 48 cm below surface in the SW quadrant. Stratum I excavated from 0-4 cm below the surface (Strat I, Lvls. 1-2). Stratum II was excavated from 4-9 cm below surface (Strat. II, Lvl. 1). Stratum III was then excavated from 9-48 cm below the surface in seven levels (Strat. III, Lvls. 1-7). Culturally sterile Stratum V was confirmed at 48 cm below surface and excavation ceased.

**Housepit 6, DkQi 17**

**204.996 North 190.733 East:**
*Datum: 540.26 meters above sea level*
*Excavation: SW corner 8.5-38.5 cmbd*

This unit is located on the northwest rim of Housepit 6 and was excavated to a maximum depth of 30 cm below surface in the SW quadrant. Stratum I excavated from 0-10 cm below the surface (Strat I, Lvls. 1-2). Stratum V was excavated from 10-30 cm below surface (Strat V, Lvl. 1). Stratums II and III were not identified in this unit.
211.57 North 205.588 East:
Datum: 539.67 meters above sea level
Excavation: SW corner 46-70 cmbd

This unit is located on the northwest rim of Housepit 6 and was excavated to a maximum depth of 24 cm below surface in the SW quadrant. Stratum I excavated from 0-3 cm below the surface (Strat I, Lvl. 1). Stratum II was excavated from 3-5 cm below surface (Strat II, Lvl. 1). Stratum III was then excavated from 5-20 cm below the surface in three levels (Strat III, Lvl. 1-3). Several lithics, fauna and groundstone were identified in Stratum III. Stratum V was confirmed at 24 cm below surface and excavation ceased.

Housepit 7, DkQi 17

204.356 North 203.784 East:
Datum: 545.15 meters above sea level
Excavation: SW corner 30-93 cmbd

This unit is located on the southeast rim of Housepit 7 and was excavated to a maximum depth of 63 cm below surface in the SW quadrant. Stratum I excavated from 0-15 cm below the surface in two arbitrary levels (Strat I, Lvl. 1-2). Stratum II was excavated from 15-29 cm below surface (Strat II, Lvl. 1-2). Stratum III was then excavated from 29-52 cm below the surface in five levels (Strat III, Lvl. 1-5). Several charcoal samples were collected from Stratum III. Stratum III-2 was excavated from 52-63 cmbs (Strat III-2, Lvl. 1-2). Stratum V was confirmed at 63 cm below surface and excavation ceased.

Housepit 8, DkQi 17

198 North 206 East:
Datum: 538.28 meters above sea level
Excavation: SW corner 59-91 cmbd

This unit is located on the northwest rim of Housepit 8 and was excavated to a maximum depth of 32 cm below surface in the SW quadrant. Stratum I excavated from 0-6 cm below the surface in two levels (Strat I, Lvl. 1-2). Stratum III was then excavated from 6-32 cm below the surface in six 5 cm arbitrary levels (Strat III, Lvl. 1-6). Several charcoal samples were collected in Stratum III. Stratum V was confirmed at 32 cm below surface and excavation ceased.
Housepit 9, DkQi 17

219.865 North 220.610 East:
Datum: 545.85 meters above sea level
Excavation: SW corner 34-59 cmbd

This unit is located on the northeast rim of Housepit 8 and was excavated to a maximum depth of 25 cm below surface in the SW quadrant. Stratum I was excavated from 0-5 cm below the surface (Strat I, Lvl. 1). Stratum III-1 was then excavated from 5-10 cm below the surface (Strat III-1, Lvl. 1). Stratum III was then excavated from 10-20 cm below the surface in two 5 cm arbitrary levels (Strat III, Lvl. 1-2). Charcoal samples were collected in Stratum III. Stratum V was confirmed at 25 cm below surface and excavation ceased.

Housepit 10, DkQi 17

218.887 North 220.759 East:
Datum: 548.64 meters above sea level
Excavation: SW corner 41-76 cmbd

This unit is located on the west rim of Housepit 8 and was excavated to a maximum depth of 35 cm below surface in the SW quadrant. Stratum I was excavated from 0-2 cm below the surface (Strat I, Lvl. 1). Stratum II was excavated from 2-9 cm below surface (Strat II, Lvl. 1). Stratum III was then excavated from 9-29 cm below the surface in four 5 cm arbitrary levels (Strat III, Lvl. 1-4). Charcoal samples were collected in Stratum III. Stratum V was confirmed at 35 cm below surface and excavation ceased.

Housepit 11, DkQi 17

230 North 238 East:
Datum: 548.55 meters above sea level
Excavation: SW corner 48-64 cmbd

This unit is located on the northwest rim of Housepit 8 and was excavated to a maximum depth of 16 cm below surface in the SW quadrant. Stratum I was excavated from 0-4 cm below the surface (Strat I, Lvl. 1). Stratum II was excavated from 4-5 cm below surface (Strat II, Lvl. 1). Stratum III was then excavated from 5-16 cm below the surface (Strat III, Lvl. 1-4). Charcoal samples were collected in Stratum III. Stratum V was confirmed at 16 cm below surface and excavation ceased.
Housepit 12, DkQi 17

234.718 North 235.719 East:
Datum: 541.71 meters above sea level
Excavation: SW corner 26-84 cmbd

This unit is located on the west rim of Housepit 8 and was excavated to a maximum depth of 58 cm below surface in the SW quadrant. Stratum I was excavated from 0-2 cm below the surface (Strat I, Lvl. 1). Stratum II was excavated from 3-4 cm below surface (Strat II, Lvl. 1). Stratum III was then excavated from 4-58 cm below the surface (Strat III, Lvl. 1-9). Charcoal samples were collected in Stratum III. Stratum V was confirmed at 58 cm below surface and excavation ceased.

Housepit 13, DkQi 17

239.786 North 243.790 East:
Datum: 541.82 meters above sea level
Excavation: SW corner 15-75 cmbd

This unit is located on the north rim of Housepit 8 and was excavated to a maximum depth of 60 cm below surface in the SW quadrant. Stratum I was excavated from 0-19 cm below the surface (Strat I, Lvl. 1). Stratum III was then excavated from 19-58 cm below the surface in six levels (Strat III, Lvl. 1-6). Charcoal samples were collected in Stratum III. Stratum V was confirmed at 60 cm below surface and excavation ceased.
Chapter Five:
Lithic Technology of Slocan Narrows

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Hamilton College

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This chapter describes the lithic artifacts recovered in the 2009 field season of the Slocan Narrows Archaeological Project at sites DkQi1 and DkQi 17. The data are presented in a unit by unit manner and organized into the larger housepits and some limited surface collection.

Debitage Analysis

Debitage recovered in the 2009 field season was sorted on the basis of material type, flake size, the percentage of dorsal cortex, the presence or absence of thermal alteration, and fracture initiation.

A measurement of the degree of decortications was taken by examining each flake and determining the percentage of dorsal cortex. For the purpose of this study, dorsal cortex was measured on the scale as follows: primary (75-100% cortex cover), secondary (1-75% cortex cover), and tertiary (0% cortex cover). The amount of cortex cover can be useful in gauging the importance of decortications activities involved in producing a given assemblage (Andrefsky 2005). Therefore, early stage reduction flakes will have more cortex cover and later stage reduction flakes will have increasingly less cortex.

The analysis of fracture initiation may be useful in determining the type of percussor that was used (Cotterell and Kamminga 1985). Hard percussors (hammerstones) generally produce cone initiations while soft percussors (antler, bone, soft stone, wood) generally produce bend initiations. Pressure flaking may produce both cone and bend initiation flakes, depending on the technique used.

Lithic raw materials associated with the Slocan Narrows Sites include basalt, chert, quartz, schistose, and obsidian. Basalt is the most abundant material recovered in the excavation followed by progressively lower numbers of chert, quartz, schistos and obsidian.

Size was determined on the basis of extra-small <4cm², small<16cm², medium <64cm², and large > 64cm² (Prentiss 1993). Extra-small and small lithic debitage dominates this assemblage recovered at the Slocan Narrows Site.

Thermal alteration occurs when the lithic material is heated to improve the quality for tool use. The chemical composition of basalt does not allow this material to be improved by heating. Characteristics present to
determine if quartz or chert has been thermally altered include; shiny or glossy appearance and the presence of pot lidding.

A Modified Sullivan Rosen Typology (MSRT) based on Sullivan and Rosen (1985) was assigned to each piece ofdebitage. This typology has been argued to aid in assigning technological traits of the overall reduction system. Figure 5.1 represents how the MSRT was assigned based on the presence/absence of debitage features.

![Modified Sullivan and Rosen Typology](image)

Figure 5-1. MSRT assignment.

Assigning types to the lithic debitage (Table 5-1) is based on the characteristics described above. This detailed typology was used to describe any variability in such a small and seemingly uniform lithic assemblage.
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<td>No</td>
<td></td>
</tr>
<tr>
<td>Type 40</td>
<td>N/A</td>
<td>Groundstone</td>
<td>N/A</td>
<td>Sandstone</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Type 41</td>
<td>Small</td>
<td>Complete</td>
<td>Tertiary</td>
<td>Chert</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Type 42</td>
<td>Medium</td>
<td>Non Orientable</td>
<td>Tertiary</td>
<td>Schistose</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Type 43</td>
<td>Small</td>
<td>Complete</td>
<td>Tertiary</td>
<td>Basalt</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Type 44</td>
<td>Small</td>
<td>Complete</td>
<td>Tertiary</td>
<td>Chert</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Type 45</td>
<td>Extra Small</td>
<td>Complete</td>
<td>Tertiary</td>
<td>Chert</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Type 46</td>
<td>Small</td>
<td>Medial Distal</td>
<td>Tertiary</td>
<td>Glass</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Type 47</td>
<td>Small</td>
<td>Complete</td>
<td>Tertiary</td>
<td>Schistose</td>
<td>No</td>
<td></td>
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<tr>
<td>Type 48</td>
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<td>Non Orientable</td>
<td>Tertiary</td>
<td>Chert</td>
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</tr>
<tr>
<td>Type 49</td>
<td>Extra Small</td>
<td>Complete</td>
<td>Tertiary</td>
<td>Basalt</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Type 50</td>
<td>Medium</td>
<td>Complete</td>
<td>Tertiary</td>
<td>Chert</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
Lithic Analysis of DkQi -1

Housepit 3

Unit 35E120N

This unit was placed on the eastern side of Housepit 3 approximately halfway up the side. No lithic artifacts were recovered from this .50x.50 cm unit.

Housepit 6

Unit 42E128N

This unit was placed on the northern side of Housepit 6 approximately halfway up the side. One lithic artifact was recovered from Stratum III-1 in level 11. The artifact is a small, medial distal, tertiary non-thermally altered quartz (Table 5-2).

Table 5-2. Lithic artifacts recovered from Housepit 6.

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 5</td>
<td>3-1</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Housepit 7

Unit 49.5E160N

This unit was placed on the northern side of Housepit 7 approximately halfway up the rim. No lithic artifacts were recovered from this .50x.50 cm unit.

Housepit 7

Unit 50E160N

This unit was placed on the northern side of Housepit 7 approximately halfway up the rim. No lithic artifacts were recovered from this .50x.50 cm unit.

Housepit 9

Unit 44E 220N Bag#’s 9.3, 9.11, 9.14, 9.33; Table 5-3

This unit was located on the south side of Housepit 9 in the first trench and a total of five pieces ofdebitage were recovered from all Strata and levels. Two lithic artifacts were recovered in Stratum II level 2 and three in Stratum
100% of the artifacts were chert but probably represent several different types of raw material. Two pieces are black and waxy in nature, one is red, and two are black non-waxy. The difference between the black waxy and non-waxy could be a result of heat treatment of the waxy raw materials. The red chert is also likely to be heat treated.

Table 5-3. Lithic artifacts recovered from Housepit 9 Unit 44E 220N.

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 45</td>
<td>II</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Type 22</td>
<td>II</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Type 18</td>
<td>III-1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

Unit 44.682E 220.42N Bag#s 9.7, 9.16, 9.25, 9.40, 9.32, 9.49; Table 5-4

This unit was centrally located in Housepit 9 in the first trench and a total of 59 pieces ofdebitage were recovered from all Strata and levels. One lithic artifact was recovered in Stratum II level 2. The piece ofdebitage is a Type 29 piece of chert. One piece ofdebitage was recovered from Stratum III-1 level 1. 32 pieces ofdebitage were recovered in Stratum III-2 level 1. There is a range of types ofdebitage but primarily are dominated by extra-small basalt and chert flakes which probably indicates a series of retouch events. 21 pieces ofdebitage were recovered from Stratum III-2 level 2. Primarily the debitage is dominated by extra small to small chert and basalt flakes again likely a result of multiple retouching events. One piece of Type 18 piece ofdebitage was recovered in Stratum III level 1. Three pieces of basalt and one piece of chert debitage were recovered from Stratum III level 2.

Table 5-4. Lithic artifacts recovered from Housepit 9 Unit 44.682E 220.42N

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 29</td>
<td>II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 2</td>
<td>III-2</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Type 6</td>
<td>III-2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Type 10</td>
<td>III-2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 18</td>
<td>III-2</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Type 19</td>
<td>III-2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 21</td>
<td>III-2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Type 22</td>
<td>III-2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 49</td>
<td>III-2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 45</td>
<td>III-2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Type 13</td>
<td>III-2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Type 18</td>
<td>III-2</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Type 22</td>
<td>III-2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Type 44</td>
<td>III-2</td>
<td>2</td>
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</tr>
<tr>
<td>Type 45</td>
<td>III-2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Type 18</td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 1</td>
<td>III</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Type 9</td>
<td>III</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
This unit was centrally located in Housepit 9 in the first trench and a total of six pieces of debitage were recovered from all Strata and levels. Two pieces of basalt (Types 5 and 10) debitage were recovered from Stratum II level 1. Two pieces of debitage were recovered from Stratum III level 2. These represent one extra small schistose and one extra small basalt (Types 9 and 47). One piece of chert debitage (Type 48) was recovered from Stratum III level 3. One piece of Type 21 chert debitage was recovered from Stratum IV level 1.

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 5</td>
<td>II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 10</td>
<td>II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 9</td>
<td>III</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Type 47</td>
<td>III</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Type 48</td>
<td>III</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Type 21</td>
<td>IV</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

This unit is located centrally on the north rim of Housepit 9 and a total of four pieces of debitage and one groundstone fragment were recovered from all Strata and levels. Four pieces of chert debitage (Types 18 and 45) were recovered from Stratum 3 level 1. One Basalt groundstone fragment was also recovered from Stratum III level 1. One piece of Type 8 quartz debitage was recovered from Stratum III level 3.

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 18</td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 45</td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Groundstone</td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 8</td>
<td>III</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

This unit is located on the north rim of Housepit 9 and a total of five lithic artifacts were recovered from all Strata and levels. One chert corner notched point was recovered in Stratum II level 1 directly resting on Stratum III. These point types are common between approximately 1,600-1,000 BP across the interior Pacific Northwest.
(Goodale et al. 2004; Rouseau 2004), and the artifact point fits within the date obtained from HP 9 at 1140 +/-40
BP (1065 +/-50 cal BP) (Figure 4.1-4.2). In the same stratum and level was recovered one piece of Type 14 small
basaltdebitage, one Type 1 basaltdebitage, and two Type 19 chertdebitage. All of these items were laying on the
occupation layer surface.

Figure 5.2. View 1 of late Plateau Horizon corner notched chert projectile point from HP9.

Figure 5.3. View 2 of late Plateau Horizon corner notched chert projectile point from HP9.
Table 5-7. Lithic artifacts recovered from Housepit 9 Unit 42.829E 221.672N

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plateau Point</td>
<td>II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 2</td>
<td>II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 14</td>
<td>II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 19</td>
<td>II</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

Unit 42.532E 222.084N Bag#s 9.24, 9.35, 9.36, 9.5; Table 5-8

This unit is located on the north rim of Housepit 9 and a total of 81 lithic artifacts were recovered in all Strata and levels. One fragment of groundstone made from basalt was recovered in Stratum III-1 level 1. Stratum III level 1 contained an abundant amount of small retouch flakes made from chert and schistose raw materials. This also includes a partial schistose stone pendant. The schistosedebitage should be able to be refit but it is beyond the scope of this manuscript to go into detail.

Table 5-8. Lithic artifacts recovered from Housepit 9 Unit 42.532E 222.084N

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundstone</td>
<td>III-1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 19</td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 23</td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 32</td>
<td>III</td>
<td>1</td>
<td>52</td>
</tr>
<tr>
<td>Type 34</td>
<td>III</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Type 44</td>
<td>III</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>81</strong></td>
</tr>
</tbody>
</table>

Unit 42.302E 222.043N

This unit was located on the north rim of Housepit 9 and no lithic artifacts were recovered in this unit.

Unit 44.178E 220.527N Bag#s 9.78, 9.83, 9.94, 9.102, 9.121, 9.125, 9.142, 9.139, 9.133, 9.142, 152; Table 5-9

This unit was located in the center of Housepit 9 and a total of 127 lithic artifacts were recovered from all Strata and levels. This unit contained the majority of Feature 5 and the highest concentrations of lithic and fauna remains found to date at the Slocan Narrows Housepit Village. In Stratum I level 3 a single piece of glass was recovered. It was determined to be glass and not some material such as quartz crystal after examining the item under polarized light. The basic approach is that cleavage planes in quartz with reflect light and change colors as polarized light moves over the sample. Because glass does not have cleavage planes no color change occurs. While this piece of
glass is a modern intrusion, it is interesting that it was recovered at the bottom of the humic layer and in isolation. In Stratum III-5 level 1, 16 pieces of lithicdebitage were recovered. All of thedebitage apart from one piece are chert the remaining piece is basalt. In Stratum III-5 level 2, 57 lithic artifacts were recovered including one chert awl. As well, all debitage was chert apart from five pieces of basalt. The chert ranges in color from flat black, glossy black, brownish green, to pink. It is evident that several pieces have been heat altered (see typology). In Stratum III-5 level 4, 11 piece of debitage were recovered and all were chert apart from one piece of schistose. In Stratum III level 1, 19 lithic debitage were recovered and all were chert. In Stratum III level 2, six pieces of debitage were recovered of both quartzite and chert. Stratum III level 3, contained one point haft which is side-notched to stemmed and would best be placed in the late Plateau Horizon due to its size (Figure 4.3 and 4.4). This also fits with the $^{14}$C date for HP 9 at 1140+/−40.

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 46</td>
<td>I</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Type 5</td>
<td>II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 19</td>
<td>II</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Type 19</td>
<td>III</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Type 20</td>
<td>III</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Type 26</td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 45</td>
<td>III</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Plateau Point</td>
<td>III</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Type 18</td>
<td>III-2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 20</td>
<td>III-2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Type 45</td>
<td>III-2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 2</td>
<td>III-2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Type 18</td>
<td>III-2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Type 21</td>
<td>III-2</td>
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<td>2</td>
</tr>
<tr>
<td>Type 2</td>
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<td>2</td>
</tr>
<tr>
<td>Type 18</td>
<td>III-5</td>
<td>1</td>
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</tr>
<tr>
<td>Type 20</td>
<td>III-5</td>
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<td>1</td>
</tr>
<tr>
<td>Type 26</td>
<td>III-5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 27</td>
<td>III-5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 44</td>
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<td>10</td>
</tr>
<tr>
<td>Type 1</td>
<td>III-5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Type 18</td>
<td>III-5</td>
<td>2</td>
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</tr>
<tr>
<td>Type 22</td>
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<td>10</td>
</tr>
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<td>III-5</td>
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<td>16</td>
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<td>Type 45</td>
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<td>Awl</td>
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<td>1</td>
</tr>
<tr>
<td>Type 32</td>
<td>III-5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Type 22</td>
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<tr>
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<td>III-5</td>
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<td>2</td>
</tr>
<tr>
<td>Type 45</td>
<td>III-5</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>
Unit 44.617E220.617N Bag#s 9.89, 9.98, 9.104, 9.144, 9.145, 9.148, 9.149, 9.151; Table 5-10

This unit was centrally located in Housepit 9 and a total of nine lithic artifacts were recovered from all Strata and levels. Stratum II level 1 contained one schistose chipped disk pendant and eight chert debitage artifacts. In Stratum III level 1 we recovered a variety of debitage with a total count of 75. The assemblage is dominated by chert and basalt although schistose also occurs in low frequency. Stratum III level 1 contained a total of 33 debitage all made from chert. Stratum III level 2 contained a total of 31 lithic debitage. The assemblage is comprised predominantly of chert although basalt does occur in low frequency. A total of six lithic debitage were recovered from Stratum III level 3 and were all chert.

Table 5-10. Lithic artifacts recovered from Housepit 9 Unit 42.532E 222.084N

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schistose Disk</td>
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<td>1</td>
</tr>
<tr>
<td>Type 18</td>
<td>II</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Type 22</td>
<td>II</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Type 45</td>
<td>II</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Type 19</td>
<td>III</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Type 23</td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 26</td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Type 44  III  1  1
Type 45  III  1  5
Type 2   III  2  3
Type 9   III  2  1
Type 19  III  2  11
Type 20  III  2  4
Type 21  III  2  6
Type 43  III  2  1
Type 44  III  2  1
Type 45  III  2  3
Type 49  III  2  1
Type 19  III  3  5
Type 44  III  3  1
Total    79

Unit 45.139E220.795N Bag#s 9.109, 9.136, 9.115, 9.117, 9.123, 9.131; Table 5-11

This unit was centrally placed in Housepit 9 and a total of 73 lithic artifacts were recovered from all strata and
levels. Stratum III-5 level 1 contained a total of 23 lithic artifacts and all were chert. Stratum III-2 level 3 contained
five lithic artifacts including two chert and three basalt debitage and from Stratum III-2 level 4 one chert debitage
was recovered. Stratum III level 1 contained nine chert debitage. Recovered from Stratum III level 2 were 28
debitage and 100% were chert. Finally, from Stratum III level 4 five chert artifacts were recovered.

Table 5-11. Lithic artifacts recovered from Housepit 9 Unit 45.139E 220.795N

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
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</tr>
<tr>
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<td></td>
<td>73</td>
</tr>
</tbody>
</table>
DkQi-1 Surface Collection

Minimal surface collection was conducted during the 2009 field season and was limited to artifacts found on the river bank that had been eroded out during high water. All of the artifacts were found on the river bank within the vicinity of Housepit 9. The collected artifacts include a chert uniface fragment, a basalt groundstone fragment, two Type 18 debitage, and one Type 19 debitage.

Lithic Analysis of DkQi-17

During the 2009 excavation only 15 debitage artifacts were recovered in situ and two artifacts were recovered via surface collection on the river bank.

Housepit 7

Unit 203.782E204.356N Bag#'s 7.4, 7.5, 7.8

This unit was placed on the southeast side of Housepit 7 approximately halfway up the rim. A total of three lithic artifacts were recovered and all were from Stratum III or a variant of Stratum III. One lithic artifact was recovered from Stratum III in level 1. The artifact is a small, medial distal, tertiary non-thermally altered basalt (Table 5-12). One lithic artifact was recovered from Stratum III in level 2 which was a medium sized, medial distal, tertiary non-thermally altered schistose flake.

Table 5-12. Lithic artifacts recovered from Housepit 7.

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
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</tr>
</thead>
<tbody>
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<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type 38</td>
<td>III</td>
<td>2</td>
<td>1</td>
</tr>
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<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Housepit 8

Unit 205.705E197.671N Bag #’s 8.8

This unit was placed on the northwest side of Housepit 8 close to the top of the rim. A total of one lithic artifact was recovered from Stratum III level 3. The artifact is a small, proximal, tertiary, non-thermally altered chert flake (Table 5-13).
Table 5-13. Lithic artifacts recovered from Housepit 8.

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 13</td>
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<td></td>
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<td>1</td>
</tr>
</tbody>
</table>

Housepit 9

Unit 205.710E220.085N

This unit was placed on the northeast side of Housepit 9 approximately halfway up the rim. No lithic artifacts were recovered.

Housepit 11

Unit 237.798E229.574N Bag #'s 8.8

This unit was placed on the northwest side of Housepit 11 approximately halfway up the rim. A total of two lithic artifacts were recovered from Stratum III level 2. The artifacts are small, medial distal tertiary, non-thermally altered chert flakes (Table 5-14).

Table 5-14. Lithic artifacts recovered from Housepit 8.

<table>
<thead>
<tr>
<th>Type</th>
<th>Stratum</th>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 13</td>
<td>III</td>
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<td>1</td>
</tr>
<tr>
<td>Total</td>
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</tbody>
</table>

Housepit 6

Unit 205.588E211.57N Bag #'s 6-2.1, 6-2.10, 6-2.7, 6-2.3, 6-2.4

This unit was placed on the northwest side of Housepit 6 approximately halfway up the rim. A total of nine lithic artifacts were recovered from this unit. One groundstone fragment was recovered in Stratum III level 1. Seven lithic artifacts were recovered in Stratum III level 2. These artifacts include two chert, three basalt, one quartz debitage flakes, and one ground stone fragment made out of sandstone (Table 5-15). One schistose flake was recovered in Stratum III level 3.

Table 5-15. Lithic artifacts recovered from Housepit 6.

<table>
<thead>
<tr>
<th>Type</th>
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<th>Level</th>
<th>Count</th>
</tr>
</thead>
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<td>1</td>
</tr>
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<td>Type 41</td>
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<td>2</td>
</tr>
<tr>
<td>Type 23</td>
<td>III</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Type 9</td>
<td>III</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Type 40</td>
<td>III</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Type 40</td>
<td>III</td>
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</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>
**DkQi-17 Surface Collection**

Minimal surface collection was conducted during the 2009 field season and was limited to artifacts found on the river bank that had been eroded out during high water. All of the artifacts were found on the river bank. The collected artifacts include a chert biface fragment, and a schistose disk fragment.

**Housepit 5**

This unit was placed on the southwest side of Housepit 5 approximately halfway up the rim. No lithic artifacts were recovered.

**Housepit 10**

This unit was placed on the west side of Housepit 10 approximately halfway up the rim. No lithic artifacts were recovered.

**Housepit 12**

This unit was placed on the west side of Housepit 12 approximately halfway up the rim. No lithic artifacts were recovered.

**Housepit 13**

This unit was placed on the north side of Housepit 13 approximately halfway up the rim. No lithic artifacts were recovered.

**Analysis of Lithic Technological Organization at DKQi-1and DkQi-17**

The lithic artifact assemblage from the Slocan Narrows Housepit Village has been very small considering the size of the village. Part of this is due to the sampling strategy employed during the 2000 and 2009 field seasons where the aim was to place excavation units where it is likely to find beams resting on surfaces of the
sides of the rims. The paucity of lithic artifacts in the rims of the houses is a unique feature of the Slocan Narrows Pithouse Village compared to other villages in the interior Pacific Northwest.

The largest assemblage from one particular house at Slocan Narrows is from the 2009 excavation of Housepit 9. The assemblage is dominated by small retouch flakes, those that would likely be swept into a feature such as a fire hearth, rather than picked up and thrown away outside. Given that there is no evidence that trash is accumulating in the rims, it appears that the prehistoric residents of Slocan Narrows had a different conception of refuse disposal, where it is conceivable most refuse is disposed in the river.

Currently, with the majority of the lithic assemblage consisting of small resharpening debitage suggests the majority of activities taking place at Slocan Narrows were resulting in stone tools needing to be sharpened rather than produced. However, these are the artifacts most likely to be recovered from domestic contexts because they are the hardest to clean up. Projects in the future when larger block excavations are opened up and we are likely to recover larger lithic assemblages to have comparative collections to that of Housepit 9. It is also planned that the summer of 2012 will entail a larger geographic survey of the area for possible raw material outcrops.

![DkQi 1: Raw Materials by Stratum](image)

Figure 5.6. Raw material by stratum.
Figure 5.7. MSRT by raw material.

Figure 5.8. Size by raw material.
Chapter Six:
Radiocarbon Dating Slocan Narrows

Nathan Goodale
Hamilton College

Alissa Nauman
Hamilton College
A primary objective of both the 2000 and 2009 field seasons was to determine through $^{14}$C analysis the age of several pithouses at DkQi 1 and 17. Excavation units were purposefully placed about midway up the rim of each dated house, areas likely to contained collapsed roof beams. Unlike many other areas of the interior Pacific Northwest where the prehistoric inhabitants disposed their refuse on the rim, we have learned from the paucity of artifacts found in the rims of the houses at Slocan Narrows that this was not the case. Therefore, issues of mixing and potentially dating materials unassociated with the actual occupation is less likely than at sites such as Keatley Creek or Bridge River EeRL-7 in the Mid Fraser.

$^{14}$C Patterns at Slocan Narrows

In total between the 2000 and 2009 excavations 17 radiocarbon dates have been run for DkQi 1, 2, and 17 which includes 14 houses (two houses which have two identified occupations) and a cultural earthwork. 2009 radiocarbon results were obtained from Beta Analytic, whereas the 2000 dates were obtained through the University of Arizona, and the Illinois State Geological Survey. Samples collected in 2009 were identified by paleobotanical specialist Naoko Endo at Simon Fraser University. The radiocarbon results from the Slocan Narrows Pithouse Village suggest that the village went through two large occupation phases interspersed with small occupations. They also reveal very large and very old pithouses dating to as early as 3,000 cal BP that are up to 23 meters in diameter.

Figure 6.1 provides the map of results from current radiometric dates. Based on the means and overlapping standard deviations of these results, we suggest there are four main occupation periods of the Slocan Narrows Pithouse Village deemed the Slocan Narrows Housepit Village (SNPV) I-IV. SNPV-I currently includes four very large houses (all >20 meters in diameter) and one small house dating from 3,000-2,600 cal BP. SNPV-II currently includes one small house dating to 1,700 cal BP. SNPV-III currently includes one medium and one large size house dating from 1,100-1,000 cal BP. SNPV-IV currently includes five large houses, two small houses and a cultural earthwork dating from 850-250 cal BP. It appears that the Slocan Narrows Pithouse supported substantial populations at least two times during the prehistory of the village with intermittent smaller occupations between the large village occupations. However, only a little over half of the main village concentration has been dated.
Future projects at Slocan Narrows Pithouse Village will concentrate in the immediate future on dating the northern cluster of houses at DkQi-17 in the summer of 2011. Once that is completed excavation will focus on those houses we have put in excavation units yet were unsuccessful in obtaining datable material (DkQi-1 HP 7 and DkQi-17 HP 9).

Figure 6.1. Map of Slocan Narrows Pithouse Village with the results of radiocarbon analysis.
Table 6-1. $^{14}$C results from the 2000 and 2009 excavations of the Slocan Narrows Pithouse Village.

<table>
<thead>
<tr>
<th>Lab#</th>
<th>Site#</th>
<th>Sample #</th>
<th>HP #</th>
<th>Conventional Age BP</th>
<th>Sdev</th>
<th>Cal Avg</th>
<th>Cal Upper</th>
<th>Cal Lower</th>
<th>Method</th>
<th>Occupation</th>
<th>UCC Period</th>
<th>Wood I.D.</th>
<th>House Size</th>
<th>Excavation Season</th>
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<td>DkQi-2</td>
<td>Earthwork</td>
<td>N/A</td>
<td>260+/-70</td>
<td>249</td>
<td>248</td>
<td>497</td>
<td>1</td>
<td>Standard</td>
<td>SNHV 4</td>
<td>UCCIII</td>
<td>*</td>
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<tr>
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<td>8.4</td>
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<td>300 +/-40</td>
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<td>95</td>
<td>480</td>
<td>290</td>
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<tr>
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<td>3</td>
<td>380 +/-40</td>
<td>410</td>
<td>100</td>
<td>510</td>
<td>310</td>
<td>AMS</td>
<td>SNHV 4</td>
<td>UCCIII</td>
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<td>Large</td>
<td>2009</td>
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<td>400 +/-40</td>
<td>420</td>
<td>100</td>
<td>520</td>
<td>320</td>
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<td>595</td>
<td>65</td>
<td>660</td>
<td>530</td>
<td>AMS</td>
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<td>710 +/-70</td>
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<td>5</td>
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<td>930 +/-40</td>
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<td>930</td>
<td>740</td>
<td>AMS</td>
<td>SNHV 4</td>
<td>UCCII</td>
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<td>274336</td>
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<td>1140 +/-40</td>
<td>1065</td>
<td>105</td>
<td>1170</td>
<td>960</td>
<td>Standard</td>
<td>SNHV 3</td>
<td>UCCII</td>
<td>Douglas Fir</td>
<td>Medium</td>
<td>2009</td>
</tr>
<tr>
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<td>DkQi-17</td>
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<td>1105</td>
<td>125</td>
<td>1230</td>
<td>980</td>
<td>Standard</td>
<td>SNHV 3</td>
<td>UCCII</td>
<td>Douglas Fir</td>
<td>Large</td>
<td>2009</td>
</tr>
<tr>
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<td>12</td>
<td>1770 +/-40</td>
<td>1690</td>
<td>120</td>
<td>1810</td>
<td>1570</td>
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</tr>
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<td>6</td>
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<td>110</td>
<td>2760</td>
<td>2540</td>
<td>AMS</td>
<td>SNHV 1</td>
<td>UCCI</td>
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<td>1</td>
<td>2650 +/-70</td>
<td>2718</td>
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<td>UCCI</td>
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</tr>
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<td>60</td>
<td>2860</td>
<td>2740</td>
<td>AMS</td>
<td>SNHV 1</td>
<td>UCCI</td>
<td>Douglas Fir</td>
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<td>2</td>
<td>2</td>
<td>2724 +/-48</td>
<td>2840</td>
<td>90</td>
<td>2930</td>
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<td>SNHV 1</td>
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<td>SNHV 1</td>
<td>UCCI</td>
<td>Tsuga sp.</td>
<td>Small</td>
<td>2009</td>
</tr>
</tbody>
</table>


14C Regional Patterns

On a regional basis there is beginning to be a decent radiocarbon record for scholars to begin to understand population dynamics through time. Goodale et al. (2008) argue that the use of 14C data to examine periods of population growth and decline. In the Upper Columbia there is a clear pattern for a bimodal distribution of radiocarbon dates. Miming the Upper Columbia is the smaller subregion of the Slocan Valley with data available from two sites: Slocan Narrows and Vallican (Figure 6-2). If this pattern is not caused by a sampling issue or one related to the calibrated radiocarbon curve, this could suggest a time of large scale abandonment of the Upper Columbia around 1,900-1,800 cal BP. Future research will be aimed at examining this time period.

Figure 6.2. Calibrated radiocarbon data for the Upper Columbia Drainage and for the smaller subregion of the Slocan Valley, British Columbia. Note that the Slocan Valley appears to be a miniature representation for the whole region. Data from above and compiled by Goodale (2001).
Chapter Seven:
Fauna Analysis of Slocan Narrows

Lisa M. Smith
University of Montana
All faunal material included in this analysis was recovered from site DkQi 1 of the Slocan Narrows Village during the 2009 field season. Data are summarized according to stratigraphic component of each unit. Although preliminary, this analysis revealed patterns of subsistence, bone processing, and disposal unique to the Slocan Narrows Village. Occupants were primarily subsisting on medium and large sized mammal, though data indicates that they were also targeting turtle. Bones were systematically broken down, perhaps due to depression of local large mammal populations. Subsequently they were burned, and then disposed of, likely to reduce overall volume of refuse. Research also suggests that the village occupants may have been participating in regional trade economies—well established during late prehistoric times—through targeting of local beaver populations.

**Materials and Methods**

Specimens were collected with all heavy fractions in the field and subsequently sorted in the archaeological laboratory at Hamilton College by student volunteers. Faunal material was analyzed in the archaeological laboratory at the University of Montana with support of zoologist David Dyer and comparative collections housed at the Phillip L. Wright Zoological Museum.

The purpose of analyzing faunal remains is to create a narrative of subsistence behavior, which can also be connected to understanding subjects as varied as socio-economics, ideology, and local environment. Archaeological deposits are always palimpsests—an aggregate of incomplete snapshots of the past (Bailey 2006). Faunal assemblages are subject to becoming more incomplete due to breakdown of bones post deposit. Thus in order to develop the most thorough narrative of subsistence behavior it is necessary to analyze the taphonomic history of each assemblage (Gifford-Gonzalez 1989; Klein and Cruz-Uribe 1984). To do this specimens were analyzed for fragmentation, weathering, burning, human and animal modification and fracturing. Weight of all specimens according to area and stratum was also measured. Fragmentation was measured by sorting all bones according to size categories: 0-9mm, 10-19mm, 20-29mm, 30-39mm, 40-49mm, 50-59mm, and +60mm (Prentiss et al 2008). Weathering of specimens was measured according to stages developed by Behrensmeyer (1978), who through experimental processes recognized five distinct stages bones go through as they are exposed to natural elements. Burning was assessed according to research of burned bones undertaken by Shipman et al. (1984). Specimens were sorted according to burning stages: yellow, brown, red/brown, black, gray, gray/white, and white,
the latter of which indicates bones were calcined as result of exposure to direct high temperatures (Lyman 1994). Analyzing traits of human modification included recognizing cut, hack, or chop marks associated with butchering and tool production; and gnawing and pitting was noted for evidence of animal modification. Bones were placed into fracturing-type categories of transverse, spiral, oblique, and irregular (modified from Sadek-Kooros 1975).

Each specimen was classified according to element and closest taxonomic identification, down to the species level when possible. Specimens that were only identifiable to mammalian class were separated into size categories small, small/medium, medium, medium/large, or large. Small mammals include animals that are small rodent to cottontail rabbit size. Medium mammals include animals that are jackrabbit to dog size; and large mammals include animals that are deer size and larger. Specimens were also analyzed according to age, end (proximal/distal), and side (right/left), the first of which can be insightful for determining seasonality of the occupation, and the latter two of which can be used to determine minimum number of individuals (MNI).

Faunal Summary

Following is a summary of the faunal assemblage. A total of 12,802 specimens were recovered, all of which were excavated from stratified components of housepit 9. This included 12,793 mammalian, 4 reptilia, 1 cf reptilia, 2 cf mollusca, and 2 indeterminate taxa. Majority of the fauna were recovered from stratum III, which through previous research was established as the occupational component of the stratigraphic sequence of all housepits (Prentiss et al 2000). Eighty-two percent of all specimens were fragmented to less than 9 millimeters (Figure 1). The majority of specimens are weathered to stage 2 according to Beherensmeyer’s (1978) weathering stages. All but 43 bones are burned and 93 percent of all bones are calcined. Identified species include *Odocoileus* sp. (deer), *Castor canadensis* (beaver), *Chrysemys picta bellii* (turtle), *Ondatra zibethicus* (muskrat), along with rodentia and artiodactyl (table 1). Rodentia specimens are indeterminate small rodents and artiodactyl fragments are likely deer, elk, moose, sheep, or goat. The majority of bones were fractured irregularly, though many diaphysis fragments were fractured transversely, and some were also spiral or oblique. Evidence of human modification includes specimens with cut marks, chop marks, and hack mark, and one possible bead of indeterminate taxon. No evidence of animal gnawing or digestion was observed.
Easting 42.024 Northing 222.062

This area contained 81 bones, all of which are mammalian. Bones were heavily fragmented, with 90 percent broken down to less than 9 millimeters. One hundred percent of all bones were burned, and over 80 percent of them were calcined.

Stratum II contained all 81 specimens. This included 54 unidentifiable fragments of indeterminate mammal, 1 distal phalanx of small mammal, 5 diaphysis fragments of small/medium mammal, 14 unidentifiable fragments and 1 diaphysis fragment of medium/large mammal, 2 2nd phalanges of cf Castor canadensis, and 1 carpal and 3 3rd phalanges of Castor canadensis.

Easting 42.302 Northing 222.43

This area contained 24 bones, all of which are mammalian. Bones were heavily fragmented, with 90 percent broken down to less than 9 millimeters. One hundred percent of all bones were burned, and over 90 percent of them were calcined.

Stratum III-1 contained all 24 specimens. This included 6 unidentifiable fragments of indeterminate mammal, 1 rib fragment, 1 phalanx, and 7 unidentifiable fragments of small/medium mammal, and 9 unidentifiable fragments of medium/large mammal.

Easting 43.383 Northing 220.818

This area contained 994 bones—993 of which are mammalian, and 1 of which is reptilian. Bones were heavily fragmented, with 75 percent broken down to less than 9 millimeters. All but one of the bones was burned, and 90 percent of all bones were calcined.

Stratum III contained all 995 specimens. This included 9 unidentifiable fragments of indeterminate mammal, 4 rib fragments and 1 diaphysis fragments of small mammal, 14 diaphysis fragment, 2 rib fragments, and 1 complete caudal epiphysis (sub adult), and 3 unidentifiable fragments of small/medium mammal, 7 unidentifiable, 6 diaphysis fragments, 1 distal phalanx fragment, 1 distal calcaneus fragment, 2 metapodial fragments, 1 proximal 3rd phalanx fragment, 3 rib fragments and 1 palate fragment of medium mammal, 897
unidentifiable fragments, 1 vertebra fragment, and 16 diaphysis fragments of medium/large mammal, 1 diaphysis fragment and 1 unidentifiable fragment of large mammal, 3 proximal phalanges fragments, 1 distal phalanx fragment and 2 metapodial fragment of cf Castor Canadensis, 1 left distal humerus fragment, 1 humerus shaft fragment, 1 right astragalus, 1 left radius fragment, 1 left metacarpal fragment, 1 2nd phalanx, 1 right distal ulna fragment, 1 left proximal ulna fragment, 1 proximal right ulna, 1 left proximal radius fragment, 1 radius shaft fragment, and 1 proximal metatarsal fragment of Castor Canadensis, 2 proximal 3rd phalanges, 1 proximal 1st phalanx, 1 proximal 2nd phalanx, and 1 distal humerus fragment of Odocoileus sp. and 1 shell fragment of Chrysemys picta bellii.

**Easting 43.383 Northing 221.818**

This area contained 26 specimens, all of which are mammalian. Bones were heavily fragmented, with 70 percent broken down to less than 9 millimeters. All bones were burned and 70 percent of them were calcined.

Stratum II contained all 26 specimens. This included 1 vertebra fragment of small mammal, 6 diaphysis fragments, 1 rib fragment, and 1 unidentifiable fragment of small/medium mammal, 1 diaphysis fragment of medium mammal, and 1 rib fragment, 2 diaphysis fragments and 13 unidentifiable fragments of medium/large mammal.

**Easting 43.454 Northing 221.236**

This area contained 452 bones—448 of which are mammalian, 1 of which was reptilian, 1 possible mollusca, and 2 indeterminate taxa. Bones were heavily fragmented, with 69 percent broken down to less than 9 millimeters. All of the bones were burned, and ninety-eight percent of them were calcined. One specimen, the possible mollusca fragment, had cut marks.

Stratum III contained all 452 specimens. This included 2 unidentifiable fragments of indeterminate taxa, 1 2nd phalanx, 7 diaphysis fragments, and 1 unidentifiable fragment of small/medium mammal, 1 2nd phalanx, 7 rib fragments, and 1 unidentifiable fragment of medium mammal, 1 carpal/tarsal, 21 diaphysis fragments, 4 skull fragments, and 396 unidentifiable fragments of medium/large mammal, 1 diaphysis fragment of large mammal, 1 possible shell fragment of mollusca, 1 tooth fragment and 1 distal metapodial fragment of Odocoileus sp., 1
vertebra fragment of cf Castor Canadensis, 1 right mandibular condyle fragment, 1 right mandibular condyle fragment, and 2 left distal ulna (MNI 2), and 1 left ulna shaft of Castor canadensis, and 1 shell fragment of Chrysemys picta bellii.

**Easting 43.682 Northing 220.42**

This area contained 392 bones, all of which are mammalian. Bones were heavily fragmented, with 87 percent broken down to less than 9 millimeters. All but two of the bones were burned, and ninety-four percent of burned bones were calcined.

Stratum II contained 205 specimens. This included 2 diaphysis fragments of small/medium mammal, 2 diaphysis fragments and 199 unidentifiable fragments of medium/large mammal, 1 diaphysis fragment of large mammal, and 2 distal phalanges of Castor Canadensis.

Stratum III contained a total of 45 specimens. This included 5 unidentifiable fragments of small/medium mammal and 40 unidentifiable fragments of medium/large mammal.

Stratum III-1 contained 76 specimens. This included 26 unidentifiable fragments of indeterminate mammal, 12 diaphysis fragments and 5 unidentifiable fragments of small/medium mammal, 4 diaphysis fragments, 2 rib fragments, 4 phalange fragments (3 sub adult), and 1 sesamoid of medium mammal, 5 diaphysis fragments and 13 unidentifiable fragments of medium/large mammals, 1 phalanx fragment of cf Castor canadensis, and 1 scapula fragment, 1 1st phalanx and 1 3rd phalanx of Castor canadensis.

Stratum III-2 contained a total of 65 specimens. This included 4 unidentifiable fragments of indeterminate mammal, 54 unidentifiable fragments, 2 diaphysis fragments and 2 phalanges of medium/large mammal, 1 unidentifiable fragment of large mammal, and 1 3rd phalanx and 1 tarsal of Castor canadensis.

**Easting 43.703 Northing 221.173**

This area contained 303 bones, all of which are mammalian. Bones were heavily fragmented, with 75 percent broken down to less than 9 millimeters. All but one of the bones was burned, and ninety percent of burned bones were calcined. Four specimens displayed cut marks.
Stratum III contained all 303 specimens. This included 1 diaphysis fragment of small mammal, 3 unidentified fragments, 11 rib fragments, 7 diaphysis fragments, and 12nd phalanx of small/medium mammal, 258 unidentified fragments (1 with cut marks), 1 vertebra fragment, 2 rib fragments, and 1 epiphysis fragment (sub adult) and 9 diaphysis fragments of medium/large mammal, 1 unidentifiable and 2 diaphysis fragments of large mammal, 1 1st phalanx and 1 ulna fragment of Castor canadensis, and 1 metapodial fragment of artiodactyl.

**Easting 43.739 Northing 220.853**

This area contained 1 unidentifiable fragment of medium mammal, which was recovered from stratum II. It was calcined and less than 29 millimeters in size.

**Easting 43.809 Northing 221.237**

This area contained 25 bones, all of which are mammalian. Bones were heavily fragmented, with eighty-four percent broken down to less than 19 millimeters. Seven of the bones were unburned, and forty-percent of all the bones were calcined. One specimen displayed cut marks.

Stratum II contained all 25 specimens. This included 2 diaphysis fragments, 1 1st phalanx and 1 unidentifiable fragment of medium mammal, 15 unidentifiable fragments (1 with cut marks) of medium/large mammal, 1 diaphysis and 2 unidentifiable fragments of large mammal, and 1 diaphysis, 1 humerus, and 1 basis sphenoid of Castor canadensis.

**Easting 44 Northing 220**

This area contained 11 bones, all of which are mammalian. One bone is complete and 10 are broken down to less than 9 millimeters. All three bones were calcined.

Stratum III contained 4 specimens. This included 1 carpal/tarsal and 3 unidentifiable fragments of small/medium mammal.

Stratum III-2 contained 7 specimens. This included 3 unidentifiable fragments of indeterminate taxa, and 4 unidentifiable fragments of medium/large mammal.
Easting 44.187 Northing 220.527

This area contained 55 bones, all of which are mammalian. Bones were heavily fragmented, with all but two broken down to less than 9 millimeters. All bones were calcined.

Stratum III contained 43 specimens. This included 6 unidentifiable fragments of indeterminate mammal, 1 diaphysis fragment and 36 unidentifiable fragments of medium/large mammal.

Stratum III-2 contained 4 specimens. This included 1 metapodial fragment and 1 unidentifiable fragment of small/medium mammal, and 2 unidentifiable fragments of medium/large mammal.

Stratum III-5 contained 8 unidentifiable fragments of medium/large mammal.

Easting 44.617 Northing 220.621

Specimens from this area were recovered from feature 4. It contained 6661 specimens—6657 mammalian, 2 reptilia, 1 cf reptilia, and 1 cf mollusca. Bones were heavily fragmented, with 83 percent broken down to less than 9 millimeters. All but nineteen of the bones were burned, and ninety-five percent of burned bones were calcined. Six specimens displayed human modification—3 had cut marks, 2 had chop marks, and 1 had hack marks.

Stratum II contained 2 unidentifiable fragments of medium/large mammal.

Stratum III contained 6287 specimens. This included 663 unidentifiable fragments of indeterminate mammal, 1 tibia fragment, 1 caudal, 28 diaphysis fragments, 5 epiphyses (sub adult), 2 femur fragments, 1 metacarpal fragment, 1 1st phalanx, 1 2nd phalanx, 5 phalange fragments, 2 radius fragments, 4 rib fragments, 4 scapula fragments, 4 vertebra fragments, and 23 unidentifiable fragments of small mammal, 1 scapula fragment, 1 epiphysis fragment (sub adult), 1 3rd phalanx, 4 2nd phalanges, 1 caudal, 17 diaphysis fragments, 1 femoral head, 1 distal humerus, 1 distal metapodial, 4 phalange fragments, 5 rib fragments, 1 sacral fragment, 1 vertebra fragment, and 88 unidentifiable fragments of small/medium mammal, 3 carpal/tarsal, 16 diaphysis fragments, 2 femur fragments, 1 vertebral spine, 2 metapodial fragments, 16 rib fragments, 1 humerus fragment and 58 unidentifiable fragments of medium mammal, 106 diaphysis fragments (2 cut and 2 chopped), 3 rib fragments,1 femoral head
fragments, 1 maxilla fragments, 2 skull fragments, 1 tooth fragment, 1 vertebra fragment, and 5064 unidentifiable fragments (1 cut and 1 hacked) of medium/large mammal, 8 diaphysis fragments, 1 thoracic fragments, 1 vertebra fragments, and 42 unidentifiable fragments of large mammal, 1 shell fragment of cf mollusca, 1 phalanx and 1 metacarpal of rodentia, 1 femural head, 2 caudal, 2 vertebra, 2 acetabulum fragments, 2 humerus fragments, 1 astragalus Ondatra zibethicus, 1 metapodial fragment and 5 caudal epiphyses (sub adult) cf Ondatra zibethicus, 2 shell fragments of Chrysemys picta bellii, 1 1st phalanx of cf Chrysemys picta bellii, 1 proximal rib head and 1 second phalanx of Odocoileus sp., 1 tooth fragment, 2 2nd phalange fragments, 3 metapodial fragment, and 4 metatarsal fragment of artiodactyl, 8 1st phalanges, 10 3rd phalanges, 1 left astragalus, 1 cervical fragments, 1 proximal fibula, 2 humerus fragments, 3 metacarpal fragments (1 sub adult), 2 metatarsal fragments, 2 distal metapodial fragments, 1 left proximal radius fragment, 1 radius shaft fragment, 2 rib fragments, 1 first rib fragment, 1 rib head, 1 carpal/tarsal, 7 tarsals, and 1 tooth fragment of Castor canadensis, and 2 tooth fragments, 1 proximal tibia, and 1 proximal left rib fragment and 1 metapodial fragment of cf Castor Canadensis.

Stratum III-2 contained 253 specimens. This included 7 diaphysis fragments of small mammal, 2 rib fragments of small/medium mammal, 1 diaphysis fragment and 242 unidentifiable fragments of medium/large mammal, and 1 diaphysis fragment of large mammal.

Stratum III-5 contained 119 specimens. This included 12 diaphysis fragments of small/medium mammal, 1 rib fragment of medium mammal, 1 skull fragment and 103 unidentifiable fragments of medium/large mammal, and 2 metapodial fragments of Castor canadensis.

**Easting 45.139 Northing 220.621**

This area contained 2 specimens, both of which came from stratum II, including 1 unidentifiable fragment of small/medium mammal and 1 unidentifiable fragment of medium/large mammal. Both were burned and fragmented to less than 19 millimeters.

**Easting 45.139 Northing 220.795**
This area contained 3744 specimens, all of which are mammalian. Bones were heavily fragmented, with 90 percent broken down to less than 9 millimeters. All but 5 of the bones were burned, and ninety percent of the bones were calcined. Six specimens displayed human modification—4 had cut marks and 1 had chop marks.

Stratum III contained 1701 specimens. This included 113 unidentifiable fragments of indeterminate mammal, 1 scapula fragment of small mammal, 9 unidentifiable fragments, 1 rib fragment, 6 phalanx fragments, 10 diaphysis fragments, 1 caudal epiphysis (sub adult), and 3 3rd phalanx fragments of small/medium mammal, 2 rib fragments, 11 diaphysis fragments (1 with cut marks), 1 femoral head, 1 metacarpal fragment, 2 metatarsal fragments, 1 phalanx fragment, and 1 1st phalanx fragment of medium mammal, 23 diaphysis fragments and 1504 unidentifiable fragments of medium/large mammal, 1 1st and 1 2nd phalanx of Odocoileus sp., 1 unidentifiable fragment of large mammal, 1 metapodial fragment of cf Castor canadensis, and 1 metacarpal, 1 carpal, 2 tarsal, and 1 ulna fragment of Castor canadensis.

Stratum III-2 contained a total of 79 specimens. This included 10 unidentifiable indeterminate fragments, 4 diaphysis fragments of small mammal, 1 3rd phalanx and 2 diaphysis fragments of small/medium mammal, 1 rib fragment of medium mammal, 58 unidentifiable fragments of medium/large mammal (2 with cut marks), 1 unidentifiable fragment of large mammal, and 1 2nd and 3rd phalanx of Castor canadensis.

Stratum III-5 contained a total of 1964 specimens. This contained 217 unidentifiable fragments of indeterminate mammal, 30 diaphysis, 1 epiphysis (sub adult), 1 femoral head, 3 phalanx fragments, 1 scapula fragment, and 16 unidentifiable fragments of small mammal, 20 diaphysis, 2 rib, and 6 unidentifiable fragments of small/medium mammal, 2 3rd phalanx fragments, 10 diaphysis fragments, 3 metapodial fragments, 1 phalanx fragment, 4 rib fragments, 1 vertebra fragment, and 3 unidentifiable fragments of medium mammal, 1 carpal/tarsal, 20 diaphysis fragments, 2 rib fragments, 4 skull fragments, and 1543 unidentifiable fragments of medium/large mammal (1 with cut marks), 16 diaphysis and 39 (1 with chop marks) unidentifiable fragments of large mammal, 1 3rd phalanx of Odocoileus sp., 2 metatarsal fragments and 1 2nd phalanx fragment of artiodactyl, and 1 radius fragment, 6 metapodial fragments, 1 humerus fragment, 1 calcaneus fragment, 1 3rd phalanx, 1 1st phalanx, 1 phalanx fragment, 1 metatarsal fragment, and 1 metacarpal fragment of Castor canadensis.

Eastings 45.684 Northing 220.917
This area contained 14 specimens, all of which were recovered from stratum III-5. This included 14 unidentifiable fragments of small/medium mammal. All were calcined and fragmented to less than 9 millimeters.

**Easting 45.934 Northing 221.045**

This area contained 17 specimens. All are mammalian and recovered from stratum III-5. This included 1 tooth fragment of *Castor canadensis*, 1 diaphysis fragment and 7 unidentifiable fragments of medium/large mammal, and 8 unidentifiable fragments of indeterminate mammal. Ninety-eight percent of bones were fragmented to less than 9 millimeters. All were burned, and 98 percent were calcined.

**Discussion and Conclusion**

Results of this analysis reflect overarching trends of bone processing and disposal at housepit 9. All specimens displayed very little evidence of weathering (stage 2), suggesting that after hunting and butchering animals were likely brought directly into the housepit, giving them little opportunity to be exposed to outdoor elements. Similar weathering of specimens also indicates that bones were deposited in a systematic way, and not a result of varied depositional processes such as water or animal transport (Gifford-Gonzalez 1989; Klein and Cruz-Uribe 1984). Majority of bones are relatively uniformly fragmented to less than 9 millimeters, indicating that occupants were methodically processing them in a very intensive manor. This signature is often implied to be symptomatic of local resource depression, or perhaps inefficient resources in the face of growing human populations (Butler and Campbell 2004).

Most specimens in the assemblage displayed some level of burning; and of all the bones, 93 percent of them were calcined. Previous research at this site by Burns and Prentiss (2000) revealed a similar pattern. Bone calcines rarely as a result of natural processes such as forest or grass fires (David 1990). High percentage of calcined bones implies that occupants were purposefully exposing them to prolonged intensive heat, resulting in a pattern similar to cremation (Shipman et al 1984). Moreover white color of the calcined bones suggests that they were exposed to heat sources while still green, just after being defleshed (Buikstra and Swegle 1989). Moreover, the majority of bones were recovered from feature 4, a pit identified in housepit 9. Exact purpose of the pit is still unknown. In other village sites on the Canadian Plateau pits inside house structures were often used for caching
winter resources (Hayden 1997; Prentiss et al 2008, 2009; Teit 1906). However, upon excavation cache pits are often full of loose backfill, along with intermittent lithic and faunal remains, not piles of burnt bones (Prentiss et al 2008; 2009). Hunter-gatherers also used subterranean pits for root and meat roasting (Hayden 1997; Prentiss and Kuijt 2004; Smith et al 2001). Occupants of the house may have been using feature 4 as a meat roasting oven, though evidence of fire-cracked rock and charcoal is lacking, making it an unlikely explanation. Another possibility is that occupants used the pit to deposit refuse, and systematically burned their garbage in order to cut back on volume and relieve themselves of foul odors (Whyte 2001).

Fracture-type is a good indicator of processing and subsistence practices (Sadek-Kooros 1975). Most of the bones in the assemblage were irregularly fractured, which is evident of them being pounded down, or perhaps, trampled by house occupants (Gifford-Gonzalez 1989). High abundance of bones in this assemblage coupled with regularity of fragment size suggests the first to be the more likely explanation. Many of the diaphysis fragments also had transverse and spiral fractures. Transverse fractures were split almost perfectly cleanly, a result of fracturing due to intensive heat exposure, not intentional cutting by humans (Buikstra and Swegle 1989). Spiral fractures on the other hand are a result of intentional human processing, and are usually done for extract marrow (Sadek-Kooros 1975). Several bone fragments displayed evidence of cut, chop, and hack marks. This along with lack of evidence for animal modification further supports the notion that humans purposely process bones for resource exploitation.

A very low percentage of specimens were identified to the species level (132 NISP total) due to high fragmentation (table 1). Majority of identifiable specimens were Castor Canadensis (beaver) (104 NISP). Several of the elements are sub adult, suggesting the village was occupied during the early spring period. Approximately 70 percent of all beaver specimens identified were foot elements (table 2). Although the sample size is small relative to the overall assemblage, high numbers of foot bones are often associated with some form of hide processing (Anna Prentiss and David Dyer, personal communication). High amount of identified beaver specimens relative to any other species also suggests use of this resource for purposes other than subsistence, such as hide production and trade. Under this scenario, hunting and the messy job of butchering likely occurred away from the village. The more tedious secondary butchering—removal of foot bones—occurred within housepits. Foot bones were then disposed of by burning them with other refuse. This is a reasonable interpretation given the context of
the region during the late prehistoric period. Sophisticated trade and interaction networks were established throughout the Canadian Plateau by as early as 2400 BP (Hayden and Schulting 1997). Societies throughout the region had a developed suite of trade items. For example in the Mid-Fraser area The Lillooet Indians exploited one of the most productive salmon runs in the region and used this resource to trade for items such as deer meat and shell beads from the coast (Romanoff 1992; Teit 1906). Thus is possible that occupants of the Slocan Narrows village were exploiting beaver resources to participate in regional trade economies.

Other species identified in the assemblage were *Chrysemys picta bellii* (turtle), *Ondatra zibethicus* (muskrat), and *Odocoileus sp.* (deer). People of the Slocan Narrows village were most certainly also targeting aquatic resources such as anadromous salmon, though no bones were preserved, likely due to coarse-grained sand and acidic soil conditions (Prentiss et al 2000). Turtle specimens include four carapace (shell) fragments of *Chrysemys picta bellii*, a fresh water turtle specific to British Columbia, which was likely targeted as a food and tool resource. Turtle is an important resource to people worldwide (Frazier 2005). The Seri Indians living on the northern coast of the Gulf of California ritualistically hunted sea turtles in the spring time as they feasted beds of *Zostera marina* L. (seagrass) floating near the shore line (Felger and Moser 1973); and in New Guinea, for the Manus people turtle was held in high esteem and eaten during important social events and special occasions (Spring 1981). Twelve elements of *Ondatra zibethicus* (muskrat) were also recovered. This large rodent was likely used as a subsistence resource and may have also been targeted for its fur. Muskrat was at one time an important food resource for people throughout North America (Fielder 1990), and post contact muskrat, along with beaver, became an important item for European trade markets (Savishinsky 1978). Twelve *Odocoileus sp.* (deer) elements were also indentified in the assemblage. Of all those identified, 10 of them were lower limb elements, 1 was a tooth fragment, and 1 was a rib head fragment. Although the sample size is too small to confirm, large numbers of limb elements relative to cranial and axial parts suggest that hunters had to travel far from the village to target deer prey. As a result hunters would have butchered the animals out in the field, requiring them to select only the most transportable parts of the deer—limb elements, the upper portion of which yields the highest protein and fat return (Binford 1978). While the majority of medium/large and large specimens were unidentifiable, the most frequent identification was diaphysis fragments. Only a small percentage was identified as cranial or axial parts, further supporting the possibility that large mammal hunting was nonlocal. Long distance travel for hunting often
implies that there was stress on local animal populations (Binford 1978). This coupled with intensive bone processing indicates that resource depression may have been occurring in the Slocan Narrows valley during the village occupation.
Chapter Eight:
Conclusions from the 2009 excavation of Slocan Narrows

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The 2009 investigations at the Slocan Narrow housepit village (DkQi-11 and 17) resulted in the excavation of 26 50x50 cm sub-squares with 15 at DkQi-1 and 11 at DkQi1-7. Excavations at the sites resulted in the recovery of one hearth, one possible floor feature, and post holes at DkQi-1. Laboratory investigations focused on analysis of the debitage, tools and faunal remains, and paleobotanical samples that were sent to Beta Analytic for dating. Analyses have emphasized technology, tool function, taphonomy and sedimentation. The following discussion outlines general conclusions and implications of these studies.

**Chronology**

Radiocarbon dating provided additional information concerning the occupational history of the Slocan Narrows Village. Housepit 6 at DkQi-17, a small house measuring 10 meters in diameter, was established around 2,965 cal BP and is the oldest house currently known in the village. Housepit 2, at DkQi-1 was established ca 2,840 cal BP is likely the oldest very large house dated in the interior Pacific Northwest at just under 23 meters in diameter. Three additional large houses at DkQi-1 and 17 were also occupied, all of them being between 20-23 meters in diameter. This rare occurrence of these massive houses at least several hundred, if not a thousand years earlier, than anywhere else in the Interior Northwest appears to represent some early experimentation in a complex hunter-gatherer socioeconomic adaptation that is unknown in other areas. Why this is the case is still up for debate and will likely be until we are able to open up larger excavation blocks.

Combined with radiocarbon dates obtained from the 2000 season these dates establish two major periods of village occupation: an early phase associated with construction of extremely large houses, such as that of Housepit 1, 2, and 6 at DkQi-1 and Housepit 11 at DkQi-17 and a later phase which includes reoccupation of large houses, construction of new large houses and establishment of smaller residences. Between these periods appear to be intermittent smaller occupations at ca 1,700 cal BP and from 1,100-1,000 cal BP. Future work on dating the remainder of the village concentration will allow a better picture of village occupation through time.
House Architecture

Excavated materials from Housepit 9 provided tentative indicators of house construction methods and architecture. It is evident from the excavation of Housepit 9 that a fire hearth was located inside the house and that debris including a large assemblage of fauna, primarily beaver, and very small pieces ofdebitage were disposed of in the feature. The occurrence of so much beaver bone in the house may be indicative of the importance of pelt processing and the fractured nature of the bone could also represent resource stress.

Mobility and Subsistence

The inventory of lithic flakes, tools, and faunal and floral remains recovered allow us to interpret subsistence and mobility. The lithic tools that were recovered appeared to be at the end of their use-life with a high occurrence of retouch flake scars. Most of the debitage was small to extra small in size and primarily retouch flakes. These two findings may suggest that raw material source outcrops may be some distance away. The faunal assemblage contained a fairly wide variety of remains allowing the discussion of the subsistence strategies during the occupation of Housepit 9 at ca 1,065 cal BP. Indicators suggest hunting deer as well as targeting other small to medium sized mammals, reptiles, and mollusk. Sparse lithic and faunal assemblages in other houses suggest that refuse disposal on rims was not commonplace at Slocan Narrows as is the case in other areas of the interior Pacific Northwest such as in the Mid-Fraser. However, it does appear that large assemblages may be found within houses as evidenced by Housepit 9.

The presence of large houses implies a degree of residential permanence at least ca 3,000-2,600 cal BP, ca 1,700 cal BP, 1,100-1,000 cal BP, and 850-Contact. The current evidence suggests that Slocan Narrows supported a dense population at least twice during its occupation and future research will aim at documenting all of the houses.

Future Research

Future research at the Slocan Narrows village should prioritize expanding the range of radiocarbon dated housepit occupations. There are over 60 identified houses on terraces lining both sides of the Slocan River.
Several of these are in imminent danger of destruction due to rising water levels in the river. Continuing to expand on the number of dated houses will allow more concrete statements to be made regarding long-term use of the village and variability in socio-economic organization. In addition, further testing needs to occur in areas outside of houses. The limited test excavations undertaken during the 2000 and 2009 field seasons suggested that more artifacts and bones will be found in these contexts than within individual houses. Central portions of many floors, particularly those closest to the river may be impacted severely by tree throws. Although no formal middens have been identified at Slocan Narrows, they are common at Vallican located 10km to the south (Mohs 1982). At Slocan Narrows it is quite possible that refuse disposal took place in the river, given the site is located directly on the river’s bank. The 2000 excavation found a greater abundance of artifacts extramural to the houses. This may imply that in prehistoric times, many activities took place out of doors. Nonetheless, future work in some housepits could produce important information on internal household activities as evidenced by those represented by the findings in Housepit 9.
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Appendix A:
Profile Drawings DkQi-1
East Wall Profile  
Slocan Narrows Archaeological Project 2009  

Area 3    Excavators MKF + MAG

Strata Description

I. organic layer, dark brown 10yr 2/2 very dark brown

III. cultural layer, medium brown sandy silt

III-1. cultural layer 2, light brown sandy silt

V. Riverbed culturally sterile, light tan sandy silt

DkQi-1 Housepit 3.
North Wall Profile
Slocan Narrows Archaeological Project 2009
Area HP 3  Profilers: MKF + MAG  Date: 27/07/2009

Strata Description

I. organic matter 10yr 2/2 very dark brown

III. cultural level medium brown sandy silt 10yr 4/6 dark yellowish brown

III-I. 2nd cultural level light brown sandy silt

V. Riverbed, light tan sandy silt

DkQi-1 Housepit 3.
South Wall Profile
Slocan Narrows Archaeological Project 2009
Unit 42 E 128 N  Area HP6  Profilers EEK+GHT
Date: 28/07/2009

vertical datum B  datum string elevation 535.46

54 cm below datum

Legend
- Bioturbation/rodent dsiturbance
- FCR/Rock
- Root/tree; tree stump
- Redened Soil
- Unexcavated area

Strata Description

Stratum I-top soil, organic debris; silty sand 10yr 2/2

Stratum II- podzol(decayed organic material); sandy silt 10yr 7/2

Stratum III-II- roof collapse; silty sand 10yr 3/5

Stratum III- B Horizon; silty sand 10yr 5/4

Stratum III-1- Feature 1; 10yr 5/4

Stratum V- Natural riverbed; culturally sterile soil 10 yr 5/3
North Wall Profile
Slocan Narrows Archaeological Project 2009
unit 42 E 128 N Area HP6 Profilers EEK+GHJ Date 28/07/2009
vertical datum B Datum string elevation 535.46m

Strata Description

I. humic layer, detailed organic remains lots of roots 2/2 10yr

II. podzol, decayed organic matter some roots, sandy silt 7/2 10yr

III. cultural layer, loose silty sand some roots, lots of rocks

III-1 cultural layer, compacted silty sandy many rocks, silty feature 1

III-2 cultural layer, likely roof collapse silty sand 5/2 10yr

V. natural riverbed, culturally sterile sediment, silty sand

DkQi-1 Housepit 6
East wall Profile
Slocan Narrows Archaeological Project 2009
unit 50E 160N Area 7 Profilers MKF+LCC Date 28/7/2009
vertical datum A Elevation Int. 5cm screen size 1/8 in.

Strata Description
I. top soil, humic layer, organic debris silty sand 10 yr 2/2 very dark brown
II. podzol, white powdery decayed organics sandy silt 10 yr 5/2 grayish brown
III. B Horizon culturally significant silty sand 10 yr 4/5 dark yellowish brown
V. sterile riverbed silty sand

DkQi-1 Housepit 7
North Wall Profile
Slocan Narrows Archaeological Project 2009

unit 50/49 5E 160N Area 7 Excavators LCC+MKF Date 28/07/2009

Legend

- Bioturbation/rodent disurbation
- FCR/Rock
- Root/tree; tree stump
- Redened Soil
- Unexcavated area

Strata Description

I. organic matter, silty sand

II. podzol, light tan sandy sild 10 yr 5/2 graysih brown

III. cultural level, medium brown, silty sand 10yr 4/6 dark yellowish brown

V. Sterile, riverbed, light brown mid-rise?? silty sand

DkQi-1 Housepit 7
West Wall Profile
Slocan Narrows Archaeological Project 2009

unit 49.5 E 160N  Area 7  Profilers MKF + LCC  Date 28/7/2009

Strata Description

I. Top humic layer, organic debris, silty sand
II. Podzol, light, powdery grey, decayed organics sandy silt 10yr 5/2 grayish brown
III. B horizon, culturally significant silty sand 10yr 4/6 dark yellowish brown
V. Sterile, riverbed

DkQi-1 Housepit 7
Housepit 9 trench profile DkQi-1
Appendix B: Profile Drawings DkQi-17
South wall Profile
Slocan Narrows Archaeological Project 2009

unit 125.835E185.504N area 5.2 excavators MG +EEK date 24/07/2009

Legend
- Bioturbation/rodent disturbance
- × FCR/Rock
- Root/tree; tree stump
- Redened Soil
- Unexcavated area

DkQi-17 Housepit 5

40cm below datum A

A'
South wall Profile
Slocan Narrows Archaeological Project 2009
area HP6-1 profilers MKF+GHJ date 24/07/2009

Legend
- Bioturbation/rodent disturbance
- FCR/Rock
- Root/tree; tree stump
- Reddened Soil
- Unexcavated area

31 cm from datum

Quadrant A

Quadrant A’

Strata Description

I. top soil, organic debris, silty sand 10yr 2/2 very dark brown
II. podzol, decaying organic matter, sandy silt 10 yr 6/3 pale brown
V. riverbed, sterile, silty sand 10yr 6/2 light brownish g

DkQi-17 Housepit 6
West Wall Profile
Slocan Narrows Archaeological Project 2009

area HP6-1 profilers MKF+GHT date 26/07/2009

Legend

- Bioturbation/rodent dsiturbance
- FCR/Rock
- Root/tree; tree stump
- Redenned Soil
- Unexcavated area

26 cm from datum A A'

Strata Description

I. top soil, organic debris silty dand 10yr 2/2 very dark brown
II. podzol, decaying organic material silty sand 10yr 6/3 pale brown
V. riverbed, culturally sterile soil silty sand 10yr 6/2 light brownish grey

DkQi-17 Housepit 6
Strata Description

I. top soil, organic debris; silty sand 10yr 3/4 dark yellowish brown
II. podzol; sandy silt; 7/2 light grey
III. B horizon, culturally significant silty sand 10 yr 4/4 dark yellowish brown
V. sterile soil, silty sand 10 yr 4/6 dark yellowish brown
North wall Profile
Slocan Narrows Archaeological Project 2009

vertical datum E  area 6-2  excavators LCC+MG  date 24/07/2009

Legend
- Bioturbation/rodent dsiturbance
- FCR/Rock
- Root/tree; tree stump
- Redenned Soil
- Unexcavated area

Strata Description

I. top soil organic debris(silty sand) 10yr 3/4 dark yellowish brown
II. podzol decayed leaf matter(sandy silt) 10yr 7/2 grey
III. B horizon culturally significant soil silty sand 10yr 6/6 brownish yellow
V. sterile soil(silty sand) 10yr 4/6 dark yellowish brown

DkQi-17 Housepit 6
profile S wall

slocan narrows archaeological project 2009: spit form

unit 203.782E204.356N  area hp7  excavators EEK+CMM  date 22/07/2009

65 cm below datum

I. 2/2 10 yr v. dark brown humic layer;
lots of decaying roots/vegetation
II 7/2 10yr lt. grey; podzol laye;
decaying organic material,
dark inclusions 2/1 10 yr
carbon deposit sandy silt
III 5/3 10yr brown, B horizon,
cultural layer, gravelly;
silty sand, loose
V. 5/4 2.5 y lt. olive brown
riverbed, silty sand-loose gravelly

DkQi-17 Housepit 7
profile W wall

slocan narrows archaeological project 2009: spit form

unit 203.782E204.356N  area HP7  profilers CMM+EEK  date 22/07/2009

I. 2/2 10 yr v. dk brown; humic layer; lots of decaying roots/vegetation 2/1 10yr sandy silt
II.7/2 10yr H.grey; podzol layer; decaying organic material, dark inclusion in southern section
III. 5/3 10yr brown; B horizon, cultural layer, gravelly; silty sand, loose
III-2: 4/6 10yr dark yellowish brown mottled with 5/3 10yr brown compacted silty sand lying beneath apparent burned fcams? in III-1
V 5/4 2.5y lt. olive br. rivered, silty sand-loose, gravelly

DkQi-17 Housepit 7
profile E wall

slocan narrows archaeological project 2009: spit form

unit 205/705E197.671N area HP8 profilers CMM+LCC+GHJ date 24/07/2009
vertical datum B

I. top soil, organic debris silty sand
10yr 2/2 very dark brown
II. B horizon culturally significant silty sand
10yr 6/3 pale brown
V- riverbed, culturally-sterile silty sand
10yr 6/2(light brownish gray)

67 cm from datum

DkQi-17 Housepit 8
profile W wall

slocan narrows archaeological project 2009: spit form

unit 220.619E219.865N area HP9 profilers CMM+LCC date 24/07/2009
vertical datum K datum string elevation 543.85

I. top soil, organic debris silty sand
10yr 2/2 very dark brown
II. podzol, decayed leaf matter sandy silt
10yr 5/2 greyish brown
III. B horizon, culturally significant silty sand
10yr 5/3 brown
V. sterile riverbed silty sand
10yr 6/2 light brownish grey

DkQi-17 Housepit 9
profile W wall

slocan narrows archaeological project 2009: spit form

unit 220.619E219.865N  area HP9 profilers CMM+LCC  date 24/07/2009
vertical datum K  datum string elevation 545.85

I. top soil, organic debris silty sand
10yr 2/2 very dark brown
II. podzol, decayed leaf matter sandy silt
10yr 5/2 greyish brown
III. B horizon, culturally significant silty sand
10yr 5/3 brown
V. sterile riverbed silty sand
10yr 6/2 light brownish grey

41 cm below datum

DkQi-17 Housepit 9
profile N wall

slocan narrows archaeological project 2009 spit form

HP10 profilers MKF+GHJ 24/07/2005

1. top soil, organic debris, silty sand
   10yr 2/2 very dark brown
2. podzol-decaying organic matter, sandy silt
   10yr 6/3 pale brown
3. B horizon, culturally significant soil, silty sand
   10yr 55/6 yellowish brown
4. riverbed, culturally sterile, silty sand
   10yr 6/2 light brownish grey
Profilic W Wall

Slocan Narrows Archaeological Project 2009: Spit Form

unit 238E230N  Area HP11  Profilers CMM+EEK  27/7/2009

I. Top humic layer, organic debris, lots of roots; 2/1 10 yr black
II. Podzol= decayed organic material, sandy silt 2/1 10 yr white
III. B Horizon- cultural layer, sandy silt. 5/4 10 yr yellowish brown
V. Natural riverbed, sandy silt; 5/3 10yr brown

DkQi-17 Housepit 11
Profile N Wall

Slocan Narrows Archaeological Project 2009: Spit Form

Area 13  profilers GHJ, LCC< MG, MKF  date 24/07/2009

vertical datum G

I. Topsoil, organic soil; silty sand 10yr 2/2 very dark brown
II. Thin podzol layer; sandy silt; 10yr 7/2 light grey
III. B Horizon culturally significant-strat layer; silty sand; 10yr 4/6 dark yellowish brown
IV. sterile level; silty sand; 10yr 5/6 yellowish brown

DkQi-17 Housepit 13
Profile W Wall

Slocan Narrows Archaeological Project 2009: Spit Form

Area HP12 profilers LCC + GHJ date 24/7/2009

I. Topsoil, organic debris
   silty sand 10yr 2/1 Black

II. podzol(decayed organic material)
   sandy silt 10yr 5/3 Brown

III. B Horizon culturally significant soil
     silty sand 10yr 5/4 yellowish brown

V. Riverbed, culturally sterile soil
   silty sand 2.5y 6/4 light yellowish brown

DkQi-17 Housepit 12
Profile E wall

Slocan Narrows Archaeological Project 2009: Spit Form

Area 13 profilers LCC, MG date 24/7/2009

I. top soil, organic debris; silty sand;
10yr 2/2 very dark brown
II. thin podzol layer; sandy silt;
10yr 2/2 light grey
III. B Horizon, culturally significant; silty sand
10yr 4/6 dark yellowish brown
V. Sterile level; silty sand;
10yr 5/6 yellowish brown

DkQi-17 Housepit 13