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DRIVERS OF DEMOGRAPHIC AND SOCIOECONOMIC SHIFTS AT THE BRIDGE RIVER SITE (EeRl4), BRITISH COLUMBIA

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DRIVERS OF DEMOGRAPHIC AND SOCIOECONOMIC SHIFTS AT THE BRIDGE RIVER SITE (EeRl4), BRITISH COLUMBIA

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I dedicate this thesis to my strong, resilient, and beautiful daughter, Rachel Nowell.

ABSTRACT

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Drivers of Demographic and Socioeconomic Shifts Regarding the Bridge River II – Bridge River III Transition at the Bridge River Village (EeRl4), British Columbia

Chairperson: Dr. Anna Marie Prentiss

The Bridge River site is located near the confluence of the Bridge and Fraser Rivers in the Mid-Fraser canyon near Lillooet, British Columbia. This region has long been popular for archaeologists seeking to understand the emergence of wealth-based inequality in complex hunter-gatherers. Housepit 54 is one of over 80 pithouses or *s7ístken* that was continuously occupied throughout most of the village history. It contains 17 intact anthropogenic or manmade floors, allowing archaeologists to address many types of cultural variation over time at the household level.

This thesis seeks to understand the underlying processes that drive socioeconomic and demographic growth as evidenced by variation in lithic technology as well as feature contents and distribution as they relate to the structural expansion that occurred between two occupational floors. It draws heavily on ethnographic record, ethnoarchaeology, household archaeology, and past studies of complex hunter-gatherers to determine whether this expansion might have resulted from a demographic spike that necessitated the structural addition, or whether members of the household held feasting events or other social activities designed to increase household status and attract new members.

While access to prestige and non-local lithic materials does not change in a way that indicates an increase in production related to feasting and social events, analysis of feature types and locations in either occupational floor does show that the changes that occur in storage strategy as well as hearth density and placement indicate that there was a shift to a more centralized or communal household organization. This thesis finds that the feasting hypothesis is the most likely scenario and discusses ways in which to expand this line of inquiry in future studies.

1. Introduction

This thesis is designed to test hypotheses that consider issues of demographic growth, socioeconomic strategies, and how these phenomena can be addressed by studying lithic technological organization changes between two generational floors in a housepit sequence that occur at a time of cultural transition. This assessment is rooted in analogies that are both ethnographic and derived from household archaeology that has taken place throughout the Pacific Northwest. In addition, there is discussion of a variety of issues in complex hunter-gatherer fisher societies framed in the results of data analysis. The conclusion discusses the implications of the findings of this research as well as outline ways to move forward and further contribute to the understanding of life at the Bridge River site.

Occupations at the Bridge River site have been divided into four general cultural periods based on household occupation (Prentiss et al. 2008, 2012). The temporal context for this thesis is the Bridge River 3 (BR3) period (1,300-1,100 BP), which has been established as the point where wealth based inequality emerged and lifeways for the residents of Housepit 54 (HP54) changed rapidly (Prentiss et al. 2010, 2012). Historically, the Mid Fraser has been cited as an excellent area to gain a better understanding of the evolution of wealth based inequality in complex hunter-gatherers (Hayden 1995, 1997, 2010; Perodie 2001; Prentiss 2010, 2011, 2012, 2014). Nevertheless, among cited researchers, there are important debates about the underlying causes of this process, although these lie outside the scope of this thesis.

The Housepit 54 Project was initiated during the 2012 field season and was established to complete the excavation of a housepit in its entirety. This house was selected based on results of geophysical testing and findings from test units that confirmed at least 15 intact anthropogenic floors. The sequence is significant because it makes HP54 one of the few houses inhabited during

three of the four occupational periods. In 2014, excavations revealed a large-scale expansion that occurred shortly after the IIf occupation, effectively doubling the house in size. This was confirmed after the 2016 field season, which focused upon completing all field work at HP54. In addition, it was discovered that the house contains 17 floors, and that another architectural shift or expansion that also occurred after the third floor in the sequence. Establishing the floor sequence and architectural shifts present in HP54 will now allow researchers to address questions of cultural variation over time at the household level.

This research is designed to gain an understanding of the types of influences that contributed to the IIf – IIe structural expansion. To test the nuances of socioeconomic and demographic changes, this thesis begins with two alternative hypotheses. The first hypothesis suggests that HP54 was expanded as the result of increased household membership that reflects demographic trends that were present throughout the region as well as on the coast (Arnold 2006; Prentiss et al. 2007, 2012, 2014). It implies that the structural expansion that occurred was the result of the need for space that would have resulted from household demographic growth. The second hypothesis suggests that HP54 expansion resulted from feasting and other hosted activities that would have influenced the status mobility of the household within the village, affording members with the prestige to expand structurally as well as recruit. These hypotheses will be tested by examining trends in lithic technological organization, types and quantities of features, and the change in utilization of space between the two selected occupational floors.

These hypotheses are designed to represent concepts from models that are related to resource management and ecology as well as social processes as drivers of change. Ecological models have been employed most commonly in the Mid-Fraser and Northwest Coast to link the emergence of inequality to the availability and control of resources (Ames 2006; Hayden 1997; Prentiss et al. 2007). The most successful applications of ecological models have incorporated issues of sociality

with a nuanced understanding of paleoclimate and ecology to address resource management and responses to availability (Prentiss et al. 2007). While they have not been commonly applied to studies in the Mid-Fraser, other types of models that address emergent complexity and differential status address the ways in which knowledge and values are negotiated by individuals. If enough individuals subscribe to what becomes a dominant ideology, then they control a certain cultural hegemony and varying status can emerge (Pauketat & Emerson 1991). As an ideology emerges and spreads, it becomes a measurable aspect of material culture when either stylistic or practical elements are adopted as a display of social and/or political alignment with the prevailing dominant entity. Examples of this can include the widespread adoption of Ramey incised pottery at Cahokia (Pauketat & Emerson 1991). In another example, it has been observed that villages that were peripheral to Cahokia's main sphere of influence would build trench and wall facades over post mold walls to give the impression that the residents had adopted Cahokia-style architecture while maintaining traditional structural foundations (Pauketat & Alt 2005). Creating an integrated approach by incorporating aspects of both agency and ecological based modeling should provide the most comprehensive assessment of ancient demography and socioeconomic change.

Researchers throughout the Pacific Northwest have engaged in similar studies in areas that are linked to the Mid-Fraser minimally through exchange (Hayden & Schulting 1997; Rousseau 2004). Examining a household as an analytical unit facilitates studies at a variety of scales if households are considered a reflection of the community (Ames 1994). As will be discussed, household demography and membership is far more complicated than it may seem (Gahr et al. 2006; Hayden & Cannon 1982). As Arnold stated in a discussion of Pacific Northwest households, "…I suggest that the plank household was legitimately a 'village within a house' in several relatively non-controversial senses" (2006: 278).

Chapter 2 provides background information to contextualize the region. This includes a summary of several the research goals that have been addressed in the Mid-Fraser. It will address theoretical issues regarding complex hunter-gatherer-fishers and household archaeology. It will also present necessary ethnographic material as well as traditional knowledge that has been shared with researchers who have worked in the Mid-Fraser over time. It is this combination of ethnoarchaeology and theory that will serve to frame the discussion of hypotheses and data analyses. Chapter 3 will detail the hypotheses and test expectations that define this thesis. It will outline relevant field and laboratory methods as well as analytical methods and testing. Chapter 4 will address the lithic assemblage and summarize data testing results for the tools, debitage, and describe certain principles of lithic analysis that apply to production and organization in HP54. It will focus on feature analysis with emphasis on hearths and features that are directly involved with household storage. The latter category includes both pits and postholes since they are not only associated with house structure but likely with the use of storage racks and shelves (Prentiss 2013; Teit 1906). Finally, it will include an assessment of mapped in situ surface objects and their relationship with the total surface area. Chapter 5 will present an argument for a specific hypothesis based upon data analysis results. It will summarize all testing and results as well as suggest potential implications and briefly outline ways to expand this research as well as other related projects that could be developed in the future. Even though archaeological excavation has been underway at the Bridge River site for years, there is broad potential for future research and inquiry.

2. Background

The Bridge River site (EeRl4) is situated near the confluence of the Bridge and Fraser Rivers in the British Columbia interior. In total Bridge River contains approximately 80 ***s7ístken*** or pithouses and over 100 external pit features (EPFs) that could have been used either for storage or as large roasting pits for either gathered plant foods or meat (Dietz 2005; Prentiss 2013; Romanoff 1992a). The following sections are intended to provide the context in which to frame subsequent discussions of the lifeways of the inhabitants of HP54.

Geographic and Ecological Context

Studies in the Mid-Fraser have long been rooted in paleoecology. Even in scenarios that do not involve quantitative ecological modeling, paleoenvironment still tends to be an important factor in developing interpretations of observed phenomena in the archaeological record (Hayden 1992a; Prentiss et al. 2011). The central and southern areas of British Columbia were completely glaciated during the Fraser Glaciation event, which is believed to have peaked around 14,500 BP. It is estimated that the area would have become ice free approximately 11,500 BP (Ryder et al. 1991). Although the area might have been free from glaciation at this time, estimates of initial human occupation range from 12,000-11,000 to 10,000 BP as evidenced by the emergence of Early Period lithic types (Rousseau 1993). The Fraser River itself is young in geological terms. It cuts into the canyon at a rate of approximately 12m per 1,000 years (60m per 5,000 years) (Tyhurst 1992). After glaciers receded from the area and the ecosystem recovered, this region experienced a relatively warm, dry period. These conditions would have been appropriate for the needs of human groups moving into and expanding throughout the area. Approximately 5,000 years ago, the Canadian Plateau began to see a shift toward colder, wetter climate patterns that came to be known as the Neoglacial period, which, although fluctuating, exists to present

day (Ryder 1978). Around 2,500 years ago, temperatures began to rise consistently in the Mid-Fraser and remained relatively favorable for marine resources and the plant life they relied on until the onset of the Medieval Warm Period (MWP), which occurred approximately 1100-600 years ago (Jones et al. 1999; Prentiss et al. 2014).

The Mid-Fraser Canyon lies on the Canadian Plateau in the British Columbia interior. The Bridge and Fraser Rivers are historically well known for providing an optimal salmon collection environment (Blake 2004; Kew 1992; Kusmer 2000; Prentiss et al. 2011; Romanoff 1992a; Rousseau 2004). The Bridge River Village is situated on a river terrace which falls within an ecological zone defined by Alexander as montane forest (1992), which describes mid-altitude forested regions with resources varying by elevation. In addition to access to a salmon run that supplies most of the British Columbia Interior and the Northwest Coast (Ames 1981; Hayden 1992a; Prentiss et al. 2008b), the area is also rich in geophytes or roots (Prentiss et al. 2011; Turner 1992). ***Figure 1*** is a map of the focus region. As seen in *Figure 1*, the Mid-Fraser was host to several prehistoric winter villages. Throughout the subsequent discussions in this thesis, many comparisons will be made to the Keatley Creek site, which is situated to the northeast of Bridge River. Keatley Creek is the only village in the region that exceeds Bridge River in size or number housepits.

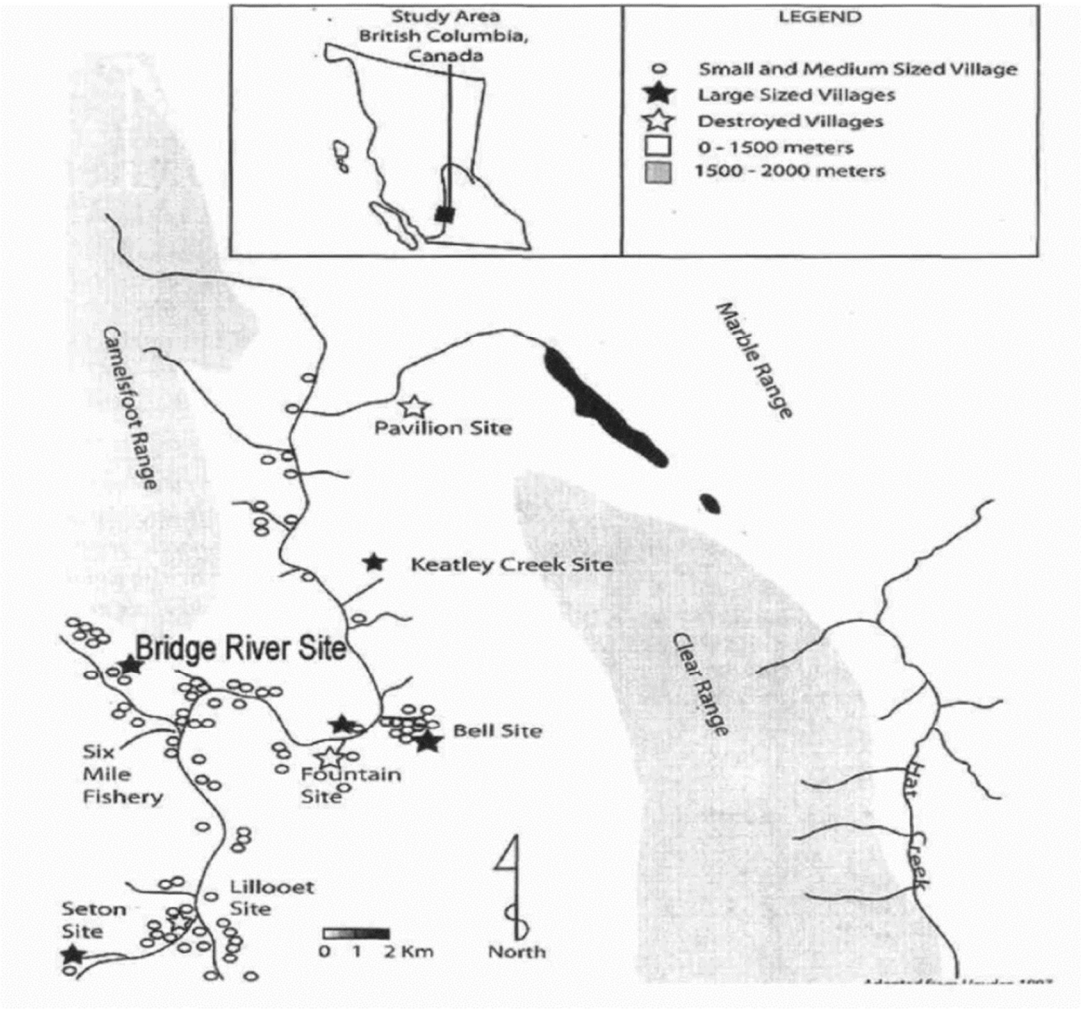

Figure 1: Regional map depicting the location of the Bridge River and surrounding archaeological sites (Prentiss et al. 2008). The Fraser River runs from the northernmost to southernmost extent on the western area of the map. The Bridge River joins the Fraser near Six Mile Fishery (depicted southeast of the Bridge River Site).

Mid-Fraser Culture History

To understand the nature of regional occupation, it is necessary to briefly discuss the history of each cultural tradition as well as a summarize their associated subsistence strategies. Understanding how the inhabitants of Mid-Fraser communities addressed varying conditions and resource availability is useful for establishing a baseline of responses as well as developing interpretations of variation over time in specific contexts.

- **Early Period** (10,000-7,000 BP): This period in the history of the BC interior is described as poorly understood (Rousseau 1993). The material culture of this period varies in resemblance to other Paleoindian tool types (e.g. Western Stemmed, Scottsbluff, and Old Cordilleran) and no conclusive evidence of significant Paleoindian populations has been discovered in the Mid-Fraser other than reports from Euroamerican collectors in the region. There are however significant Early Period occupations in surrounding regions (e.g. Chilcotin, Shuswap, and Thompson River). Any occupants that might have inhabited the vicinity of the future Bridge River village would have been highly mobile foragers who were likely in pursuit of the large game that moved through the area, given that temperatures were still on the rise and the area was still in a state of recovery from a long period of glaciation (Rousseau 1993).
- **Nesikep Tradition** (7,000-4,500 BP): This period can be sub-divided into the Early Nesikep, Lehman, and Lochnore phases. Reportedly, the traditions were originally defined by Sanger (1968) (in Rousseau 2004). Early Nesikep residential settlements were small and sparsely distributed. Recovered lithic artifacts tend to suggest that these people were still highly mobile apart from base camps. Members of this cultural tradition are responsible for the implementation of the region's only example of microblade technology. Like the inhabitants of the Early Period, Early Nesikep people were still reliant upon mammal resources, but also engaged in fishing. Identified Lehman Phase components have dates of approximately 6,000-4,500 BP. Climates during the Lehman Phase shifted toward warmer, drier trends. These changes were more favorable to ungulate populations, which were an important source of subsistence for Mid-Fraser inhabitants during this time. Around the time of the shift from Lehman to the Plateau Pithouse Tradition, a transitional cultural phase referred to as Lochnore emerged (Rousseau 1993, 2004). The relationship between these cultural traditions is the subject of debate for many researchers who have studied the Mid-Fraser and Canadian Plateau. Detailed discussion of this debate is peripheral to this thesis and will not be

outlined in detail. The Lochnore Phase is present from approximately 6,000 – 4,000 BP. Rousseau (2004) argues that residential patterns during this phase contributed to the rise of pithouse villages in later periods. Even if this is the case, it is argued by others that the Plateau Pithouse Tradition should not be assumed to have emerged directly from Lochnore in a linear fashion (Prentiss & Kuijt 2004b).

- **Plateau Pithouse Tradition** (3,500-200 BP): The Plateau Pithouse Tradition (PPT) can be subdivided into three major phases, the Shuswap Horizon (3,500-2,400 BP), the Plateau Horizon (2,400-1,200 BP), and the Kamloops Horizon (1,200-200 BP) (Rousseau 2004 citing Richards & Rousseau 1982, 1987). Around 3,500 BP, the Mid-Fraser experienced a cooler fluctuation within the Neoglacial Period (Prentiss & Kuijt 2004b). The general strategy during the early **Shuswap Horizon** consisted of winter villages and basecamps that were used to gather resources on seasonal rounds. Reliance on stored food increased and lithic assemblages reflected less curated technology, presumably indicating regular access to local raw materials (Rousseau & Richards 1987).

  By the beginning of the **Plateau Horizon** around 2,400 BP, the climate had begun to warm and dry out once again, which brought about the conditions that are common to present day. Many of the winter villages at this time show evidence of continuous reoccupation (Rousseau 2004; Stryd 1973). This horizon was host to the adoption of the bow and arrow and the onset of the Plateau Interaction Sphere (Hayden & Schulting 1997), which will be subsequently discussed at greater length. Regional native populations were assumed by some researchers to have been at their peak during the Plateau Horizon (Rousseau 2004).

  The **Kamloops Horizon** is indicated by increased reliance upon salmon and new diagnostic stone tool technology (e.g. small side-notched and corner-notched points). It is around this time that the emergence of wealth-based inequality becomes evident at HP54 (Prentiss et al. 2012, 2014). Mid-Fraser residents during the Kamloops Horizon would have experienced the MWP and been required

to adapt their subsistence strategies to a decrease in fishery productivity as well as other resource scarcities (Prentiss et al. 2011).

It is notable to mention that different societies on the Northwest Coast and Canadian Plateau experienced a shift in household demography to multi-lineage household groups around 1,600 BP (Arnold 2006; Coupland 2006; Martindale 2006; Prentiss et al. 2012). Many of these societies were separated by some distance, which could suggest that large scale shifts in climate patterns that would have influenced resource availability indirectly caused inhabitants of the greater region to adopt strategies in household structure that incorporated non-kin membership (Teit 1906) as a response to subsistence pressure (Arnold 2006; Martindale 2006).

Occupation of the Bridge River Village

Geophysical assessment of the Bridge River site was initiated in 2003 (Prentiss et al. 2008a, 2008b). The strategy was to examine differences both within and between houses of small, medium and large sizes to test variability in socioeconomic status in Mid-Fraser winter villages (Hayden 1997; Prentiss et al. 2008a, 2010). In addition, test units were excavated over the 2003 and 2004 field seasons, providing material for dating (Prentiss 2008b). The resulting data allowed for an initial establishment of a site chronology. Subsequent field seasons provided additional dating material and the chronology has been adjusted to reflect new calibrated dates. By combining dated material, geophysical testing, and paleoecological data, Prentiss and colleagues were able to establish a cultural sequence based upon perceived transitions as well as fluctuations in household occupation in the village. Similar methods have also been employed by other researchers in the Pacific Northwest and

British Columbia interior (Coupland et al. 2009; Matson & Coupland 1995; Prentiss et al. 2008b). ***Table 1*** shows the current[1] working chronology of the Bridge River Village.

Table 1: Summary of Currently Employed Bridge River Chronology

Phase	Date Range
Bridge River 1	1800-1600 BP
Bridge River 2	1600-1300 BP
Bridge River 3	1300-1000 BP
Bridge River 4	600-100 BP

Figure 2 shows maps of the Bridge River site during all four periods of occupation and the housepits occupied during those times. After the initial geophysical testing phase, several housepits were selected according to the strategy of examining activity areas in houses of varying sizes in the north and south "neighborhoods," which are best depicted in the Bridge River 2 and Bridge River 3 phases in the map above. The selected housepits were HP11, HP16, HP25, HP20, HP24, and HP54 (Prentiss et al. 2010, 2012). HP20 and HP24 were found to be least and most affluent of the sample respectively, with HP24 containing large quantities of prestige goods as well as indicators of high status in the faunal assemblage regarding both diet and higher frequencies of dog remains (Prentiss et al. 2012). Discussions that address varying socioeconomic status at the Bridge River site are largely based on comparisons made between these housepits.

[1] At a point nearing the completion of this thesis, newly calibrated radiocarbon dates reflecting dated material from the 2016 Bridge River field season have been released and illustrate a slightly different chronology as well as alter former perceptions of which floors are associated with each cultural period. The newest calibrated radiocarbon dates can be found in the **Appendix A**.

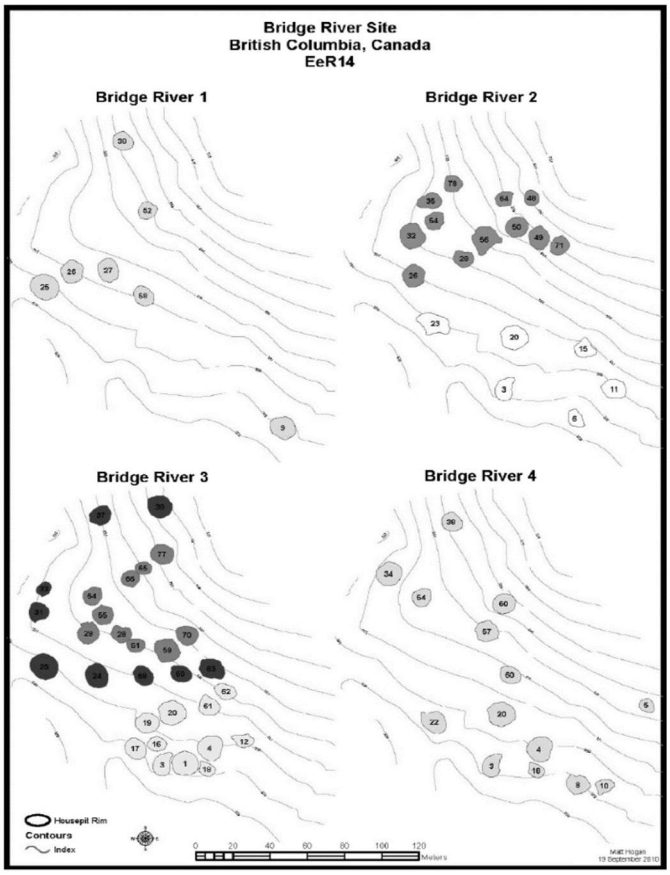

Figure 2 Map of housepit occupation during each Bridge River phase

The Housepit 54 Project

The Housepit 54 project was designed to be a relatively complete excavation of one housepit. Three test trenches were initially excavated in 2008, revealing what was believed to be at least 15 intact anthropogenic floors. Excavations in 2012 were entirely dedicated to the final floor and roof of HP54, which was occupied during the Canadian Fur Trade Era (Prentiss 2017). Excavations of the prehistoric floors began in all blocks, or excavation units, in 2013 (Prentiss 2014). By the close of the 2014 field season, excavations in Block B, the southeastern quadrant of the house reached substrate (sterile soil) after the IIe floor. This discovery implied that between the IIf and IIe occupations, the housepit doubled in size. This expansion was verified during the 2016 field season when Block D, or the northeastern

quadrant of the house also terminated in substrate after the IIe floor, confirming that an east-west expansion occurred. **Appendices B** & **C** include maps of the IIf and IIe floors respectively that provide clarification of excavation blocks and house area. Blocks are simply designations for areas in the grid and are not intended to represent meaningful designations for space. They are not typically considered independently. ***Table 2*** identifies the HP54 stratigraphy and floor designations to provide an understanding of occupational floor sequences and the terminology used to describe them.

Excavations for The Housepit 54 Project were concluded in 2016. In addition to confirming household expansion, it was discovered that stratum IIa, or the most recent prehistoric floor was not occupied in a similar manner to the preceding Bridge River 3 floors in that the northeast portion of the house (Block D) did not contain a living surface, but bedded rim deposits and might have later been converted to some form of discard area. In Block A, or the southwest quadrant of HP54, it was discovered that with the IIm-IIL transition another shift or expansion in the house occurred. In addition to these discoveries, two more floors were confirmed, IIn and IIo, increasing the number of confirmed floors to 17. Some excavation units or areas of units were left unexcavated in each block based on the appearance of rim deposits and surface disturbances. HP54 stratigraphy is represented by roman numeral and letter designations. Figures have already appeared in this thesis with floor designations and may be referred to as examples. The designation V is given to roof strata. Floors and roofs have distinct characteristics. Roof strata are characterized by large amounts of burned material, remnants of beams, and artifacts. The soil typically contains coarser sediment. Floor strata are identified on the surface by higher frequencies of faunal remains, tools that lie flat in situ, and contain higher amounts of clay.

Table 2: Cultural strata at Housepit 54 (Prentiss 2017)

Stratum	Description
I	Surface
V	BR4 (Fur Trade Period) Roof
II	BR4 (Fur Trade Period) Floor
XVI	BR3 Bench/Rim (as identified in 2012 field season)
III	BR2 & 3 Rim
Va1	Remnant of final BR3 Roof
IIa1	Remnant of final BR3 Floor
XVII	BR3 Rim-like fill in depression within Block D (likely IIa1 cache pit remnant
Va	Final Complete BR3 Roof
IIa	Final Complete BR3 Floor
Vb1	BR3 Roof (Blocks B & D)
IIb	BR3 Floor
IIc	BR3 Floor
Vb	BR3 Roof (Block A)
IId	BR3 Floor
Vb3	BR3 Roof (Block B)
IIe	**BR3 Floor**
IIf	**BR3 Floor**
IIg	BR3 Floor
Vc	BR2 – 3 Transition Roof (Block A)
IIh	BR2 – 3 Transition Floor
IIi	BR2 Floor
IIj	BR2 Floor
IIk	BR2 Floor
IIL	BR2 Floor
IIm	BR2 Floor
IIn	BR2 Floor
IIo	BR2 Floor
IV	Substrate (non-cultural

** Table developed by Prentiss (2017) in preparation for the 2016 field report (unpublished)*

The surface is typically succeeded by floor fill, which is indicated by significant amounts of gravel and may contain fire cracked rock, and artifacts that are deposited at angles in relation to the floor surface.

Research to understand the variation in household dynamics that would explain these expansion events, technological organization, and refine household chronology is currently in progress and will undoubtedly alter many prevailing assumptions regarding lifeways for the inhabitants of HP54. This thesis potentially contributes to the understanding of how the IIf – IIe structural expansion fits into the

overall progression of growth and shifts in socioeconomic strategy at a point during the life of the house when both population and resource stresses would have been at their peak (Prentiss et al 2014). This study combined with others in the future will be informative to the larger endeavor of understanding events of structural expansion throughout the entire history of the house. It will also provide a better understanding of how HP54 and Bridge River fit into regional trends of adaptation to emergent inequality and resource stress by specifically analyzing variation in technological organization and use of space.

Theory and Literature Review

The following sections are designed to provide context regarding the body of relevant literature and theory that is useful for framing interpretations of data collected and analyzed from HP54. To do this, it is first necessary to discuss complex hunter-gatherers (CHG), sometimes referred to as hunter-gatherer-fishers in the Pacific Northwest and Canadian Plateau. CHG groups throughout the broader region often follow comparable settlement and subsistence strategies, therefore outlining these strategies is useful. Next will be a discussion of household archaeology in the Pacific Northwest. Both the Fraser River Investigations into Corporate Group Archaeology project at Keatley Creek and the Bridge River Archaeological Project near Lillooet, British Columbia have incorporated methodology from the Ozette site, located on the coast of Washington state. This methodology has been employed at many other sites in the broader region, making it a widely-shared source for comparison (Ames et al 1992; Grier 2010; Hayden 1997, 2000; Prentiss et al 2011, 2012). It is particularly relevant to this thesis, since the data collection methods employed at Bridge River are designed to allow for a variety of spatial analyses on a floor-by-floor basis and household archaeology on the Northwest Coast is largely concerned with use of space. Ties to the coast and exchange, will be discussed in subsequent chapters.

Next there will be a brief discussion to clarify sources of ethnography, ethnoarchaeology, and informants who have provided researchers with traditional knowledge, which is vital to a holistic and ethical representation of lifeways in the Mid-Fraser. Some of this information is useful in explaining some of the results from data analysis discussed in Chapters 4 and 5. Finally, will come a brief clarification of the Malthusian hypothesis that has been posed to explain observed cultural trends at the Bridge River site and HP54 (Prentiss et al. 2014). While this thesis does not directly seek to test Malthusian pressures, the processes involved are linked to discussions and understanding of the emergence of wealth-based inequality at Bridge River, and therefore relevant. Given that the IIe floor is believed to be the peak of these Malthusian pressures, it is probable that the results from examining lithic technological organization will also reflect these pressures to some degree.

Complex Hunter/Gatherers in the Mid-Fraser

The term complex hunter-gatherer is used to describe groups of hunter-gatherers who engage in varying levels of mobility, establish ways to control labor and resources, display status based hierarchy, but do not engage in agriculture or large scale domestication (Prentiss & Kuijt 2004a). Some researchers imply that status is typically inherited (Arnold 1996). Ultimately, in the Pacific Northwest, status hierarchy is said to be the hallmark of the regional pattern (Ames 1981; Sassaman 2004). This definition is admittedly simplistic and broad. It is necessary however, to avoid the task of defining complex hunter-gatherers fully because an adequate definition is far beyond the scope of this thesis (see Arnold 1996; Arnold et al 2015). CHG at Bridge River as well as throughout the Mid-Fraser constructed winter villages of semi-subterranean pithouses for occupation during the cold months and spent other seasons in conical lodges covered in mats or bark while engaged in seasonal rounds (Teit 1906). Mid-Fraser communities are described by researchers as residential corporate groups (Hayden &

Cannon 1982). In fact, it has been the desire to better understand corporate groups in prehistory that has drawn a great deal of attention to the region for decades (Hayden & Cannon 1982; Hayden 1997, 2000). A corporate group can be briefly defined as a residential socioeconomic group that cooperates in subsistence and household efforts (Hayden 1995, 1997; Hayden & Cannon 1982; Prentiss & Kuijt 2004b). It is suggested by some researchers that corporate groups only tend to emerge in times of scarcity or abundance of resources (Hayden & Cannon 1982), which implies that wide scale cooperation is typically the result of socioeconomic extremes. As will be discussed in recommendations for future research, it is likely that HP54 stands as evidence that these processes can be much more complicated.

Mid-Fraser CHG often follow a pattern of large aggregate winter villages such as the Keatley Creek site, Bridge River site, Pavilion, Bell, Fountain, etc. Prentiss et al (2005) argue that the subsistence strategies that have been observed in the area are likely to have been transported or transmitted into the interior from the coast, evolving from a collector strategy to a complex collector strategy. St'át'imc territory is described to range from the Fraser River at Della Creek to 40km north of Lytton (Kennedy & Bouchard 1992). Residents engaged in a seasonal round for the harvest of resources. Individuals would continually gather resources until enough had been acquired to justify the effort. Base camps were often in use for extended periods (10 days to one or two weeks at a time) (Alexander 1992). In this region, access to resources is understood to have been "owned" by lineages or clans. For the purposes of this thesis, ownership can be defined in a broad sense, referring to access (see Hayden 1992b). Lands were the common property of the lineage or clan and regulated by certain families. Prevention of over-exploitation is considered to have been the priority of regulation in regard to many resources (mostly excluding salmon) (Alexander 1992). Control of access to resources or resource ownership manifested itself in a variety of ways depending on the resource. Below is a summary of hunting, fishing, gathering, and surplus management behaviors that serves to both complete this discussion as well as inform later discussion:

- Hunting: Hunting was done both by small groups as well as individuals. A village would often have what has been described as "hunting chiefs" (informant Sam Mitchell in Romanoff 1992b) as well as a leader that served as a manager or administrator. "Hunting chiefs" were adept hunters who would make major hunting decisions such as where to hunt, when to hunt, and who would be allocated what portions of meat from a hunt (Alexander 1992; Teit 1906; Tyhurst 1992). Some animals were hunted during particular seasons based upon preservation preferences. For example, bear fat was not harvested until fall as opposed to other resources hunted in summer because later acquisition helped to ensure that it would not go rancid over winter (Alexander 1992). The St'át'imc people also used traps to harvest terrestrial mammals. It is likely that hunting and trapping would have taken place in different areas to avoid overlap, which is a behavior that has been observed in neighboring regions (Brumbach & Jarvenpa 1997). Other aids such as dogs and hunting fences were used to track animals and maintain hunting boundaries respectively. Dogs have been the subject of much discussion regarding status in the Mid-Fraser and were also used for other needs such as fur for clothing and even in feasting contexts (Alexander 1992; Prentiss et al 2011, 2012, 2014; Romanoff 1992b; Teit 1906).
- Fishing: While the area surrounding the Bridge River site would have been productive for hunting during much of the occupational history of the village, fishing provided both food and goods for the local population as well as attracted the attention of outside groups seeking exchange from potentially as far away as the southern coast (Hayden 1992a; Romanoff 1992a; Sobel 2006; Turner 1992). It is possible that the desirability of fish from Fraser runs are linked to the fact that the salmon do not typically lose a significant amount of their body fat, as is the case in many other runs. There are five species of salmon available, all of which run at different times and require different technology for harvesting given that they swim at different depths or in different river currents. The three most widely available species include *Oncorhynchus*

tshawytscha (spring/chinook), *Oncorhynchus kisutch* (coho), and *Oncorhynchus nerka* (sockeye) (Kew 1992). Like other resources, certain lineages, families, or households were responsible for regulating fishing areas. Access to fishing areas was known to have been directly linked to status in the village (Kennedy & Bouchard 1992). The ability to harvest salmon was limited first, by the number of household members able to participate in fishing duties and second, by household capability to store and preserve it. The preservation and storage of salmon was also a factor in household ability to host community events (Romanoff 1992a).

- Gathering: Root, or geophyte, roasting is a subsistence activity that the residents of Mid-Fraser villages are thought to have relied upon for at least 2,250 years (Turner 1992), which is a relatively short time after the beginning of the Plateau Horizon. Roots and other plant resources were also harvested seasonally (Turner 1992). Root foods were typically roasted in ovens, either alone or along with salmon (Desmond Peters Sr. in Hayden & Cousins 2004). Geophytes in the Mid Fraser were also traded in exchange for other plant foods, some of which were local to the area and some that were not (Alexander 1992; Turner 1992). This provides potential clues for better understanding local trade practices and could also serve as an indicator of access to gathering areas in future studies. In terms of division of labor, gathering of plant resources appears to be among duties that are more fluid regarding gendered work among the St'át'imc people (Cannon 1992; Turner 1992). According to Cannon (1992), men and women would both engage in plant gathering activities if they were in higher demand at the time.
- Surplus: Surplus of resources was handled in varying ways depending upon the resource. Many hunters were known to have killed animals and left them in specific places for others to come and take (Romanoff 1992b). As with other ethnographically observed indigenous groups in Northwest North America, decisions regarding how much of an animal would have been taken or left were sometimes made in consideration of specific plans for the use of the animal

(Brumbach & Jarvenpa 1997). In other scenarios, hunters would bring extra kills to the village. One way the surplus was distributed was by calling a gathering called *xelítxal,* which was like a coastal potlatch and could also include the giving of trade goods (Romanoff 1992b). In some celebratory scenarios, an event referred to as a scramble was held, in which a deer or other animal would be thrown into a house to be butchered. The redistribution of surplus was an indicator of success, and therefore a large source of status for hunters and fishers in the village (Hayden 2001). Storage itself, which women produced and managed in the form of making baskets, bottles and other containers, directly impacted the amount of surplus a family could acquire (Romanoff 1992b) and thus also potentially impacted status maintenance and mobility for the household. The ability to store surplus resources for household use or trade (both inter and intra village) were undoubtedly factors that contributed to the eventual emergence of wealth based inequality, which as mentioned has been a premier subject for Mid Fraser researchers.

Household Archaeology

This thesis is essentially a study in household archaeology given that the household is the analytical unit. The methods for data analysis in this study reflect the three elements of household composition proposed by Wilk and Rathje (1982): social (demography), material (in this case lithic technological organization), and behavioral (assessment of the likelihood of feasting or other social activity). According to Ames (1995), emergent complexity is best studied at the household level. As previously stated, studying a housepit in this manner is also a useful way to understand social dynamics at the village level under the assumption that a household is a direct reflection of larger scale processes (Ames 1996; Gahr 2006; Martindale 2006). Excavation of the Ozette site provided many archaeologists with a methodological model (Ames et al 1992; Arnold et al 2015; Coupland et al 2009; Gahr et al 2006).

Work in the Mid Fraser is no exception (Hayden 1997, 2000, 2010; Prentiss et al 2011, 2012). Because there is such a ubiquitous acceptance of methodologies and due to evidence of significant cultural transmission between the coast and the interior, it is possible to carefully construct certain analogies between the Mid-Fraser, particularly Bridge River, and the coast. To interpret the archaeological record in a way that affords a better understanding of the lifeways occurring in a house, it is necessary to consider the demographic makeup of the household, how labor might be organized among household members, and the relationship between these characteristics and the village.

It has already been established that members of a household can be considered as part of a larger corporate group, or in this case a residential corporate group. At the Bridge River village, these groups would have been composed of a single clan (Teit 1906). Household membership is typically expected to consist of members of the same extended family, but this could often be subject to change (Gahr et al 2006). Some prior studies have focused on assessing the agency of the individual family within a corporate group as well as variance in the overall size and strength of corporate groups (Hayden & Cannon 1982). Movement of household members from one household to the next could be indicative of intermarriage or food processing tasks from larger hunting and gathering ventures (Alexander 1992). This type of movement is thought to cause radical changes to household interior. When considering that surplus management and the ability to host events is largely tied to storage, it is reasonable to conclude that changes in household membership can potentially affect the subsistence strategies of an entire household in more ways than gaining or losing laborers (Arnold 2006). By analyzing social organization of a household, or lineages as economic units, it is then also possible to better understand modes of production within the house (Martindale 2006).

Organization of labor within the house has already been partially discussed in terms of leadership, or managers and “hunting chiefs”, who were skilled hunters that supervised hunting activities as well as the allocation of meat when it was brought back to the village. Many other

resources were managed by lineages and households that could include trapping areas, fishing areas, root roasting pits, plant gathering areas, lithic raw material sources, etc. Organization of subsistence management could also be subject to occupational ranking among individuals (Romanoff 1992b). Within the house, labor could be divided by either gender or between family groups within a household (Grier 2006; Martindale 2006). If the household is to be considered the most common social component of subsistence activities (Wilk & Rathje 1982), it is then important to consider these contributions from household archaeology on the Northwest Coast and the Canadian Plateau when interpreting the results of data analysis and attempting to reconstruct socioeconomic and demographic variation in HP54.

Ethnoarchaeology and Ethnographic Sources

Many analogies and interpretations at Bridge River are possible due to the rich ethnographic work conducted by James Teit, an anthropologist associated with the Jesup North Pacific Expedition, led by Franz Boas. Teit studied groups ranging from the Thompson River to the Upper Lillooet or St'át'imc during the early 20th century. He was aided by his wife, a Thompson woman, who was raised by elders that possibly lived within one or two generations of past members of Mid-Fraser villages (Cole 2001; Wickwire 1993, 2005 cited in Barnett 2015). This means that she would likely have been raised and taught by elders who participated in many of the described activities and traditions in this thesis. In addition, many members of descendant communities such as Sam Mitchell and Desmond Peters Sr. have shared their traditional knowledge with many ethnoarchaeologists that have conducted research in the area over the years. Based on a considerable amount of early ethnography, ethnoarchaeology with band members, and archaeology that has been conducted throughout the Mid-Fraser over the span of decades, it is possible to see a high level of cultural continuity. In fact, the area has been cited as

an example for extended cultural continuity by other researchers (Arnold 2006; Hayden 2000; Odell 2003).

Wealth Based Inequality, Status, and Feasting

Wealth based inequality and feasting are two topics that are discussed extensively in complex hunter-gatherer studies, especially in the North American Northwest (Dietler & Hayden 2001; Hayden 1992b, 1995, 2001, 2009; Hayden & Adams 2004; Hayden & Cousins 2004; Perodie 2001; Prentiss & Kuijt 2004a; Prentiss et al. 2007, 2012, 2014; Rousseau 2004; Sassaman 2004). Differential access to and the redistribution of resources, whether for subsistence or other ascribed value, are visible in social functions, competitive giving, and other activities that leave their signatures in the archaeological record. Feasting is a term that occurs regularly in interpretations of status and wealth based inequality in the Mid-Fraser as well as the Northwest Coast. For the purposes of this thesis, the term feast will refer to the broad range of social activities that are not considered to be part of a daily routine and which include exchange or meals (Dietler & Hayden 2001). Some studies of feasting have been based on cost-benefit and risk. Cost-benefit approaches tend to use quantitative models to determine whether the reward of social functions and feasting justify the cost of the resources that are consumed, especially in scenarios that involve competitive giving (Kelly 2007). Risk seems to be applied rather broadly by assessing variation in possible outcomes as it applies to the individual forager (Ames 2006).

This thesis is heavily influenced by the approaches of Hayden and colleagues (Dietler 2001; Dietler & Hayden 2001; Hayden 2001; Perodie 2001) to determine whether there is evidence at HP54 for certain types of feasting events, which they classify by socioeconomic context and function. Some practical benefits of feasting can include but are not limited to: the mobilization of labor, creating cooperative relationships, excluding other groups, attracting potential marriage partners, labor, allies, or

trade by advertising group success (Hayden 2001). These appear to be the types that are most applicable to Mid-Fraser hunter-gatherers based on ethnoarchaeological studies by other researchers who have concentrated on the area. According to Romanoff (1992b), the types of feasts that typically occurred in Mid-Fraser villages include: celebrating status change or upward social mobility, memorials, the passing of names, and gratitude.

In other studies that focus on potlatch activities in the Pacific Northwest and similar events in other cultures, feasting can be described as a show of solidarity for the mutual good of the participants (Perodie 2001). Other assessments frame feasting in relationship to conflict. Feasts can serve as conflict management by functioning as competitions that do not directly challenge social order (Dietler 2001). Hostile giving is another conflictive feasting type that could have served to assert the dominance of a household or village over neighbors (Romanoff 1992b). Archaeological signatures of feasting events are also important to consider when applying these concepts to the assemblage at HP54. Large central hearths are referred to as "feasting hearths" by Hayden (1995). This association should be applied cautiously. While a large central hearth does tend to indicate communalism, other findings should be required to define a hearth as a "feasting hearth." Some indicators of feasting outlined by Hayden (2001) that could apply to HP54 include: analysis of the size, number, and raw material of serving vessels, frequencies of jewelry or personal adornment and prestige materials, smoking paraphernalia, and careful analysis of storage and refuse pits in a household. The concept of feasting raises questions about changes that occurred throughout the life of HP54. Since this house would not always have been among the most affluent of Bridge River houses, would residents be more likely to hold feasts or events to boost their status? It would certainly contribute to the observed household continuity (Ames 2006; Kim & Grier 2006).

Wealth is often transmitted generationally and can be broadly defined as anything passed forward that increases reproductive success (Mattison et al 2016). This can include material wealth as

well as skills and knowledge. Given that most houses were occupied by family groups, the success of a household can potentially be measured by the ability to transmit wealth generationally (Ames 1996; Gahr 2006). In the North American Northwest, characteristics of a house are directly tied to the status of the household and its members. The Kwakwaka'wakw are reported to have considered the house to be a type of "chief" or a leader (Boas 1888, cited in Gahr 2006). Throughout the Pacific Northwest researchers link household and individual status to the physical construction of a house. Gahr (2006) evaluates status in plankhouses at Ozette and states that labor and material commitments related to house construction could be linked to status and ranking. In another example, Tlingit house construction and acquisition of building materials could also reportedly incur debt. All new construction required approval based on the consensus of the entire clan, not just the household. Approval would have been based on economic cost-benefit assessment, which would have included labor and material cost (Ames 1996; Ames et al. 1992; Gahr 2006).

Rank and status within and between households is also expressed spatially. The location of a house in a village as well as the positioning of living spaces within a house have been found to directly indicate status in many North American Northwest societies (Marshall 2006; Samuels 1991, 2006). Status and ranking are also relevant to household archaeology in the Mid Fraser. If knowledge, skills, and resource ownership are commodities that are passed through feasting or social activities linked to rank, understanding archaeological signatures of feasting are then also relevant to understanding how rank and status emerged in HP54. It has been observed in the Mid-Fraser that knowledge and resource ownership are only available to certain ranks (Hayden 1992b). Other evidence to support the emergence of wealth based inequality during the Bridge River 3 period include quantities of dog and deer remains, presence of non-local items and materials, and items determined to carry prestige (Prentiss et al. 2012). These markers are also considered in evaluating the lithic assemblage and spatial variation in occupational floors for this thesis.

The Malthusian Hypothesis at Bridge River

To provide a complete background of the social and economic factors present in HP54, it is important to briefly outline the evidence that supports the Malthusian hypothesis that has been proposed and applied to the Bridge River 3 period. Prentiss and colleagues (2014) test a variety of models to determine whether demographic trends at the Bridge River site reflect Malthusian trends. It has been established throughout the course of research at Bridge River that the village experienced a punctuated episode of demographic growth that coincides with the Bridge River 3 period (Prentiss et al. 2014, 2015b). ***Figure 3*** is the most recent representation of population estimates for each floor based on fire cracked rock (FCR) densities and hearth frequency. To determine this figure, FCR density is calculated in proportion to total excavated floor volume. This is useful for comparing the amount of cooking activity relative to the extent of floor occupation, but it should be noted that changes in FCR density can also indicate variation in cooking strategies (Prentiss et al. 2007). The proposed Malthusian ceiling event (e.g. Kirch 1984, Malthus 1976) at Bridge River is broadly based on faunal analysis indicating a decrease in resource availability and drastic increases in population as compared to a variety of demographic models (Prentiss et al. 2012, 2014). All current research appears to support this hypothesis; however, many specifics of the Malthusian event are unclear.

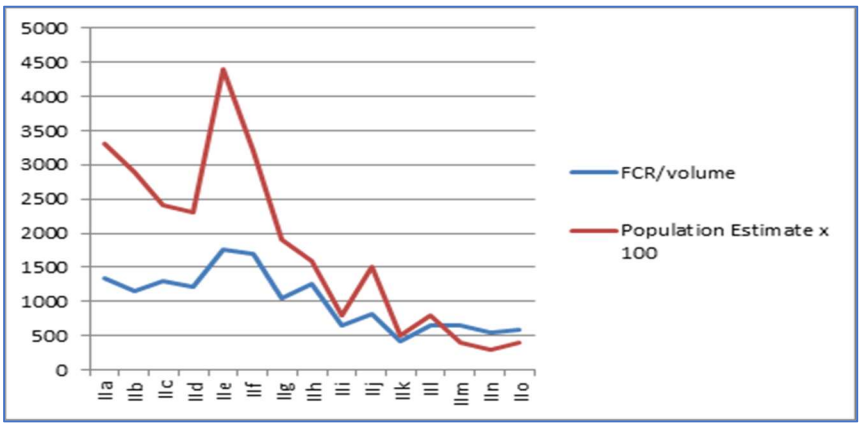

Figure 3: FCR Volume and Estimated Population X 100 for all Bridge River HP54 Floors (credit: Anna Prentiss 2017)

These sections were designed to address theoretical concepts and previous studies as they relate to Bridge River and HP54. Addressing such concepts as the emergence of wealth based inequality in total is beyond the scope of this thesis. The purpose is to provide enough background to clarify concepts that will be addressed in subsequent chapters and final discussion.

3. Hypotheses, Test Expectations, and Methods

This chapter will define the specific hypotheses and associated test expectations to test the two proposed scenarios regarding the structural expansion that occurred between the IIf and IIe occupations at HP54. In addition, it will explain field and laboratory methods as they apply to data in this study. Finally, it will include a summarized version of the hypotheses and test expectations to contextualize the analysis and results contained in Chapter 4.

Hypotheses and Test Expectations

Hypothesis 1: The structural expansion of Housepit 54 that took place between the IIf and IIe floors is the result of demographic growth and the features, lithic assemblage and their spatial relationships reflect an increase in domestic activity that does not indicate social or political signaling.

Expectations if Hypothesis 1 is Accepted:

- If Hypothesis 1 is true, features in the IIe floor as compared to the IIf floor will increase in quantity and be similar in dimensions and patterns of use that are not necessarily in reference to floor space.
- Features will indicate separate domestic areas within the house as opposed to centralized areas that are suggestive of communalism.
- Artifacts will be distributed across the IIe floor in a similar distribution to the IIf floor, indicating that no significant area was allocated for increased social or ritual activity.
- There will be no dramatic increase in the relative number of tools produced from prestige materials between occupational floors.
- There will also be no dramatic increase in the ratio of tools that are considered ornamental or trade goods relative to subsistence-related tools within the assemblage for each floor.
- There will be no evidence for increased production of favored feasting foods (e.g. mule deer, big-horned sheep). Thus, lithic tools related to terrestrial hunting should not increase in abundance within the tool assemblage from each floor.

Hypothesis 2: The structural expansion of HP54 that took place between the IIf and IIe floors is the result of an increase in activity that indicates socioeconomic or political signaling and the features, lithic assemblage, and their spatial relationships reflect an intensification of ceremonial or social activities intended to increase the social standing of the household within the village and possibly recruit new household membership.

Expectations if Hypothesis 2 is Accepted:

- Features in the IIe floor as compared to the IIf floor will reflect a shift from largely domestic activity to surplus management in the form of larger, deeper cache pits, as well as larger, more extensively used hearths relative to floor area.
- The arrangement of features will reflect spatial arrangements that allow for increased social or ceremonial activity.
- The distribution of artifacts and materials will reflect more frequent clearing of areas in the IIe floor as opposed to the IIf floor for social and ceremonial activities.
- More tools in the IIe floor will be produced from prestige or non-local materials than in the IIf floor.
- Ornaments, formal tools and other products that contain prestige value should be relatively more abundant in the IIe assemblage compared with IIf.
- Evidence will be present for intensification of production of feasting foods, especially meat (e.g. mule deer, big-horned sheep). This will be indicated by increases relative to other tools in the assemblage.

Methods

This section will divide methods into those that apply to the general laboratory and field procedures for the Bridge River Project and those that apply to analysis for this thesis. More complete information regarding laboratory and field methods can be accessed from Bridge River site reports, which are available to the public at: http://hs.umt.edu/bridgeriver/data/default.php (accessed March 2017). Relevant maps, typologies, and other relevant documents will be included in appendices.

Relevant Field and Laboratory Methods

HP54 is divided into four excavation blocks (see **Appendices B** & **C** for examples). Each excavation block contains 16 1mX1m excavation units. The maps that are produced in the field and later digitized are depicted by blocks, but are intended to provide a representation of the living surfaces. Each stratum in each block was mapped, entirely excavated, and photographed before moving to the next. Features were excavated in their entirety when encountered, documented and photographed. If features were not stratified, they were excavated in 10cm arbitrary levels. If bedding was present, it was designated as a cultural layer(s). Carefully recorded maps were created for both features and floor strata. Maps include features, surface fauna and lithics, and locations of large (5cm) samples of FCR. Artifacts were inventoried in the field. Lithics were cleaned and soil samples were floated in the field. All artifacts collected were transferred back to the laboratory of Dr. Anna Prentiss at University of Montana for analysis and preparation for curation. All Xwísten artifacts are prepared to be sent to the Royal British Columbia Museum to be held in trust for the band.

In the laboratory, lithics are separated and analyzed by stratum. Each lithic artifact is examined under magnification ranging from 6X – 50X. They undergo an expedient analysis that first separates artifacts into either debitage or tool categories. Tools are subject to classification by a diverse typology that includes usewear characteristics and function. Recorded data include: provenience, material type, presence or absence of heat treatment, usewear and retouch characteristics for each edge used, measurements taken with a sliding caliper, edge angles, and sketches of each tool in profile, planview, and any other necessary edge or face. **Appendix D** provides the most recent version of the Bridge River lithic typology and contains information for both debitage and tools.

Data Analysis and Testing

Data analysis for this thesis was carried out according to test expectations for each hypothesis. Simple frequency data was analyzed initially to determine whether sample sizes would be large enough to complete various types of statistical tests. Examined variation of tool and debitage types from the assemblage is largely based on functional criteria and raw material types. Functional criteria are observed by using the methodology above and are categorized by ethnographic and ethnoarchaeological studies cited throughout this research (also see Hayden 2000 and Prentiss et al 2007). All data for spatial and feature analysis were compiled directly from Bridge River reports corresponding with the field season when each feature was excavated. Since sample sizes were small (fewer than 20 tools in most cases) abundance indices (AI) (Broughton 1994; Smith 2014) were the preferred quantitative method for determining the representation of tool types and materials within the assemblage of each floor. Although AI scores do not permit testing of statistically significant relationships, they are able to indicate data trends that are useful in preliminary evaluations. Distributions of mapped surface objects in each floor were calculated in units that did not contain features and compared to the total excavated floor surface rather than the total excavated floor volume in each block to provide a meaningful assessment of actual living space. ***Table 3*** explains the test expectations and what they are designed to test. The latter information will be discussed further in the following chapter on analysis and results.

Table 3: Summary of Hypotheses and Test Expectations

Test Expectation	Data Analyzed	Hypothesis 1	Hypothesis 2
Lithics	Abundance of prestige and non-local material types in the tool assemblage	No Change	Expected increase between IIf and IIe
Intensified production	Abundance of terrestrial hunting tools in the assemblage	Remain stable relative to volume	Relative increase
	Abundance of formal hide working tools in the assemblage	Remain stable relative to volume	Relative increase
Ownership/display of prestige goods	Density of ornamental/effigy/prestige tools in the assemblage	No Change	Overall Increase
Features	Storage/Pit Feature Volume compared to total floor volume	Increase proportionate to population	Disproportionate increase compared to population
Public feasting	Conspicuous or large hearths/hearth clusters	No change in quantity of hearth clusters per population	Change in hearth clusters per population
Evidence of cleaning or clearing	Density of artifacts in units and quads that contain no features	Even proportion of feature volume to total living space between floors	Increase in total excavated feature volume in proportion to total living space
	Total mapped objects in units and quads that contain no features	No change in quantity of mapped objects in relation to excavated living space	Fewer mapped objects in the IIe floor than IIf in relation to excavated floor volume
Changes in population per floor	Estimated population as evidenced by FCR and hearth density	Increase consistent with structural growth	Increase reflecting structural growth resulting in more surface area per person than in the IIf floor

4. Analysis and Results

The goal of this chapter is to report the data analysis and results based on the hypotheses, test expectations, and methodology described in previous chapters. It will be divided into sections that address (1) the lithic assemblages of the IIf – IIe floors and (2) the features, activity areas, and distribution of mapped objects. Finally, these results will be summarized and compared.

Lithic Analysis

A series of abundance indices (AI) were calculated to determine the associations among tools and materials for the IIf and IIe assemblages. ***Table 4*** explains how each test expectation was assessed as well as the index values. A summary of AI scores is provided at the end of this section (***Figure 4***).

Table 4: Abundance Index (AI) Calculation Summary for HP54 Lithics

Compared Types	Abundance Index (AI)	Actual Values	IIf	Actual Values	IIe
Non-local and local prestige material tools within the assemblage	∑ non-local and local prestige / ∑non-local and local prestige + ∑ all other material types	16/138	0.12	18/193	0.09
Tools associated with terrestrial hunting	∑ points + ∑ formal tools with usewear consistent with terrestrial hunting / ∑ all other tools	7/138	0.05	15/193	0.08
Tools associated with hide processing activities	∑ scrapers / ∑ all other tools	25/138	0.18	26/193	0.13
Tools associated with terrestrial animal processing combined	∑ points + ∑ formal tools with usewear consistent with terrestrial hunting + ∑scrapers / ∑ all other tools	32/138	0.23	42/193	0.22
Prestige Goods	∑ ornamental goods + ∑ effigies + ∑ incised and decorated goods / ∑ all other tools	12/138	0.09	14/193	0.07

The first calculation addresses test expectations that involve lithic raw material. Overall, it shows the quantity of tools that were produced from raw materials that were local and carried prestige value (steatite/soapstone and nephrite) as well as materials that have been designated as non-local (chalcedonies, chert, obsidian, and pisolite). The results in comparing these values are not consistent with either hypothesis given that the frequency of these tools does change, but this change is not an increase in tools made from prestige or non-local material within the assemblage. ***Table 5*** is a chart that

shows tool types in the IIf assemblage made from these raw materials in which quantities. ***Table 6*** shows tool types produced from prestige and non-local materials in the IIe floor.

Table 5: IIf Tool Types Produced from Prestige and Non-Local Materials

Tool Type	Material Type	Quantity
Used Flake	Chalcedony	1
	Chert	2
Stage 4 Biface	Yellow Chalcedony	1
End Scraper	Chert	1
	Obsidian	1
Hammerstone	Chert	2
Polished Nephrite Fragment	Nephrite	2
Bipolar Core	Obsidian	1
Single Scraper	Pisolite	1
Bead Core	Steatite/Soapstone	1
Stone Bead	Steatite/Soapstone	1
Ground Steatite Stemmed Point	Steatite/Soapstone	2
Totals	**7 (material types)**	**16**

Table 6: IIe Tool Types Made from Prestige and Non-Local Materials

Tool Type	Material Type	Quantity
Used Flake	Chalcedony	1
	Chert	1
	Jasper	1
End Scraper	Obsidian	1
Polished Nephrite Fragment	Nephrite	1
Bipolar Core	Chalcedony	1
	Chert	1
Stone Bead	Steatite/Soapstone	4
Unifacial Knife	Chalcedony	1
	Chert	1
Single Scraper	Chalcedony	2
Kamloops Preform	Hat Creek Jasper	1
Ground or Sculpted Ornament	Steatite/Soapstone	1
Bead Blank	Steatite/Soapstone	1
Totals	**7 (material types)**	**18**

According to these figures, there are some differences in prestige and non-local materials as well as the types of tools they are used to produce between the IIf and IIe floors. Each occupational floor contains the same total number of prestige or non-local materials. Samples are too small to draw conclusions based on quantities of tools made from specific raw materials, however it is notable that the IIe assemblage contains more formal tools such as beads, a bead blank, scrapers, and ground or sculpted ornaments, while the IIf assemblage contains mainly used flakes, hammerstones, and scrapers. *Table 5* and *Table 6* also demonstrate changes in the quantities of ornamental and effigy artifacts as representation of prestige goods in the IIf and IIe assemblages. The prestige tool index for each floor shows that there is a decrease between occupations. Tools for this index were selected based on function. It is notable that in these tables, some prestige goods are not represented because they were produced from local, utilitarian raw materials such as slate and dacite.

The next set of calculations addresses quantities of tools that are ethnographically associated with terrestrial hunting and hide working. Intensification in the hunting and processing of terrestrial mammals such as deer and big horned sheep has been linked to the emergence of wealth based inequality and status mobility in other Mid-Fraser studies (Prentiss et al. 2007, 2012; Smith 2014). ***Table 7*** is a summary of the total counts of tools associated with either type of activity in each floor as well as which tool types were included in each category. While quantities of hide working tools tend to remain similar in proportion in the assemblage of each floor, tools associated with hunting double between the IIf and IIe occupations. Tools for this set of calculations were selected in accordance with other similar studies (Hayden 2000; Prentiss et al. 2007). Types with the potential for multiple functions (e.g. used flakes and knives) were omitted since they could have served purposes other than those tested in this thesis.

Table 7: Summary of Tools Associated with Hunting and Hide Working

Tool Classification	Tool Type	IIf Quantity	IIe Quantity
Tools Associated with Terrestrial Hunting	Kamloops Preform	1	1
	Large Square Stemmed Dart Point	1	0
	Shuswap Corner Removed, Eared	1	0
	Shuswap Stemmed, Eared with Concave Base	1	0
	Stage 2 Biface	1	0
	Stage 3 Biface	1	0
	Stage 4 Biface	1	0
	Biface Fragment	0	1
	Kamloops Corner-Notched Point, Base Missing	0	1
	Kamloops Side-Notched Point, Concave Base	0	1
	Kamloops Side-Notched Point Straight Base	0	1
	Plateau Corner-Notched Point, Concave Base	0	3
	Point Tip	0	1
Tools Associated with Hide Working Activities	End Scraper	5	3
	Slate Scraper	10	14
	Single Scraper (on multi-tool)	2	1
	Single Scraper	8	5
	Alternate Scraper	0	1
	Double Scraper	0	1
	Convergent Scraper	0	1
Combined Totals		**32**	**42**

Among hunting tools (points and bifaces with usewear), the only tool type common to either floor is the Kamloops Preform. The IIf occupation shows a larger quantity of Callahan stage bifaces, while the IIe occupation is largely comprised of projectile points. ***Figure 4*** is a summary of AI scores for all tool types that were tested in the assemblages of these two floors. This figure shows that the greatest variance is the decrease in tools that are associated with hide working activities. *Table 7* shows that although these tools decrease as a percentage of the total assemblage in the IIe floor, they are much more diverse than those in the IIf assemblage.

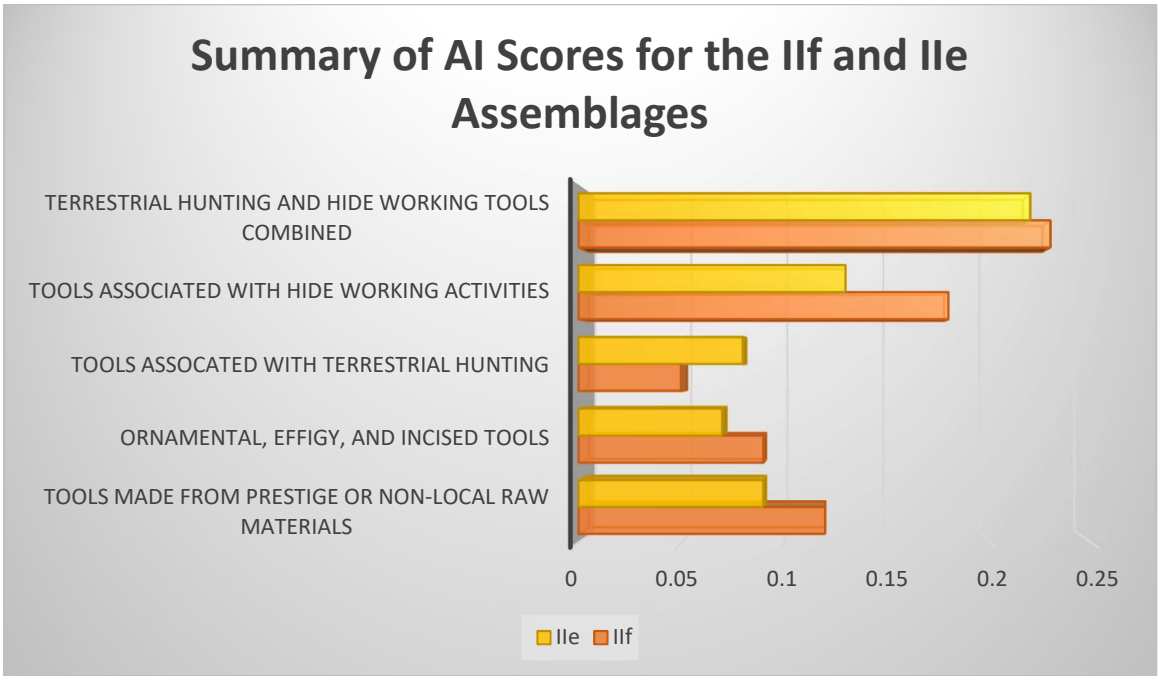

Figure 4: Summary of AI Scores for the IIf and IIe Tool Assemblages

Features, Population, and Spatial Assessment

This section will describe variation in features and characteristics of the IIf and IIe living surfaces. This will be compared to the most recent population estimates. Hearths occur in HP54 in several types. These can include shallow hearths, basin hearths, surface hearths, and deep oven-like hearths. Other types have been encountered at the Bridge River site, but these are the types that are relevant to the IIf and IIe floors. Hearths are compared based on total volume (cm^3) and contents. Faunal data has not been evaluated for this thesis in any capacity, and will not be outlined in feature contents. ***Table 8*** gives the content and volume of all IIf hearths. The table shows two shallow hearths with higher volumes of excavated material than the singular basin hearth. Artifacts were only found in the basin hearth, which include two pieces of slate debitage, a slate multidirectional core, a chipped slate adze, and a dacite multi-use tool (two total used edges (EU), bifacial knife and used flake).

Table 8: **IIf Hearths: Contents and Volume**

Feature Number	Hearth Type	Volume (cm^3)	FCR Count	Debitage	Tools
	Block A				
A18 (2013)	Shallow	12,550	29	0	0
	Block C				
C3 (2014)	Shallow	24,000	n/a*	0	0
C23 (2014)	Basin	7,257	7	2	3
Totals		43,807	36	2	3

**n/a can either indicate that totals were not recorded, or the feature fill was collected in its entirety for soil samples*

Table 9 is a similar table that shows contents and volumes for the IIe features.

Table 9**: IIe Hearths: Contents and Volume**

Feature Number	Hearth Type	Volume (cm^3)	FCR Count	Debitage	Tools
A12 (2013)	Basin	3,266	11	0	0
B2 (2014)	Broad Shallow	33,912	11	26	0
B12 (2014)	Deep Oven-like	7,920*	5	3	0
C1 (2014)	Shallow	38,151	172	35	5
C5 (2014)	Basin	21,600	n/a**	2	0
D1 (2016)	Basin	5,202	n/a**	0	0
D10 (2016)	Surface	5,084	3	0	0
D11a (2016)	Surface	1,570	n/a**	0	n/a***
D25 (2016)	Deep Oven-like	75,000	105	0	8
Total		191,705	307	66	13

**indicates volume excavated; some features are cross cut or dug into by other features from later floors*
*** indicates that no data was recorded or entirety of feature fill was bagged as a soil sample*
****tools were counted but it remains to be established whether the 10 tools in the D11 complex were from the hearth, the pit, or both combined*

Features in the IIe floor were more likely to contain tools and high counts of FCR than features in the IIf floor. Shallow hearths in both floors contained substantially higher quantities of debitage than other hearth types. In summary, the IIe floor contains many more hearths than the IIf floor. These differences can indicate variability in activity areas, or variability in access to materials for individuals or smaller family groups living in different areas of the household.

Tables 10 and ***11*** present data from pit features in the IIf and IIe floors respectively. Pit features are more likely to vary in content and use-life than hearths; however, this thesis focuses quantity, dimensions, and placement rather than contents.

Table 10: **IIf Pit Features, Volume, and Contents**

Feature Number	Pit Type/Shape	Volume (cm^3)	FCR Count	Debitage	Tools
	Block A				
A17 (2013)	Deep Bell Shaped	301,298	299	62	4
	Block C				
C26 (2014)	Deep Cylindrical	11,719	28	2	0
Total		313,017	327	64	4

In total, there were only two pit features in the IIf occupational floor. They are located in different areas of the house, are different sizes and shapes, and contained drastically different contents. It is reasonable to conclude that feature A17 held the contents of cleaning and discard. IIf Feature A17 is a large pit feature containing a considerable amount of FCR and a large amount of debitage compared to the other feature in this floor. It also contains four tools.

Table 11: **Pit Feature Volume and Contents from the IIe Floor**

Feature Number	Pit Type/Shape	Volume (cm^3)	FCR Counts	Debitage	Tools
	Block B				
B3 (2014)	Deep Bell Shaped	228,906	457	127	12
B15 (2014)	Microbedded Bell Shaped	401,920	9	88	1
B14 (2014)	Microbedded	1,907,550*	173	162	4
B7 (2014)	Deep Bell Shaped	n/a	8	3	0
D20 (2016)	Deep Bell Shaped	250,635	393	0	10
D11c (2016)	Deep Bell Shaped	231,144	33	0	n/a**
Total		3,020,155	1,073	380	27

**Feature B14 is estimated to only have been 50% excavated*

*** Tools were counted but it remains to be established whether the 10 tools in the D11 complex were from the hearth, the pit, or both combined*

Pit features in the IIe floor were concentrated in the eastern portion of the house. These pit features are large and contain much more material. All pits are bell shaped, with three containing microbedding. Feature D11c is not described as microbedded, but does show evidence of multiple fill events. The shape of feature B14 is not recorded because the feature was only estimated to have been excavated 50%. One quad was excavated to level 12 (recall that levels are arbitrary 10cm). The bottom of level 12 was not sterile, the excavator was unable to reach farther into the space while maintaining integrity of the walls and surface. A large quantity of dog coprolites was recovered from the deepest excavated quad intermixed with a pile of rock. Not all coprolites were removed, because they were imbedded in the walls of other quads and would have been destroyed in removal. Feature B14 also contains the highest quantities of FCR, debitage, and tools, which is not surprising considering its size.

The final type of feature that will be addressed are postholes. The IIf and IIe occupations of HP54 contain collared, small (sometimes referred to as cuphole), and larger postholes. Since collared

and larger postholes could serve functions other than storage racks or benches, they will be omitted from this analysis. ***Table 12*** and ***Table 13*** give quantities, locations, and volume of small postholes for the IIf and IIe floors respectively. No small postholes contained any artifacts or FCR. No content data is specified in the Bridge River reports because the features were small enough that all fill would have been collected as a soil sample. In both occupational floors, small postholes are concentrated in specific areas of the house, which is shown in each table. Both concentrations of small post holes span approximately 2m in each floor and are clustered in the northern portion of the house near cooking features. Based on distribution and proximity to cooking areas, it could be reasonable to assume that these small postholes represent storage racks or tripod-like structures; however, it is important to keep in mind that they could potentially indicate placement of benches.

Table 12: ***Small Postholes in the IIf Floor***

Feature Number	Location	Volume (cm^3)
C19 (2014)	Block C – 15NW	137
C18 (2014)	Block C – 15NW	118
C17 (2014)	Block C – 15SE/NE	137
C6 (2014)	Block C – 16NW	199
C8 (2014)	Block C – 15SW	137
C9 (2014)	Block C – 15SW	283
C10 (2014)	Block C – 15SW	190
C11(2014)	Block C – 15NE	157
C13 (2014)	Block C – 15NE	519
C14 (2014)	Block C – 15NE	166
C20 (2014)	Block C – 15NW	285
C24 (2014)	Block C – 14SE	79
C25 (2014)	Block C – 14SE	98

Table 13: Small Postholes in the IIe Floor

Feature Number	Location	Volume (cm^3)
D3 (2016)	n/a*	251
D4 (2016)	Block D – 15SW	763
D5 (2016)	Block D – 15SW	509
D6 (2016)	Block D – 15NW	7686 (3 small merged postholes)
D7 (2016)	Block D – 15SW	n/a** (2 small merged postholes)
D17 (2016)	n/a*	509
D18 (2016)	Block D – 11SE	570
D21 (2016)	Block D – 7SW	471

**feature has not been added to the most current map*
***entirety of feature was collected as soil sample*

The relationship between total feature volume and total surface/living space is summarized in ***Table 14***. This is useful for drawing broad comparisons between the overall use of space between each floor. According to these calculations, it is reasonable to assume that while residents of the IIf floor dedicated slightly more living surface to hearth areas, residents of the IIe floor dedicated much more living space to storage areas. This will be addressed in following discussions regarding population density and the use of structure space.

Table 14: Summary of Feature Volume(m^3) per Estimated Total Living Area

Stratum	Feature Quantity	Estimated Feature Volume (m^3)	Estimated Total Living Area (m^2)	Index Score (∑ estimated feature volume/ ∑ estimated total estimated living area)
		Hearths		
IIf	3	0.043807	13.5625	0.03
IIe	9	0.191705	21.375	0.01
		Storage Pits		
IIf	2	0.313017	13.5625	0.023
IIe	6	3.020155	21.375	0.141

Totals compiled from BR Site Reports (Prentiss 2013, 2014) and includes data from 2016 field season

Population estimates for HP54 have vary dramatically through the life of the house. ***Figure 3*** provided an overview of demographic change over time based on FCR density in excavated floor volume. ***Table 15*** provides a detailed accounting of the underlying data and the population estimates by housepit floor. The IIe occupation represents the height of population density in HP 54. To further quantify a comparison between the IIf and IIe floors, population was considered in relation to estimated floor surface area as well as total mapped surface artifacts in quads that do not contain features. This calculation reflects the average amount of living space occupied per resident of the household. The addition of total mapped surface artifacts addresses trends of cleaning or clearing in the floor surface as well. It is worth cautioning that this comparison could potentially be impacted by the density of artifacts in certain types of activity areas as well as reuse of discarded items. Future spatial analyses would be better informed by incorporating testing to attempt to understand these nuances for this and other occupational surfaces. ***Table 16*** summarizes total living area, space per individual, and total surface mapped artifacts in units not containing features. It shows that while the IIe occupational floor is considerably larger, the amount of space per estimated population decreases from the IIf occupation. The index of total excavated surface area to total mapped surface objects shows that there is a slight decrease in objects discarded on the floor surface in the IIe floor as compared to the IIe floor. **Appendix E** is a visualization that superimposes the IIf and IIe floors to visually compare the placement of features and mapped surface objects between each occupational floor. ***Table 17*** is a summary of hypotheses, test expectations, and results of all analysis included in this chapter.

Table 15: Estimate of house floor population sizes. This is a heuristic designed to demonstrate approximate trends. (*Credit: Anna Prentiss 2017*)

	FCR Density	N hearth areas	FCR Divisor[a]	Population Estimate
IIa	1331	4	40	33
IIb	1142	4	40	29
IIc	1292	3	54	24
IId	1220	3	54	23
IIe	**1756**	**4**	**40**	**44**
IIf	**1704**	**3**	**54**	**32**
IIg	1038	3	54	19
IIh	1249	2	80	16
IIi	650	2	80	8
IIj	819	3	54	15
IIk	409	2	80	5
IIl	650	2	80	8
IIm	646	1	160	4
IIn	535	1	160	3
IIo	588	1	160	4

[a]Divisor calculated as follows: (1) assume 20 years per floor; (2) 365 days x 20 years = 7300; (3) house occupied 33% of year = 2409 (Teit 1900, 1909); (4) Two cooking events per day = 4818 (Teit 1906); (5) x 5 rocks = 24,090; (6) /15 (rock recycling across 15 days) = 1606; (7) /2 (50% removed to roof/rim) = 803; (8a) /5 (one hearth x 5 people) = 160; (8b) /10 (two hearths x 5 people) = 80; (8c) /15 (three hearths x 5 people) = 54; (8d) /20 (four hearths x 5 people) = 40.

Table 16: Estimated Population, Total Counts of Mapped Surface Artifacts, and Average Amount of Living Space per Person during the IIf and IIe Occupations

Stratum	Estimated Population	∑ estimated population/ ∑estimated living surface	Total Count of Mapped Surface Artifacts	Estimated Living Surface	∑total mapped surface artifacts/ ∑estimated living surface
IIf	32	2.34	141	13.5625m^2	10.398
IIe	44	2.06	263	21.375m^2	12.31

Table 17: Summary of Data Analysis and Results

Test Expectation	Data Analyzed	Hypothesis 1	Hypothesis 2	Result
Lithics	Abundance of prestige and non-local material types in the tool assemblage	No Change	Expected increase between IIf and IIe	Decrease between IIf and IIe floors – ***Consistent with nether hypothesis, possibly more indicative of Hypothesis 1***
Intensified production	Abundance of terrestrial hunting tools in the assemblage	Remain stable relative to volume	Relative increase	Increase between IIf and IIe floors – ***Consistent with Hypothesis 2***
	Abundance of formal hide working tools in the assemblage	Remain stable relative to volume	Relative increase	Decrease between IIf and IIe floors– ***Consistent with neither hypothesis, possibly more indicative of Hypothesis 1***
Ownership/display of prestige goods	Density of ornamental/effigy/prestige tools in the assemblage	No Change	Overall Increase	Decrease between IIf and IIe floors – ***Consistent with neither hypothesis, possibly more indicative of Hypothesis 1***
Features	Storage/Pit Feature Volume compared to total excavated living area	Increase proportionate to population	Exponential increase compared to population	Disproportionate increase – ***Consistent with Hypothesis 2***
Public feasting	Conspicuous or large hearths/hearth clusters	No change in quantity of hearth clusters per population	Change in hearth clusters per population	Increase – ***Consistent with Hypothesis 2***
Evidence of cleaning, clearing, and use of space	Comparison of total excavated feature volume to total excavated living space	Even proportion of feature volume to total living space between floors	Increase in total excavated feature volume in proportion to total living space	Overall increase – ***Consistent with Hypothesis 2***
	Total mapped objects in units and quads that contain no features	No change in quantity of mapped objects in relation to excavated living space	Fewer mapped objects in the IIe floor than IIf in relation to excavated floor volume	Increase (∑ total mapped objects / excavated surface area in m^2) – ***Consistent with neither hypothesis, possibly more indicative of Hypothesis 1***
Changes in population per floor	Estimated population as evidenced by FCR and hearth density	Increase consistent with structural growth	Increase reflecting structural growth resulting in more surface area per person than in the IIf floor	Decrease in surface area per person (2.34m^2 in IIf vs. 2.06m^2 in IIe) – ***Consistent with neither hypothesis, possibly more indicative of Hypothesis 1***

5. Discussion, Conclusions, and Future Implications

All analyses in this thesis have been designed to address one question: did the expansion that occurred during the IIf – IIe transition take place as a response to population increase in HP54, or was the house expanded to hold feasting and social activities to attract new members to the household and increase its social status in the Bridge River Village? This chapter will first frame the results of analysis in response to the test expectations for each hypothesis, then discuss issues that are pertinent to interpretations of the data, and finally suggest future implications of this study and future research.

Both Hypotheses 1 and 2 address quantity and characteristics of features and whether they change between the IIf and IIe floors. In the IIe floor, hearths triple in both quantity and volume. It is important to that past researchers believe that the increase in hearths and hearth volumes could be more complicated than it seems. Hayden (2001) proposes that there are potentially several hearths in a household that are used for different purposes as opposed to all being used at one time for multiple family groups. A similar trend exists regarding storage pits in either floor. In fact, even though there is less variation in pit quantity between floors, the approximate excavated volume of pits in IIe as compared to IIf is drastic. Small postholes decrease in quantity between the IIf and IIe floors. While the specific quantities do not change drastically (13 total in IIe compared to eight total in IIf), when considered along with house size and variation in features between the IIf and IIe occupations, it is reasonable to assume that there is a shift in strategy regarding storage and surplus management. In the future, analysis of the contents of pit features combined with population and faunal data could help to determine whether increased use of in-ground storage might be attributed to storing surpluses related to either population increase or preparation for feasting events. Given these observations in the scope of this thesis, it is concluded that the feature data examined for this thesis supports Hypothesis 2.

In Northwest North America as well as in other complex hunter-gatherer societies, social relationships are spatial and spaces can be symbolic (Dietler 2001; Samuels 2006). Use and organization of space can impact daily activities and practices. These factors are good reason to incorporate spatial analysis into studies involving household archaeology. Placement of houses in villages and their orientation carry meaning and status in many societies, even if styles of arrangement tend to vary (Hayden et al 1996; Marshall 2006). In the Mid-Fraser, external use of space likely carried meaning as well as function. Roasting pit dimensions are described to have resulted from the types of plants that were cooked in them (Alexander 1992), which illustrates that all spaces, however mundane are planned. While it is possible to develop various analogies from studies throughout Northwest North America as well as other complex hunter-gatherer societies, it is important to remember, that there is a considerable amount of variance in the Mid Fraser alone. Returning to the roasting pit example, the Bridge River site contains far more EPFs than housepits, while nearby at Keatley Creek, few houses have one dedicated roasting pit (Dietz 2005; Hayden & Cousins 1992; Prentiss 2013).

Storage is an important component in surplus management. Items were stored in Mid-Fraser pithouses using woven birch bark or grass baskets, storage pits, ceiling rafters, and racks on which items could hang or that held boxes. Understanding variation in storage methods can be useful in identifying shifts in surplus, production, and preparation for feasting or social activities. Unlike hearths, pits can have different purposes throughout their use-life. Clues regarding the use and history of storage pits are best addressed by considering the presence of bedding and contents of pit features. Bedding implies multiple fill events that indicates extended fill and use, while pits without bedding or cultural layers indicate singular, short term fill events. In addition, it has also been noted in Pacific Northwest archaeology that the size of pit features is usually proportionate to the size of the group using them (Alexander 1992).

Testing regarding evidence of cleaning or clearing activities based on an index of ∑ total mapped surface artifacts in quads without features/ ∑ total estimated living space showed that there was a slight increase (refer to *Table 16*). This is consistent with neither hypothesis. Further testing is required to understand the increased surface artifact density in the IIe floor, one possibility among many is that there is variation in discard rates. The largest variation in the distribution of features and surface objects is in the locations of features in each floor. This is supported by visual comparisons between IIf and IIe floors. Stratum maps for the IIf floor show a major cooking area and small posthole cluster in the northern portion of the house, with the larger storage pit located in the southern portion. No major features are situated in the central portion of the IIf floor. In the IIe floor, a complex of large storage features, many of which are capped by surface hearths, is located in the eastern portion of the house. Like the IIf floor, the IIe floor also contains a large cooking area in the northwestern corner as evidenced by the quantity of large sized FCR and other artifacts positioned around the C-1 hearth. The 2016 excavations in Block D, Stratum IIe revealed part of a larger hearth that is positioned in an east of central area of the house (feature D25 2016). While this does not indicate a large, open central space, it does imply that centralized activities possibly took place more frequently than in the IIf occupation. It should be cautioned that there is a significant portion of Block C and Block D that would have been located in the center of the house that remained unexcavated to varying degrees. In accordance with test expectations, it is concluded that feature distributions are consistent with Hypothesis 2.

Apart from feature contents and placement, it is important to consider cleaning activities when attempting to determine whether archaeological signatures of feasting and social activities are present. It has been determined at sites such as Ozette that floor midden, or floor deposits are not random. The evidence of cleaning floors often implies status and the presence of activities that are described as ritual. Informants from Ozette have indicated that cleaning house floors is an activity that is directly associated with getting ready for a dance. Associations between cleaning and ritual or social activity are

thought to be even stronger in households with evidence of higher levels of production in conjunction with cleaning activity (Samuels 1991, 2006). Such trends and associations are common throughout the Pacific Northwest (Gahr et al 2006). While decisions regarding space and cleaning activities are important in the North American Northwest, it is also important to remember the possibility that many movable objects might be in secondary as opposed to primary context and that to a certain extent, they must be considered in sequences of discard and reuse (Samuels 2006; Schiffer 1972). In framing many of these concepts in terms of the Mid-Fraser in general and the Bridge River site specifically, it appears thus far that household position and orientation in the village are potentially more important than the positioning of individuals and living spaces in a household, which should be confirmed with future research.

Analysis of tools produced from prestige and non-local materials revealed that there is more significant variation in technological organization than in access to lithic raw material sources. Prestige and non-local material tools in the IIf floor include items that are utilitarian in nature such as bipolar cores, used flakes, hammerstones, and scrapers. This implies that these materials typically comprised tools associated with production activities. Tools produced from the same materials in the IIe floor are most often used to produce ornamental, decorated, and incised tools such as beads, bead blanks, ground or sculpted ornaments, and polished fragments. AI scores for prestige materials and tools are not consistent with expectations for either hypothesis, but could potentially indicate Hypothesis 1, since trends are in more direct opposition to the expectations for Hypothesis 2. AI scores for tools associated with terrestrial hunting such as projectiles are higher for the IIe floor, which supports Hypothesis 2. Incorporation of data regarding this tool type from feature contents would both increase the number of evaluated artifacts and give a more complete assessment of terrestrial hunting activities from the IIe occupational floor. This test expectation was originally established with subsistence activities in mind. Further analysis that incorporates faunal analysis could contribute to either affirm that this

technological shift is subsistence related, or whether it indicates an intensification in the acquisition of prestige foods (e.g. mule deer, *O. hemionus* and big-horned sheep, *O. canadensis).* The incorporation of faunal analysis along with other classes of data would also be useful determine the general nature of variation in prestige goods and materials between IIf and IIe occupations. To explain the quantity of hide working tools and ornamental tools as a proportion of the IIe assemblage compared to the IIf assemblage, it will helpful to develop a more nuanced understanding of individual activity areas and living spaces in the IIe floor to separate issues of inequality and access from daily household activities.

Determining the source of variation in lithic assemblages is valuable because changes in assemblages directly reflect changes in society (Odell 2003). In the Mid-Fraser, the highest levels of lithic variation can be expected at winter villages as compared to other types of sites, camps, and activity areas (Alexander 1992). This is likely due to the variety of activities conducted in winter villages compared to the specialized purposes of remote sites such as base camps and fishing areas. This analysis appears to indicate that more variation appears to occur in technological organization and possibly in subsistence strategy than in access to raw material sources. Overall, there is a general decrease in the quantities of tools made from prestige and non-local materials as evidenced in the tool assemblage. This assessment could be better informed by incorporating debitage data. It is notable that some studies show that prestige and non-local material types were often processed at the source. This is specifically true in the case of chalcedony, although the variety of chalcedony is not mentioned (Tyhurst 1992). This is a cautionary consideration which serves as a reminder that not all production activities would have occurred inside the house. Based on studies conducted in the North American Northwest, it is important to remain cautious regarding the interpretation of prestige based on general characteristics of the raw material. On the Northwest Coast, obsidian carries prestige because of its utility. Characteristics of the material make obsidian more cost effective in certain areas (Sobel 2006). Prestige based on utility is also a factor in other CHG societies and can also be tied to trade value (Arnold

2006; Sobel 2006). In the Mid-Fraser, elder Desmond Peters Sr. refers to a "basalt" source at upper Maiden Creek (one of the known sources of HP54 dacite) as a high demand lithic material source that was guarded (Tyhurst 1992).

Changes in estimated population as compared to approximate living surfaces for each occupational floor reflect a decrease in living space per person even though HP54 nearly doubled in size. This is likely somewhat affected by the increase in quantity and size of hearth and pit features in the IIe floor surface. The index of ∑ total mapped surface objects in quads with no features/ ∑ total exposed living surface shows a higher density of objects present in the IIe floor. When the IIf and IIe maps are superimposed, they show a potential similarity in the location of large cooking areas in portions of the house that were inhabited on each occupational floor. Future studies could confirm this similarity with more refined analysis and comparison of features and their contents in each floor. Demographic variation as compared to estimated living space is consistent with the test expectations of neither hypothesis. While the results do not necessarily discount Hypothesis 2, they are possibly more supportive of Hypothesis 1. Scenarios could include that although the structural expansion between the IIf and IIe floors does not create an excess of space per individual, potentially centralized floor area could imply that feasting or social activities were held more frequently in the IIe floor provided that additional data corroborate. Alternatively, the fact that the structural expansion did not create an excess of space per individual could simply indicate that the space was intended for living areas as opposed to hosting public events. This would require additional data as well.

This thesis has presented evidence that supports either hypothesis in different scenarios. The variation in lithic assemblages between IIf and IIe will require further research before conclusions are possible. The increase in terrestrial hunting tools indicates a limited possible intensification of hunting potential prestige foods, supporting Hypothesis 2. While some intensification of terrestrial mammal hunting would possibly occur in a scenario that would reflect Hypothesis 1, this change would have

occurred in relation to population growth. Feature positioning and the relationship between features and the exposed living space in either floor are in accordance with Hypothesis 2, especially considering the possibility that feature D25 (2016) is part of a central hearth. The presence of any significant variation in storage strategy implies potential changes in the socioeconomic status of a household and its members according to other household archaeology studies in the North American Northwest, therefore it is reasonable to conclude that the feature data and distribution are supportive of Hypothesis 2 overall. As mentioned, there are multiple explanations for the quantity of hearths present in either floor. Several HP54 hearths cover or cap the large pit features in the IIe floor, which is visible on the map. This occurs at both the Bridge River site as well as the Keatley Creek site in the Mid-Fraser (Hayden 2000; Prentiss et al 2008a). This could be a type of ceremonial activity or possibly done to abate smells emanating from food remains and coprolites, which were found in IIe pits.

Considering all evidence provided by this thesis, it is not possible to definitively select either hypothesis without incorporating further research and analysis. Even so, it is possible to argue based on presented research and data analysis that given certain conditions, Hypothesis 2 appears more likely than Hypothesis 1. This is a simple assessment based on the observation that while some lithic analysis tends to support Hypothesis 1, it is rejected by other data, namely assessments of terrestrial hunting tools, features, storage, and living space. Test expectations that supported neither hypothesis, such as those regarding hide processing tools, ornamental goods, prestige lithic material, and the relationship between mapped surface objects and exposed living surfaces potentially support Hypothesis 2 under circumstances that have been previously described in this chapter. The most likely alternative scenario could be that instead of the residents of the IIf occupation intensifying production, acquiring a surplus of goods, and then holding feasts to bring new members into the household, resulting in structural expansion, feasting activities were likely held *because* of an increase in status that was achieved in the IIf – IIe transition. The next provision is that there is a reasonable likelihood that the processes that

contributed to the achievement of the type of status required to expand HP54 to twice its former size did not occur over the span of one generation. This provision is consistent with revised, unpublished dating and analyses that changes the Bridge River cultural chronology to include older floors with the Bridge River 3 period (refer to **Appendix A** and ***Table 2***). The idea of a buildup in status is consistent with the idea that changes in house size are indicative of the long life of a household (Arnold 2006). The longevity of HP54 in the Bridge River Village is well known and documented.

Prestige materials and items have been a common theme to this thesis. Researchers who study CHG have differing opinions regarding whether prestige items should be present in times of resource abundance or stress (Hayden 1992a, 1997, 2000; Hayden & Cannon 1982; Prentiss et al. 2007, 2011, 2012). It has also been proposed that changes in access to resources and materials and inequality are directly linked (Hayden 1992b). This thesis contains insufficient evidence to address this issue, however the incorporation of faunal data could potentially aid in this regard. According to researchers, all feasting is exchange (Dietler & Hayden 2001). In the Mid-Fraser, exchange is said to have taken place primarily at fishing sites as opposed to winter villages (Alexander 1992). It is reasonable to argue that the Bridge River village would have been ideally situated in the Plateau Interaction Sphere (PIS). This concept was originally proposed by Hayden & Schulting (1997) to describe trends in trade across the Plateau region over the past approximate 2,400 years. The PIS is thought to have resulted from the emergence of wealth based inequality and the need for exchange, which necessitated trade with the coast for the benefit of many (Hayden & Schulting 1997; Rousseau 2004). The Mid-Fraser was certainly host to many high quality lithic raw material types. Nephrite and steatite are the two local prestige sources to the Bridge River village and these materials were valued by the Northwest Coast (Hayden 2000; Prentiss et al. 2007, 2012; Rousseau 2004). The PIS is relevant to this thesis in that the assemblages for either occupational floor contain the types of unfinished bifaces that might have been regularly traded as well as bifaces with usewear, implying that they were not for trade. Future studies

of these artifacts in all HP54 occupational surfaces could provide useful information regarding subsistence and trade. Understanding this could determine whether participation in larger exchange networks could have affected status mobility in Mid-Fraser winter villages as well HP54. Exchange concepts such as an interaction sphere as opposed to linear trade routes are preferable since describing exchange as linear cause and effect implies that material culture is only affected by external forces and ignores the dynamic social processes at work within a household (Marshall 2006).

Finally, this thesis has been subject to certain limitations. Given the variation in feasting and social activities in Northwest North America alone, the analysis of feasting activities and demographic change can be quite tricky (Hayden 2001). This can be problematic in some contexts when considering that some structures such as storage racks could only be in use during a feasting event and not a permanent fixture of a household living area. As suggested, it would be very useful to incorporate faunal data to develop a more nuanced understanding of whether the shift in technological organization to tools that are associated with hunting and hide working are indicative of increased access to prestige foods or resource stress. Incorporation of faunal data would be useful and informative to studies of demography and feasting activities at HP54 as well. Informants for ethnoarchaeological studies conducted in the Mid-Fraser have indicated that salmon were occasionally roasted along with geophyte foods. Understanding the circumstances in which this took place as well as variation in roasting activities in conjunction with household feasting evidence could provide a more holistic view of specific preparation practices.

At the household level, a more in depth analysis of features and their contents could be useful to determine whether there is more evidence of feasting present that might be concealed by cleaning or discard activities. Incorporating data from additional floors would solve issues regarding when activities related to building the type of status required to stage household expansion might have occurred and at what rates. In Northwest Coast households, studies have been conducted that assess the accumulation

of floor midden in households. HP54 does not appear to contain true floor midden, but it would be interesting to conduct analysis on the accumulation of floor deposits to determine whether there is any relationship between floor accumulation and the status of a household, which is similar to studies conducted at Ozette (Samuels 1991). It would also be interesting to determine whether structural elements or house size are associated with the status of a household within neighborhoods or at the village level considering other projects (e.g. Hayden 2000; Prentiss 2011). Finally, at the regional level, it would be interesting to conduct analysis that seeks to understand the variability in status mobility between winter villages in the Mid-Fraser.

In conclusion, this thesis was designed to test hypotheses regarding whether the structural expansion that occurred between the IIf and IIe occupations in HP54 resulted from the need to house additional household members after a period of demographic growth or whether intensified production and increased access to resources permitted household members to host feasting events or other community activities that would have secured the required amount of social capital to expand. Feature quantity, and spatial distribution of objects in living areas have determined that it is likely that the latter scenario is most adequate explanation, although there are several caveats. The extensive occupational history of the house and meticulous excavation methods have produced sufficient data to conduct years of research into the lifeways of CHG and address issues regarding interaction spheres and the effects of social ranking and wealth based inequality on human populations, while simultaneously giving back to the descendant community who so generously welcome archaeologists into their communities to learn about their ancestors and heritage. The project serves as a model for relationships between archaeologists and community relationships and has unlimited potential for future development and research.

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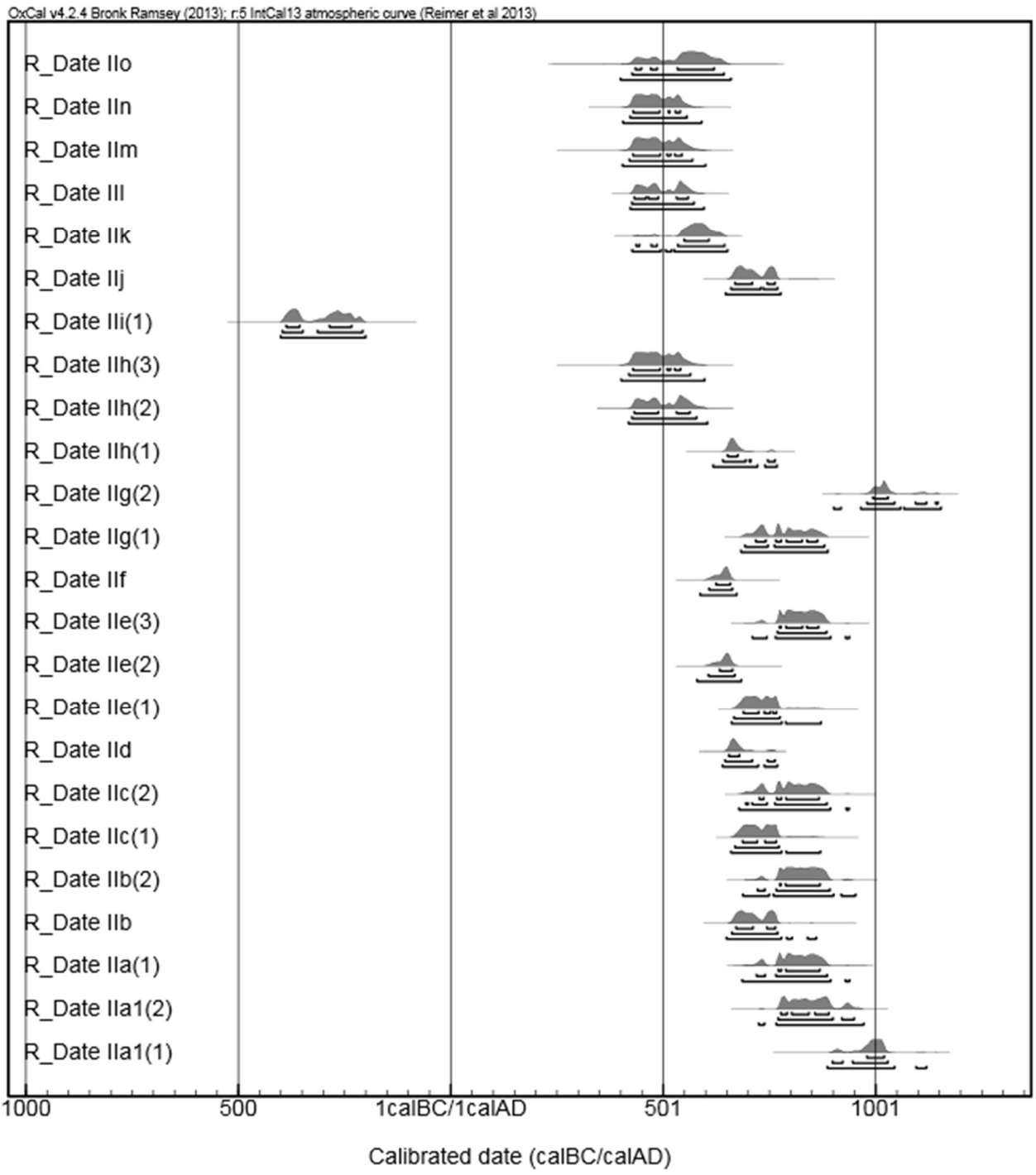
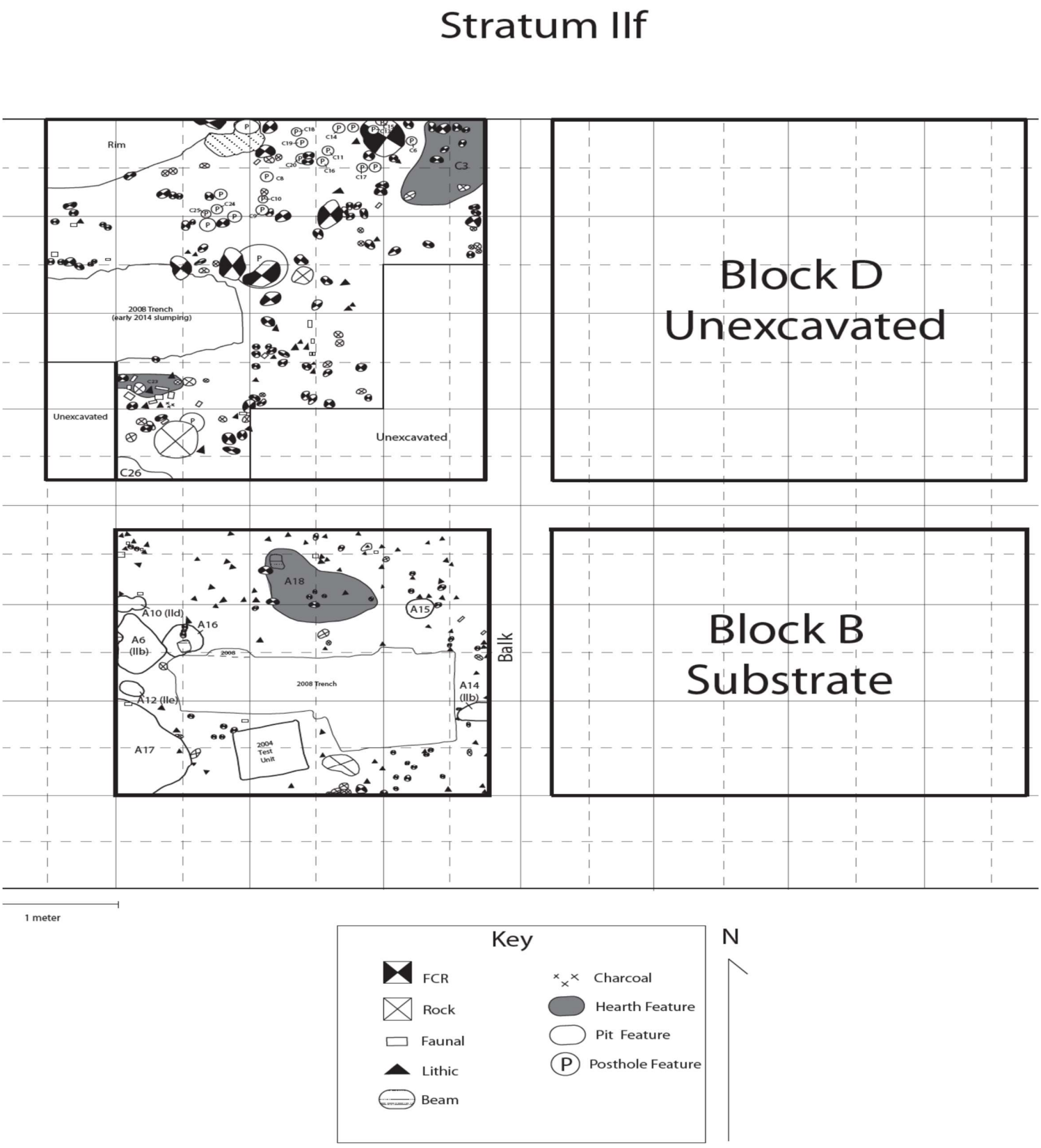
Appendix

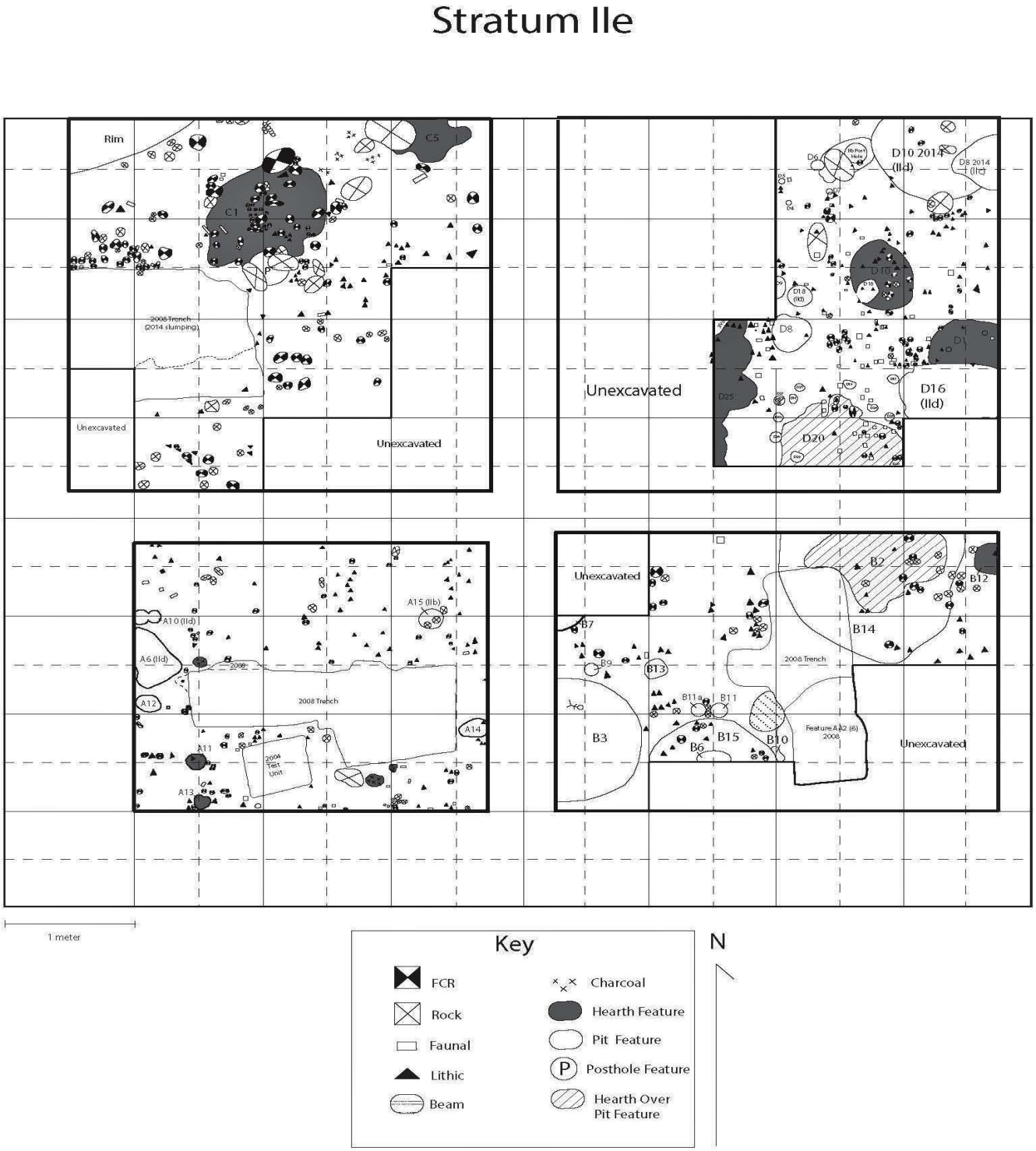
A. New Calibrated Radiocarbon Dating Sequence for HP54 (2016)



B. <u>IIf floor (complete)</u>



C. <u>IIe floor (current April 2017)</u>



D.

D. Bridge River Lithic Typology

Unifacially Retouched Artifacts

1	Miscellaneous
50	Unifacial Blade Tool
71	Used Flake on a Break
88	Dufour Bladelet
143	Scraper Retouch Flake
148	Flake with Polish Sheen
150	Single Scraper
151	Unifacial Perforator
152	Unifacial Borer/Drill
153	Small Piercer
154	Notch
156	Alternate Scraper
157	Miscellaneous Uniface
158	Key Shaped Uniface
159	Unifacial Knife
160	Unifacial Denticulate
162	End Scraper
163	Inverse Scraper
164	Double Scraper
165	Convergent Scraper
180	Used Flake
183	Spall Tool
184	Retouched Spall Tool
188	Retouched Backed Tool
232	Stemmed Scraper
255	Abruptly Retouched Truncation on a Flake
279	Hafted Unifacial Knife with some Bifacial Chipping on Haft
302	End Scraper on Kamloops Projectile Point

Bifacial Artifacts

2	Miscellaneous Biface
4	Biface Retouch Flake with Use-Wear
6	Biface Fragment
130	Bifacial Knife
131	Stage 4 Biface
132	Bifacial Perforator
133	Bifacial Borer/Drill
135	Distal Tip of a Biface
139	Fan Tailed Biface
140	Knife-like Biface

141	Scraper-like Biface
145	Piece Esquilles
192	Stage 2 Biface
193	Stage 3 Biface
225	Tang Knife
240	Chipped Wedge Tool on Angular Slate or Shale
258	Hafted Knife on a Spall
262	Side-notched Bifacial Drill
286	Steep Retouched Truncation on a Biface
291	Bifacial Knife Retouch Flake
299	Key-shaped Biface
316	Knife-like Biface on a Concave-based Side-notched Drill
317	Corner-notched, Concave-based Bifacial Drill

Points

19	Late Plateau Point
35	Point Tip
36	Point Fragment
99	Miscellaneous Point
101	Lochnore Point
102	Lehman Point
109	Side-notched Point, No Base
110	Kamloops Side-notched Point, Concave Base
111	Kamloops Side-notched Point, Straight Base
112	Kamloops Side-notched Point, Convex Base
113	Kamloops Multi-notched Point
114	Kamloops Stemmed
115	Plateau Corner-notched Point, Concave Base
116	Plateau Corner-notched Point, Straight Base
117	Plateau Corner-notched Point, Convex Base
118	Plateau Corner-notched Point, No Base
119	Plateau Basally-notched Point, Straight Base
120	Shuswap Base
121	Shuswap Contracted Stem, Slight Shoulders
122	Shuswap Contracted Stem, Pronounced Shoulders
123	Shuswap Parallel Stem, Slight Shoulders
124	Shuswap Parallel Stem, Pronounced Shoulders
125	Shuswap Corner Removed, Concave Base
126	Shuswap Corner Removed, Eared
127	Shuswap Stemmed, Single Basal Notch
128	Shuswap Shallow Side-notched, Straight Basal Margin
129	Shuswap Shallow Side-notched, Concave Basal Margin
134	Preform
136	Plateau Preform
137	Kamloops Preform

229	Shuswap Stem/Eared with Concave Base
231	Ground/Sawed Slate Projectile Point
236	Limestone or Marble Projectile Point
237	El Khiam Style Point: Side Notched Point on a Triangular Blade-like Flake
244	Small Triangular Point
245	Large Straight to Concave Base, Side-notched Point
251	Slate Side-notched Point, Straight Base
254	Large Square-stemmed Dart Point
256	Kamloops Split-base, Corner Notched
285	Unifacial Point Preform
289	Lame a Crete
292	Notched Flake with Distal Impact Fracture
295	Plateau Corner-notched Point with Base Missing
301	Crude Projectile Point (shape of point on chipped flake)
303	Kamloops Corner-notched Point, Base Missing

Groundstone

185	Wedge-shaped Bifacial Adze
190	Hammerstone
200	Miscellaneous Groundstone
201	Abrader
202	Sandstone Saw
203	Ground Slate
204	Steatite Tubular Pipe
205	Abrader/Saw
206	Anvil Stone
207	Abraded Cobble or Block
208	Abraded Cobble Spall
209	Ornamental Ground Nephrite
211	Groundstone Mortar
218	Celt
219	Groundstone Maul
220	Ground Slate Piercer/Borer with Chipped Edges
222	Slate Scraper
226	Sawed Gouge
228	Groundstone Adze on Natural Break
230	Slate Knife
233	Nephrite Adze
234	Burnishing/Polishing Stone
235	Metate
238	Groundstone Spike
239	Small Stone Bowl
241	Sawed Adze
242	Ochre Grinding Stone
246	Slate Knife with Bored Hole

250	Ground Nephrite Scraper
257	Ground Slate Adze (without cutting/sawing)
259	Groundstone Cube
260	Mano
261	Groundstone Effigy
263	Ground Slate Chopper
264	Adze Preform
265	Shallow Ground Slate Bowl
266	Sawed Scraper on an Igneous Spall
267	Miscellaneous Groundstone Base (possible effigy or bowl)
268	Nephrite Adze Core
276	Hafted Slate (blunt edge and parallel striations; most likely mat scraper)
277	Incised Slate
278	Slate Knife Retouch Flake
280	Chipped Slate
281	Sawed Slate
282	Slate Chopper
283	Steatite Tubular Pipe Manufacture Reject
284	Chipped Adze
293	Ground Nephrite Adze Preform
294	Chipped Stone Chopper
296	Nephrite Polished Scraper
297	Scraper on a Flake Derived from a Hand Maul
298	Polished Steatite Fragment
300	Small Groundstone Disk
304	Slate Scraper Retouch Flake
305	Incised or Pecked Image on Ground Surface
306	Polished Nephrite Fragment
308	Polished Metamorphic Rock
309	Sawed and/or Chipped Metamorphic or Sedimentary Rock
310	Stemmed Piece Esquilles
312	Slate Drill
315	Groundstone Vessel Shard

Ornaments

210	Ochre
212	Mica Ornament
214	Stone Bead
215	Stone Pendant or Eccentric
216	Ground or Sculpted Ornament
217	Copper Artifact
243	Sawed/Sliced Bead
252	Copper Bead
253	Copper Pendant
287	Spindle Whorl Preform

288	Spindle Whorl
290	Ornament/Pendant Blank
311	Bead Core
313	Bead Blank

Other

213	Miscellaneous Metal Artifact
223	Burin Spall Tool
224	Burin
227	Sawed Stone Disk
247	Miscellaneous Drilled Artifact
248	Miscellaneous Sawed Stone
249	Painted Stone Tool
269	Glass Beads
270	Miscellaneous Glass
271	Window Glass
272	Iron Projectile Point
273	Other Historic Period Beads
274	Horseshoe
275	Nail

Cores

146	Bipolar Core
147	Microblade
149	Microblade Core
182	Core Rejuvenation Flake
186	Multidirectional Core
187	Small Flake Core
189	Unidirectional Core
221	Slate Core
307	Used Margin on a Tabular Core

Size

XSM	Extra Small	1 cm^2
SM	Small	4 cm^2
M	Medium	16 cm^2
L	Large	64 cm^2
XL	Extra Large	Greater Than 64 cm^2

Initiation

C	Cone

B	Bend
W	Wedge

SRT

N/O	Non-orientable
M/D	Medial-distal
S	Split
P	Proximal
C	Complete

Cortex

T	Tertiary	0%
S	Secondary	1-99%
P	Primary	100%

Flake Types

ESR	Early Stage Reduction
TF	Thinning Flake
RBF	R Billet Flake
RF	Retouch Flake
BF	Bipolar Flake
NF	Notching Flake
B	Blade
CRF	Core Rejuvenation Flake
CF	Core Retouch Flake

Retouch

0	Invasive
1	Semi-Abrupt
2	Abrupt
3	Scalar
4	Step
5	Hinge

Use-Wear

0a	Polish
0b	Rounding
1a	Perpendicular Striations
1b	Parallel Striations
1c	Oblique Striations

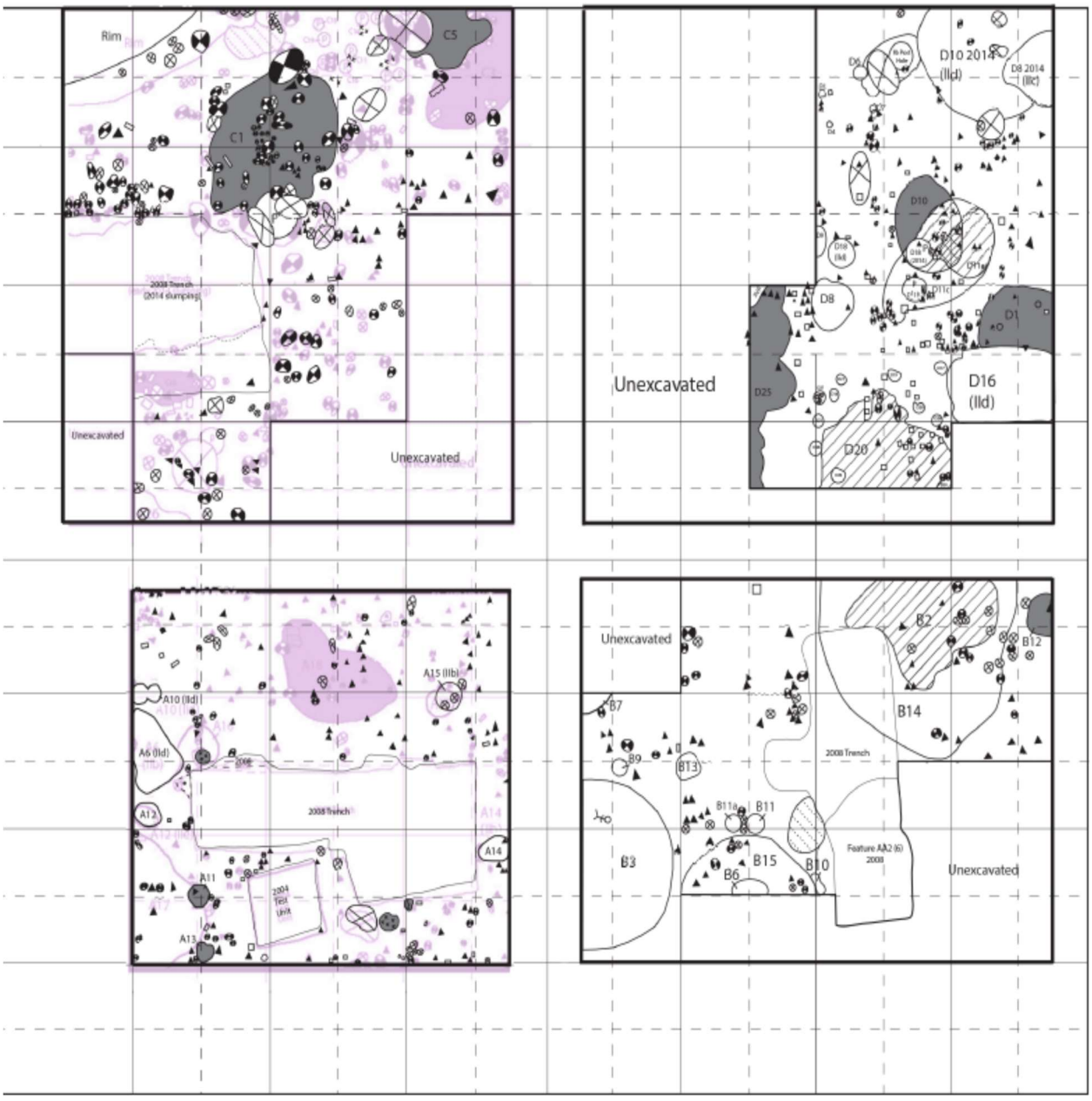
2a	Scalar/Step Chipping
2b	Oblique/Perpendicular Chipping
3a	Crushing
3b	Grinding
3c	Blunting
4	Sawing
5	Gouging/Boring
6	Notched
7a	Drilled
7b	Incised
8	Pecked
9	Battering

Material

1	Dacite
2	Slate
3	Silicified Shale
4	Coarse Dacite
5	Obsidian
6	Pisolite
7	Coarse Basalt
8	Nephrite
9	Copper
10	Ortho-quartzite
11	Basalt
12	Steatite/Soapstone
13	Chert (green)
14	Chert
15	Jasper
16	Jasper (Hat Creek)
17	Chalcedony
18	Chalcedony (yellow)
19	Igneous Intrusive
20	Granite/Diorite
21	White Marble
22	Green Siltstone
23	Sandstone
24	Graphite
25	Conglomerate
26	Andesite
27	Vesicular Basalt
28	Phyolite
29	Limestone
30	Mica (black)
31	Porphyry

32	Silicified Wood
34	Schist
35	Miscellaneous
36	Serpententite/Serpentine
37	Gray Vitric Tuff
38	Gypsum
39	Mudstone
40	Galena
41	Quartz Crystal
42	Metal/Iron
43	Glass
44	Quartzite
45	Other Greenstone Metamorphics
46	Rhyolite
47	Metamorphosed
48	Gneiss
49	Shale
50	Silicified Bone
51	Ochre
52	Silicified Sandstone

E. Overlay of IIf and IIe Maps for Comparison of Features and Mapped Surface Objects



*__Key:__ IIe = black/IIf = purple
** *Credit: Ashley Hampton*