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Exploring Community Formation and Coalescence at the Late 14th-Early 15th Century Tillsonburg Village Site

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Abstract

This thesis examines the Tillsonburg Village's particularly large and dispersed community plan through an intra-site analysis of ceramic vessels and longhouse attributes, as these are considered useful indicators of social, organizational, and temporal processes. The archaeological site in Tillsonburg, Ontario dates to the late Middle Iroquoian Period (AD 1350-1420). Community coalescence involves the aggregation of previously separate social groups into one communal settlement. It is explored as the predominant conceptual approach to better understand the formation of the Tillsonburg Village's community plan. However, other processes relating to the contemporaneity of village areas or houses are also considered. Spatial and statistical analyses are used to explore spatial patterning of attributes among their associated contexts. The findings suggest that the Tillsonburg occupants were experimenting with formative processes of community coalescence, with groups interacting and living together in one settlement, yet still remaining socially and spatially distinct within the larger village community.

Keywords

Tillsonburg Village Site, Iroquoian, Middle Iroquoian Period, Late Woodland, Southern Ontario, Community, Coalescence, Aggregation, Longhouse, Ceramic Vessels, Intra-site Analysis, Attribute Analysis, Spatial Analysis

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Chapter 1

1 Introduction

This study examines the particularly large and dispersed community plan at the Tillsonburg Village Site, a late 14th to early 15th century Iroquoian village located in Ontario, Canada. The Tillsonburg community plan may be indicative of formative processes of community coalescence or aggregation that existed within a unique local and regional context, but were also part of a broader social phenomenon within the Late Woodland Period in the lower Great Lakes region. The process of community coalescence involves previously geographically separate social groups aggregating into one communal settlement. Two phases of coalescence have been suggested for Ontario Iroquoian communities during the Late Woodland, specifically one that spans the late 13th to mid-14th centuries, and one that spans the mid-15th to mid-16th centuries (Birch, 2012; Birch & Williamson, 2013a; Birch & Williamson, 2013b, Birch & Williamson, in-press). The Tillsonburg Village Site dates to the late 14th to early 15th century, situating the village in between these two periods, and giving further credence to coalescence-like processes as a plausible narrative for the size and layout of the settlement.

Even though coalescence is explored as the predominant conceptual approach to understand the Tillsonburg community plan, a number of alternative processes must also be considered. These alternatives include the idea that the Tillsonburg community was a unified whole that arrived at the village area all at once, or that houses, or groups of houses, were occupied sequentially by the same community over a period of time. These possibilities can be explored by assessing the overall contemporaneity of the Tillsonburg longhouses to determine whether or not there are significant or more fine-grained temporal differences among the structures, as well as by looking for evidence of social or organizational variability between houses or groups of houses.

In order to address these research questions, I undertake intra-site analyses of ceramic vessel and longhouse attributes, as well as subsequent spatial and statistical analyses of these data. Traditionally, settlement pattern and ceramic vessel data have been utilized to study the socio-political structures of prehistoric societies (Chang, 1968; Engelbrecht, 1974; Timmins, 1997; Trigger, 1967; Warrick, 1984; Whallon, 1968) and these data continue to be regarded as valuable for interpreting the social organization of past peoples (Birch, 2010, 2012; Stone, 2016; Watts, 2006). The study investigates how variability in the Tillsonburg Village's material culture and longhouse architecture may reflect social or temporal distinctions among houses or groups of houses within the larger village. Organizational variability between villages, or houses within a village, is a possible outcome of dynamic social negotiations that commonly exist among newly coalesced groups and individuals (Stone, 2016). Variability in social relationships occurs within newly aggregated communities, and studies of the technology and production of material culture, as well as architectural analyses of construction methods and the organization of space, allow for these differences to be made visible in the archaeological record (Dobres, 1999; Kowalewski, 2013; Locock, 1994; Pauketat & Alt, 2003; Rautman, 2013; Stone, 2016).

Geospatial analyses, using ArcGIS software, allow me to explore the spatial patterning of ceramic vessel attributes within the village. GIS can be a beneficial tool for exploring spatial relationships within an archaeological site, and spatial data can provide a wealth of information on community patterns, given that organization and arrangement of space is culturally and functionally determined (Birch, 2012; Kapches, 1990; Locock, 1994; Rapoport, 1990; Timmins, 1997). SPSS statistical tests serve to explore patterns of variability between groups of houses in regards to longhouse architectural attributes. A group's or individual's decisions about the organization of space, architectural construction methods, and pottery production are all connected to sub-conscious learning frameworks, as well as conscious choice embedded in daily activities and experiences (Johnson, 2012; Kent, 1990; Stone, 2016).

This thesis offers a unique opportunity to interpret the settlement and community patterns of one of the largest known pre-contact Iroquoian sites in the Province, manifested in a pattern idiosyncratic to this time period. During the mid-14th to mid-15th centuries, a number of Iroquoian village sites throughout southern Ontario exhibit more dispersed settlement patterns, similar to the Tillsonburg Village, but not nearly as expansive (Archaeological Services Inc. (ASI), 2004, 2008, 2009, 2010, 2011; Birch & Williamson, in-press; Wagner, Toombs & Reigert, 1973; Tripp, 1978) (Appendix A, Figures A.3-A.9). The Tillsonburg Village extends over sixteen hectares, which is five times the size of the larger villages commonly documented from the late 14th century (Dodd et al., 1990, Golder Associates, 2009). In this period, distances between longhouses or groups of longhouses become greater, and the longhouse groups have been referred to as separate but contemporary village components (Williamson, personal communication, July 4, 2017; Birch & Williamson, in-press). The trend for increasingly dispersed settlement patterns in the late 14th to early 15th centuries has not been studied in great detail, therefore this research project offers a chance to enrich our knowledge of the settlement and social organization practices of ancestral Iroquoian peoples in southern Ontario at this time. Furthermore, this study provides an additional case for thinking about formative processes of community coalescence in the Late Woodland, contributing to this growing field of archaeological inquiry, and making a broader contribution to settlement and community studies of pre-contact North American societies in general.

1.1 Thesis Organization

This thesis is organized into six chapters. In the remainder of this chapter, I provide a brief summary of the Tillsonburg Village Site, including the excavation methods, environmental setting, settlement patterns, seasonality, and material culture recovered. Chapter 2 provides the conceptual approach for the study, encompassing perspectives on communities and coalescence. This chapter also discusses a few examples of coalescent communities dating to the late 13th to mid-14th century, as well as several coalescent communities from the mid-15th to early 16th century. This discussion assists in situating the Tillsonburg Village within a broader regional and temporal context of coalescence. Chapter 3 outlines trends in settlement patterns, as well as pottery form and decoration, for the Late Woodland period (900-1534 AD), with a particular focus on the Middle Iroquoian period (1300-1420 AD). This chapter also reviews previous research on pottery assemblages and longhouses from Iroquoian village sites in southern Ontario, providing context for the analyses in this study. In Chapter 4, I present the methodology for both the ceramic vessel and longhouse analyses. Chapter 5 presents the results of these two analyses, as well as some interpretations of the patterns suggested by the data. Chapter 6 will conclude by further situating the resulting social and temporal patterns into a conceptual framework of formative community coalescence, considering the ways in which the Tillsonburg community exhibits processes or strategies of coalescence common to other ancestral Iroquoian communities, as well as how the village differs based on its own historically constituted local and regional contexts.

1.2 The Tillsonburg Village Site

The Tillsonburg Village Site (AfHe-38) is located in the town of Tillsonburg, Oxford County, Ontario, thirty-five kilometres southeast of the City of London, Ontario, and twenty-five kilometres north of Lake Erie (Figure 1). The village spans over 40 acres, approximately 16.1 hectares, making it the largest known Iroquoian village of its time in southern Ontario. A local amateur archaeologist discovered the village during the construction of a new municipal soccer complex in 2000. Archaeologix Inc., a consultant archaeology firm, was hired to conduct salvage excavations on the western portion of the site in fall 2000 and spring 2001, uncovering ten widely-dispersed longhouse structures in various states of archaeological preservation (Figure 2). This western area of the site was heavily impacted by construction grading activities prior to its discovery (Archaeologix, 2002).

Figure 1: Location of the Tillsonburg Village Site

Golder Associates, another consultant firm, completed a Stage 4 mitigation and excavation of an eastern portion of the Tillsonburg Village Site in 2008. Prior to this Stage 4 excavation, Archaeologix (2004) was enlisted by Bamford Homes Inc. to complete a Stage 1-2, and subsequent Stage 3, assessment on a study/project area immediately north east of the municipal soccer complex, and in 2006 Bethel Temple Penecostal Church requested that Archaeologix (2006) complete a Stage 1-2, and subsequent Stage 3, assessment on a study area immediately southeast of the soccer complex. These assessments led to recommendations for the Stage 4 excavation of the eastern segment of the Tillsonburg Village. An additional five longhouse structures, three middens, and four activity areas were exposed (Figure 2). This area of the site was better preserved and therefore subject to a more exhaustive excavation, yielding a more abundant artifact collection (Golder Associates, 2009). It should be noted that the site may extend to the north and west, and the exact village limits may not be known. For example, Iroquoian material was found during a preliminary archaeological assessment of the adjacent northern property (Timmins Martelle Heritage Consultants, 2006).

The village is situated on an elevated plateau overlooking Stony Creek to the south and west. There is a drop of six metres from the northern flatter area of site to the southern areas of the site, situated on a sloping terrace. The northern area elevation is 244 metres a.s.l., and the southern area elevation ranges between 238 and 241 metres a.s.l. The closest water source is Stony Creek, which is located approximately 75 metres south of the village and flows southeasterly into Big Otter Creek, within the town of Tillsonburg. The soil is well-drained loamy sand and the topography is gently rolling terrain (Archaeologix 2002, Golder Associates 2009, Timmins 2009). The village is situated on the northern edge of the "Norfolk Sand Plain" physiographic region (Chapman & Putnam, 1984). "The Norfolk Sand Plain is a wedge shaped region of sandy soils along the north shore of Lake Erie that includes the southeast corner of Oxford County" (Archaeologix, 2002, p. 1, Chapman & Putnam 1984, p. 153).

A combination of mechanical topsoil stripping and shovel shining were used to expose subsoil features during the 2000/2001 excavations. All cultural features and post moulds were marked, recorded, and excavated in the field, according to a five-metre grid. The salvage excavations recovered the remains of ten widely-dispersed longhouse structures that survive as post moulds, support posts and sub-surface cultural features, such as hearth, ash pits, semi-subterranean sweat lodges, storage and refuse pits. Also, five human burials were discovered throughout the course of the excavation. The longhouses were identified and recorded over an area of 19 acres or 7.6 hectares, and the distance between longhouses ranges from 20 to 46 metres. No middens or activity areas were recorded for this area of the village, likely due to the overall poorer preservation of archaeological remains. Shallower features, such as some midden deposits, hearths and ash pits, are poorly represented because of the prior construction grading. Houses 2, 3, 4, 9 and 10 were severely impacted by the construction grading, resulting in a complete loss of data for portions of these longhouses. For example, the easterly end of house 3 and westerly end of house 4 were both cut to a depth of one metre, and only a central segment of house 9 was recovered. Houses 1, 5, 6, 7, and 8 were better preserved comparably, with the exception of the south end of house 8 (Figure 2) (Appendix B, Figures B.2-B.4) (Archaeologix, 2002).

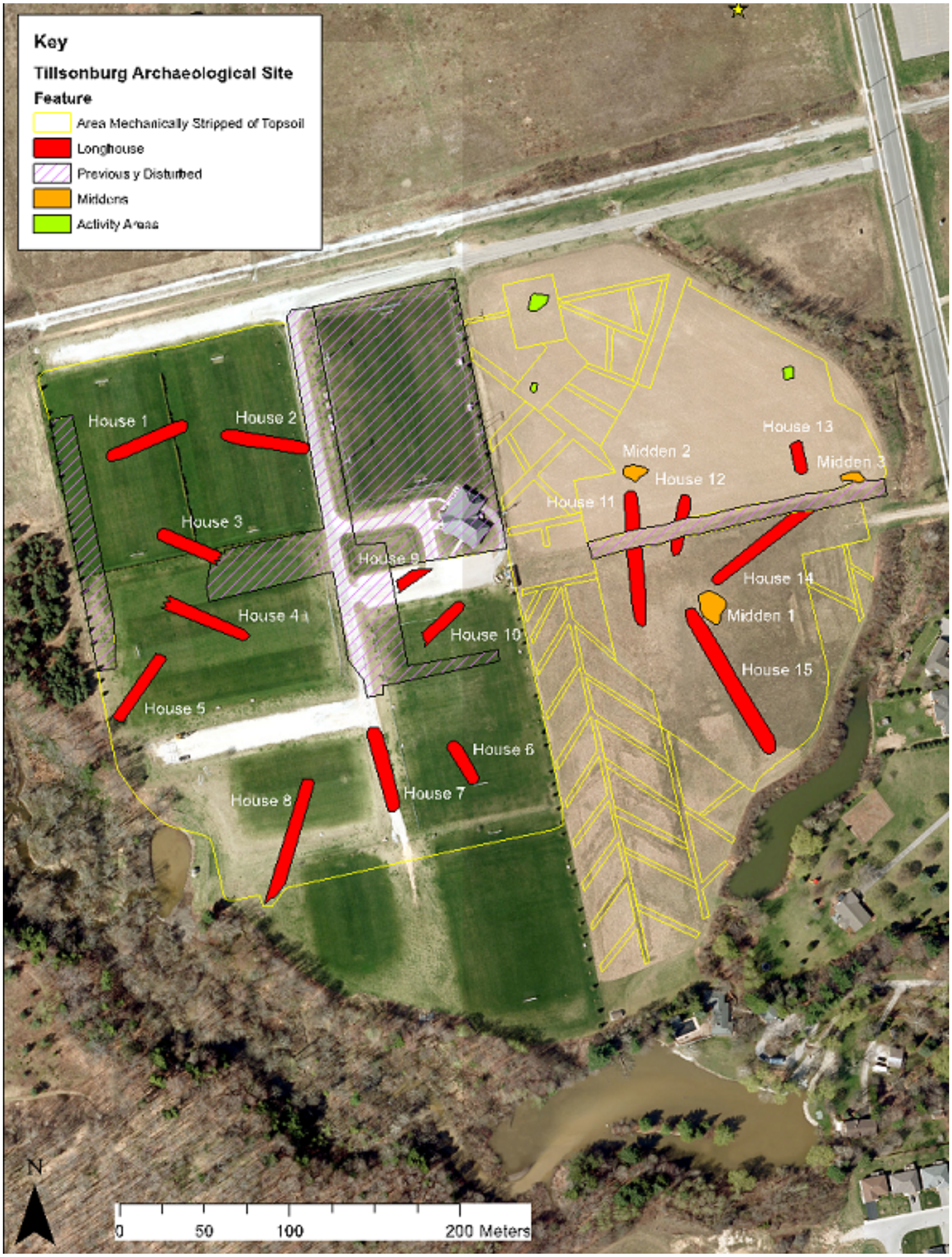

Figure 2: The Tillsonburg Village Site Map (Adapted from Timmins Martelle Heritage Consultants (TMHC) shape file and South-Western Ontario Orthophotography Project (SWOOP) digital imagery)

The 2008 Stage 4 excavations involved a combination of hand excavation of one by one metre units over midden deposits and mechanical stripping of topsoil to identify subsoil features that reflect settlement patterns. All cultural features and post moulds were mapped in the field on to the established five-metre grid. A ten-metre wide swath of disturbance is the result of the prior construction of a municipal water main, and is located centrally, running in an east-west direction (Figure 2). Mechanical trenching assisted in determining the limits of the site, during both the western and eastern excavations (see Figure 2). The excavations recovered another five longhouses, three middens, four activity areas, and nine features containing human remains, over 21 acres or 8.5 hectares (Appendix B, Figure B.5). Houses 11 to 15 are clustered somewhat closer together in comparison to houses 1 to 10 from the western excavations. Middens 1 and 2 were identified during the Stage 2 assessments, on the basis of high artifact concentration areas, and as such were excavated in blocks of one-metre units. Midden 3 was later discovered after topsoil removal, and was recorded and excavated as a single large feature. Activity area 1 consists of rows of posts moulds, or small fences, and several sub-surface features, and is situated adjacent to the north end of house 15, occupying a somewhat central position among the five longhouses (Appendix B, Figure B.5). Activity area 2 is located approximately 40 metres north of house 13 and consists of a cluster of four pit features, eight support posts, and a semi-square row of post moulds, likely representing a small special purpose structure (Figure 2). Activity area 3 consists of several isolated post moulds and nine cultural features located in the northeast area of the site (Figure 2). Finally, activity area 4 is located 47 metres south of activity area 3 and consists of several isolated post moulds and support posts (Figure 2) (Golder Associates, 2009).

Table 1 represents individual feature type quantities for each longhouse. In total, 1,030 sub-surface cultural features were documented during the 2008 Stage 4 mitigative excavations and 477 features from the 2001 salvage excavations (Archaeologix, 2002; Golder Associates, 2009). The discrepancy in feature numbers between the 2001 and 2008 datasets reflects the better preserved nature of the eastern part of the village.

Table 1: Cultural Feature Totals from Longhouses

House	Storage Pits	Ash Pits	Hearths	Sweat Lodges	Burials	Total
1	62	31	4	0	0	**97**
2	38	14	3	0	0	**55**
3	11	9	1	0	0	**21**
4	9	0	2	2	0	**13**
5	12	25	3	3	1	**44**
6	16	11	1	1	0	**29**
7	42	27	2	3	0	**74**
8	51	39	3	1	0	**94**
9	26	6	1	1	0	**34**
10	12	3	1	0	0	**16**
11	244	107	8	0	1	**360**
12	25	5	0	0	0	**30**
13	34	0	1	1	1	**37**
14	232	111	6	5	3	**357**
15	163	71	10	1	1	**246**
Total	**977**	**459**	**47**	**18**	**7**	**1513**

* Red text denotes incomplete houses

The 2008 Stage 4 excavations at the Tillsonburg Village recovered 61,990 artifacts in total, and the 2001 salvage excavations recovered 11,236 artifacts in total. Table 2 summarizes the total counts for artifact types by longhouse and midden (Archaeologix, 2002; Golder Associates, 2009).

Table 2: Artifact Totals from Longhouses and Middens

Houses & Middens	Lithics	Groundstone	Ceramics	Pipes	Bone Artifacts	Floral	Faunal	Charcoal	Misc.	Totals
1	758	2	1,556	7	3	1	811	10	8	**3,156**
2	191	0	242	3	3	0	381	18	0	**838**
3	56	1	20	2	1	0	88	2	0	**170**
4	391	1	177	7	12	10	526	6	2	**1,132**
5	132	1	152	1	0	5	172	139	0	**602**
6	122	0	102	2	1	1	52	0	1	**281**
7	693	4	729	6	6	1	688	11	0	**2,138**
8	683	2	128	5	14	0	845	9	1	**1,687**
9	285	2	60	3	4	0	121	4	0	**479**
10	56	1	647	0	0	0	46	3	0	**753**
11	1,278	4	1,208	23	3	1	1,914	9	2	**4,442**
12	29	0	59	0	0	0	65	0	0	**153**
13	142	1	280	3	1	0	86	0	1	**514**
14	4,385	10	13,521	86	41	2	76	5	8	**18,135**
15	1,795	7	2,519	19	7	0	2,138	0	1	**6,486**
M1	9,863	6	5,594	65	2	0	923	0	1	**16,454**
M2	1,695	0	501	10	0	0	32	0	0	**2,238**
M3	3,107	7	7,239	27	20	0	3,096	69	3	**13,568**
Totals	**25,661**	**49**	**34,734**	**269**	**118**	**21**	**12,060**	**285**	**28**	**73,226**

*Miscellaneous column refers primarily to shell or copper beads, stone pendants, and misc. rock.

The settlement pattern and diagnostic artifacts recovered were largely consistent throughout the village area, suggesting that the site was an ancestral Iroquoian community dating to the late 14th to early 15th centuries. In a culture history framework, the village site would be considered part of the late Middle Ontario Iroquoian period, or Middleport sub-stage (AD 1350-1420) (Wright, 1966). The 2002 report identifies Middleport Oblique as the most common ceramic vessel type, followed by Pound Necked and then an Untyped Stamped ceramic type consisting of linear stamps on the collar and a plain neck zone. Middleport Oblique remains the most predominant ceramic vessel type in the 2009 report, followed by Ontario Oblique and Ontario Horizontal, however, this preliminary analysis was based upon rim sherd counts rather than vessel counts. Throughout the entire village, the prevailing decorative technique is linear stamping, which is a common technique during the Early and Middle Iroquoian periods. The majority of pipe bowls exhibit a conical form in both the 2001 and 2008 assemblages, which is considered to be most prevalent on Middleport period sites. However, the 2001 pipe assemblage also contains a number of barrel and vasiform bowl forms that become more prevalent in the 15th century. A substantial number of the projectile point types are either Middleport Notched or Middleport Triangular, specifically fifty percent of the 2008 point assemblage and seventy-five percent of the 2001 point assemblage. According to the diagnostic artifact evidence in the site reports, there is no strong evidence for major temporal differences between longhouses (Archaeologix, 2002; Golder Associates, 2009). Rather, the artifact evidence suggests that all village components were occupied during the late 14th and early 15th centuries.

The excavations also uncovered floral and faunal material that, along with the artifactual evidence, indicates the village was occupied on a long-term, year-round basis. The general interpretation of the Tillsonburg Site's subsistence economy is that the year-round occupation relied on a combination of maize agriculture and hunting. The bulk of the floral and faunal assemblages have not undergone detailed analyses, however, the 2009 report suggests that a majority of the recovered faunal elements belong to white tail deer, small mammals, and a variety of birds. Furthermore, both excavations identified a number of fragments of carbonized corn and nuts (Archaeologix, 2002; Golder Associates, 2009).

A single chapter has been published on the Tillsonburg Village data in *Iroquoian Archaeology and Analytic Scale* (Timmins, 2009). Timmins investigates and rethinks the relationships between site size and village population particular to the distinctive situation at Tillsonburg. It is generally accepted in Iroquoian archaeology that if site size increases, so does population size. Some regional population analyses have been based upon this premise, utilizing "village area per person" or "hearth density" estimates (Snow, 1994, Warrick, 1990). Many site-specific analyses of population size have relied on hearth preservation, and then interpolated village population size through calculating the number of hearths with the number of individuals sharing a hearth, derived from ethnohistoric records. A typical "hearth density" estimate was not possible at Tillsonburg due to poor hearth preservation; thus, Timmins adopts Snow's (1994) compartment approach that assumes, through ethnohistoric and archaeological evidence, a common longhouse compartment was six metres long with one hearth and two family-occupied cubicles, averaging five individuals per nuclear family. The population size for the Tillsonburg Village based on this approach was 676 people for houses 1 to 10, and with at least two possible houses lost during construction grading, the author raises his estimated population size to 812 individuals. House 1, the best-preserved structure, indicated nine metre long compartments, thus the analysis was also completed using this measurement, resulting in a smaller population size of 512 individuals. These population estimates are not unusual for sites with 10 to 12 longhouses, but the distribution of longhouses over such a large area is unique and unprecedented (Timmins, 2009). It should be noted that the 2008 excavation data from the eastern portion of the Tillsonburg Village was not included in this analysis, and as such population estimates for the overall site would now be greater than those presented above.

This study aims to gain a better understanding of the large and dispersed community plan at the Tillsonburg Village Site, which may be indicative of social processes of formative community coalescence wherein different social groups came to the village at different times. Alternatively, the community pattern may be related to other processes, such as the sequential occupation of village houses or components by the same community over a period of time, or the result of the Tillsonburg residents' arrival to the area together, as a single unified community. The analyses of longhouse and ceramic vessel attributes will assist in examining the contemporaneity of village structures, as well as the potential similarities and variability among them. Subtle variations between houses or groups of houses in either ceramic vessel form and decoration or longhouse architecture may indicate social or temporal distinctions within the Tillsonburg Village community plan.

1.3 Conclusion

Chapter 1 has provided a brief summary of the Tillsonburg Village Site, which forms the basis of my research. The site is located in the town of Tillsonburg, Ontario, and the initial material culture analyses date the village to the late 14^{th} to early 15^{th} century. Through attribute analyses of ceramic vessel morphology and decoration, as well as longhouse architecture, I intend to explore the formation of this village's distinct community plan. In Chapter 2, the conceptual context of the study will be discussed, exploring perspectives on communities and coalescence.

Chapter 2

2 Communities and Coalescence

This chapter outlines the conceptual context for processes of community coalescence that have been applied to Iroquoian village settlements in southern Ontario. The study of aggregation or coalescence has its roots in settlement archaeology, from which an archaeology of communities approach has emerged, incorporating perspectives on agency, practice, place, and the built environment. Coalescence as a phenomenon, extends beyond the spatial and temporal boundaries of ancestral Ontario Iroquoian peoples, and is relevant to studies of settlements and communities worldwide.

The study of Iroquoian village aggregation in the Late Woodland began with earlier perspectives on the determinants of Iroquoian settlement organization, whereas recent work primarily focuses on coalescent community patterns and sequences in the south-central region of Ontario. Examples of documented coalescent communities dating to the late 13th to early 14th centuries, and the mid-15th to 16th centuries, will be reviewed for comparative purposes, and as a basis for understanding Iroquoian processes of coalescence and community relocation sequences. Nevertheless, the Tillsonburg community should be considered as part of its own distinct geographical and social landscape.

2.1 From Settlement Archaeology to Archaeologies of Community

The latter half of the 20th century was characterized by a surge of interest in settlement archaeology (Chang, 1968), which Trigger (1967) broadly defined as the "study of social relationships using archaeological data" (p. 151). The approach focused on the structural, synchronic, diachronic and developmental facets of social relationships, and I consider it to be the precursor and overarching framework for later studies on coalescent communities. Trigger (1967) characterizes settlement archaeology as a historical approach rather than a unilineal evolutionary approach. Originally, settlement archaeology was an attempt to move away from equating archaeological sites with distinct cultures or kinship systems, as there are difficulties determining connections between social realities and material culture. A site does not always equal one community, and cultures do not always equate with ethnohistoric tribal groups. Culture is a complex term that has a multitude of meanings and nuances, and lacks well-defined boundaries. In settlement archaeology, the material remains and history stay the same but are organized and interpreted differently, through an effort "to study the social, economic, political, and, if possible, linguistic relations among prehistoric peoples as problems that are quite different from the delineation of material cultures" (Trigger, 1967, p. 151). Thus, the approach moved away from defining ethnic and cultural groups and towards a multiscalar analysis that incorporates intra-settlement and regional studies, situated within their historical contexts.

Chang (1968) acknowledges community as the primary social group in settlement archaeology, responsible for effectively conditioning people's modes of behavior, life-ways, and views of the world, perhaps more so than other primary or secondary social groups. However, unlike in more recent holistic or dynamic perspectives, community was still thought of as an easily definable and static entity. Settlement and community existed as substitutes in archeological contexts, and archaeological typologies of settlements and artifacts were used for inter community comparison to discern historical relationships (Chang, 1968). The foundations of settlement archaeology were embedded in static culture history frameworks, but over time settlement archaeology has become a more nuanced and multifaceted approach through the inclusion of perspectives on communities, agency, practice, and place making.

In twenty-first century Iroquoian archaeology there has been a shift towards middle-range approaches that focus on intersectionality and the dialectical relationship between theory and data. In settlement pattern studies specifically, there has been a new emphasis on communities and site sequences that examines intra-site and regional data concurrently (Birch, 2010, 2012, 2015; Trigger, 1984, 2001, 2006). In this type of approach, "each community, nation, and confederacy was part of unique and historically contingent processes of development in distinct geographical and social landscapes"

(Birch 2015, p. 267). Therefore, archaeologists are now attempting to move beyond twentieth century approaches that tended to generalize the archaeological record into existing culture history frameworks, and focus on the communities and individuals that lived within these local and regional contexts.

Current theoretical perspectives on community encompass concepts of agency, place, space, boundaries, and the built environment to assist in social interpretations of archaeological data. Communities are one of the most meaningful and significant social contexts for social interaction, and "village communities are often the largest sociopolitical unit in small-scale societies" (Birch, 2012, p. 649; Williamson & Robertson, 1994, p. 32). The archaeology of communities is situated in between studies of individual households and broader regions, allowing for insights into identity, group membership, social organization, and socio-economics to be developed at this critical juncture. An interactional and socially constituted perspective of communities is ideal, as it recognizes that community formation occurs through mutual practices and the fostering of relationships between members. Community is "a dynamic socially constituted institution that is contingent upon human agency for its creation and continued existence" (Yaeger & Canuto, 2000, p. 5), and should be rejected as solely a socio-spatial unit. Issues arise when a community is understood in a framework of cultural evolutionism and considered to be internally homogenous, externally bound, and exhibiting a collective consciousness (Isbell, 2000). I refer to the Tillsonburg Village Site as a site, or village, or community, but I would like to be clear that the use of community in this sense is meant only to refer to the village community as a geographical or physical entity. This is not done with disregard for the multitude of social communities that likely existed within the village and beyond it, given that a community is a dynamic and complex social institution, and can interact in social processes that are not always bound by physical space (Yaeger & Canuto, 2000).

Traditional definitions of human communities typically entail two criteria: "(1) a shared residence or space, and (2) shared life experiences, knowledge, goals, and sentiments" (Isbell, 2000, p. 243). These criteria relate to two common designations of communities in the literature: natural and imagined (Isbell, 2000). "The natural community is what most archaeologists have traditionally meant when they discuss community, generally equating its boundaries with the spatial parameters of a site" (O'Gorman, 2010, p. 572). The concept of 'natural communities' is understood as a social fact (Pauketat, 2000), given the shared spatial proximity of households and families in which people interact and generate social experiences. Despite the concept's connotations of homogeneity, boundedness, and collective consciousness, it continues to be salient for settlement studies and spatially focused analyses (Isbell, 2000; O'Gorman, 2010). The concept of "imagined community repositions the community itself as the object of study rather than the spatial unit of analysis… where the conceptualization of community focuses on identity, agency, social boundaries, meaning, and social repercussions" (O'Gorman, 2010, p. 572).'Imagined communities' are conceived of as fluid and continuously changing, as individuals make choices, as well as select and create alternatives, to pursue goals. The material record is the "means, medium and outcome of social reproduction" (Soja, 1989, as cited in Isbell, 2000, p. 249), in which individuals constructed and reconstructed identities, affirming and reaffirming social relationships and power dynamics. However, issues also arise from the use of the term 'imagined communities' as it is cannot be as clearly defined as a 'natural community,' specifically with the former's relation to place or territory. The concept of an 'imagined community' moves away from assumptions of natural units, ideal types, and evolutionary notions (Isbell, 2000), and has facilitated more recent archaeological studies of communities as dynamic entities, composed of integrated human relationships, and situated in historical and geographical contexts (O'Gorman, 2010).

Kolb and Snead (1997) argue that community has three visible functions archaeologically; "social reproduction, subsistence production, and self-identification," creating a "sociospatial setting" (p. 611). A community relies on mutual interactions in a given space to continue to exist, and a sense of shared identity is also formed through these interactions. The archaeological record represents the material remains or outcomes of individual, group, or community interaction. Thus, archaeologists need to not only compare and combine data from disparate household groups but also consider the larger social context. Meaningful practices and interactions occur within circumscribed space, and are usually connected to broader social, spatial, and temporal frameworks. The archaeology of communities approach “attempts to place patterns within the material record into specific socio-historical contexts” (Yaeger & Canuto, 2000, p. 12). “Community is not a spatial cluster of material remains to be observed, but rather a social process to be inferred” (Yaeger & Canuto, 2000, p. 9). For instance, a spatial cluster of decorative pottery attributes in this thesis could be indicative of sub-communities within the larger settlement, possibly understood through social processes of coalescence. Even though archaeological remains are static, community should be considered ephemeral, taking multiple and diverse forms, which result in dynamic patterns of community organization (Yaeger & Canuto, 2000). Perspectives on community coalescence align with the conceptualization of communities as a dynamic social process.

2.2 Coalescence as a Conceptual Approach

The concept of coalescence involves the merging of different elements together to become one, and has become a prevalent research orientation in prehistoric settlement studies (Birch, 2013). A coalescent community results from previously geographically separate social groups aggregating into one communal settlement. Recent literature on coalescent communities in south-central Ontario, and the southwestern United States, focuses on the community as a dynamic rather than static entity, and suggests that individuals in these aggregated communities negotiated new social situations through experimenting with existing and new social mechanisms (Birch, 2012; Stone, 2016). The presence of organizational variability between villages, and between houses within a village, is the result of dynamic social negotiations occurring between newly coalesced groups and individuals (Stone, 2016). Transformative events of social or cultural innovation guide social life to new directions, and this transformation requires a great amount of social labour by all involved actors (Kowalewski, 2013). Also, given that social experimentation occurs as part of the processes of coalescence, a certain amount of variability in a community is expected (Birch, 2013; Stone, 2016).

In newly aggregated communities variability occurs in social relationships, and these differences can be made visible through a study of technology or use and production of material culture, as well as through an architectural analysis of construction methods and organization of space (Dobres, 1999; Kowalewski, 2013; Locock, 1994;

Pauketat & Alt, 2003; Rautman, 2013; Stone, 2016). Pfaffenberger (1992) argues that the material world is a socio-technical system with "complex heterogeneous linkages of knowledge, ritual, artifacts, techniques and activities" (p. 509). The way in which individuals or groups organize a house's interior and extramural space is a part of these processes of social negotiation, and differences in the architecture and layout of space among houses in a village can "reflect social groups with different ways of doing and being" (Stone, 2016, p. 64). Variability in architecture between houses within communities may reflect families' incorporation, or rejection, or experimentation with new ways of doing and being (Stone, 2016). Built environments are continually being structured and restructured, experimented with and either failing or becoming widely practiced, as well as creating or maintaining separation or integration of community groups or households. There is symbolism in these built formations that can reflect social relationships through combining and separating different architectural units to denote social boundaries and influence social interaction. The structures in the built environment of a site can reflect social organization, particularly through division of spaces (Birch, 2010, 2012, 2013; Bourdieu 1970, 1977; Yaeger & Canuto, 2000; Hegmon, 1989; Niemczycki, 1984; Pauketat, 2007; Ramsden 1990; Williamson & Robertson, 1994). The materiality of these changes is evident at the local community level and can then be situated into regional contexts to further explore the historical trajectories of community sequences (Birch, 2013).

Kowalewski's (2006) model of coalescent societies has been utilized as a conceptual framework for the potential strategies used by Iroquoian groups to socially adapt to their newly aggregated situations (Birch, 2012, 2013). Lehmer (1954) was the first to use the term coalescent in archaeology, by describing the coming together of two Plains archaeological cultures, the Central Plains and Middle Missouri, into a coalescent tradition. The term coalescent society stems from work by Charles Hudson and Robbie Ethridge (2002) on the social formations of a number of historic southeastern polities in the 17th and 18th centuries. The authors used this term to explore the formation of new social groupings in new places, as a response to severe external pressures, particularly colonialism and demographic collapse in this case. The new social situations led to integrative changes and innovations in architectural design, material culture, and socio-political organization. Kowalewski's (2006, p. 117) strategies include larger villages, collective defense, community integration, provisions of resources, trade intensification, organized planning of village layouts, changes in social means of production, universalizing ritual practice or ideologies, and an emphasis on collective leadership. The planning of village layouts or domestic architecture is related to the promotion of community integration and activities. Also, given the larger size of coalescent settlements, a number of advantages would have presented themselves, specifically the promise of greater security, better material conditions, and expanded ceremonial repertoires, related to changing regional systems (Wilcox, 1996). The experience of coalescence by multiple groups throughout multiple regions creates a macro-regional cultural basis for these processes, which gives greater weight to the potential manifestation of these strategies. The presence of coalescent processes in colonial times within a region, such as the Northeast Iroquoian area, may suggest that these groups experienced coalescence earlier in their histories. Kowalewski's (2006) coalescence strategies can be difficult to discern solely from the archaeological record, but organization and size of settlements are readily assessed, making them key elements of study for this type of research (Birch, 2010, 2012).

Evidence of coalescent societies emerges worldwide throughout prehistory, but particularly in the Americas. Coalescence is one of several strategies people adopt to cope in times of severe pressure, and this pressure has commonly been characterized as negative (Kowalewski, 2006). The notion of negative pressures, such as population collapse or regional conflict, does not appear to apply to the Tillsonburg Village, as archaeological evidence suggests it was occupied during a relatively affluent and peaceful period of time. Therefore, I tentatively propose that coalescence could also be a strategy adopted in the face of positive pressures, such as population explosion, prosperity, and the creation of greater social networks throughout the landscape. There are numerous reasons as to why groups would decide to aggregate, but one commonly cited motivation is warfare and collective defense, however, this should not always be assumed. Another more positive motivation would be the expansion of interactional networks that would facilitate social and material exchange within the village community and further afield (Kowalewski, 2013). In the Puebloan southwest, a number of small dispersed villages coalesced into a few larger settlements, in which changes to architecture and the layout of space are apparent. Architectural changes were the result of town-scale integrative activities, with spaces such as internal plazas being created to facilitate public ceremonies and exchange (Kowalewski, 2006).

Architecture is an appropriate line of evidence for examining social integration, as it is commonly archaeologically visible and capable of demonstrating whether differential access or control over public and domestic spaces was practiced. The activities that occurred within structures would have been significant in instituting and maintaining coalescence. A significant amount of both social and material labour would be required in undertaking construction projects, and conflict may arise from competing concepts, processes, or goals, requiring social negotiation (Kowalewski, 2013). Individuals make culturally or socially determined choices regarding the building process, such as determining building materials, as well as designing and constructing the structures, but these choices could be restricted based on the locally available resources (Locock, 1994). Architectural standardization results in similarities in form and function capable of expressing a shared notion of how spaces should be created and utilized, and can also reflect communal and collective works (Kowalewski, 2013). In the Late Woodland, Iroquoian longhouses exhibit relatively standardized features and symmetrical layouts, indicating a shared template of longhouse architecture for ancestral Iroquoian peoples. A building is a social statement, given that the architectural design and construction of a building is embedded in historical and socio-cultural contexts. The building's form is negotiated between numerous social facets, and these conscious and sub-conscious negotiations do not cease after the structure is occupied, but continue through changing patterns of use and alterations by the inhabitants. The house is the locale for social interaction, and thus there is social meaning behind architectural form (Locock, 1994). Architecture creates mental and physical boundaries that did not previously exist in nature, and "the use of space can be seen as a means to organize that unbounded space" (Kent, 1990, p. 2).

The archaeology of social boundaries is another realm of study that connects well with concepts of community and coalescence. The identification of social groups, and the boundaries of those groups, have been analyzed through the spatial variation of artifacts, architecture, raw materials, and site formation within the archaeological record (Stark, 1998). Relationships occur between "technical choices, social boundaries and material culture patterning" (Stark, 1998, p. 2). An internalized understanding of the manufacturing tradition is passed on from one generation to the next, similar to a 'communities of practice' approach that will be discussed further in Chapter 3. "The manufacture and use of material culture creates and mediates social relations," and there are both technological and stylistic aspects of a given object (Stark, 1998, pp. 6-7). The relationship between style and social boundaries should be considered highly contextualized, given that material culture is historically constituted (Stark, 1998).

Style is a contentious term that has been defined variously and ambiguously in past literature. The concept of style is a multi-layered phenomenon, involving how an object was made as much as the decoration, and various cultural processes encompass different layers of style. Stylistic similarities are often the result of social interactions or movement of peoples, and on occasion trade (Chilton, 1998; Gosselain, 1998), and styles can potentially play a role in defining groups or group boundaries, expressing individual identity or group membership, as well as expressing cultural understandings of one's universe (Hegmon, 1998). Style has historically been considered separate from function and technology, after residual aspects of the former two have been accounted for (Dietler & Herbich 1998), but Hegmon (1998) suggests that technology has style and style has function, given that technological choices and decoration exhibit style and can inform about social boundaries (Sackett, 1982). Technical choices "are the product of social learning processes and may be social actions, sometimes used to mark group distinctions" (Hegmon, 1998, p. 268; Lemonnier, 1986, 1992). In some cases social boundaries are concrete and well defined, but in other cases these "boundaries are abstractions or ideological constructs, recognized differently and for different reasons by people on the basis of their perceived identity, interests, or social context" (Goodby, 1998, p. 161). Difficulties arise when attempting to identify past social boundaries, as multiple networks of overlapping identities likely existed. "Shared technologies may be the byproducts of interaction at different levels," and material, whether ceramics or architecture, plays a significant part in defining who people are socially (Hegmon, 1998, p. 276).

2.3 Iroquoian Settlements and Community Aggregation or Coalescence in Southern Ontario

A number of past and recent researchers have grappled with ideas surrounding Iroquoian village aggregation, coalescence, organization, and size, in southern Ontario. Notably, much of this research involves archaeological sites dating to the Late Pre-Contact period, typically a hundred years after the occupation of the Tillsonburg Site. However, I think that the perspectives presented are still valid when studying Iroquoian settlement patterns and coalescence in the broader Late Woodland period.

Earlier literature tends to focus on socio-economic or socio-political determinants of village organization or layout. Hayden (1978) outlines socio-economic models for the increase in village size during the Late Ontario Iroquoian, primarily based on differential access and competition for resources and trade routes. Warrick (1984), however, did not agree that that Late Ontario Iroquoians were inherently competitive over trade routes or material wealth items, due to a lack of disparity in storage space archaeologically and no institutions preventing trade route violations ethnographically. Consequently, Warrick (1984) proposes that socio-political factors are the major determinants of Iroquoian village layouts or organization, based on archaeological, ethnographic, and cross-cultural data. The underlying assumptions made in his paper include interpretations of longhouse clusters as clan segments, and that social distance is highly correlated with physical distance. Warrick's (1984, pp. 51-53) socio-political model of Late Ontario Iroquoian village organization includes the following traits:

- Villages are comprised of corporate groups
- Longhouse size is primarily determined by number of occupants; only minor size differences exist between most longhouses other than council houses and cabins
- Neighbouring households have socio-political and economic ties
- Village layout is determined by primarily socio-political factors but there are some other subsidiary determinants (e.g. space conservation, defense, topography)
- Villages contained two or more sub-clan residential wards

Recent works on Iroquoian villages (Creese, 2011, 2013; Birch 2010) offer contemporary perspectives that are more holistic, focusing on the agency of individuals and social interactions between them. According to Creese (2011), Late Woodland cultural change was a process that involved “competing projects of group formation and identity constitution connected in a variety of ways to community” (p. 7). Community is a heterogeneous term in Iroquoian societies, referring only in some instances to the nucleated village community that involves regular interaction and bodily co-presence (Creese, 2011; Varien & Potter, 2008). Iroquoian peoples also engaged in a multitude of ‘communities of practice’ that were continually reproduced, disrupted and transformed through the spatially discrete activities of community members. The formation of villages and production of communities results in stress from increasing social interaction, along with new kinds of engagement and power dynamics between individuals, the landscape, and the material world. The built environment is intimately linked with social life and communication, in which individuals strategically used space to convey physical and social boundaries connected to social action and meaning-making. In archaeology, household and community are terms suspended between spatial and social definitions, whereas house and village are the spatial equivalents of these two terms (Creese, 2011; Leone, 1984; Rotenberg, 1996).

Creese (2013) examines early Iroquoian village development in southern Ontario through the concept of ‘place-making,’ which relates to perspectives on community coalescence, as well as ‘communities of practice’. ‘Place making’ involves “people’s changing material engagement with their natural and built environments,” and individuals are continuously engaging in these place-making practices (Creese, 2013, p. 185). Social identities are embedded in built places, where peoples’ changing engagement with their built environment may also change their conceptions of family, lineages, or communities. Creese argues that place should be understood as relational, and that place emerges through fluid relationships among people and things. There are symbolic and material consequences for the individuals and groups who created these built places, given that “place-making was a process of symbolic and materially embedded territorialization linked to defining households and the village community as a social whole” (Creese, 2013: 204). Creese (2013, p. 187, citing Hodder, 2012) refers to this process of territorialization as "human-human and human-thing interdependencies or entanglements" that are diverse and historically contingent, similar to perspectives on coalescence that view Iroquoian village settlements as dynamic and historically constituted (Birch, 2012).

In south-central Ontario, recent literature on coalescent communities incorporates both an intra-site and regional level of analysis for Iroquoian village sites, in order to better understand ancestral Wendat communities and regional sequences in the Duffins Creek and Rouge River areas (Birch, 2010; Birch, 2012; Birch & Williamsom, 2013a, 2013b). Birch (2010) argues that historical processualism is a particularly salient approach to studies of community coalescence given their unique and historically contingent circumstances. The approach considers "*how* certain social features developed and *how* cultures changed in a particular time or place" (Birch, 2010, p. 39; Pauketat, 2001). Historical processualism is connected to theories of practice (Bourdieu, 1977), as practice underlies processes of cultural production and reproduction that constructs history, and the materiality and spatiality of these practices can be identified in the archaeological record (Birch, 2010; Pauketat, 2001).

2.3.1 Coalescent Communities in the early Middle Iroquoian and Late Pre-Contact Periods of Southern Ontario

In the mid-13th to early 14th century we begin to see some convincing evidence for community coalescence at Iroquoian village sites, related to the increase in sedentary life and agricultural economies (Birch & Williamson, in-press). The late 15th and early 16th centuries has been characterized as a period of widespread settlement aggregation in Northeastern North America, and aggregation played a crucial role in the creation of social and political mechanisms to meet the demands of daily life (Birch, 2012). A majority of the literature on coalescent communities concentrates on ancestral Huron-Wendat communities in south-central Ontario, given the rich dataset in that area dating to this time period (Birch & Williamson, 2013a, 2013b; Damkjar, 1990; Finlayson, 1978, 1985; Ramsden, 1989; Robertson, Welsh & Williamson, 1998; Robertson & Williamson, 2003). A few analogous examples of coalescent communities from these two periods of time will now be summarized to provide a basis for the existing site-specific research within southern Ontario. Specifically, the Uren and Myers Road Sites from the earlier phase of coalescence, and the Dunsmore, Parsons, Kirche, Coulter, Draper and Mantle Sites from the later phase. The site plans for the villages are available in Appendix A. These comparisons serve to initially assess how the Tillsonburg Site fits within a broader regional and temporal context of coalescence. However, it is understood that the Tillsonburg Village community is geographically distant from south-central Ontario and existed within its own unique social and historical contexts.

The Uren Site is located two kilometres northeast of Otterville, Ontario, in South Norwich Township, and dates to the late 13th, early 14th century. The site spans 1.1 hectares, and consists of 11 longhouse structures and multiple palisades (Figure A.1). The village exhibits evidence of early amalgamation, and is single component with houses arranged into two clusters with parallel orientations and no structures overlapping (Warrick, 2000; Wright, 1986). The appearance of longhouses in aligned clusters could indicate that individuals and houses within these clusters had closer social ties (Birch, 2015). The presence of multiple palisades suggests that conflict was a concern for the village occupants, and the arrangement of longhouses within the settlement suggests conscious planning of the village layout. In Wright's (1986) analysis of the ceramic assemblage some intra-site variability is present for particular attributes, but the overall distribution of ceramic attributes confirms the single component status of the Uren Site (Wright, 1986). The Tillsonburg Village's community plan is quite distinct from Uren, but similar in that distinct spatial clusters of houses are apparent within the larger built environment.

The Myers Road Site dates from AD 1280 to AD 1330-1360, and is located in the City of Cambridge, Ontario. The excavation revealed 10 longhouse structures, four of which were surrounded by a single-row palisade that also superimposes another four longhouses (Figure A.2). This site exhibits at least four construction phases, indicated by the superimposition of features and palisades. The palisade does not seem to have been built for defensive purposes but rather as a marker of community inclusion and exclusion (MacDonald, Ramsden, & Williamson, 1998: Ramsden, Williamson, McDonald & Short, 1998a). The distribution and design on ceramic vessels suggests that the site was occupied, possibly intermittently, from the late 13th to mid-14th centuries (Ramsden, Williamson, Thomas & Hanley, 1998b). There was a brief late Early Iroquoian occupation (Phase 1) of Myers Road, and then three subsequent phases of occupation spanning a 40 to 50 year period, with Phase 2 dating to the Uren-sub-stage and phase 3 and 4 dating to the early Middleport sub-stage (Williamson & Ramsden, 1998). Williamson and Ramsden (1998) proposed that phase 3 was abandoned before the phase 4 occupation; however, it could still be possible that these two areas of the village overlapped, making coalescence a possible narrative for the latter part of the Myers Road occupation. The complex occupational history at the Myers Road Site distinguishes it from the Tillsonburg Village Site, which lacks palisades, superimposed structures, or significant temporal variability in material culture. Interestingly, there are eighteen semi-subterranean sweat lodges present among six of the ten Myers Road longhouses (Ramsden et al., 1998a), and the Tillsonburg Village also has eighteen of these features present, associated with 10 of the site's 15 longhouses.

The Dunsmore Site is located in Simcoe County, Barrie, Ontario, and consists of sixteen longhouse structures, partial fences consisting of several post alignments, and three middens over a 2 hectare area (Figure A.10). The village dates to the late 15th century, and is one of the only examples of a potential coalescent community that lacks evidence of a palisade at this time. The site also exhibits variability in house form and size that could be evidence of either household's fissioning, new groups amalgamating into the community, or just a more fluid settlement pattern typical of earlier village sites (Robertson & Williamson, 2003). It is clear that the parallels between the Dunsmore Site and Tillsonburg Village Site are strong, given the latter's absence of a palisade and earlier 15th century occupation date. Also similar to Tillsonburg, at Dunsmore there appears to be an emphasis on separation of physical space, possibly reflecting social distance as well (Birch, 2012).

The Parsons Site is located in North York, Ontario, and dates to the mid to late 15th century. The village was twice the size of earlier villages in the area, at 3.2 hectares. Robertson, Welsh, and Williamson (1998) hypothesize that this large size represents an amalgamation of earlier groups into one settlement; unfortunately only ten percent of the site has been excavated. Nevertheless, ten longhouse structures, four middens, as well as an east and west palisade, have been documented (Figure A.11). Unlike the Tillsonburg Village, the Parsons Site appears to have evidence of collective defense, with several rows of palisades and topographical advantages, as well as having evidence of far-reaching trade networks, with exotic goods and St. Lawrence ceramics found on site (Robertson & Williamson, 1998).

The Kirche Site is an early 16th century ancestral Huron village that spans 1.4 hectares and is located in the Upper Trent Valley, Fenelon Township, Victoria County, Ontario. The excavations documented twenty-nine longhouse structures that were not all contemporary or within the palisade walls (Figure A.13) (Ramsden, 1989). There are a number of palisade extensions evident at the Kirche Site, but since there is no evidence of a catastrophe that necessitated the moving or building of these houses, it is possible that this was a choice made by the community to incorporate new groups in to the village (Ramsden, 1988). Similar to Tillsonburg, house length varies throughout the site and twenty of the twenty-four documented middens were found adjacent to house structures. The Kirche Site exhibits a complex pattern of village formation and expansion, where superimposed houses are evidence of either new arrivals or departures from the existing settlement (Ramsden, 1989). Complexity from superimposed features or house structures is non-existent at the Tillsonburg Village due to its extremely dispersed settlement pattern. The Tillsonburg Site is unique in that its complexity stems from dispersion rather than superimposition.

The Coulter Site is another early 16th century ancestral Huron village located in Bexley Township, Victoria County, and is two kilometers northwest of West Bay on Balsam Lake. The village has a complex settlement pattern with an estimated 1600 metres of palisade crosscutting areas of the 3.3 hectare village, and in some places comprising five rows (Figure A.12). Damkjar (1990) indicates five sections of the site, or phases of construction, based on the palisade crosscuts or expansions. Measures of differences for ceramic attributes were examined for the village sections, and revealed that as the site expanded there was increased variation in ceramics from the core village section, as well as an increase in inter-section difference. The outcomes of the ceramic studies indicate possible social ties within sections, as well as outline a chronological sequence of expansions (Damkjar, 1990). The Coulter Site exhibits clear evidence of processes of community integration through divisions of spaces (Birch, 2012), which is an argument I explore for the earlier Tillsonburg Village site.

The Draper and Mantle Sites are the primary case studies in Birch (2010, 2012) and Williamson's (2013a, 2013b) work on coalescent communities, situated in a series of settlement relocations over five hundred years in the Duffins Creek and Rouge River areas. Several populations in the Duffins Creek area aggregated together to form the Draper Site (Birch & Williamson, 2013b). The site is a late 15th century ancestral Huron-Wendat village with at least six major expansions, increasing the population from 600 to 2500-3000 individuals. Given the complexity of several village segments, it is argued that a fair amount of thought and decision-making was dedicated to the community's layout (Figure A.14, A.15). Post mould densities indicate the most evidence of rebuilding and repair in the core area, whereas the southern area, the supposed last expansion, shows the least evidence of any rebuilding (Birch & Williamson, 2013b; Finlayson, 1978, 1985).

Birch and Williamson (2013b) suggest that the Draper Site occupants first relocated to the nearby Spang Site, and eventually relocated to the 16th century Mantle Site. The relocation sequence is primarily based on ceramic similarities between the villages. Each occupation, Draper, Spang and Mantle, would have been occupied for twenty-five to thirty years from approximately AD 1450 to 1530 (Birch & Williamson, 2013b). The Mantle Site excavations documented ninety-eight longhouse structures, one large midden on the creek slope, another linear trench midden parallel to the palisade, as well as a multi-row palisade structure (Figure A.16). Birch and Williamson (2013b) noted an early and late phase of occupation, which they acknowledge as archaeological constructs. The interpretations of these two phases of occupation were largely based on average wall post and feature densities, superimposed houses or features, contractions in palisade walls, and the infill of a central plaza area. The authors suggest that clusters of houses oriented similarly may be a result of changing topography. The northern houses are on high flat ground and the southern are situated on slope, which is coincidentally a similar pattern to the Tillsonburg Village. The Mantle Site longhouses were initially arranged to radiate around a central plaza area, which would have been a socially integrative space for communal gatherings, as well as indicative of social cohesion among the inhabitant's identities (Birch & Williamson, 2013b). Notably, houses 1 to 10 at the Tillsonburg Village radiate around a large central open area, whereas houses 11 to 15 appear to radiate around a similar, but relatively smaller, central open area. These two areas may also have functioned as integrative social spaces for the Tillsonburg occupants, yet the presence of two separate plaza areas may suggest that greater social cohesion existed within groups rather than between them.

For the earlier Draper Site, physical aggregation preceded social unification, whereas the later Mantle Site exhibits a highly organized pre-planned layout. Thus, before relocating, the Draper Site became increasingly integrated into a single community with a more communally held social identity (Birch, 2012). Interestingly, in ethnohistoric texts, the longest longhouses were residences of clan leaders where communal gatherings took place (Birch, 2012, citing Thwaites, 1896-1901). At Draper, the archaeological data suggests that each cluster has one longhouse structure that is considerable larger than the rest, whereas at Mantle, House 15 and 20 have a significant function in the community as a whole (Birch & Williamson, 2013b). The Tillsonburg Village tends to align more with the earlier Draper Site, given that each 'clustered' area of the site appears to have one or two very long longhouses, possibly indicating that each village segment built houses for the purpose of communal gatherings. For example, house 4 is at least 10 metres longer than the other houses located in the northwest, and house 8 is substantially longer, at 74 metres, than houses 6 and 7 in the south. However, in the east, houses 11, 14 and 15 are all quite long, ranging from 76 to 89 metres, perhaps suggesting that more than one longhouse was communally significant in this area. In regards to village waste disposal, the Draper Site has twenty-two middens located at the end of houses throughout the site, which does not indicate a high degree of planning. In contrast, The Mantle Site exhibits a uniform waste management system, where large-scale disposal of waste occurred at

Midden 1, located on the creek slope outside of the village enclosure (Birch, 2012). Once again, the Tillsonburg Site aligns with the waste disposal practices common to Draper, with middens occurring adjacent to longhouses. This means that the Tillsonburg occupants were making household rather than communal decisions about waste disposal.

Through comparisons with these documented coalescent communities, it is clear that the Tillsonburg Village Site more commonly exhibits characteristics that are analogous with the earlier Uren and Myers Road Sites, as well as the mid-late 15th century Draper and Dunsmore Sites. Iroquoian archaeologists have considered these sites to be exhibiting processes of 'formative' community coalescence with physical aggregation preceding social cohesion (Birch, 2012).

2.4 Conclusion

This chapter has reviewed concepts surrounding communities and coalescence within southern Ontario and beyond. Around the globe, long-term archaeological sequences demonstrate more than one episode of aggregation, at times within cycles, conveying the multiple and non-linear pathways of social change (Kowalewski, 2013). Settlement archaeology, beginning in the 20th century, gave rise to a number of current perspectives on community, coalescence, agency, practice, place making, and boundaries. The formation of larger, integrated settlements requires modifications to the social and technological means of production, and in many cases "social integration meant new architectural design and innovations in material culture" (Kowalewski, 2006, p. 107.). Coalescence would not have occurred as a singular event, but within situations of change and transformation that involved the purposive actions of numerous agents, beyond an existing political authority, with potential gain and consequences (Kowalewski, 2013). I am applying these broader conceptual ideas to a community pattern that does not conform to general patterns of settlement aggregation for ancestral Iroquoian groups, but may have been an integral moment of experimentation on the way to coalescence more broadly in the region. In the next chapter I will review trends in settlement patterns and pottery form and decoration dating to the Late Woodland period. Previous studies of Ontario Iroquoian pottery assemblages and longhouses will also be reviewed.

Chapter 3

3 Late Woodland Context

This chapter begins by outlining trends in settlement patterns and pottery form and decoration from the Late Woodland, addressing early, middle, and late phases of the broader temporal period in southern Ontario. Given that the Tillsonburg Village dates to the late 14^{th} century, particular focus will be placed on detailing trends from the middle Late Woodland. A summary of previous studies on pottery assemblages from Iroquoian village sites in southern Ontario will assist in contextualizing the forthcoming ceramic vessel analysis. These studies are situated within the larger debate of typological versus attribute approaches to pottery analysis. Finally, a review of previous research pertaining to Iroquoian settlement patterns, specifically longhouse studies, will establish the context for my analysis of these structures' architectural attributes.

3.1 Trends in Late Woodland Settlement Patterns

The Late Woodland (AD 900-1534) was a period of significant transformation in subsistence, settlement, population, and socio-political organization (Warrick, 2000). Iroquoian, as a cultural and linguistic pattern, can be located within the archaeological record of southern Ontario by AD 500 at Princess Point sites along the Grand River, during what is considered to be a transitional Woodland period. By AD 900 Iroquoian peoples had begun to live in semi-sedentary villages of longhouses and increasingly relied on maize, squash, and bean agriculture (Bamann et al., 1992); facts which have been confirmed by ethnographic accounts of historic groups in the area, as well as the archaeological record. The presence of these traits in archaeological site data indicates that the people occupying these villages were likely ancestral Iroquoian (Warrick, 2000). Since Iroquoian archaeological sites have a relatively short history spanning only the last 1500 years, they are comparably well preserved in terms of features and material remains (Warrick, 1990, 2000; Timmins 1997).

In Iroquoian archaeology there continues to be much debate over the use of previously defined cultural periods or traditions, and whether these culture history terms should continue to be accepted to varying degrees, or eliminated entirely due to their arbitrary and restricting nature. Many academic and CRM archaeologists continue to use these designations to refer to temporal periods, in order to maintain consistency with past constructs and literature. Within Iroquoian studies in southern Ontario, many researchers have organized data temporally under Wright's (1966) *The Ontario Iroquois Tradition,* built upon the framework of MacNeish's (1952) *Iroquois Pottery Types*. Wright separated the Late Woodland into three stages, Early, Middle, and Late Ontario Iroquoian, based on ceramic seriation and the direct historic approach (Warrick, 2007). The Early Ontario Iroquoian stage was further subdivided into the Pickering and Glen Meyer branches, and the Middle Ontario Iroquoian into two, fifty-year substages, the earlier Uren and later Middleport. It has been argued that the Early Iroquoian period 'branches' should be considered part of a broad cultural continuum rather than as separate and distinct cultural or political entities (Ferris & Spence, 1995; Smith, 1990; Williamson, 1990).

Issues are also present with respect to the Uren and Middleport sub-stages, primarily in terms of their chronological placement and origins based on Wright's conquest hypothesis, which suggests "the militaristic absorption of the western Glen Meyer branch by the eastern Pickering branch" (Ferris, 1999, p. 8). There is little archaeological evidence to support the conquest hypothesis, since regional continuity spans from Early Iroquoian times into the Uren period (Ferris & Spence 1995). Some Iroquoian archaeologists argued that gradual and incremental changes occurred during the Middle Ontario Iroquoian period, but Dodd et al. (1990) consider the subdivision between Uren and Middleport valid because of the significant changes in settlement patterns and certain aspects of material culture that have been documented. Some researchers choose to disregard the Uren sub-stage entirely (Kapches 1981; Pearce 1984) while others still consider it to be a useful construct (Dodd et al., 1990). For the purposes of this thesis, terms such as Middle Iroquoian and Middleport will be used, but solely for the purpose of situating the Tillsonburg Village Site temporally within the Late Woodland. The Iroquoian chronological framework is based on past seriation of ceramic rim sherd decoration or form (MacNeish, 1952; Wright, 1966) alongside radiocarbon dates from multiple sites (Smith 1997a; Timmins, 1985), forming the most widely accepted chronology: Early Iroquoian AD 1000-1300, Middle Iroquoian AD 1300-1420, subdivided into Uren AD 1300-1330 and Middleport AD 1330-1420, followed by the Late Pre-Contact AD 1420-1534 (Warrick, 2000).

3.1.1 Early Iroquoian (AD 1000-1300)

Early Iroquoian villages typically encompass about an acre or 0.4 hectares, commonly with four or five small longhouse structures, which may or may not be surrounded by a single or double row palisade. There are also large quantities of ceramic, lithic and bone artifacts found on sites (Pearce & Warrick, 1999; Timmins, 1997; Warrick, 1990, 2000; Williamson 1990). Wright (1966) geographically and culturally distinguished Pickering and Glen Meyer branches, thought of as distinct cultural groups, but this distinction was not wholly accepted by the archaeological community and has been eliminated in some past research (Warrick, 2000). Early Iroquoian villages often have evidence of rebuilding events and re-occupation over many decades, sometimes spanning over a century (Timmins, 1997). As a result of these patterns, sites tend to have a disorganized appearance due to the successive and layered phases of semi-sedentary occupation over a period of years by the same group (Fox 1986, Timmins 1997, and Williamson 1990). Timmins (1997) demonstrated that the Early Iroquoian Calvert Site exhibited three discrete well-organized community plans over an estimated occupation period of fifty years, opposing previous notions of disorganization. The internal differentiation between these early sites from small camps, special purpose sites, to semi-permanent settlements, indicates that “the transition to village life was clearly a multi-linear process with the adoption of settlement and subsistence strategies and social, political, and economic developments occurring at slightly different times in different sub-regional localities” (Birch & Williamson, in press, p. 5; Williamson, 1990). Early village populations may have been inclined to begin aggregating into larger villages due to their participation in local social networks that involved “resource procurement, spousal exchange, defensive alliances and trade relationships” (Birch & Williamson, in-press, p. 8; Timmins, 1997) At this time there is little or no evidence of matrilineal descent or residence patterns, although there is some limited evidence for the practice of patrilocality, indicating that the socio-political structure of these early villages was clearly flexible, variable, and continually evolving (Birch & Williamson, in-press; Hart, 2001).

3.1.2 Middle Iroquoian (AD 1300-1420)

By the 14th and early 15th centuries, Iroquoian village sites begin to show evidence of changes in socio-political organization (Warrick, 2000). Despite earlier claims that the Middle Iroquoian was a particularly homogenous period (Wright 1966), the beginning of the 14th century has also been deemed a time of innovative 'culture-making' (Pauketat, 2005), where Iroquoian life was considerably variable (Niemczycki, 1984). This period has archaeological evidence of rapid cultural change with the amalgamation of villages, and introduction of semi-subterranean sweat lodges and ossuary burials (MacDonald, 1988). The size of houses and villages doubled, to an average of twenty-eight metres and one hectare respectively (Dodd et al., 1990; Warrick, 1990). Steady population growth is one probable factor related to the increase in house length and village size, and amalgamation is another explanation for this increase (Pearce, 1984; Timmins, 1997; Williamson, 1990; Warrick, 1990).

In a recent paper, Birch and Williamson (in-press) suggest an initial wave of coalescence for Northern Iroquoian groups that began in the mid-13th century and continued throughout the early 14th century (AD 1250-1350). The aggregation of previously semi-sedentary peoples into more permanent villages co-occurred with the "establishment of maize-based agricultural economies, the emergence of village communities and longhouse-based residential patterns, and the development of social institutions that served to integrate village residents with local and regional social networks" (Birch & Williamson, in-press: 1). Larger villages, with populations of approximately 500 individuals, are suggested to have been formed through aggregation of previously dispersed groups rather than internal population growth alone. This aggregation was accompanied by a decrease in mobility and increase in cooperation and communication between neighboring groups, as well as intensification in food production (Birch & Williamson, in press; Dodd et al. 1990, Pearce 1984, Williamson & Robertson 1994). The lesser evidence of re-building or structural change during this period suggests that village sites were rarely re-occupied in this period, and that community relocation sequences, usually documented from the Late Pre-Contact, have much earlier origins (Birch & Williamson, in-press; Dodd et al. 1990; Warrick 2008; Birch & Williamson, 2013; Niemczycki, 1984). A potential catalyst for coalescence may have been the rising tensions between expanding agricultural populations.

Social and political developments, such as matrilineal descent and matrilocal residence, would have accompanied village coalescence, serving to strengthen group solidarity and form social linkages within the region. These socio-political developments may have also led to formal leadership or village councils, which facilitated group decision-making and maintenance of internal and external relationships (Birch & Williamson, in-press). If community sizes increased up to 500 individuals during the mid-13th century, existing socio-political mechanisms of egalitarian communities would experience more internal strain or conflict (Forge, 1972), and as a result village fission could have been utilized as a mechanism to relieve the stresses placed on growing communities (Warrick, 2000). The occupational history of the Myers Road site adequately exemplifies the dynamic and volatile socio-political situation during this time (Williamson & Ramsden, 1998). The appearance of semi-subterranean sweat lodges, elaborate pipe complexes, and ossuary burials suggest that newly amalgamated communities used these practices to facilitate internal social integration, as well as expand external networks of interaction and social signaling among village communities (Birch & Williamson, in-press).

The late 14th and early 15th centuries are characterized by a massive population growth, resulting in the creation of a higher number of village sites overall, and the migration of groups into previously unoccupied regions, likely in response to growing population pressures, competition for resources, or village fissioning (Birch, 2015; Hassan, 1981; Sutton, 1996; Warrick, 2000). The dramatic population increase can be attributed to high fertility and low infant mortality rates (Warrick, 1990), linked to a higher dependence on agriculture (Warrick, 2000).

Iroquoian settlement patterns for the late 14th century have, until recently, been understood as consisting of villages ranging from 1.5 to 3.2 hectares in size, commonly surrounded by one or more rows of palisade, with closely spaced longhouses exhibiting a nucleated pattern (Ambrose, 1987; Dodd et al., 1990; Finlayson & Bryne, 1975; Lennox, Dodd & Murphy, 1986; Wintemberg, 1948). The average longhouse length was thirty-three metres, and midden deposits were commonly interspersed throughout the village, adjacent to longhouses. House features and posts were present in larger quantities during the Middle Iroquoian compared to early and later Iroquoian period longhouses, possibly indicating longer occupations of these structures and villages (Dodd et al., 1990). Furthermore, the late 14th and early 15th centuries have evidence of particularly large villages exceeding two hectares, as well as an exponential increase in longhouse length, with some structures reaching 100 metres (Dodd et al. 1990; Warrick, 1990; MacDonald, 1986). At that size a single house would have been capable of holding the same number of individuals that would have once occupied a single village site in the Early Iroquoian period (Pearce, 1996). This increase in house size could represent the further development of co-residential matrilineal household groups and communal functions guided by prominent lineages or persons in the community (Hayden, 1976; Trigger, 1990). These changes in the size of villages and longhouses would have been related to the development of more formal social institutions within and between communities, such as matrilineages, subclans, or village councils (Birch, 2015).

Recent work in south-central Ontario has documented a number of Iroquoian village sites dating to the mid-14th to mid-15th centuries that exhibit dispersed settlement patterns, with more than one contemporary, or partly contemporary, village component (ASI, 2004, 2008, 2009, 2010, 2011; Birch & Williamson, in-press; Wagner, Toombs & Reigert, 1973; Tripp, 1978) (Appendix A, Figures A.3-A.9). For example, the Hope and Alexandria sites exhibit two or more clusters of houses with evidence of minute temporal differences, given that one sub-community likely arrived after another communities' initial occupation of the village area (ASI, 2008, 2011; Birch 2012, 2015). During this period, there is also evidence of a number of small late 14th century site components, suggesting that some larger communities may have fissioned after the earlier period of amalgamation, favouring even more dispersed settlements, yet retaining their previous social affiliations (Birch & Williamson, 2013a, 2013b). Unlike Uren villages, Middleport villages were generally not palisaded, but fences were used on occasion to create strategic visual boundaries between social units (ASI 2008, 2011; Birch, 2015; Birch & Williamson, 2013). The lack of palisade or modified human bone indicates that this period of time was relatively peaceful and stable, and perhaps signifies a formalized system of local and regional interaction (Birch, 2015).

Socio-political change continued throughout the later 14th and early 15th centuries, as indicated by the recurrent presence of semi-subterranean sweat lodges, larger longhouses in aligned clusters, ceramic vessels with horizontal motifs, and the emergence of ornately decorated smoking pipes (MacDonald, 1988; Smith, 1997b; Warrick, 2000). These changes in socio-political organization assisted in integrating newly aggregated, large, and potentially unstable, communities (Engelbrecht, 1985; Trigger, 1985). These innovations in cultural practices would have promoted widespread interaction and integration between communities, spreading ideas and change throughout the region (Birch, 2015; Ferris & Spence, 1995). For example, semi-subterranean sweat lodges could have been utilized for various ritual, recreational, and health-related practices, involving kinsmen from within the village, as well as individuals from neighbouring communities or even wider social networks (MacDonald, 1983; Roberston & Williamson, 2003).

The Tillsonburg Village exhibits a settlement pattern that has a similar layout to other dispersed village patterns documented from south-central Ontario at this time, yet still differs considerably in size from prior understandings of late 14th century Iroquoian settlements. The size of the Tillsonburg Village is sixteen hectares, which is five times the size of the larger villages more commonly documented from the late Middle Iroquoian period (Dodd et al., 1990; Golder Associates, 2009). However, in some ways the Tillsonburg community is similar to other contemporary sites through a more dispersed settlement pattern, common lack of palisade walls, an abundance of semi-subterranean sweat lodge features, and the positioning of middens adjacent to longhouses. This overview of Middle Iroquoian settlement trends assists in situating the

Tillsonburg Village within existing regional and temporal contexts, but also serves to highlight the unique aspects of the site.

3.1.3 Late Pre-Contact (AD 1420-1534)

The late 15th and early 16th centuries, about a hundred years after the Tillsonburg Site was occupied, have been described as a time of conflict and coalescence. A number of rich datasets exist for ancestral Huron-Wendat communities in south-central Ontario, and much of the literature on coalescent communities is concentrated on this particular area during the Late Pre-Contact (Birch, 2012; Birch & Williamson, 2013; Damkjar, 1990; Finlayson, 1978, 1985; Ramsden, 1989; Robertson, Welsh & Williamson, 1998; Robertson & Williamson, 2003). During this time, a significant number of smaller village communities were aggregating into single large village settlements, ranging from 0.4 to 5.4 hectares in size (with an average of 1.7 hectares). These large amalgamated villages were first formed by village expansion events, and then by regional relocations of these integrated communities. Satellite longhouse clusters joined an existing core settlement during a process of village expansion, involving the addition of one or more longhouses adjacent to the initial community. Over time these houses would become further incorporated into the village, but were usually demarcated by surrounding palisades, possibly indicating both a level of unity and separation. There is evidence that some of these communities later relocated as a more integrated whole, but other communities may have chosen to disperse, moving on to other places, or joining separate villages (Birch 2010, 2012, 2015; Ramsden 1988, 1990; Warrick 1990). Coalescent community patterns tend to exhibit palisades and/or similar longhouse orientations that help to visually indicate aggregation of new groups into the village, which would have likely occurred intermittently over a period of twenty-five to thirty years (Birch, 2012).

Conflict was also characteristic of the 15th and 16th centuries, and was likely a result of population pressures that led to competition over hunting resources (Birch, 2015; Mesquida & Weiner, 1999; Gramly, 1977; Fitzgerald, 2001; Hasenstab, 1996; Warrick, 2008). Village amalgamation was probably caused by the social upheaval that resulted from this increase in conflict. Villages had complex defensive structures of palisades and earthworks, as well as evidence of modified or butchered human skeletal remains found within site middens (Birch, 2015). On-going tensions would have needed to be mediated between individuals and groups, leading to new forms of social and political organization. These new socio-political organizations could have included the creation of clan systems that may have superseded household lineages, as well as the formation of an authoritative village council for internal, external, and spiritual relations (Birch & Williamson, 2013a). The inferred higher rate of conflict has also been explained through the examination of internal social factors, involving the process of individuals and groups redefining and repositioning themselves within their new social landscapes. As subsistence patterns changed from predominantly hunting to horticulture, men were no longer the primary resource providers and would have required new avenues to acquire prestige. Males would participate in more raids and rituals if their primary means to acquire prestige and status in the community were through warfare and trophies of captives. Warfare between local groups, and those farther afield, could have also served as an integrative function for newly aggregated communities, facilitating community solidarity against external enemies (Birch, 2010).

A number of these common and delimiting features of coalescent communities in the south-central region, such as palisades or evidence of conflict, are not present at the Tillsonburg Site; therefore, the site is likely exhibiting local and regional social responses that differ from the later examples of Iroquoian amalgamation or coalescence. The Tillsonburg Village may be an earlier and formative example of individuals' experimentation with merging of previously separate social groups. This experimentation with settlement patterns may be correlated with developing social practices of community coalescence (whether successful or not) that began in the late 13th century, but preceded these later substantive trends of coalescence in the 15th and 16th centuries (Niemczycki, 1984).

Given that the Tillsonburg Village's built environment lacks palisades or superimposed structures, common to Iroquoian villages involved in the later phase of coalescence, different methodological strategies were undertaken to examine the possibility that coalescence occurred during the formation of the village. I conducted an intra-site examination of the spatial distribution of morphological and decorative pottery attributes, as well as an investigation of longhouse architectural attributes. Post mould densities, as an exterior longhouse attribute, were also used in this research, as they have been employed in previous studies to assess the occupational history of villages, highlighting possible initial and secondary sub-communities. These two lines of evidence were queried in order to explore variability or similarity in the Tillsonburg Village's material culture and built environment, which may reflect the effects of coalescent processes or alternative processes. The remainder of Chapter 3 outlines previous studies of ceramic vessels and longhouses in the Late Woodland of southern Ontario to contextualize these two main analyses. Before beginning these contextual overviews, I will briefly summarize some of the general trends in Late Woodland pottery form and decoration.

3.2 General Trends in Late Woodland Pottery Form and Decoration

Throughout this section pottery forms and decorations are discussed from different chronological periods and sites. It should be noted however that categorizations of pottery are not always definitive, as there is often an element of subjectivity to their analysis and designation. It is also worth noting that the following generalizations regarding Late Woodland pottery do not reflect the entirety of variations found within types or a given village assemblage.

Early Iroquoian pottery tends to be thin walled and globular in shape with comparatively rounded bottoms. Vessel rims are typically collarless, and are decorated on the exterior and interior surfaces, as well as the neck and lip. A hallmark of Early Iroquoian ceramic vessels is variability in both decorative technique and motif. However, a common exterior motif consists of bands of oblique lines, which are usually applied by a linear stamping technique in western assemblages and a dentate stamping technique in eastern assemblages. Cord-wrapped stick, push-pull and crescent stamping are other common techniques for Early Iroquoian potters (Williamson, 1985, 1990). Punctation also occurs as an exterior and interior technique or decoration, often with bossing on the opposite surface (Noble, 1975; Williamson, 1990; Wright, 1966; Wright & Anderson, 1969). The use of these aforementioned techniques suggests continuity with earlier

Princess Point ceramics. There is evidence of cord-malleated, smoothed-over cord, ribbed-paddled, and check stamp surface treatments across Early Iroquoian sites in southern Ontario, but temporal and spatial patterns for these treatments are not clear (Williamson, 1985, 1990).

Uren period ceramic vessels exhibit primarily globular shapes and are either collarless or have poorly developed collars, sometimes defined as 'rolled rims.' The most common exterior decorative motifs are horizontals, or some combination of obliques and horizontals situated above and/or below each other. The techniques used are variable, but push-pull, incising, and linear stamping, either in combination or alone, are frequent in assemblages. The lips and interior rims of vessels are commonly decorated, but this decreases in prevalence over time (Dodd et al., 1990; Wright, 1966; Wright, 1986). For southwestern Ontario sites, a ribbed-paddled surface treatment dominates assemblages accompanied by a marked decrease in cord-malleation. The predominant ceramic vessel types for Uren sites tend to be Ontario Oblique, Iroquois Linear and Ontario Horizontal. The former two types only survive as a minority vessel type after the Uren phase, helping to demarcate temporal changes between Uren and Middleport sites (Dodd et al., 1990; Smith, 1987; Wright, 1966).

Middleport period ceramic vessels are predominantly collared with a slightly elongated-globular body form. The most common decorative motif is obliques above horizontals, followed by solely obliques or horizontals. A temporal trend occurs in which horizontal motifs and obliques over horizontal motifs decrease, while oblique motifs steadily increase over time. Decoration mostly appears on the upper rim and/or collar section of the vessel. The most prevalent technique is incising, with a marked decrease in linear stamping and virtual absence of push-pull. There is a lack of decoration on the lip and interior of the vessel, with plain body sherds forming over half of Middleport assemblages. Lip decoration is commonly found on over fifty-percent of Uren vessels, and only twenty-percent of Middleport vessels, and this trend is also fairly consistent for interior decoration (Dodd et al., 1990; Kapches, 1981; Pearce, 1984; Poulton, 1985). Castellations also become more common on Middleport vessels, with a trend toward pointed and incipient pointed forms (Dodd et al., 1990, Ferris & Spence, 1995). Plain or smooth surface treatments dominate the site assemblages with small percentages of ribbed-paddled treatments, which is a marked contrast from the preceding Uren vessels. Two dominant ceramic types, Ontario Horizontal and Middleport Oblique, usually consist of at least half of the assemblage from a site dating to this period (Dodd et al., 1990; MacNeish, 1952; Wright, 1966). Lawson Incised was originally included in Wright's (1966) dominant Middleport types, but this type has been virtually absent in at least one local sequence (Poulton, 1985). Pound Necked and Black Necked types appear more frequently during the transitional period into the Late Pre-Contact, resulting in sizeable percentages of these types on later Middleport sites (Dodd et al., 1990; Ferris & Spence, 1995; Lennox et al., 1986).

For ceramic vessels in the Late Pre-Contact I will discuss trends specific to groups designated as Neutral Iroquoians. Compared to earlier times, there is greater variability in vessel sizes, likely due to functional differences between cooking and storage pots. Vessels are typically more globular or squat-globular with constricted necks and rounded shoulders (Kenyon, 1982; Lennox & Fitzgerald, 1990; Ridley, 1961). Collars become more pronounced and shorter in height following the Middle Iroquoian period, however, flaring collarless vessels are also found in assemblages. The predominant upper rim or collar decoration is simple oblique or opposed oblique motifs using trailed or stamped techniques. Undecorated vessels that are either collarless or incipient collared also dominate in site assemblages, however neck decoration becomes rarer by AD 1500. Vessels exhibit a range of singular and multiple castellations with both rounded and pointed forms. Shoulder decoration becomes most prevalent on 16^{th} century Neutral sites, and bodies are generally plain and undecorated, with minimal examples of ribbed-paddled or cord-marked vessel bodies on most sites (Lennox & Fitzgerald, 1990; Ridley, 1961). In regards to ceramic types, Ontario Horizontal and Pound Necked tend to be characteristic of the early Late Pre-Contact Neutral sequence, whereas after AD 1500 Lawson Incised and Lawson Opposed types become more dominant (Lennox & Fitzgerald, 1990; MacNeish, 1952).

3.3 Previous Studies of Late Woodland Ceramic Vessels in Southern Ontario

In Great Lakes archaeology, a typological approach (MacNeish, 1952) to ceramic vessel classification was the norm historically and continues to endure particularly in the field of consultant archaeology and, to a lesser extent, in academia, despite many criticisms of the approach. MacNeish (1952) pioneered the typological approach to Iroquoian ceramic analysis, in order to organize ceramic data from a series of sites from southern Ontario and New York State into a comparable format. He defines a type as "a group of objects having interrelated or similar features that may have temporal or spatial significance" (MacNeish, 1952, p. 2). Emerson's (1968) paper is a follow up to MacNeish's earlier work, and began to introduce an attribute approach to ceramic studies by adding an emphasis on certain temporally sensitive attributes, such as rim profile, and decorative motifs and techniques. However, Emerson was primarily using these attributes to further describe and analyze types (Emerson, 1968).

Critics of the typological approach have argued that it disregards variation in pottery assemblages and reinforces dominant culture-history frameworks, thus leading to the rise of attribute analyses in the latter part of the 20th century. Wright (1966, 1967) proposed that ceramic analyses should shift from the traditional typological approach to single specific attribute analyses, as they are more accurate, less biased units of analysis, and more sensitive indicators of relationships through time and space. Peter Ramsden (1977) completed one of the first major syntheses of Iroquoian ceramic attributes from twenty-eight Huron-Wendat sites in southern Ontario, in an attempt to clarify chronologies and spatial distributions. He studied the co-variation of attributes, which helped to indicate patterns of occurrence (Kapches, 1981). Smith's (1983, 1987) thesis and dissertation were also significant contributions to ceramic attribute studies in southern Ontario. In his thesis, Smith developed an attribute code that determined attribute complexes, which highlighted the interaction among individual attributes, allowing for a successful seriation of Iroquoian sites in southwest Ontario. Smith's dissertation employs the use of attribute combinations to assess Middleport Iroquoian sites located in the Crawford Lake area. His analysis of ceramic rim sherd and pipe assemblages indicated both similarities and variations between groups of sites in the research area. The study discredits past inferences of homogeneity for Middleport ceramic vessel assemblages by examining two largely contemporary and distinct communities in the Crawford Lake area (Smith, 1987).

Another recent dissertation, following Smith's earlier papers, involved a detailed attribute analysis of ceramic vessels from several Iroquoian and Algonquian village sites in southwestern Ontario (Watts, 2006). Watt's study focuses on the phenomenological and agential aspects of pottery production at village sites associated with these two linguistic and cultural groups. The author uses ceramic morphology and surface decoration to examine networks of interaction between individuals and their material products, as well as the practices involved in producing these material objects. The findings of the study indicate that Iroquoian peoples in the Late Woodland subscribed to a fairly well-defined design repertoire in regards to potting practices. Individuals in these social groups would have internalized these design canons through phenomenological experiences during the production of vessels (Watts, 2006).

Similar to Watt's study, Chilton (1998) examined technical choice variation between Algonquian and Iroquoian ceramic vessels. She points out that the study of ceramic vessels was historically used to create culture histories that assumed connections between ethnicity and ceramic styles, but little attention was paid to the multitude of choices available to potters during the production and use of vessels, which inevitably would have led to correspondingly variable objects. Iroquoian peoples made pots in similar ecological and social contexts, creating stability and continuity in craft traditions and producing a higher degree of internal homogeneity than Algonquian potters. Pottery iconography may have been used to signal group identity, given that decoration was not needed for pots to function as cooking or storage vessels (Chilton, 1998). Iroquoian peoples' production of ceramic vessels was a household industry, meaning that a number of likely related individuals were involved in a part-time sequence of production for group use (Van der Leeuw, 1984). Chilton (1998) suggests that each linguistic group acted as active social agents in their own social change, or lack thereof, producing within a continuum of choice, which would be expressed within the design choices of individual potters.

As discussed in the aforementioned studies, an attribute approach to ceramic vessel analysis is currently considered to be a favorable alternative to the typological approach, because attributes are considered more accurate and sensitive indicators of spatial and temporal relationships (Watts, 2006; Wright, 1967). A greater level of accuracy and sensitivity allows for the researchers to make more exhaustive and nuanced interpretations, given that ceramic attributes are commonly used to investigate socio-political organization. However, the attribute approach is not without weaknesses, leading some researchers to use the two approaches in tandem (Kapches, 1981; Pearce, 1996; Sheratt, 2003). Kapche's (1981) dissertation used a combination of attribute and typological approaches to re-analyze what she deemed the 'Middleport Pattern,' referring to similarities in material culture rather than the cultural manifestations derived by previous archaeologists. A typological approach was chosen for comparative purposes in her study, as many Middleport sites lacked detailed attribute analyses. She examined local and regional similarities between a regional cluster of Markham area sites and other previously researched Middleport site clusters. Through these ceramic analyses, Kapches found that Middleport sites were more homogeneous within a regional focus, and more heterogeneous among regional site clusters. Geographically discrete groups were continually interacting, which created an overall effect of cultural homogeneity in the archaeological record, but this study found that each regional cluster exhibited traits distinct from the other site clusters (Kapches, 1981). A comparison of attributes rather than types may have enabled the author to further elaborate on these findings, possibly reaching different conclusions than cultural homogeneity within regional clusters.

Pearce (1996) also included a typological and attribute analysis of ceramics within his dissertation, which analyzes local Iroquoian site sequences in the London, Ontario area. The author utilizes a number of material remains to investigate village seriation and organization, adopting a societal, rather than cultural, framework to facilitate a better understanding of the human groups that participated within these local sequences. Pearce attempts to move beyond static and linear culture history frameworks, although these frameworks still underscore the interpretations of his data. He recognizes the importance of understanding regional site sequences and local community patterns, which are viewed as important sources of contextual information in current literature on coalescent communities (Birch, 2012). In an earlier paper, Pearce (1978) completed an attribute analysis of the Draper Site rim sherds, investigating inter-house variation and suggesting a potential temporal sequence of village expansion based on midden deposits. The Draper Site exhibits considerable intra-site variability for ceramic attributes and village segments, allowing a chronological ordering of the segments, as well as the social and spatial relationships between them (Pearce, 1978).

Sherratt (2003) provides a somewhat more recent study of ceramic variability and social organization at the Chypchar Site, which dates to the Middle Iroquoian Period and is located near Flamborough, Ontario. The author analyzed the variability in spatial distributions of ceramic types and attributes within a single house, informing chronological, social, and functional interpretations of the data. Similarly, Howie-Langs (1998) studied ceramic variability at the Praying Mantis Site, located in London, Ontario, and dating to the early Late Woodland. Using an attribute analysis, variability in the intra-site distribution of decorative, morphological, and use-wear attributes allowed her to address behavioural patterns connected to social and functional facets of Iroquoian village life. The author determined that the distribution of primarily decorative vessel attributes is patterned according to residential structures, suggesting that the groups occupying each longhouse were making different choices that were in part tied to these socio-organizational units. Current theoretical perspectives on Iroquoian ceramic studies tend to focus on the practices or experiences of pottery production rather than sociological behavioural significance. Even though these theoretical standpoints have changed, the methods employed by Howie-Langs (1998) are quite similar to those used in this thesis, given that she too considers attribute distributional patterns among intra-site longhouse contexts.

Alternatively, Mather’s (2015) study of ceramic vessel attributes focuses on the production and use of the vessel itself to address questions of social boundaries, rather than social organization, at two early-Late Woodland sites. Given that her study concentrates on pottery production and the movement of potters throughout the landscape, she applies a ‘communities of practice’ perspective. A ‘communities of practice’ approach, derived from Bourdieu’s (1977) practice theory, is becoming a prevalent theoretical orientation to apply to studies of material culture, particularly ceramic vessel assemblages (Fink, 2013; Mather, 2015; Newcomb, 2015; Sassaman & Rudolphi, 2001). This approach suggests that the fluid nature of group membership and individual influences assist in explaining the similarities or variability seen in ceramic styles (Mather, 2015). Variation in ceramic vessel manufacture, form, and decoration is a product of individuals having a multitude of social affiliations that affect choices and practices involved in pottery production. Differential distributions of ceramic attributes throughout an archaeological context may reflect a potter’s individual or group associations with particular ‘communities of practice’ (Sassaman & Rudolphi, 2001). “A community of practice refers to a group of practitioners who share a sense of group identity; these groups can change throughout a potter’s lifetime and a potter may belong to multiple communities at once” (Mather, 2015, p. 34). Notably, this approach disregards material culture variation as an indicator of ethnic identity but rather emphasizes social boundaries or influences (Hegmon, 1998).

A ‘communities of practice’ approach emerges from situated learning theory, which postulates that learning occurs through social interaction, with communities as the units within which learning is situated (Lave & Wenger, 1991). This process can serve to increase an individual’s participation in multiple ‘communities of practice,’ depending on their available social situations. Through this situated learning the individual would develop social identities and forms of group membership (Lave & Wenger, 1991; Mather, 2015). The basic tenents of the approach are historical context and social identity, common to theories of agency and practice. Through the maintenance of certain modes of co-participation the community can then be reproduced. Changes in social identities, forms of membership, and learning trajectories mediate the relationship between material expression and cultural affiliation over one’s lifetime. Crafting exists within the lived experiences of individuals whose social relations are situated in specific historical and cultural contexts, and served to assert and reproduce social relations and identity. The context determines whether or not the learning will result in similarities or differences in material expression, making the situating of study subjects into historical and cultural contexts key to understanding material culture variation (Sassaman & Rudolphi, 2001). However, alterations or innovations to these mental repertoires still occur and are the driving factors behind spatial and temporal changes within the archaeological record (Pauketat, 2001). Following this approach, similarities or variability in ceramic form or style will not be interpreted as representing ethnic affiliations, but rather as the presence of possible fluid and overlapping ‘communities of practice’ participated in by Tillsonburg Village residents. In this thesis, a ‘communities of practice’ approach is used to refer to the pottery as part of the material record of all the individuals living within a longhouse or groups of longhouses, rather than individual potters.

3.4 Previous Studies on Iroquoian Longhouses in Southern Ontario

In this study, the focus of the settlement pattern analysis is narrowed considerably to longhouse architectural elements, making it pertinent to consider previous literature related to these built structures. Historically, researchers have considered the longhouse to be a unique architectural feature related to the cultural identity of Iroquoian peoples. The analysis of structural variability in residential or domestic architecture can reflect the social or cultural dimensions of the built environment. An archaeological longhouse has a non-specific functional interior with certain standard features, like post-moulds, storage pits and hearths; however, there was also considerable variation in the larger regional context (Kapches, 1994). Literature on particularly germane architectural attributes, such as post moulds and storage facilities, will also be included in this discussion.

Kapches (1990, 1994, 2007) has contributed a number of papers to Iroquoian longhouse studies, one of which outlines diachronic and synchronic analyses of longhouses over 800 years of Ontario Iroquoian prehistory (Kapches, 1990). The questions considered in her 1990 article are dated and tend to support existing culture-history perspectives, particularly through her use of significant diachronic patterns to suggest linear tribal variation from patrilocal to matrilocal residence systems within the Late Woodland. However, the methods of the analysis were unique for the time, in that they use a spatially dynamic, rather than static approach. A spatial dynamics approach recognizes that longhouses were lived in and used for activities, whereas a static approach uses basic descriptive categories for statistical analysis of metric data. Kapches (1990) acknowledges that a comprehensive study would involve both dynamic and static approaches. In this thesis I opted to utilize a more static methodological approach, similar to Dodd (1984), in order to isolate a greater number of architectural longhouse traits for comparison, however the dynamic qualities of communities and space are still explored.

Dodd's (1984) study, while dated, continues to be one of the most comprehensive investigations into temporal and spatial longhouse variability available within Ontario Iroquoian literature. Architectural attributes of Iroquoian longhouses were examined to discern temporal and spatial patterns in house form and construction throughout the Late Woodland. This study incorporated a broader regional approach primarily, but the author also considers intra-site patterns at the late 16th, early 17th century Ball Site. The author offers an alternative line of evidence to investigate archaeological temporal periods or sequences that were routinely based on pottery assemblages (Dodd, 1984). She examined variability and interrelation between exterior and interior longhouse variables, and she calculated the relative frequencies of these variables over time, and found two distinctive characteristics of a longhouse floor plan: bilateral symmetry and uniformity. Longhouses yielded little variation in their symmetry between either side or end, with similar spacing and uniform numbers of features and posts within the overall layout. Given that past studies, like Dodd's, relied on normative expectations of historic longhouses, the author could have possibly ignored patterns that did not fit into this established search template (Creese, 2012). Despite these problematic assumptions, Dodd's work still provided this researcher with an array of useful attribute designations relating to the architectural structure of a typical Iroquoian longhouse, specifically the preserved archaeological features that outline a house floor plan.

Similarities in house layouts can be a reflection of local area resources, the communal activity of construction, and a sign of group solidarity or social cohesiveness (Dodd, 1984). For Middle Iroquoian longhouses, Dodd found that structures peaked in overall size and exhibit the most linear tapering at the ends, however, this period lacked an adequate regional sample size. The standard deviation for house size was also greatest during the Middle Iroquoian period, which suggests that a significant range of variation in house size was present at the time. Generally, Dodd's study found that Middle Iroquoian villages were occupied for the longest periods of time and exhibited a decrease in the number of overlapping houses, potentially indicating more permanent and sedentary settlements with longhouses built for longevity. More recently, Creese (2011) found that houses in the Middle Iroquoian period were more widely dispersed than preceding or following periods. A relationship between total roofed area and settlement size indicates that villages were on average less dense and commonly unpalisaded. Generally, Middle Iroquoian villages grew in total roofed area but were less densely built, which is similar to the extremely low density of houses recovered at the Tillsonburg Village Site.

Another recent paper examines longhouses and community in tribal societies, which are particularly salient to this current project (O'Gorman, 2010). O'Gorman (2010) specifically "explores the relationship of community dynamics and the built environment shaped by the use of longhouses for residential purposes" (p. 571). The longhouse is a fundamental entity through which to explore community, and this is particularly apparent in ethnohistoric literature. Individuals would be born and remain affiliated with natal longhouses while also forming new linkages in marital longhouses, thus, creating varied perceptions of longhouse community and facilitating social and integrative linkages beyond a singular village. Intra-village relationships were fostered through daily activities and communal projects, and inter-village relationships would be fostered through the movement of peoples in the regional landscape in communal relocation events (O'Gorman, 2010).

O'Gorman (2010) proposes a longhouse community model, incorporating five kinds of community that are all interrelated and differentiated by diverse relationships and spatial configurations. The natal and marital communities are the second and third kinds of communities, which are situated within the first kind of community, the individual longhouse. Each of these communities existed as significant places of social action and interaction for members. The fourth kind is the village community, encompassing all the longhouses that make up the village, and equates most with the concept of a ‘natural community’ in archaeology. Notably, O’Gorman suggests that sub-village or inter-longhouse communities may also exist within the village community. Physical proximity and the arrangement of structures could highlight groups of longhouses or village sub-communities. The final and fifth community is the regional community, in which social networks are created through linkages of individuals that form ties between village communities within the region. Unlike in ethno-historic studies, finding evidence for these five kinds of communities in the archaeological record can be more problematic and speculative. O’Gorman’s (2010) case study found some evidence for longhouse and village communities, including variations in burial practices between individual longhouses, as well as expansions to existing structures, which would have required social negotiations at the house and village level. The greater density of sites throughout a regional area would indicate the presence of a broader regional community, in which groups and individuals may have coordinated community relocations or determined access to resources. The paper situates Iroquoian longhouse life as the basis for community membership and identity, as longhouses existed within networks of relations throughout the landscape, creating places of interaction between residential communities (O’Gorman, 2010).

A few other recent studies on Iroquoian longhouses have concentrated on particular architectural attributes of the structure, such as storage pits or facilities (Bursey, 2001), as well as post mould features (Creese, 2012). Bursey (2001) reviews patterns of storage behaviour in the Northeast, relating to ethnohistoric and archaeological evidence of storage pit features and facilities. The surplus and subsequent storage of foodstuffs is a necessary precondition for horticulture and sedentary life, and this lead to the formation of storage facilities. There are a number of storage facility forms, known from both ethnographic and archaeological sources, including storage pit features, end cubicles, semi-subterranean features, and hanging baskets or other items from the rafters. One of the main purposes of Bursey’s (2001) review was to investigate possible differential control and access to these various storage facilities within an Iroquoian village, and he found that end storage cubicles or vestibules, known from ethnohistoric documents (MacDonald, 1987), as well as the archaeological record (Dodd, 1984), were likely under the control of the entire household. Bursey’s (2001) article highlights the notion that variation in the architecture of longhouses could correlate with variation in storage behaviour, particularly in regards to the access and control of storage facilities.

Creese's (2012) analysis of interior spatial organization of longhouses resulted in the documentation of a previously unknown structural support system for houses using relative proxemics distances, which were found to have stayed constant for over five centuries, despite spatial location or house size. Numerous longhouses had four rather than two rows of interior support posts on either side of the central hearth corridor. These findings impact interpretations of structural integrity of longhouses, given that these additional interior posts likely functioned to strengthen and stabilize the roof. Creese suggests that the space between interior rows of posts was a significant behavioural transition zone that would have unconsciously influenced social interaction and daily movements within the house. This would have affected the occupant's domestic habitus, or set of embodied dispositions, which underlies daily practices within these residential structures (Bourdieu, 1977; Creese, 2012). Longhouses served a number of social and domestic needs and exhibited long-term consistency in interior post organization. "The resulting domestic *habitus* (*sensu* Bourdieu, 1977) can be expected to have had important ramifications for the development of social boundaries and identities within and beyond the longhouse" (Creese, 2012, p. 65).

Archaeologists infer that social life is manifested in part via the material expressions of space, and that communities are formed through interactions and negotiations in this space. The longhouse plays a physical and symbolic role in the process of how inhabitants experienced and created community, linking community and place (O'Gorman, 2010). For the longhouse attribute analysis, I determined that the use of basic known traits for comparison would be sufficient, even though they involve ethnohistoric or culture-history assumptions about longhouse architecture. If the scope of this thesis had been to explore longhouse architecture in its own right, a more holistic and neutral approach would have been preferred and advantageous. However, the current study is more focused on how each longhouse, or groups of longhouses, compare in terms of architectural traits or construction methods and how this may or may not relate to social processes of community formation. In this thesis, the longhouse serves as the social and analytical unit of analysis for both the architectural attribute analysis, as well as the ceramic vessel analysis, given that vessels are tied to the material record of each longhouse and the individuals who lived within these houses.

3.5 Conclusion

This chapter has outlined settlement pattern and pottery production trends for Iroquoian village sites throughout the Late Woodland Period of southern Ontario, allowing for a greater understanding of the broader temporal, archaeological, and socio-cultural context in which the Tillsonburg Village existed. The context for the ceramic vessel analysis was outlined through a review of previous typological and attribute analyses of ancestral Iroquoian assemblages in southern Ontario. Furthermore, the context for the longhouse attribute analysis was outlined through a review of previous literature on the architectural and spatial attributes of Iroquoian longhouses, as well as common features of these structures, such as post moulds and storage pits or facilities. Chapter 4 will outline the methodologies employed for the ceramic vessel and longhouse analyses.

Chapter 4

4 Methodology

In this chapter I will outline the attributes examined for the ceramic vessel analysis, with a focus on vessel morphology and decoration. I will then discuss the geospatial analysis of categorical ceramic vessel data using ArcGIS software for the purpose of examining spatial patterning of attribute distributions throughout the Tillsonburg settlement. Also, this chapter outlines the attributes chosen for the investigation of longhouse structures at the Tillsonburg Village, specifically exploring post mould densities, as well as interior and exterior architectural elements of each house. Lastly, SPSS statistical procedures will be summarized, as they were used to test for patterns of variance between houses and groups of houses for both morphological-metric ceramic data and longhouse attribute data. Each analysis further contributes to examining patterns of similarity or variability expressed in the Tillsonburg Village's material culture and built environment.

4.1 Ceramic Vessel Analysis

Ceramic analyses have historically been utilized to study questions of socio-political organization (Engelbrecht, 1974; Ramsden, 1977; Timmins, 1997; Whallon, 1968) and continue to be utilized in recent studies of community organization (Mather, 2015; Watts, 2006). The analyses of ceramic vessel attributes and their spatial patterning across the site will be the primary line of evidence to further investigate the temporal, organizational, and possible social variability within the Tillsonburg Village. Differences in vessel morphology and decoration may reflect the varying social contexts of potters inhabiting the Tillsonburg Site related to 'communities of practice.'

4.1.1 Sampling

All artifacts had been previously catalogued by either Archaeologix Inc. (2002) or Golder Associates, Ltd. (2009), and were grouped according to longhouse or midden. Ceramic rim sherds were first organized by house and then feature provenience to facilitate the identification and sorting of rim sherds into vessels. The sampling strategy for the study included only ceramic artifacts catalogued as rim sherds, as well as a select number of fragmentary rim sherds. A complete or fragmentary rim sherd had to exhibit a minimum set of criteria to be considered analyzable. At minimum rim sherds needed a complete exterior, lip, and interior upper rim or collar zone. Sherds that lacked any of these criteria were considered non-analyzable and were excluded from the attribute analysis. It was not within the scope of this research to include a more exhaustive analysis of the site's complete ceramic assemblage, although a substantial number of the analyzable rim sherds sorted into vessels exhibited portions of the vessel neck, and in a few cases, the vessel shoulder. The grouping of ceramic rim sherds into vessels involved an evaluation of direct physical cross-mends, as well as inferred cross-mends. A number of criteria were used for the inferred mends (Mather, 2015), including:

- Surface colour
- Surface treatment/decoration
- Relative size (curvature, diameter, shape)
- Wall thickness
- Vessel fabric (core colour, size of temper or inclusions)
- Evidence of use-wear
- Proximity (within the same feature or house/midden)

During the analysis for cross-mends, if no matches occurred, the sherd or sherds were considered a unique vessel. The presence of vessel cross-mends usually occurred within the context of individual houses, however several vessels cross-mended between houses 14 or 15 and midden 1 or 3 in the eastern area of the village. Each vessel was labeled with a vessel ID number and the consultant report's catalogue number. After the initial sorting, the vessel count was 350, however throughout the process of analyzing attributes several vessels were once again sorted as a unique vessel or became part of an already existing vessel. Thus, at the end of the attribute analysis 338 vessels had been analyzed, which included a single entry for vessels that cross-mended between two separate contexts. For the subsequent spatial analyses of the ceramic attribute data, it seemed pertinent to include cross-mended vessels in all of their respective spatial contexts, resulting in the duplication of several vessel records, creating a somewhat inflated vessel count of 348. Notably, there was a considerably smaller sample size for houses 1 to 10 in comparison to houses 11 to 15: 66 and 272 respectively.

4.1.2 Attribute Analysis

An attribute analysis was considered most suitable for this research, as it provided smaller units of analysis that allowed for a more in-depth examination of variability within the Tillsonburg assemblage. Given that typologies continue to underlie our understandings of Late Woodland temporal periods, and as such are useful for comparative purposes, ceramic vessel 'type' was included as one of the study's attributes.

An attribute code was compiled based on several previous research studies on ancestral Iroquoian ceramic assemblages (Howie-Langs, 1998; MacNeish, 1952; Mather, 2015; Pearce, 1978; Smith, 1983, 1987; Sherratt, 2003; Watts, 2006) (Appendix C). I decided to focus on two specific categories of attributes for the analysis: morphological and decorative. The morphological category includes both categorical attributes relating to form, and metric attributes relating to size. The decorative category includes attributes of decorative complexity, technique, and motif. In total, forty-four attributes were selected for the study: seventeen morphological and twenty-three decorative. I chose these particular categories because previous research on Iroquoian pottery has argued that morphology and decoration are accessible attributes, which relate to the semiotic functioning of material culture, and have the capacity for subtle variation (Watts, 2006)**.** I chose to exclude manufacture and use-wear related attributes, as they were not within the scope of this research project and its objectives. Also, it should be noted that five contextual attributes were included in the study to associate the vessels with their correct provenience.

The goal of the attribute analysis was to evaluate the morphological or decorative attributes of each vessel in order to facilitate spatial analyses of these traits, which will explore variability or similarities between houses or groups of houses within the village. Table 3 outlines the specific morphological and decorative attributes included in the study, and these will now be discussed in further detail. A complete version of the attribute code formulated for this study is available in Appendix C.

Table 3: Summary of Ceramic Vessel Attributes Included in Study (See Appendix C for Detailed Attribute Code)

Morphological Attributes	
1. Rim Form	10. Collar Height (mm) (If Collared)
2. Rim Orientation	11. Rim to Neck Height (mm) (If Collarless)
3. Upper Rim Profile - Exterior	12. Basal Collar Width (mm)
4. Upper Rim Profile - Interior	13. Neck Length (If Applicable) (mm)
5. Collar Base Shape (If Collared)	14. Neck Thickness (If Applicable) (mm)
6. Lip Form	15. Rim Diameter (If Applicable) (cm)
7. Angle of Lip to Interior	16. Neck Diameter (If Applicable) (cm)
8. Lip Thickness (mm)	17. Shoulder Diameter (If Applicable) (cm)
9. Rim Wall Thickness (mm)	

Decorative Attributes		
18. Number of Exterior Bands of Decoration	27. Interior Rim Motif	36. Interior Punctate Form
19. Number of Exterior Motifs	28. Neck Motif	37. Exterior Surface Treatment - Neck
20. Rim Technique	29. Shoulder Motif	38. Ext. Surface Treatment - Shoulder
21. Lip Technique	30. Number of Horizontals on Ext. Collar/Upper Rim	39. Interior Surface Treatment - Neck
22. Interior (Int.) Rim Technique	31. Number of Horizontals on Exterior Neck	40. Int. Surface Treatment - Shoulder
23. Neck Technique	32. Number of Horizontals on Lip	41. Type
24. Shoulder Technique	33. Castellation (P/A)	42. Int. Surface Treatment – Upper Rim/Collar
25. Rim Motif	34. Castellation Form	43. Int. Neck Technique
26. Lip Motif	35. Interior Punctate	44. Int. Neck Motif

4.1.2.1 Contextual Attributes

Contextual attributes were included in the analysis to ensure adequate provenience data for each vessel, which is necessary for a comparative analysis aiming to investigate vessel attributes in their associated contexts (Howie-Langs, 1998). The Vessel ID number was assigned during the process of sorting rim sherds into vessels. The catalogue number, house or midden number, as well as feature, square, or support post number were all transcribed from the consultant archaeology site reports (Archaeologix 2002; Golder Associates, 2009). A small number of rim sherds were assigned sub-catalogue numbers as it became clear the report catalogue number had been incorrectly recorded during original processing. Representation is included in the contextual section of attributes, as this data served to outline the specific zones present for each vessel, shaping the following morphological and decorative attribute analyses.

4.1.2.2 Morphological Attributes

The morphological attributes refer to the size and form, or shape of the ceramic vessel. There were several form-related attributes considered, as well as several attributes related to measurements of size (Howie-Langs, 1998; Mather, 2015; Watts, 2006). These attributes were analyzed to gain a better understanding of vessel form throughout the Tillsonburg Village, examining potential similarities that may relate to a shared mental template, or variability that may relate to possible social factors.

Due to the sampling strategy, a number of vessels yielded incomplete data sets, particularly in regards to neck and shoulder zone attributes, thus metric attributes 13 through 17 were the most affected. Specific criteria for inclusion or exclusion of these attributes are detailed in the attribute code located in Appendix C. Certain morphological attributes, such as neck length and rim, neck, and shoulder diameter, were difficult or even impossible to assess for vessels that consisted of one or two fragmentary upper rim or collar sherds. This lead to a number of vessel attributes being classified as indeterminate during the raw data collection. Indeterminate outcomes were then excluded from any further spatial or statistical testing, resulting in variable sample sizes for each attribute investigated.

4.1.2.3 Decorative Attributes

The decorative attribute category included attributes relating to complexity, technique, and motif (Howie-Langs, 1998; MacNeish, 1952; Mather, 2015; Pearce, 1978; Smith, 1983, 1987; Sherratt, 2003; Watts, 2006). MacNeish's (1952) types were also appended on to this broader category, as types are primarily a combination of decorative characteristics. The overall complexity of decoration was assessed by two attributes: the number of exterior bands of decoration and the number of exterior motifs. Decorative techniques and motifs were recorded by vessel zone, including the exterior and interior upper rim or collar (rim), neck, and shoulder. A number of singular sub-attribute options and sub-attribute combination options were available to effectively record the technique or motif for each zone. In the context of this thesis, a sub-attribute refers to the range of possible outcomes or choices available for the vessel attribute. For example, linear stamped or incised are sub-attributes for the rim technique attribute (see Appendix C).

The remaining attributes in this category could be argued to further illuminate a vessel's decorative complexity, including the number of horizontal lines per zone, as well as the presence or absence and form of castellations or interior punctates. Exterior and interior surface treatments were also included in this category, as not only technical, but also decorative or stylistic choices can be involved in their application. The same preservation and sampling issues are present for decorative attributes, as they were for morphological, leading to incomplete data sets. Indeterminate outcomes were once again excluded from further spatial statistical testing. The recording of numerous sub-attributes for the spatial analyses allows for a deeper investigation into minute variations of vessel form and décor between houses and groups of houses, possibly relating to social distinctions within the village linked to pottery-making practices. Further analyses of ceramic vessel 'types' allows for an examination of temporal patterning at the intra-site level, assessing the contemporaneity of the Tillsonburg longhouses.

4.2 Spatial Analyses

GIS software is a beneficial tool for exploring spatial patterns and relationships within an archaeological site; thus, geospatial analyses were completed for the categorical ceramic vessel attributes. Spatial data can provide a wealth of information on community patterns, as organization and arrangement of space is culturally and functionally determined (Timmins, 1997). GIS spatial analyses allowed me to explore and statistically test for significant distributional patterning among the ceramic vessel attributes, as well as output these patterns in a stimulating visual format. A number of recent studies have effectively employed GIS applications to examine the spatial distributions of artifacts throughout archaeological sites (Cardinal, 2011; Casto, 2015; Hoskins, 2010; Mallo, 2016; Mather, 2015).

For this study, the spatial analyses were conducted using ArcGIS software, in the program ArcMap. A GIS technician at Timmins Martelle Heritage Consultants (TMHC) provided the longhouse polygon shape file for the site. I then acquired digital imagery of the site area from the South-Western Ontario Orthophotography Project (SWOOP), and aligned this with the existing shape file. I compiled and formatted the ceramic vessel attribute data into GIS-compatible attribute tables that were then joined to the existing shape file table, attaching appropriate data to respective longhouse polygons. The quantity and percentage of each sub-attribute was calculated and included in the ArcGIS tables. In an effort to normalize the data, quantities of sub-attributes were converted to percentages based on the total number of vessels within a given attribute for each longhouse, and then these percentage columns were further analyzed spatially. Three separate ArcGIS-compatible tables were created including one for morphological attributes, one for decorative attributes, and a separate table for ceramic vessel types. Following the spatial analyses of these initial tables, I decided to amalgamate the latter into a final table consisting of groups of characteristically earlier, Middleport, and later vessel types, according to MacNeish's (1952) typologies and seriation.

Quantity and percentage columns were first explored using Layer Symbology, which visually represents house sub-attribute values in a graduated colour ramp. A quantity map helps to highlight the sample size of each sub-attribute, whereas a percentage map illustrates hypothetical spatial patterns for each sub-attribute prior to statistical testing. Sub-attributes that were non-significant would appear highly uniform throughout the site area when explored using Layer Symbology. These exploratory output maps allow for a more exhaustive understanding of a sub-attribute's spatial patterning.

Two spatial statistic tools were utilized in this study: Spatial Autocorrelation (Global Moran's I) and Optimized Hot Spot Analysis (Getis-Ord Gi*). For certain sub-attributes, it was more advantageous to use the standard Hot Spot Analysis (Getis-Ord Gi*) to manually adjust the parameters, resulting in more exact hot spot and cold spot results. It should be noted that for a majority of sub-attributes, the Optimized Hot Spot Analysis was successful in producing an optimal representation of spatial patterns. Indeterminate records were removed before the spatial statistical tests, which consequently shifted the percentage values for each attribute. Morphological sub-attributes and decorative 'types' required at least one observation to run Spatial Autocorrelation, whereas all other decorative sub-attributes required at least two observations in different contexts to be further analyzed. Sub-attributes yielding only one or two observations were still incorporated into the house totals used to determine percentage values for each sub-attribute, as well as into the summary tables found in Appendix D. Sub-attributes with no observations were excluded from both spatial statistical testing and attribute summary tables, as they did not require any further study. Indeterminate or absent sub-attribute records were also excluded from the spatial statistical testing and attribute summary tables.

4.2.1 Spatial Autocorrelation (Global Moran's I)

Spatial Autocorrelation is located in the Analyzing Patterns toolbar, and measures the spatial autocorrelation based on feature locations and attribute values using the Global Moran's I statistic, determining whether the pattern expressed is clustered, dispersed, or random. This tool outputs a report and graph representing the z-score, p-value, and Moran's I index value of the sub-attribute being assessed. A z-score and p-value indicate whether a sub-attribute is statistically significant for either clustering or dispersion, or randomly distributed and as such lacks statistical significance. A positive Moran's I index value indicates a tendency towards clustering and a negative value indicates a tendency towards dispersion. The z-score is based on the null hypothesis that feature values are randomly distributed across the study area, or in other words the null hypothesis is

Complete Spatial Randomness (Environmental Systems Research Institute (ESRI), 2017e).

The Global Moran's I statistic requires a minimum of thirty input features for the results of the analysis to be considered reliable (ESRI, 2017f). The original polygon shape file only included fifteen longhouse features and three middens features, and as such did not meet this minimum requirement. Therefore, in order to adhere to this requirement, each house was divided into sections of relatively equal area. The longhouse polygons were measured on their central axis and were subdivided depending on the overall length. Houses less than thirty metres long were not divided, houses between forty and eighty metres long were divided into two sections of relatively equal size, and houses greater than eighty metres long were divided into three sections of relatively equal size. In the Editor tool bar, the split (cut) polygon tool was utilized to split houses into their respective sections, and these sections were then added to the ceramic vessel raw data tables according to contextual feature data. The original fifteen houses were split into twenty-seven house sections, along with the original three middens, to conform to the threshold of best practice. Geospatial longhouse figures with the necessary archaeological feature locations from the consultant reports were georeferenced over the new house sections shapefile, allowing me to visually inspect where features, and consequently vessels, lay in terms of the newly created house sections. Ceramic attribute data became linked to house sections rather than entire house polygons, according to a vessel's respective feature context. In the following results chapter, I will refer to spatial patterns in terms of houses and house groups rather than sections, but the spatial statistical results will be reported according to house section.

Spatial Autocorrelation is also an advantageous statistical tool for data with skewed distributions, which was the case for a majority of the ceramic sub-attribute columns analyzed. Despite the tool's general permissiveness, skewed data does have an effect on the parameters set for the statistic. Specifically, one has to manually enter a distance band, or threshold distance, to ensure that each polygon feature has at least eight neighbouring features. Thus, in order to meet this standard of best practice, I set the distance threshold to 150 metres, which allowed for the house sections to have at least several neighbours each time the tool was run. Row standardization was another specific parameter that was set to mitigate the skewed distribution of the data. The row standardization option is commonly utilized when there is potential for sampling or aggregation bias in the data set, and is also highly recommended for polygon features (ESRI, 2017f). The other parameters used for the Spatial Autocorrelation analysis were the mandatory default settings, and these default parameters were considered acceptable for evaluating the sub-attribute data. Inverse Distance was used for the Conceptualization of Spatial Relationships, as it considers nearby neighbours to have a higher influence on the computations for a target feature than those further afield. Euclidean Distance was the default distance method that specifies the distance for computations as a straight line between two points. The Input Feature Class was always the house sections shapefile, and the Input Field was dependent on the ceramic sub-attribute being assessed (ESRI, 2017e).

4.2.2 Hot Spot Analysis and Optimized Hot Spot Analysis (Getis Ord Gi*)

The Hot Spot Analysis is located in the Mapping Patterns toolbar, and uses the Getis-Ord Gi* statistic to assess hot spots and cold spots for a set of weighted features. Hot spots identify statistically significant areas of high values and cold spots identify significant areas of low values, which are more distinct than one would expect in a random distribution of those same values. This local statistical tool was only utilized on the sub-attributes exhibiting statistically significant patterns at the global level, indicated by the Spatial Autocorrelation results. This tool creates an output map representing these hot or cold spots, as well as an attribute table that indicates the corresponding z-score and p-value for each house section in relation to the inputted sub-attribute. A z-score near zero would indicate no spatial clustering, whereas a high positive z-score and low p-value indicates a hot spot, and a low negative z-score and low p-value indicates a cold spot. The greater the z-score in either direction is related to the greater intensity of value clustering (ESRI, 2017a,b).

The optimized version of the Hot Spot Analysis (Local Getis-Ord Gi*) considers the feature input field and decides which parameters would best suit the data in that particular case. Thus, the Optimized Hot Spot Analysis allows for less manual manipulation of the statistical tool's parameters. For a majority of the statistically significant sub-attributes analyzed, this tool succeeded in outputting the most optimal results, thus creating an adequate visual representation of either hot spots or cold spots throughout the village, pertaining to a specific sub-attribute. The optimized hot spot maps and data tables consistently corresponded to the sub-attribute's raw data percentages for each house, indicating the tool was outputting efficient results. As stated earlier in this section, for the minority of cases in which the tool did not output accurate results, a standard Hot Spot Analysis was utilized to better manipulate the tool's parameters (ESRI, 2017c,d). At the discretion of the researcher, a smaller distance threshold of 40 to 60 metres was applied in roughly half the cases, however the other half yielded optimal results when a larger threshold of 125 to 150 metres was applied.

4.3 Longhouse Attribute Analysis

An analysis of the architectural attributes of each longhouse structure allows me to explore commonalities and variability within the Tillsonburg community's built environment. Settlement pattern data has been and continues to be regarded as valuable and amenable for interpreting the social and political structure of prehistoric societies (Chang, 1968; Trigger, 1967; Warrick, 1984). The way in which individuals or groups organize a house's interior and extramural space is a part of a process of social negotiation, and differences in the architecture and layout of space among houses in a village can reflect the variability of social groups in a community (Stone, 2016). Decisions related to construction methods and organizations of space are connected to sub-conscious learning frameworks, as well as conscious choice embedded in daily activities and experiences (Johnson, 2012; Kent, 1990; Stone, 2016). The Tillsonburg Village Site offers an opportunity to explore intra-site architectural variability within an Iroquoian village context. If variability occurs between the architectural features of the Tillsonburg longhouses, one can then explore whether or not these differences could be related to social processes of community coalescence.

All archaeological features and post moulds from the Tillsonburg Site were mapped and documented during either the 2001 salvage excavations or 2008 Stage 4 archaeological assessment. The Archaeologix (2002) and Golder Associates (2009) site reports served as the primary datasets, providing the necessary geospatial figures of longhouse structures to complete the attribute analysis. Dodd's (1984) thesis, *Ontario Iroquois Tradition Longhouses,* supplied a methodological framework for the examination of architectural variability among the Tillsonburg structures. The author argues that longhouses are an integral part of Iroquoian life or culture and the spatial characteristics of houses can reflect socio-political, economic or religious aspects of the community (Dodd, 1984). Dodd's study extended another possible line of evidence for understanding archaeological temporal periods and sequences, which have in the past been largely defined by ceramic vessel analyses (MacNeish, 1952; Wright, 1966). In this research, the longhouse analysis will serve as a supplementary line of evidence to the ceramic vessel attribute analysis.

4.3.1 Post Mould Analysis

A post mould density analysis was completed for the exterior side walls in order to investigate the duration that a longhouse was occupied or maintained. A number of researchers have shown a correlation between densities of wall posts and length of occupation (Kenyon, 1968; Dodd, 1984; Finlayson, 1978, 1985; Timmins, 1997, Warrick 1988). This analysis helps to assess temporal relationships between longhouses, and aids in interpretation of a site's occupational history (Kenyon, 1968; Birch, 2010). Essentially, the higher the post mould density, the longer a structure was occupied or in use. The occupation of a Late Woodland Iroquoian village typically ranged from twenty to fifty years, and this range is considered to be a single occupation within the archaeological record (Birch, 2015). Thus, processes of community coalescence unfolded within a fairly brief time-scale, where different groups may have inhabited the village area for various lengths of time within this overall occupation period.

For the post density analysis, I utilized geospatial figures of the longhouse structures acquired from the consultant reports (Archaeologix, 2002; Golder Associates, 2009). As side walls commonly yield more accurate data on post densities, they were used to calculate the general averages for each house. Side walls were measured to scale, and post moulds were manually counted until evidence of wall tapering occurred. The number of posts was then divided by the total number of metres to produce an average post mould density per linear metre for each side wall of the house. The methodology for post mould densities had to be adjusted to account for heavily impacted areas of the western portion of site, damaged by construction grading. If a gap of more than two metres occurred within the side wall, that area was excluded from the calculation. Gaps in the side walls may have been house entryways, however, construction cutting likely caused many of the larger gaps in the western portion of the village. End wall post densities were also calculated in some instances, particularly when end walls were more intact than portions of side walls and thus yielded more accurate results. Finally, a five-metre segment of side wall, with the highest quantity of posts, was used to calculate the maximum average post mould density per metre for each longhouse. An example of how I conducted both average and maximum post mould density analyses can be seen in Figure 3. The raw data table for the post mould analysis can be found in Appendix E, Table E.1.

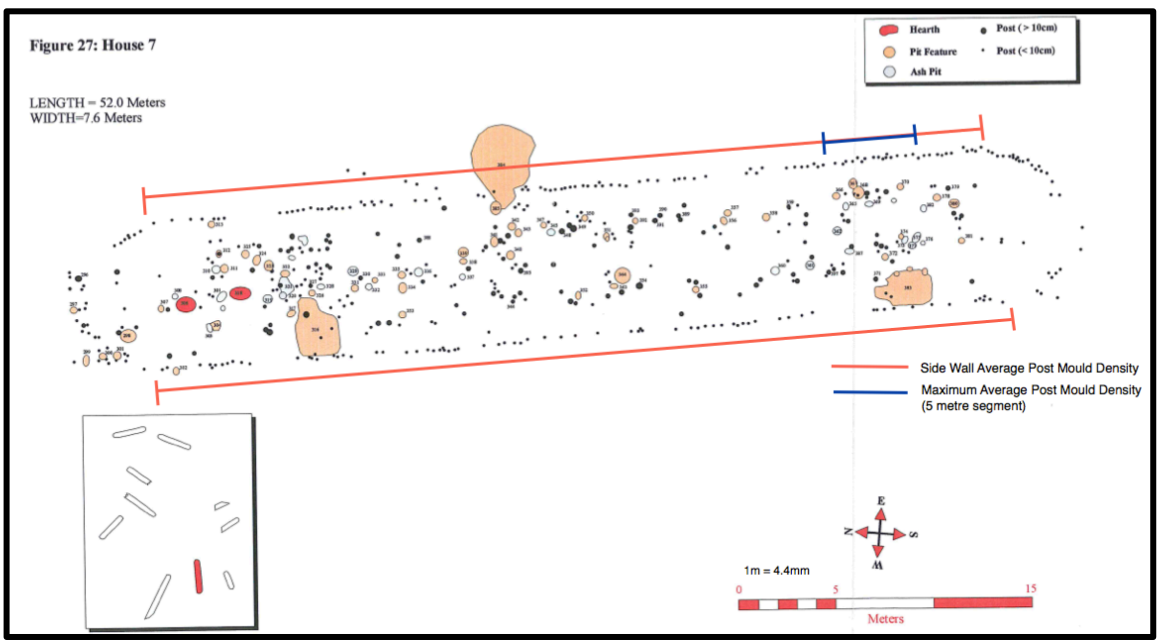

Figure 3: Example of Post Mould Density Analysis for House 7 (Adapted from Archaeologix, 2002)

4.3.2 Exterior and Interior Longhouse Attributes

A number of exterior and interior longhouse attributes were also analyzed. The attributes were adopted from Dodd's (1984) thesis *Ontario Iroquois Tradition Longhouses,* as they were appropriate for the type of architectural analysis I intended to complete for each house. Through having a wide array of exterior and interior longhouse attributes, minute variations in the structures and their construction may become apparent, and lead to the interpretation that certain houses may be more closely related than others.

Seven attributes were examined for the exterior longhouse analysis (Figure 4). The data for length and width of longhouses was provided by the consultant reports, and from these measurements, I calculated the total area for each house. The midline width was measured from the central point of the longhouse length. For houses with only one intact end, the midline width was calculated at a central point between the intact end wall and the furthermost post on the opposing side. The linear taper length was recorded for both sides of each house end, measured from where the side wall begins to taper until the straight portion of the end wall. Averages were first calculated for each house end, and then combined into linear taper length averages for the entire structure. House end widths were calculated from where the end wall begins to taper on each side. Finally, the percentage difference between the midline width and combined end widths was calculated. The raw data table for exterior attributes can be found in Appendix E, Table E.2.

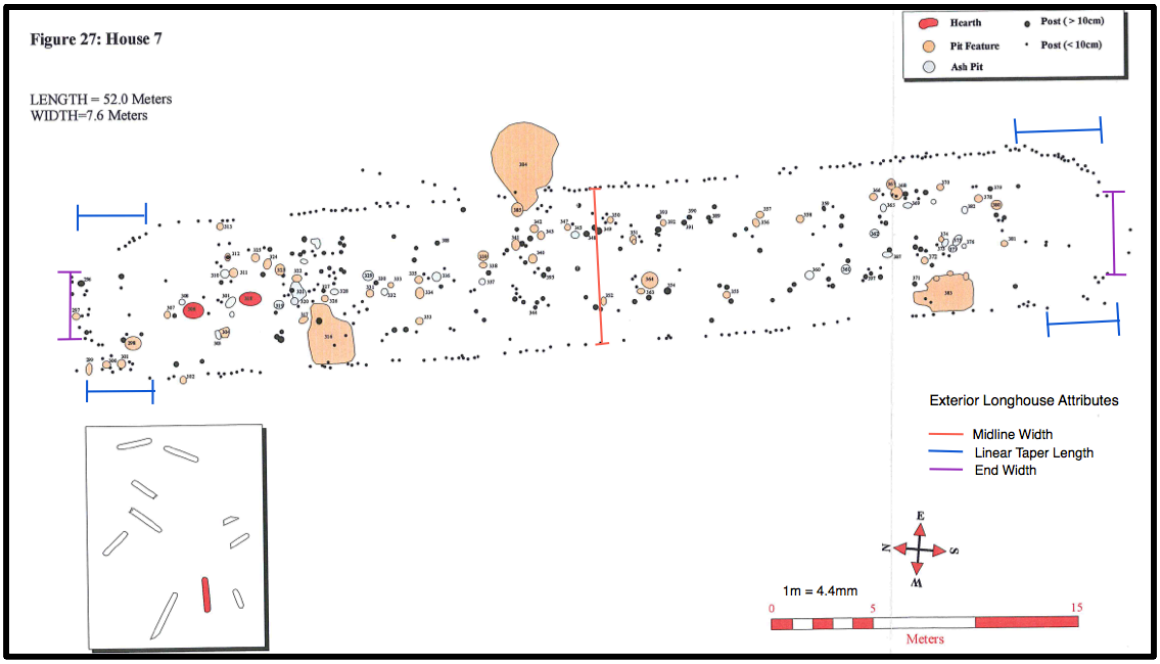

Figure 4: Example of Exterior Attributes for House 7 (Adapted from Archaeologix, 2002)

Twelve attributes were examined for the interior longhouse analysis (Figure 5). Storage cubicle length was measured from end wall posts to the presence of either a partition wall or central corridor features. The storage area for each cubicle was calculated, as well as the overall storage cubicle area for the entire structure. The presence or absence of partition posts was noted. The consultant reports provided ranges for the distance between bench line support posts to either side wall. I then averaged those ranges to produce a representative result for each house. Central corridor length was calculated as the distance between end storage cubicles, and central corridor width was calculated as the distance between the bench line support posts. Feature densities (per m^2) were analyzed within three four square metre areas in the central corridor for intact houses; one located at the mid-point, as well as one at each end of the corridor. I attempted to lay these areas over central hearth features, but this was dependent on house preservation. For houses that were heavily disturbed from construction activities, the four square metre areas were placed on the available central hearth features. Since hearths tend to be shallow features, it is likely that areas with documented hearths would be less affected by grading and yield more accurate results than those areas in which hearths may have previously existed. The same four square metre areas were also used to record interior post mould densities (per m^2). Features or interior posts touching or partially inside these square areas were included in the calculations. A general interior feature and post mould density (per m^2) was calculated for the entirety of the house, although results of these general densities were greatly affected by house preservation or lack thereof. Interior feature and post densities, similar to wall post mould densities, are useful indicators of duration of occupation. Houses occupied for longer periods of time will likely have higher densities than those occupied for a lesser extent (Dodd, 1984). The raw data table for interior attributes can be found in Appendix E, Table E.3.

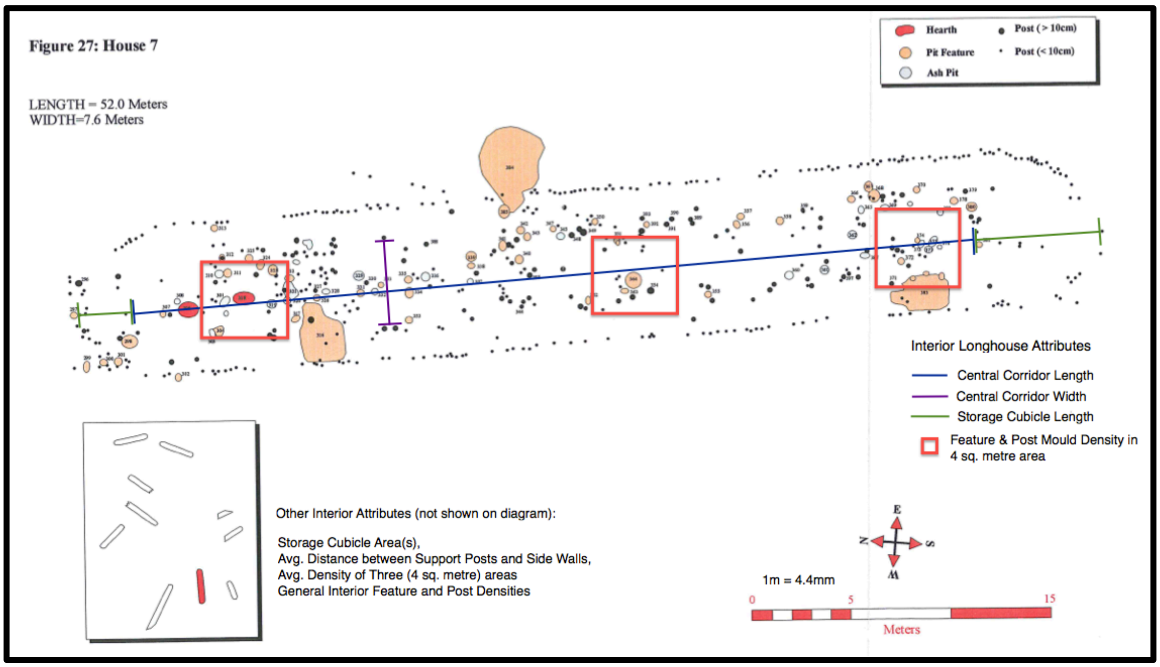

Figure 5: Example of Interior Attributes for House 7 (Adapted from Archaeologix, 2002)

Through combining this longhouse attribute analysis with the analysis on ceramic vessel attributes, two complementary lines of evidence converge to examine and interpret the community organization at the Tillsonburg Village Site.

4.4 Statistical Analyses

SPSS software was utilized to analyze longhouse attribute data for statistically significant patterns. The longhouse data was amalgamated into three or four groups, depending on whether data was available for every longhouse. Three factors influenced the grouping of houses: proximity, patterns discerned visually from the attribute tables, and patterns exhibited during spatial analyses of the ceramic vessel data. Group 1 included houses 1, 2, 3, 4, and 5 situated in the northwest area of the village. Group 2 included houses 6, 7, and 8, situated in the southern area of site. For certain attributes house 10 was included in Group 2, precipitated by a complete lack of data for house 9, as well as house 10's closer proximity to the southern houses. Group 3 included houses 11, 12, 13, 14, and 15 situated in the easternmost area of the village. Group 4 consisted of houses 9 and 10 located centrally, when data was available for house 9. The attributes could not have been statistically analyzed by individual longhouse, as only one, or perhaps two, observations were recorded for each structure, generating an inadequate sample size for such testing.

The ceramic morphological metric attributes were also analyzed using SPSS statistical software, including the measurements for lip thickness, rim wall thickness, collar height, rim to neck height, neck thickness, and rim diameter. These attributes were formatted and compared by each individual house's observations, as well as grouped and averaged in a similar manner as the longhouse attributes. Some morphological metric attributes lacked a sufficient number of observations to be further analyzed by statistics, such as neck length, neck diameter, and shoulder diameter.

4.4.1 One-way ANOVA

A one-way ANOVA test is utilized to determine whether or not there is a statistically significant difference between two or more means of independent variables, or in this case groups. This type of test is considered omnibus, which means it is does not discern which specific groups are significantly different, but indicates that a difference does exist between at least two of the groups. Discerning which of the groups are significantly different from each other requires a post hoc test, usually completed at the same time as the one-way ANOVA (see 4.4.2 below). There are six major assumptions that data must adhere to for the one-way ANOVA statistic (Laerd Statistics, 2013):

- The dependent variable must be continuous data
- The independent variable must consist of two or more independent or categorical groups

- Independence of observations
- No significant outliers
- Approximately normal distribution for the dependent variables for each independent variable
- Homogeneity of variances

The attribute data adhered to five of these six major assumptions, however certain attributes violated the homogeneity of variances assumption, which was tested during the one-way ANOVA by including Levene's Test of Homogeneity of Variances. The occurrence of unequal variances does not negate the use of the statistic entirely, but requires the researcher to modify which version of ANOVA is used (Laerd Statistics, 2013). Thus, in order to keep the statistical analyses consistent, I also ran Welch's ANOVA for each attribute, which does not assume the data has homogeneous variances. Welch's ANOVA has the most power and lowest type I errors when the data has a normal distribution, equal sample sizes, and unequal variances. Even though Welch's ANOVA prefers equal sample sizes, it can still be run with uneven sample sizes, whereas the classic ANOVA becomes unstable for data that violates the assumption of equal variances (Statistics How To, 2017). Despite this, the classic ANOVA performs best for groups with unequal sample sizes and homogenous variances. Prior specification allows SPSS's one-way ANOVA test to output the results of both the classic ANOVA as well as the alternative Welch's ANOVA. Therefore, either result was available for further assessment, depending on the data specifications for each variable or group (Laerd Statistics, 2013).

4.4.2 Post Hoc Tests: Dunnett's T3 and Games-Howell

There are a number of common post hoc tests available for use within SPSS's one-way ANOVA computation. These tests are used to identify which groups are statistically different from other groups when more than two groups are being analyzed. The Games-Howell and Dunnett's T3 post hoc tests have sturdier formulas that allow for the data to have unequal variances as well as unequal sample sizes. Both these characteristics were common for a number of the attributes, therefore the data was best suited for these types of pair-wise multiple comparison procedures. Games-Howell is an advantageous statistical tool for the study's data, as it provides narrower confidence intervals, is robust to non-normality, and controls for experiment-wise error rates involving unequal sample sizes and variance. Even though this test was best suited for some of the longhouse and metric ceramic data, sample sizes of less than five observations can have a potentially adverse effect on the statistical results. Thus an alternative post hoc test, Dunnett's T3, was utilized for a majority of the attributes, due to their small sample sizes and degrees of freedom. Dunnett's T3 is better formulated to assess a lesser number of observations, along with unequal variances, as it has very tight type I error control, although the procedure can be conservative for unequal sample sizes. Overall, statistical best practices suggested that I apply the Games-Howell post hoc test to attributes with sample sizes greater than five, and the Dunnett's T3 post hoc test to all the attributes that fall below that threshold (Shingala & Rajyaguru, 2015).

4.5 Conclusion

This chapter has outlined the methodological procedures undertaken for the ceramic vessel and longhouse attribute analyses, in order to address the Tillsonburg Village's distinctive community plan. Attribute analyses examined decorative and morphological traits of ceramic vessels, as well as architectural features of the longhouses. Using ArcGIS software, subsequent spatial statistical analyses were completed on the categorical ceramic vessel attributes. Using SPSS software, statistical procedures were completed for the longhouse attribute data and metric ceramic vessel data. In Chapter 5, the results of these analyses will be presented, as well as some interpretations of the findings.

Chapter 5

5 Results and Interpretations

This chapter presents the results, as well as some initial interpretations, of the ceramic vessel and longhouse attribute analyses. The results of the two main analyses suggest an overarching pattern of uniformity for pottery form and decoration, as well as longhouse construction, and this trend will be introduced first. The major patterns of variability from each analysis will then be considered, along with their corresponding statistical results. Through the examination of these patterns an occupational sequence emerges, as well as idiosyncrasies specific to groups of longhouses, which may be representative of sub-communities within the larger village. Following the presentation of these major analyses, I will summarize a few notable patterns exhibited by other artifact classes in the Tillsonburg assemblage. Chapter 5 will conclude with a discussion of the methodological limitations encountered in the study.

5.1 General Village Uniformity

A dominant pattern emerges in the results of both the ceramic vessel and longhouse analyses. Specifically, more morphological and decorative vessel attributes were random than statistically significant or clustered, in terms of their spatial distribution throughout the site. Studies of Iroquoian pottery assemblages have shown that a well-defined design repertoire of potting practices existed for Iroquoian peoples in the Late Woodland (Watts, 2006). Sedentary village life allowed Iroquoian peoples to develop stability and continuity in craft traditions as they remained in similar social and ecological contexts for extended periods (Chilton, 1998). Thus, the overall uniformity, or internal homogeneity, of the Tillsonburg ceramic vessels' decorative and form attributes align with these previous findings. Similarly, many of the architectural attributes were also not statistically different among areas of the village. Iroquoian longhouses are known to be uniform and bilaterally symmetrical, containing a number of standard floor plan features, such as hearth, storage pits and post moulds. The Tillsonburg houses fit these characteristics, even though Middle Iroquoian villages are known to exhibit the greatest amount of variation to this standard template of longhouse construction (Dodd, 1984; Creese, 2011).

The regularity of attributes throughout the village could seemingly suggest an absence of social processes of coalescence, however, this result was tentatively expected given that the site's overall material culture assemblage was considered largely contemporary in the site reports and based on my own general impressions during the attribute analysis. Therefore, this overarching pattern suggests that the Tillsonburg Village community may have begun to integrate socially by sharing ideas, knowledge, and information concerning material culture and longhouse architecture or construction, while continuing to retain and value a level of physical and spatial separateness that may correlate with social separateness. Community integration has been shown to be a potential strategy for social adaptation to newly aggregated situations. Consistency in pottery production practices and longhouse architecture suggests a pattern not unlike other Late Woodland sites, as well as further supporting the contemporaneity of longhouses within a village that may have been experiencing integrative processes of community coalescence (Kowalewski, 2006).

A smaller number of attributes indicate subtle variation in either ceramic vessel decoration or longhouse construction, suggesting that different houses or groups of houses had more close social affiliations or relationships. A certain amount of variability in the community is expected, given that social experimentation occurs as part of the processes of coalescence (Birch 2013, Stone 2016). These differences also appear to relate to a temporal sequence of occupation that occurred rapidly during the common lifespan of a Late Woodland village, approximately 10 to 40 years (Birch & Williamson, in-press; Hart et al., 2016).

5.2 Ceramic Vessel Data

Most ceramic vessel attributes did not exhibit statistically significant patterns of clustering or variation throughout the site, suggesting that an integrated mental template regarding ceramic vessel formation and decoration existed within the Tillsonburg community. Similar to results from previous research on Iroquoian pottery (Howie-

Langs, 1998; Watts, 2006), morphological traits appear to have the greatest uniformity throughout the site, whereas decorative attributes exhibit considerably more variability among individual houses or clusters of houses.

All together 36 out of the 220 ceramic vessel sub-attributes demonstrated statistically significant clustering in regards to their spatial distribution within the village. The statistical scores of all significant attributes are outlined in Appendix F, Table F.1. Decorative attributes and their spatial patterning throughout the site will be discussed first, followed by the spatial patterns of morphological attributes of vessel form, and then morphological attributes of vessel size.

5.2.1 Decorative Attributes

Generally, decoration was the most variable category of attributes, although a majority of sub-attributes continue to suggest a substantial amount of regularity in decorative practices throughout the village. To reiterate, sub-attribute refers to the range of possible outcomes or choices available for the vessel attribute, for example, collared or collarless are sub-attributes of the attribute rim form (see Appendix C). Before discussing the spatial statistical results I will outline a few general trends for the Tillsonburg assemblage in regards to vessel decoration. Detailed summary tables for each decorative attribute are available in Appendix D, Tables D.9-D.33.

Linear stamped (18%, n=61) and incising (13%, n=42) dominated the rim techniques, with the highest percentage of vessels exhibiting linear stamped over incising (26%, n=85) (Table D.11). A majority of the assemblage exhibited plain lips (81%, n=272), while linear stamped (3%, n=10), incised (9%, n=31), and trailed (4%, n=14) made up most of the remaining lip techniques (Table D.12), and were exclusively present in houses 11 to 15. Interior rim techniques (Table D.13) were primarily plain (76%, n=253), followed by linear stamped (15%, n=51). Neck techniques (Table D.14) primarily consisted of plain (31%, n=71) and incised over indeterminate (19%, n=44). In regards to decorative motifs (Tables D.15-D.18), upper rims or collars exhibited the greatest number of combinations and variability; nonetheless simples right oblique (SRO) (16%, n=54) and SRO over horizontals (23%, n=76) were most common. For lip motif, a majority of vessels exhibited plain lips (81%, n=272), followed by horizontals (14%, n=47) exclusively on vessels from the east houses, 11 to 15. A majority of the interior rim or collar motifs were plain (76%, n=254), followed by SRO (14%, n=45) at a considerably lesser amount. Exterior neck motifs were quite numerous and variable, however, a majority were still plain (31%, n=71), followed by horizontal over indeterminate (27%, n=63) and horizontal over plain (9%, n=21). Generally, interior neck technique and motif was plain (92%, n=158) (Tables D.32-D.33), but some interior neck décor does occur in vessels from longhouses 11 to 15.

For exterior bands of decoration (Table D.9), most vessels exhibit two bands (52%, n=173), but houses 1 to 5 in the northwest have a proportionally higher number of vessels with zero or one band compared to vessels from longhouses in the south and east. The eastern houses have the only evidence of four exterior bands (2%, n=7). Similar patterns are apparent for number of exterior motifs (Table D.10), with a majority of vessels exhibiting two motifs (59%, n=198). Furthermore, the number of vessels with one exterior motif (25%, n=85) is similar to the number of vessels with one exterior band (22%, n=75). The number of vessels with three exterior motifs (12%, n=40) and three exterior bands (21%, n=70) are not as comparable, suggesting that similar decorative motifs were being used on separate bands of the same vessel.

Castellations (Table D.22) are present on 83 of the 338 total vessels in the assemblage. Sixty percent (n=50) of castellations had continuous decoration (i.e. the decoration did not change on the castellation), followed by 22 percent (n=18) with unknown decoration consistency. The remaining vessel castellations exhibited various discontinuous decorations (see Table D.22). Castellation form (Table D.23) was commonly pointed (41%, n=31) or rounded (32%, n=24) for vessels exhibiting castellations.

Interior punctates (Table D.24) were predominantly absent (97%, n=330) from the assemblage, with no presence in houses 1 to 5, and an extremely minor presence of circular or elliptical punctates in houses 7 and 14, and middens 1 and 3. The number of horizontals (Tables D.19-D.21) commonly ranges from 1 to 3 for the upper rim/collar zone and 2 to 4 for the neck zone, with no significant disparities in percentage values for either zone's range. One horizontal line was most common for the number of horizontals on the lip zone, and is exclusively present in houses 11 to 15. All interior surface treatments (Tables D.28-D.30), whether upper rim, neck, or shoulder zone, primarily exhibited smooth, wiped, or smooth and wiped treatments. Exterior neck surface treatments (Table D.26) consisted of ribbed-paddled (21%, n=29) and smooth or wiped (78%, n=109). Furthermore, for the few vessels with exterior shoulder zones, half exhibited ribbed paddled surface treatments (50%, n=3) and the remaining half was smooth (17%, n=1), wiped (17%, n=1), and cord marked (17%, n=1).

In accordance with the dating of the Tillsonburg Site to the latter 14th century, Middleport Oblique (31%, n=84), Pound Necked (15%, n=41), and Ontario Horizontal (14%, n=37) constitute the majority of ceramic vessel types found within the village (Table D.31). Lawson Opposed, Pound Blank, Middleport Criss-Cross, and Ripley Plain are also found in varying percentages throughout the entire village area, each contributing 2 or 3 percent to the total assemblage. Minor percentages of Iroquois Linear (IL) (0.74% of the total assemblage, n=2) and Uren Dentate (UD) (0.74% of the total assemblage, n=2) are present in east, specifically within house 14 (IL, 2% of house 14 assemblage, n=2; UD, 1% of house 14 assemblage, n=1) and midden 3 (UD, 1% of midden 3 assemblage, n=1). These types are more commonly found at earlier Iroquoian villages. Another characteristically earlier type, Ontario Oblique (8% of the total assemblage, n=21), is predominantly found in the eastern houses 11 to 15 (9% of the total east houses assemblage, n=20), and in the southern house 8 (10% of the house 8 assemblage, n=1). An Untyped Stamped vessel type, originally described in the consultant report by Timmins (Archaeologix, 2002), comprised of 8 percent (n=21) of the overall assemblage's ceramic types. Linear stamps on the upper rim or collar zone and a plain neck zone characterize this vessel type. These Untyped Stamped vessels superficially resemble the Lawson Incised type but the simple oblique motif is stamped rather than incised, and thus does not conform to the Lawson Incised type definition (Archaeologix, 2002; MacNeish, 1952). High percentages of Untyped Stamped vessels were noted in the northwest houses 1 to 5 (32% of the northwest houses assemblage, n=7) whereas minor percentages were also found in house 8 (10% of the house 8 assemblage, n=1), house 14

(11% of the house 14 assemblage, n=10), midden 1 (8% of the midden 1 assemblage, n=2), and midden 3 (2.5% of the midden 3 assemblage, n=1) (see Table D.31). The somewhat greater presence of this type in house 14 may be connected to the possible communal and integrative function of the structure, further discussed later in the chapter section. This summary of general trends in vessel decoration form a basis to acknowledge the common and dominant decorative practices shared by village occupants, which likely indicates a common repertoire for pot decoration. At the same time individuals had considerable freedom to experiment with various rim and neck decorations despite this shared template.

Thirty-four decorative sub-attributes exhibited significant clustering, according to the spatial statistical results. This category of attributes included 192 sub-attributes in total, most of which exhibited a random spatial distribution. Table F.1 (Appendix F) lists the Moran's I index, z-scores and p-values produced by Spatial Autocorrelation, as well as z-scores and p-values produced by the Optimized Hot Spot or Hot Spot Analyses, for significant attributes. These thirty-four significant results can be viewed through a lens of three broader patterns, specifically an intra-site occupational sequence of possible aggregation beginning in the east, a comparatively greater degree of decorative complexity for eastern house vessels, and the presence of distinct decorative idiosyncrasies in the northwest and east groups of longhouses. There are a number of interconnections between the significant spatial results; thus, some decorative sub-attributes are associated with more than one broader pattern. I attempt to further explore these connections in the discussion section (5.2.3) of the ceramic vessel analysis.

5.2.1.1 Intra-site Occupational Sequence

The spatial analysis of types and grouped types suggests an intra-site occupational sequence for the Tillsonburg Village, suggesting that houses 11 to 15 may have been constructed and occupied prior to houses 1 to 5. The evidence is less clear about the relative temporal position of houses 6 to 8, and 9 and 10. The potential sequence could relate to the aggregation of groups into the village community over a fairly rapid period of time, suggesting that groups of houses were only partially contemporary, with the addition of sub-communities to the initial village community. Figure 6 shows high values of characteristically earlier ceramic vessel types for the Middle Iroquoian period in the east houses and middens. In this grouped category, earlier ‘types’ refer to Iroquois Linear, Ontario Horizontal, Uren Dentate and Ontario Oblique (Figure 7) (Dodd et al., 1990, MacNeish 1952).

According to existing ceramic seriations, the spatial hot spot indicates that individuals in houses 11 to 15 may have been the first occupants to settle the village. The map also shows a cold spot of low values in the northwest, possibly suggesting that these houses were later additions to the village site, following at least the east inhabitants. Two individual vessel types, Iroquois Linear and Uren Dentate, also exhibit hot spots in the east, specifically in house 14 and midden 3. Iroquois Linear and Uren Dentate are minority types within the Tillsonburg assemblage, represented by two vessels each, and together they contribute only 1.48% to the total percentage of types. These two types are most prevalent in village sites dating to the beginning of the Middle Iroquoian period (Dodd et al., 1990). Pottery ‘types’ are a broad unit of analysis based on a select combination of attributes that have been determined and accepted by the archaeological community as temporal, and to an extent social, indicators (MacNeish, 1952; Emerson, 1968; Timmins, 1997; Wright, 1966). Thus the analysis of types and grouped-types allows for a consideration of the temporal sequence of occupation for houses or house groups. These findings relate to patterns of attribute clustering seen for rim and neck techniques, which are also temporally suggestive. For example, there is a hot spot of Dentate Stamped in house 14 and midden 3. These results help to assess the site on a temporal scale, and strongly suggest a sequence of village aggregation that began in the east and expanded westward.

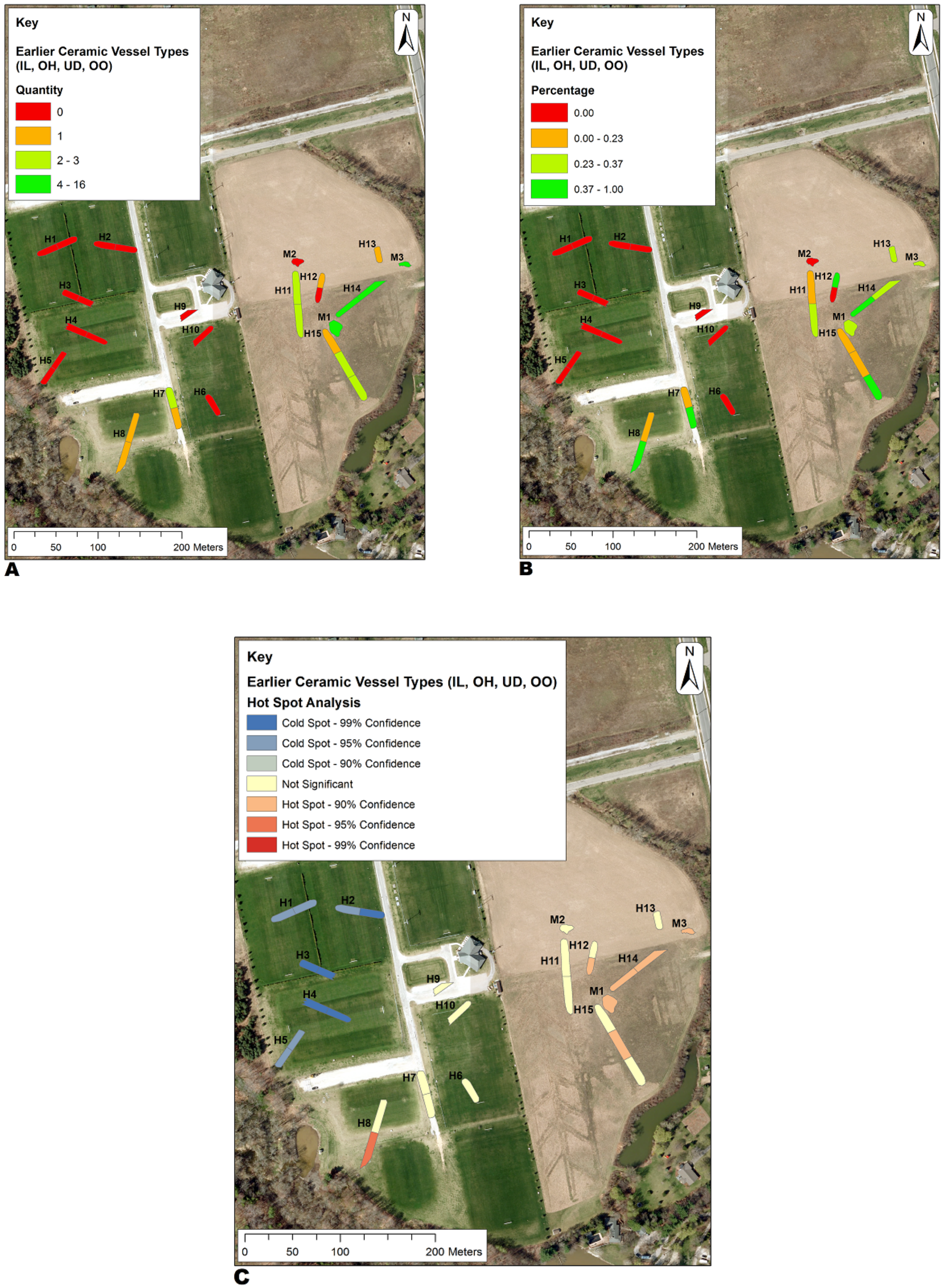

Figure 6: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Earlier Ceramic Vessel Types

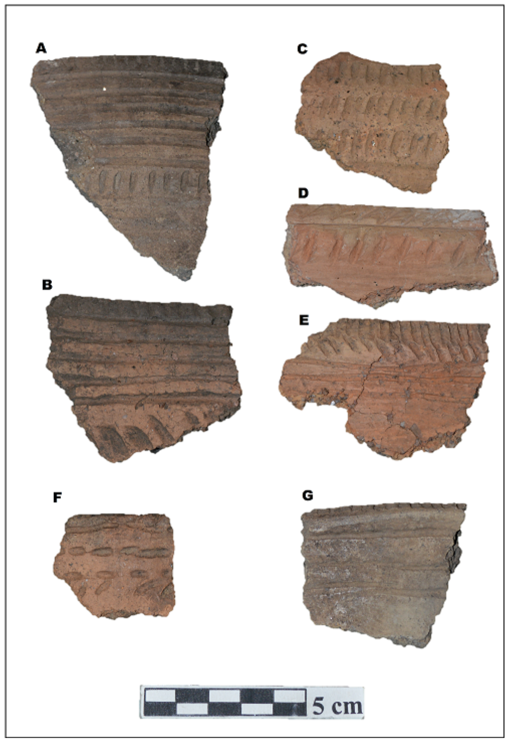

Figure 7: Characteristically Earlier Ceramic Vessel Types; A, B: Ontario Horizontal; C, D, E: Ontario Oblique; F, G: Iroquois Linear

5.2.1.2 Decorative Complexity

A number of significant spatial results indicate an overall greater amount of decorative complexity for vessels recovered in houses 11 to 15 in the east. Decorative complexity decreases over time for the Late Woodland period, suggesting an initial and longer-lived occupation for this eastern area of the village. This interpretation could in part relate to the small sample size of the 2001 assemblage, but should remain as one trend in support of this broader pattern. Decorative complexity refers to the number of decorative bands, and variety of decorative techniques and motifs on multiple exterior and interior zones of a vessel. Several exterior neck techniques and motifs exhibited significant hot spots in one or more of the eastern houses or middens (Appendix F, Table F.1). For instance, there is a hot spot for the neck technique Linear Stamped over Plain in house 13 and midden 3, and a hot spot for the neck motif Horizontals over Plain in house 15. Also, one interior neck technique, Linear Stamped, and one interior neck motif, Simples Right Oblique, exhibited similar hot spots in the eastern houses; the former is represented in Figure 8. Notably, there is no evidence of interior neck decoration for vessels from houses one through ten.

The number of exterior decorative bands and motifs on ceramic vessels indicated a significant spatial pattern for both two and four bands or motifs. Figure 9 represents a hot spot of four decorative bands in house's 11, 14, and 15, and Figure 10 represents a hot spot of two decorative motifs for the houses in the east and cold spot for houses in the northwest. The results are nearly identical for two decorative bands and four motifs. The northwest houses tended to have higher number of vessels with only one decorative motif or band situated on the exterior comparatively, which indicates a lesser degree of decorative complexity for these vessels.

The final attributes that indicate greater vessel complexity in the east involve the number of horizontals on the rim and lip zones. All the eastern houses and middens exhibit a hot spot for one horizontal line on the lip, and the remaining longhouses exhibit a cold spot, given this was an exclusive feature on many vessels in the East. This result is connected to patterns involving lip technique and motif discussed in the following section on decorative idiosyncrasies. The upper rim or collar zone also exhibited significant spatial patterns for three and six horizontal lines. Figure 11 shows a hot spot for six horizontal lines in house 14 and midden 3. However, it must be pointed out that there are only two vessels with six horizontal lines in the collection, so the pattern exhibited is based on a very small sample size. All the aforementioned spatial patterns suggest that the decorative complexity is greater for ceramic pots found in the eastern houses and associated middens, particularly indicated by the focus on exterior and interior neck decoration, as well as a greater variety and number of decorative bands, motifs, and horizontal lines on multiple vessel zones. The distribution of decoration on vessel lips and necks supports the notion that the East houses may be the earliest village occupants, as these traits decrease in frequency over time during the Late Woodland. These findings are strong evidence that houses 11 to 15 were part of an initial core segment of the village community.

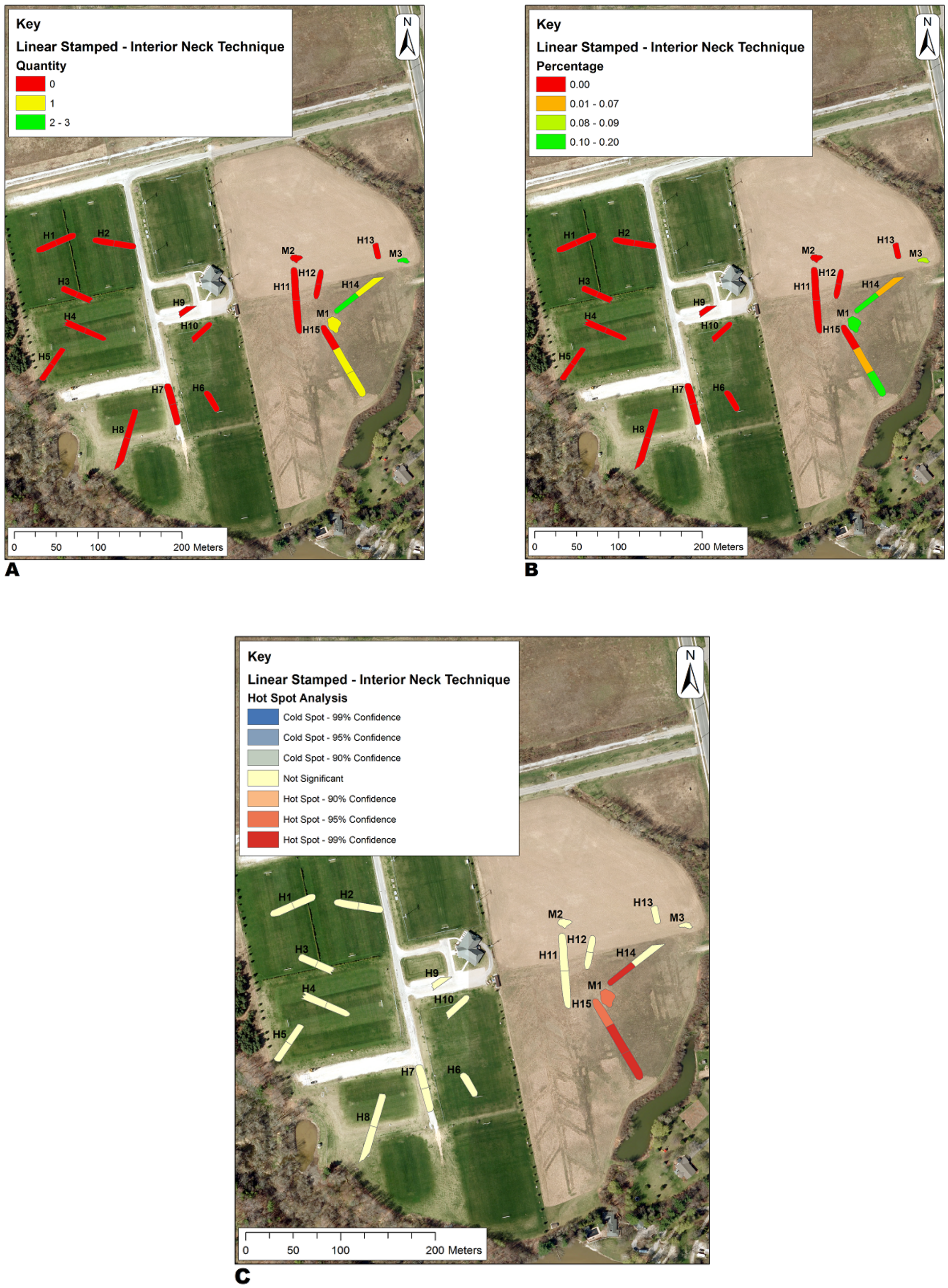

Figure 8: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Linear Stamped - Interior Neck Technique.

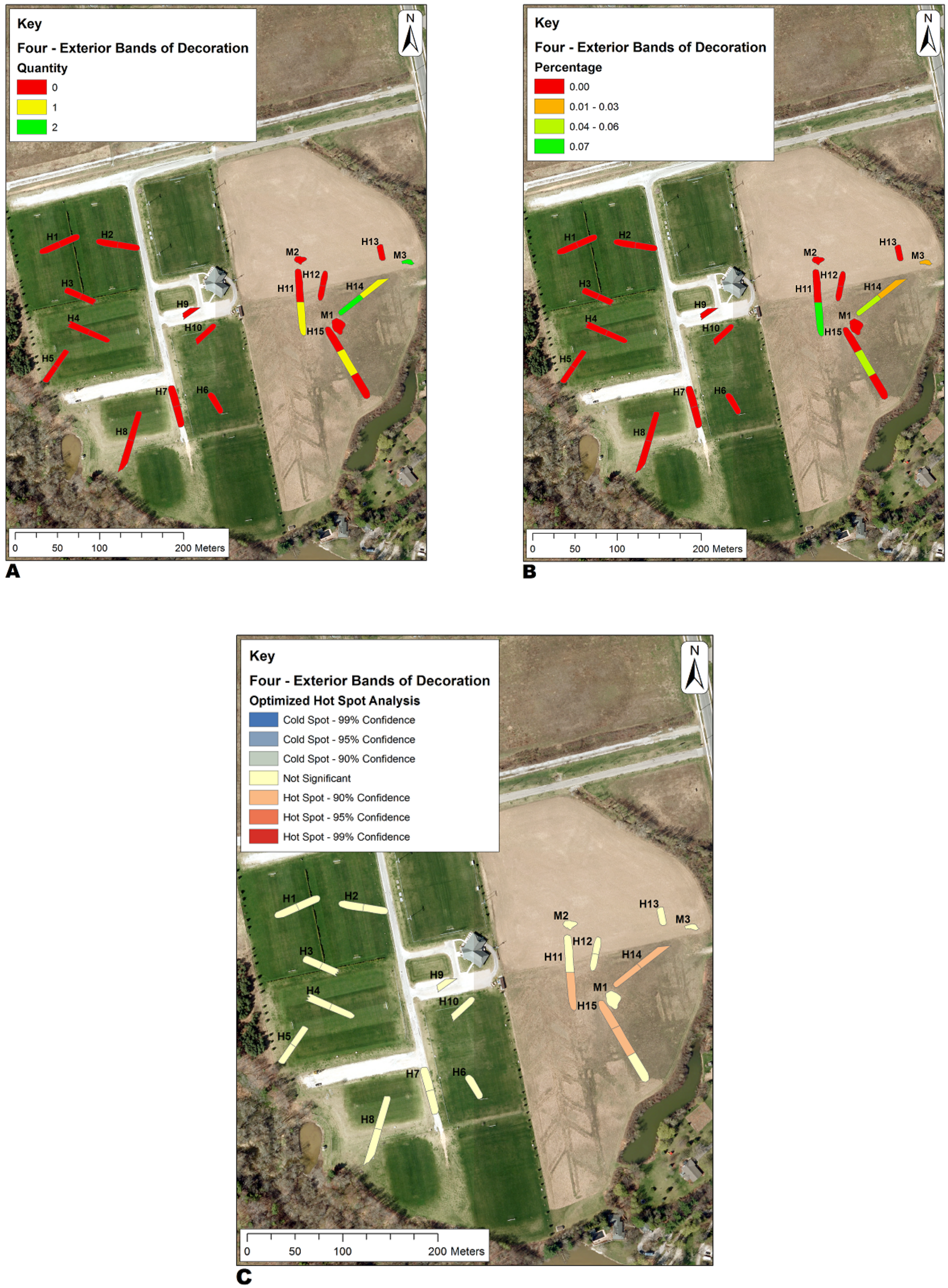

Figure 9: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Four Exterior Bands of Decoration.

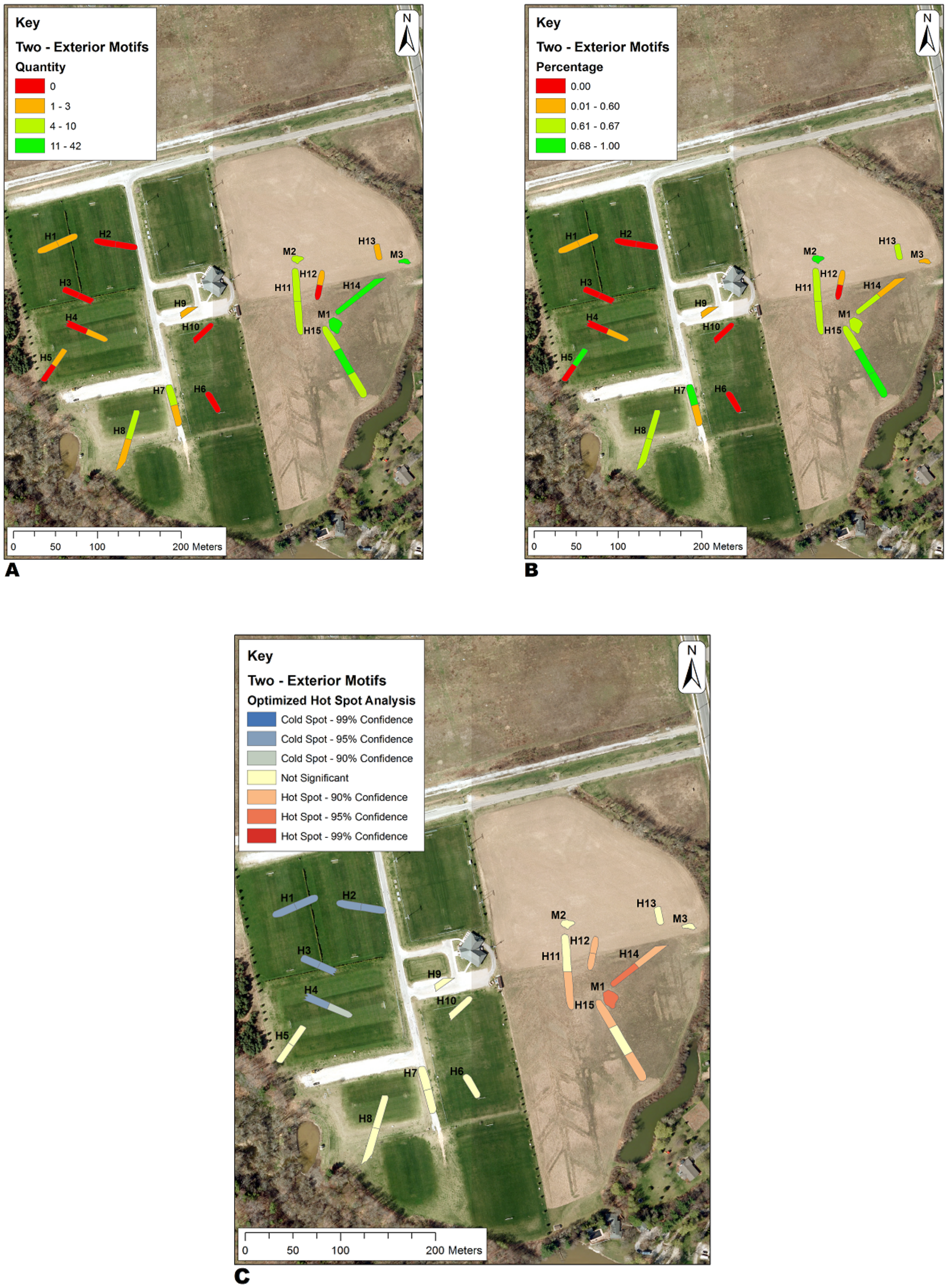

Figure 10: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Two Exterior Motifs.

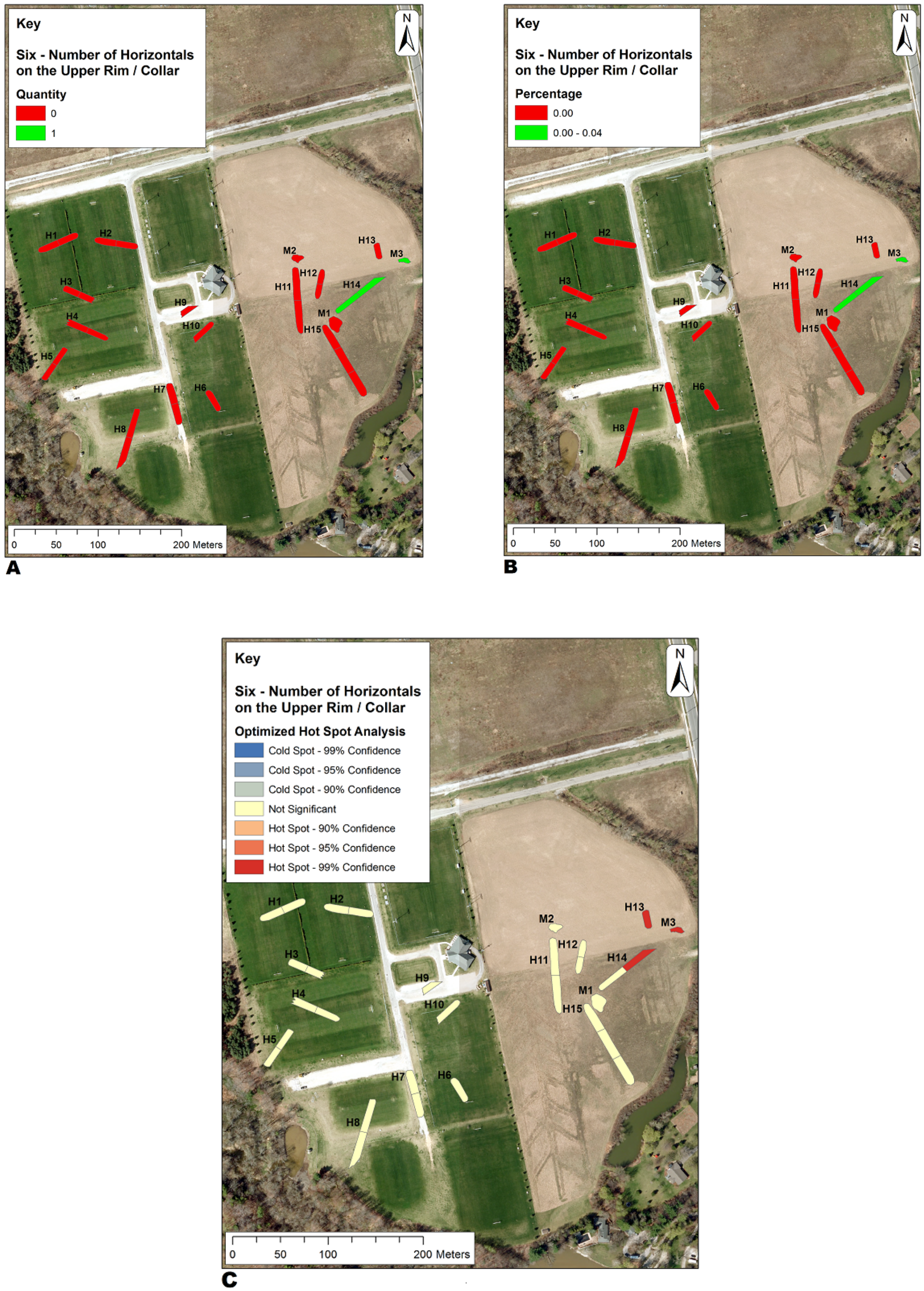

Figure 11: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Six - Horizontal Lines on the Upper Rim.

5.2.1.3 Decorative Idiosyncrasies

If the Tillsonburg ceramics show evidence of processes of formative coalescence one would expect idiosyncratic patterns of ceramic vessel form and decoration to endure among different longhouses or groups of longhouses that distinguish the recently aggregated social groups. Two such patterns emerge from the spatial analyses, which indicate idiosyncratic or preferential patterns particular to houses in the northwest and in the east. Figure 12 shows a hot spot of high values for an Untyped Stamped vessel type in houses 1, 2 and 3, located in the northwest. As discussed, linear stamps on the upper rim or collar zone and a plain neck zone characterize this vessel type, shown in Figure 13.

A similar rim motif, Simples Vertical with Superimposed Horizontal Dash (Figure 14), shows a hot spot in house's 1 and 2, as well as house's 9 and 10 (Figure 15). The result suggests a connection between house's 9 and 10 and the northwest house's 1 and 2, however sample sizes are quite low for this sub-attribute. Nevertheless, it remains the sole pattern involving these central structures.

One corresponding rim technique, Linear Stamps with Superimposed Linear Stamps, also clusters in the northwest, specifically house's 1 and 2. Interestingly, there are only five instances of this motif and technique in the East houses' assemblage of 272 total vessels, however these vessels exhibit primarily simples right oblique rather than simples vertical. These instances may perhaps indicate social interaction or communal gatherings between the northwest and east areas of the village rather than a shared practice. In the east, three vessels occur in house 14, one in house 15, and one in midden 1. The simples vertical version of this motif appears to be exclusive to vessels from the south, central and northwest houses, although one vessel in both longhouse 1 and 8 exhibits the motif with simples right oblique. All three aforementioned spatial patterns occur most abundantly in the northwest houses and represent an idiosyncratic pattern specific to this area, which is convincing evidence for a closer 'community of practice' among these individuals.

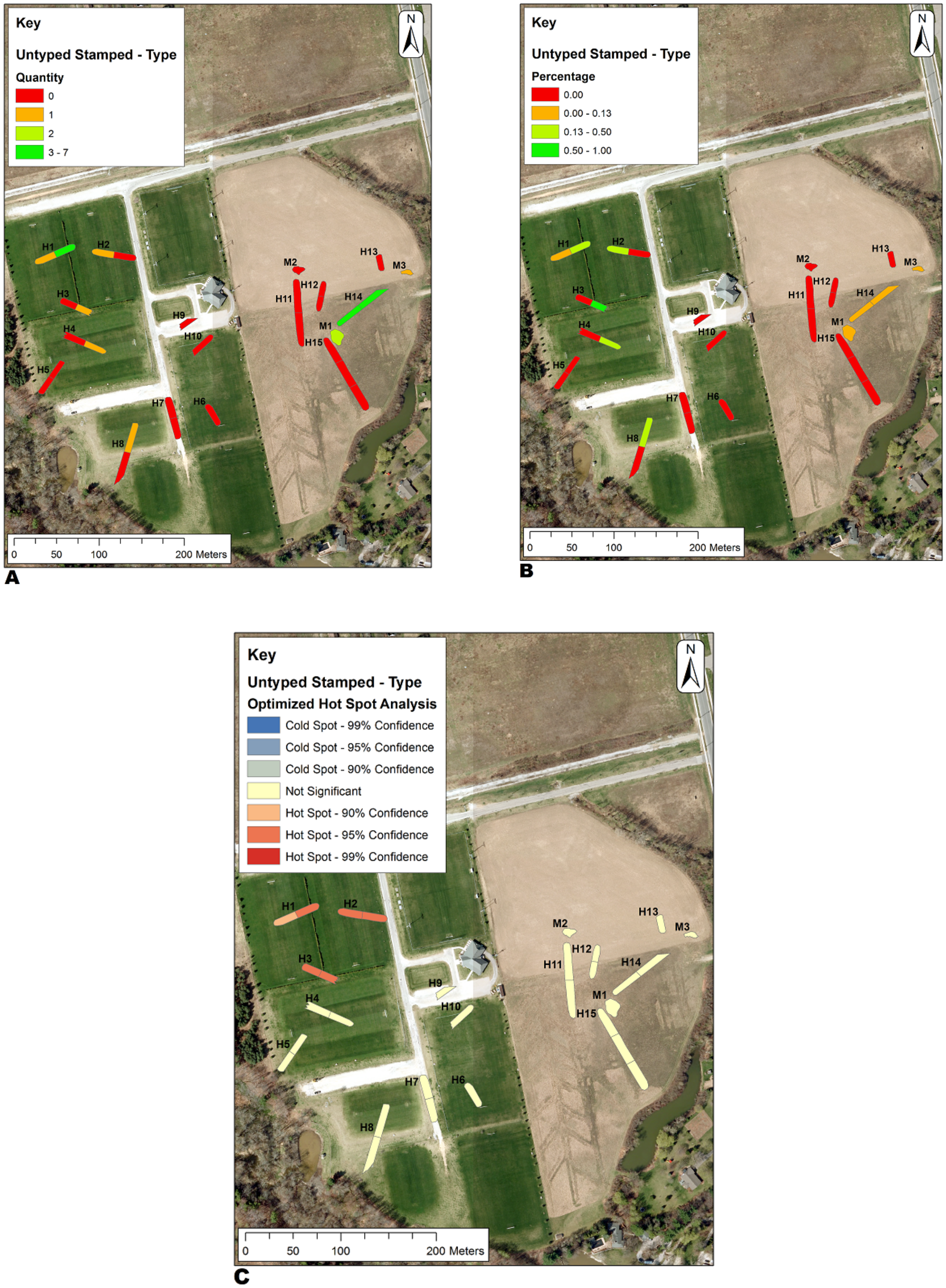

Figure 12: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Untyped Stamped - Type.

Figure 14: Examples of Untyped Stamped Vessel Type.

Figure 13: Examples of Vessels with the 'Simples Vertical with Superimposed Horizontal Dash' Upper Rim or Collar Motif.

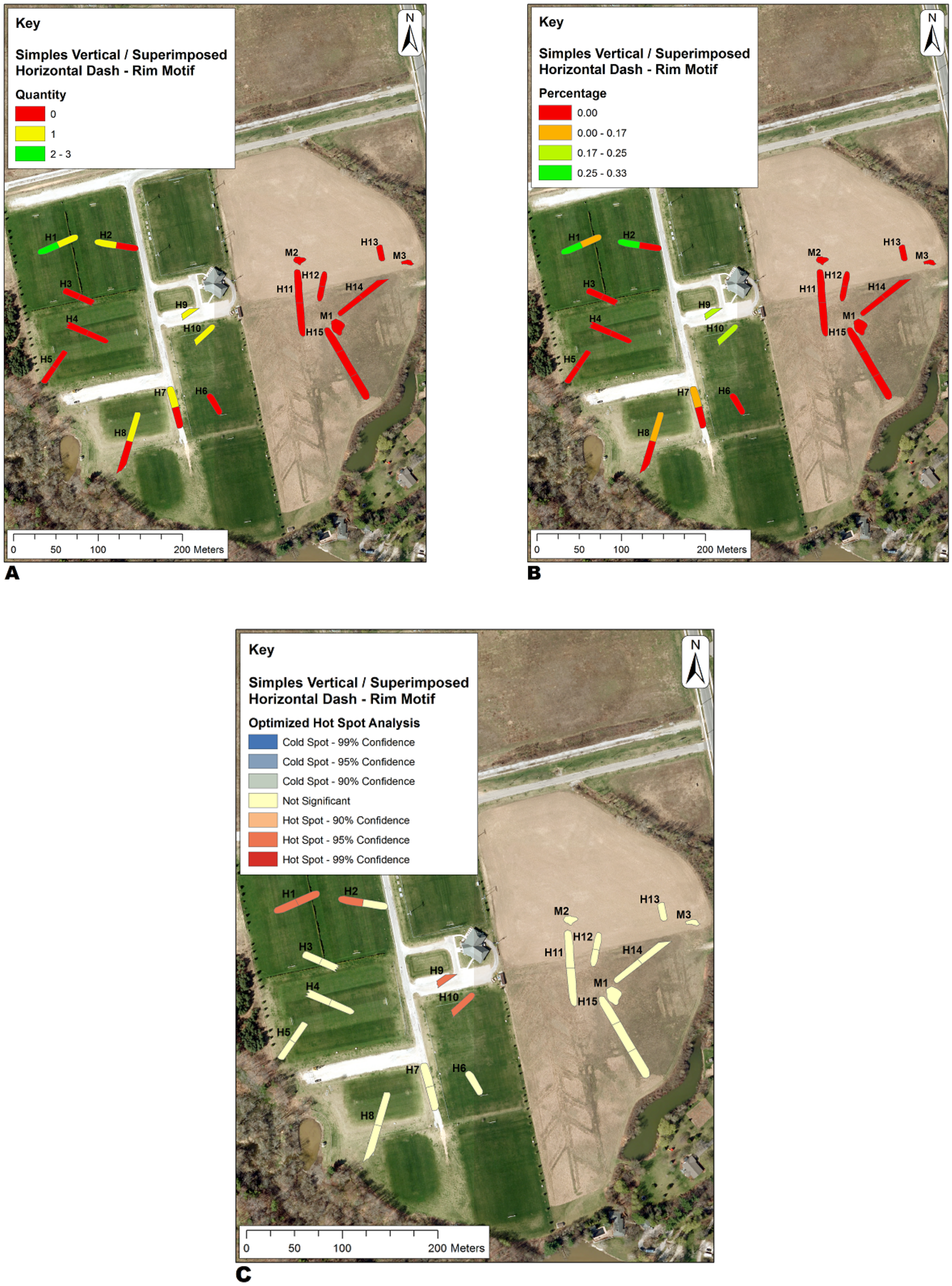

Figure 15: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Simples Vertical with Superimposed Horizontal Dash - Rim Motif.

One of the most significant idiosyncratic patterns to emerge from this analysis involves a single horizontal line of incised decoration on the lip zone (Figure 16), found exclusively on vessels recovered from the eastern houses of the village, 11 to 15. Figure 17 and 18 represent the hot spots for these two lip attributes, incised technique and horizontal motif respectively. This distinctive pattern does not occur on a single vessel lip from the south, central, or northwest longhouses, possibly indicating the presence of an exclusive ‘community of practice’ in the east. Even though decorative preferences from the northwest community of potters transgressed the eastern community of potters, as seen with the rim motif of Simples Right Oblique with superimposed Horizontal Dash, the application of a single horizontal line on the lip was not reciprocally shared with the individuals living in longhouses one through ten. Therefore, a closer, longer-lived, and probably somewhat earlier social community likely existed among individuals in houses 11 to 15. Linear stamped and trailed lip techniques also exhibit similar hot spots in the east houses. Also, these lip attribute patterns are connected to the one horizontal line result discussed in previous section (p. 83), as this pattern of lip decoration also adds to the vessel’s overall decorative complexity. The presence of spatially distinct idiosyncratic patterns of decoration in the east and northwest longhouse groups strongly suggests that discrete ‘communities of practice’ existed in each area, which may be indicative of the social and spatial distinctions that remain in formative coalescent communities.

Figure 16: Examples of Vessel Lips with a Single Incised Horizontal Line of Decoration.

A hot spot for castellations with chevron and punctate face décor occurs in house 14 and midden 1. This pattern once again adds to the overall decorative complexity of vessels found in this area and may represent an idiosyncratic pattern of décor by the individuals living in the East, however, I think the pattern better relates to the possible communal or ceremonial function of house 14 discussed below. The pattern is found only on one large pot that cross mends between house 14 and midden 3, and was partially found within a sweat lodge feature. The castellation décor has minimal representation in the east's overall pottery assemblage but the decoration may have been reserved for special purpose vessels used in a ceremonial or spiritual contexts. House 14 has by far the largest number of ceramic vessels present, and the greatest amount of variation, which might be expected for a structure used in communal village gatherings (Howie-Langs, 1998). Also, a high number of semi-subterranean sweat lodges are present in house 14 (n = 5), and these features have been argued to serve a socially integrative function among individuals within a village, as well as visitors from further afield (MacDonald, 1986). Semi-subterranean sweat lodge features will be further discussed in Chapter 6.

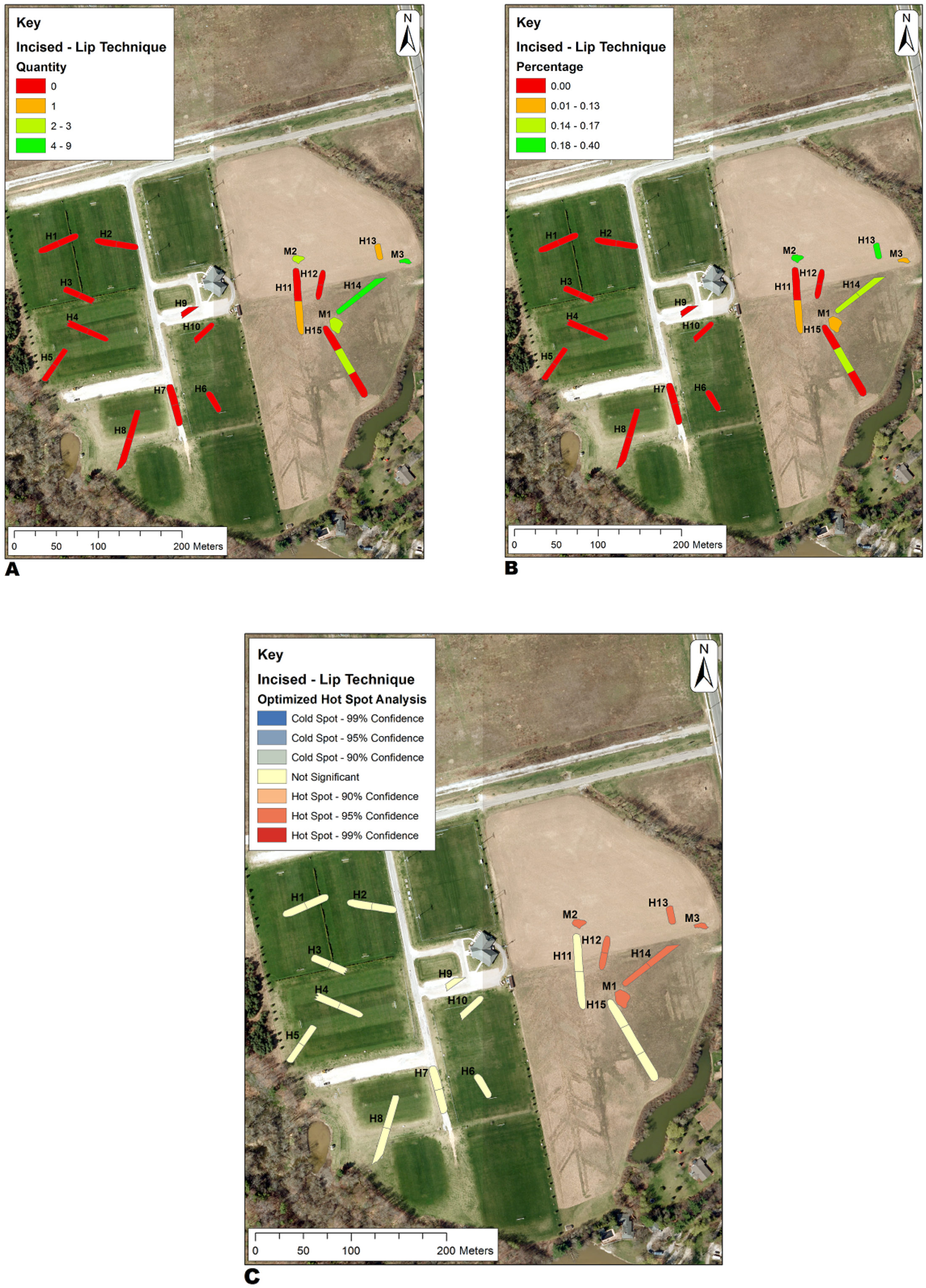

Figure 17: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Incised Lip Technique.

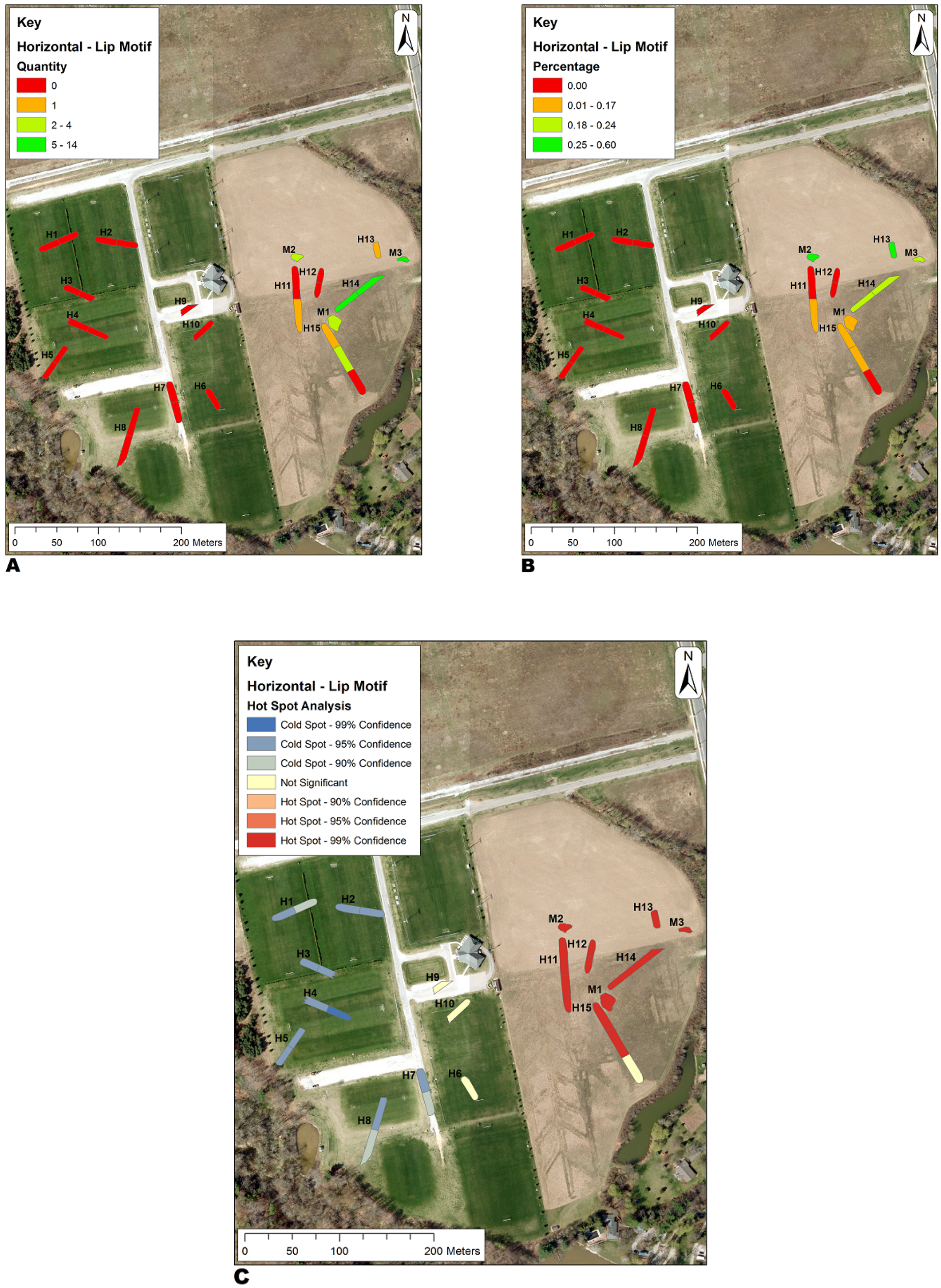

Figure 18: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Horizontal Lip Motif.

5.2.2 Morphological Attributes of Vessel Form

Attributes relating to vessel form were fairly consistent throughout the Tillsonburg Village longhouses, and I will briefly outline some general trends within the assemblage. Detailed summary tables for morphological attributes are available in Appendix D, Tables D.2-D.8. A substantial number of vessels exhibit incipient collars (34 percent, n=117), but there are also many collared pots (28 percent, n=94) and several collarless pots (19 percent, n=65) (Table D.2). The orientation of the rim is predominately straight (62 percent, n=194), but a number of vessels are outflaring (29 percent, n=92) (Table D.3). A convex (51 percent, n=170) or vertical (42 percent, n=141) exterior upper rim profile (Table D.4) and concave (69 percent, n=229) interior upper rim profile are most prevalent (Table D.5). A flat vessel lip (84 percent, n=283) is by far the most prominent lip form in the assemblage, however 13 percent (n=45) exhibited a splayed lip form (Figure 19) (Table D.7). A right angle from lip to the interior is present for a majority of the vessels (52 percent, n=171), followed by acute (30 percent, n=97) then obtuse (18 percent, n=59) (Table D.8). For collared pots, 83 percent (n=178) exhibit a rounded collar base shape, compared to a meager 0.39 percent (n=37) with an angular shape (Table D.6). The high percentage of rounded basal collars is likely related to the considerable number of incipient collars within the collection, as collar development was clearly in flux during the Tillsonburg occupation. The overall consistency in vessel form likely contributes to the fact that a majority of sub-attributes exhibit a random spatial distribution throughout the village.

A total of twenty-eight morphological sub-attributes were analyzed spatially, but only two sub-attributes showed evidence of statistically significant spatial clustering; splayed lip form and a ‘convex-concave’ exterior upper rim profile (Appendix F, Table F.1). Spatial Autocorrelation indicates a significant clustering of a convex-concave exterior upper rim profile, with hot spots in house 14 and midden 3. These two contexts yielded the most abundant sample sizes for the analysis, and thus could be argued to encompass the greatest amount of possible variation. This greater amount of variation, along with the learning curve associated with novice pottery analysis, may have led to possible observer bias for this particular outcome, and as such I lack confidence that the spatial statistical pattern has cultural or archaeological meaning, making it difficult to comment on its validity.

Splayed lip form represents the most noteworthy outcome for attributes related to vessel form, given that it is directly connected to decorative counterparts discussed in the previous section. The presence of this lip form in the eastern houses directly corresponds to the application of either a trailed or incised line on the lip of a vessel resulting in the formation of a splayed appearance for the lip (in profile) (Figure 19). Therefore, this sub-attribute cannot be considered an independent line of evidence, but rather complementary to the spatial statistical results of incised lip technique and horizontal lip motif. Clustering for this trait occurs in longhouses 11 to 15, as well as middens 1 to 3, and was entirely absent from houses 1 to 10, as seen in Figure 20. This lip form pattern further emphasizes the presence of an established 'community of practice' of individuals living in the eastern longhouses.

Figure 19: Splayed Lip Form

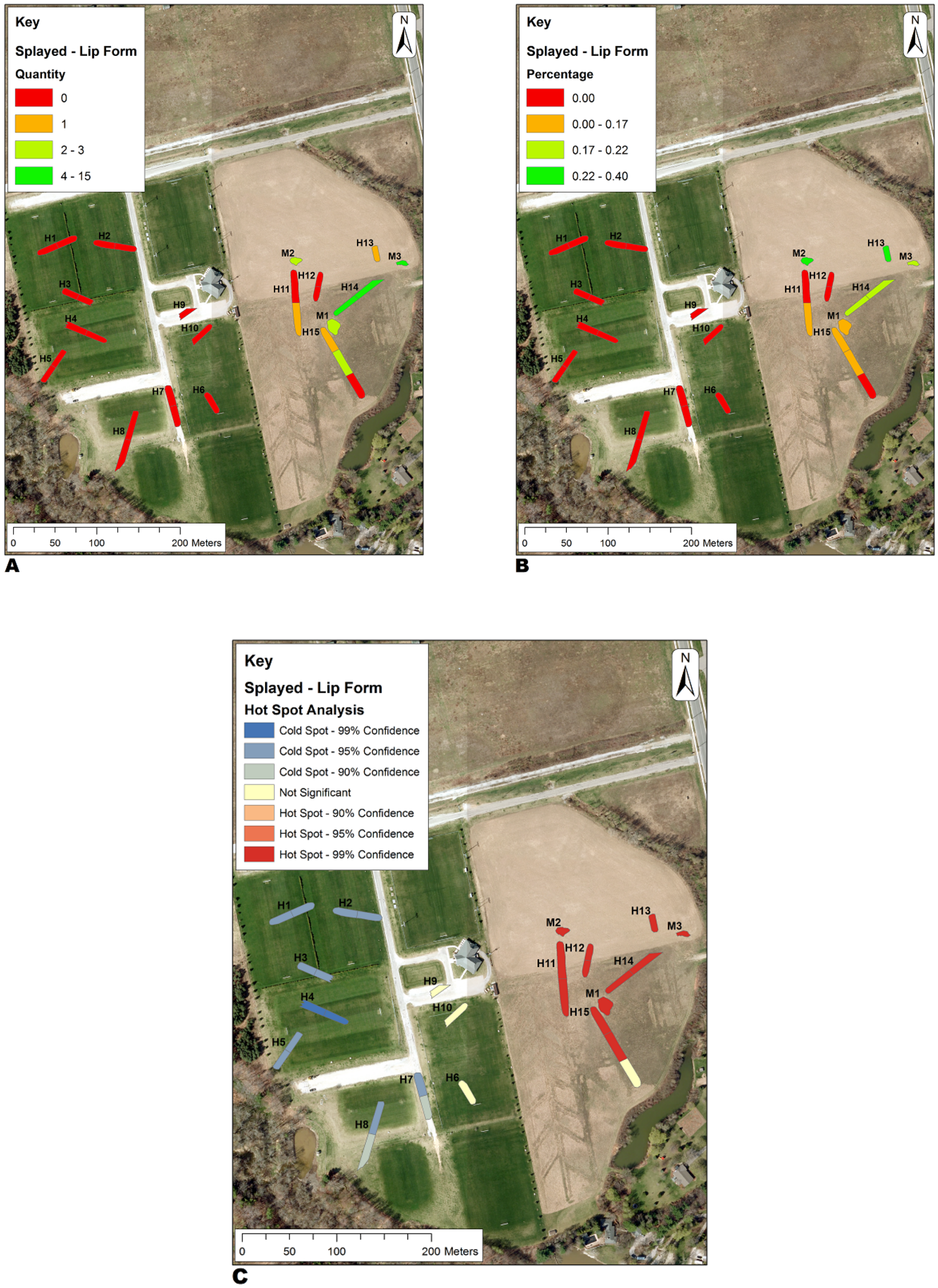

Figure 20: Quantity (A), Percentage (B), and Hot Spot Analysis (C) Maps for Splayed Lip Form.

5.2.3 Morphological Attributes of Vessel Size

Three attributes relating to vessel size yielded statistically significant patterns, specifically lip thickness, rim to neck height, and, to a lesser extent, rim diameter. The former two attributes exhibit significant differences between the eastern and southern groups of houses, potentially related to decorative idiosyncrasies specific to each area. A number of other size-related attributes were tested but did not yield significant patterns, including rim wall thickness, basal collar width, collar height, and neck thickness. Summary graphs for vessel size attributes are available in Appendix D (Figures D.1-D.9). Detailed statistical results for significant variables are available in Appendix G (Figures G.1-G.8). As stated in the previous chapter, neck height and diameter as well as shoulder diameter were not included in the statistical analyses due to an insufficient number of observations. Given that the ceramic vessel analysis generally allowed for a greater number of recorded observations per house, the metric variables were first compared between individual longhouses and then amalgamated and compared between the house groups designated in Chapter 4. House 6 was excluded from the testing of individual houses, due to its inadequate sample size ($n = 1$), but was then reincorporated into group 2 for the following tests on longhouse groups. Similar overall results were observed for both formats despite their discrepancies, with the exception of rim diameter that yielded a minor significant difference for means of individual houses ($F(7, 76) = 2.146$, $p = 0.49$), but not for house groups, or for comparisons between houses or groups. Thus, rim diameter has been omitted from further discussions.

For clarification of in-text and table statistics, the F value is the ratio of two variances, and variance refers to measures of dispersion. The analysis of variance or ANOVA uses an F test to determine the variation between three or more sample means, and the larger the F value the greater the dispersion. The bracketed numbers represents two degrees of freedom for the variable, one for the variation between groups (or houses) and one for the variation within groups (or houses). The p value indicates statistical significance at a 95% confidence interval (Laerd Statistics, 2013). The remaining statistically significant results for house groups are summarized in Table 4, and individual house results are discussed in-text.

Table 4: Summarized Statistical Results of Morphological-Metric Vessel (Vessel Size) Attributes for House Groups

Classic or Welch's ANOVA					
Attributes				*F-Value*	*P-Value*
Avg. Lip Thickness (LT)				F(3, 14) = 3.696	.038
Avg. Rim to Neck Height (RNH)				F(2, 7) = 3.522	.087
Post-Hoc Test (Games-Howell or Dunnett's T3)					
Attributes	House Groups	Means	Std. Dev.	*Significant Group Comparison Outcomes*	*P-Values*
Avg. LT	1	7.08	0.77	Group 2 and Group 3	.004
	2	6.09	0.22		
	3	7.78	0.86		
	4	6.92	0.81		
Avg. RNH	1	28.9	11.05	Group 2 and Group 3	.004
	2	35.38	1.14		
	3	20.67	4.87		

For lip thickness (Figures G.1-G.2), there is a significant difference between the means of individual houses ($F(15, 324) = 2.387$, $p = .003$), occurring between house 7 (6.10±1.15) and houses 14 (7.98±2.23, $p = .001$) and 15 (7.92±2.21, $p = .043$), as well as midden 3 (8.16±2.29, $p = .001$). Variation also occurs between house 8 (5.88±1.62) and midden 3 (8.16±2.29, $p = .041$). Therefore, vessels in houses 7 and 8 have considerably smaller lip zones than vessels found in houses 14, 15 and midden 3. There is a general trend for lower average lip thicknesses (Figures G.3-G.4) predominantly in the southern houses, ranging from 5.8 to 6.1 mm, and also the northwest houses, ranging from 6.3 to 7.4 mm, which contrasts with a trend for higher lip thickness averages in the eastern houses, ranging from 6.7 to 9.5 mm. Figure 21a and 21b represent the means and range of variation for lip thickness and average lip thickness respectively. A lack of overlap between the ranges of houses or house groups corresponds to the statistically significant variances. Figure 21a appears relatively consistent in terms of the overall means, but the ranges of variation for houses 7 and 8 do not overlap with those of houses 14, 15 and midden 3, given they differ considerably. Table 4 and Figure 21b show a marked distinction between groups 2 and 3, emphasizing the difference in vessel lip thickness between the two areas of the village, given that group 2 incorporates house's 7 and 8 in the south and group 3 incorporates houses 14, 15 and midden 3 in the east**.** Thus, an almost identical pattern is formed for this variable despite the format of the analysis. These differences in lip thickness likely relate to the need for a greater surface area on vessel lips in the East, connected to the previously discussed spatial results involving horizontal lip decoration.

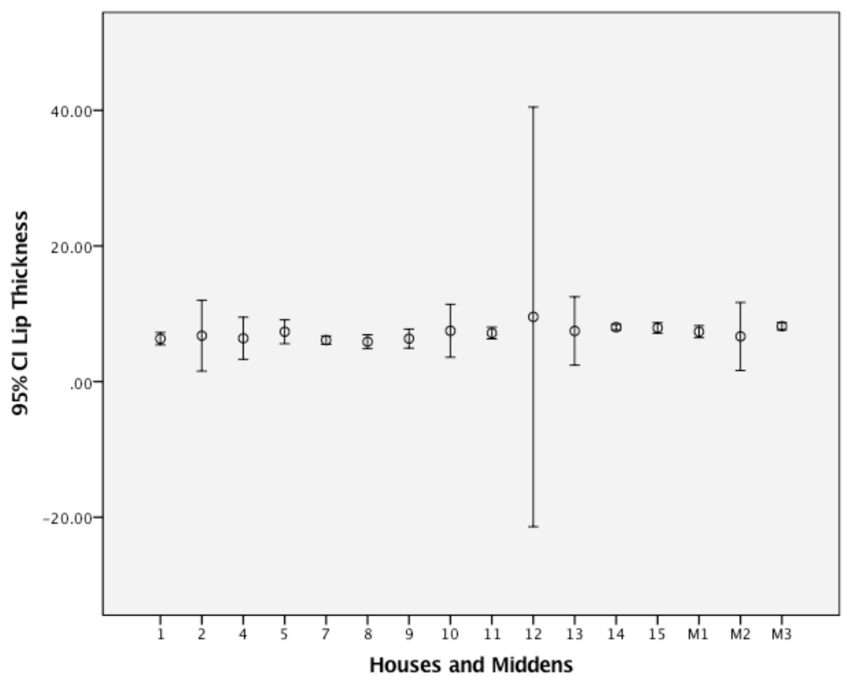

Figure 21a: Error Bar Graph of Vessel Lip Thicknesses for Houses and Middens

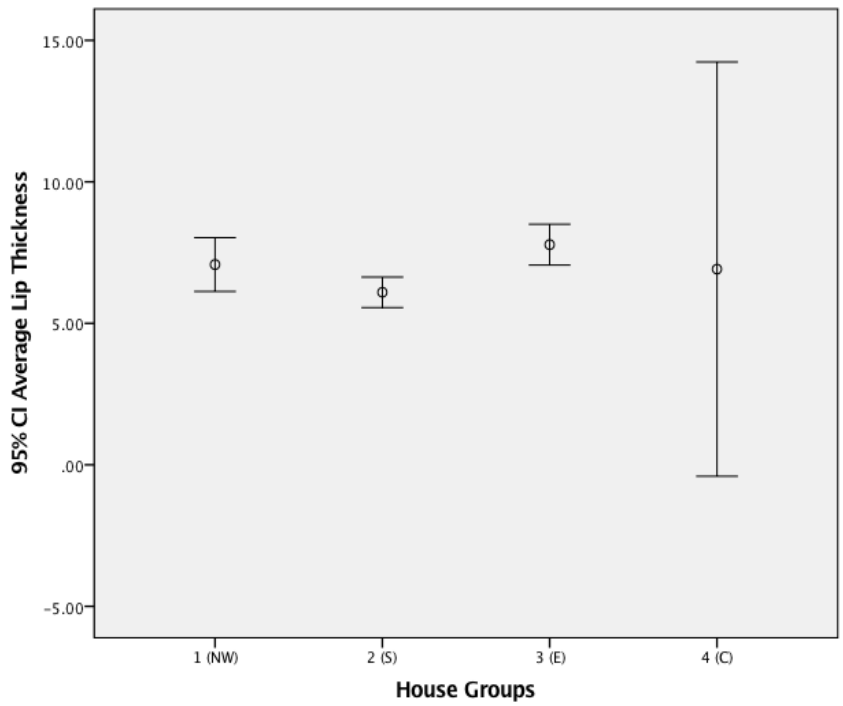

Figure 21b: Error Bar Graph of Vessel Lip Thicknesses for House Groups

Given that rim to neck height (Figures G.5-G.8) was an attribute specific to collarless vessels, and collarless vessels did not occur as frequently, or at all, in a majority of structures, a number of houses and middens had to be excluded from the statistical test due to insufficient sample sizes. For the late Middle Iroquoian period it is not uncommon for collarless vessels to be a minority rim form (Dodd et al., 1990). No significant difference is present between individual houses for rim to neck height ($F(6, 37) = 1.684$, $p = .152$), but the comparisons between houses show localized variances between house 7 (36.18±1.59) and house 14 (19.97±10.34, $p = .000$), midden 2, (12.91±1.96, $p = .032$) and midden 3 (25.42±7.11, $p = .024$). Also, a significant difference was present between midden 2 (12.91±1.96) and 3(25.42±7.11, $p = .022$). The comparisons of house groups indicate a difference between group 2, in the south, and 3, in the east, once again corresponding to patterns exhibited by the individual houses (Table 4). Rim to neck height may vary between the southern and eastern houses due to a number of factors, including uneven sample sizes, the recovery of a wider range of vessel sizes from the eastern excavation, and preservation bias for larger and sturdier vessels from the western excavation. Sample and preservation bias aside, this pattern could also indicate a preference for larger rim zones on collarless vessels by potters in houses 7 and 8.

5.2.4 Discussion

The spatial analyses of morphological and decorative vessel attributes indicate primarily idiosyncratic patterns, or ‘communities of practice’, for the eastern and northwestern groups of longhouses, more so than the southern and central longhouses. An occupational sequence emerges from examining vessel type data, which suggests houses 11 to 15 may predate houses 1 to 5. Houses 6 to 8 also exhibited a hot spot of earlier vessel types, but to a lesser extent than the eastern houses. Thus, the southern houses may also have been inhabited earlier than the northwest houses. The data from central houses 9 and 10 did not exhibit any temporally suggestive spatial patterning.

A majority of the significant spatial results for decorative attributes relate to a greater degree of decorative complexity for houses 11 to 15, potentially indicating a slightly earlier and longer-lived occupation of the area. A number of exterior and interior neck techniques and motifs yielded hot spots among the eastern houses. Interestingly, the vessels in the east exhibit the sole evidence for interior neck decoration. Generally, the vessels in this area of the site usually have at least two exterior bands of decoration or exterior motifs, and, unlike other groups of houses, have a number of vessels exhibiting four bands or motifs. Collectively houses 1 to 5 have more vessels exhibiting either one or zero exterior bands of decoration or motifs, amounting to 51% of the total vessels from this northwest area. In the archaeological record of southern Ontario, lip and interior neck decoration tends to become less prevalent over time, from the Early and Middle Iroquoian periods to the Late Pre-Contact period. The Tillsonburg Village dates to the latter part of the Middle Iroquoian period, and fits into this trend through having a majority of vessels with plain lip and interior neck zones. Thus, the somewhat greater complexity of decoration seen in the eastern house’s vessels further accentuates the interpretation that these east structures represent the initial founding settlement of the village, which subsequently experienced processes of formative coalescence through the addition of longhouses 1 through 10 to the existing community.

One of the most meaningful and idiosyncratic patterns of the spatial analysis is the presence of one incised horizontal line on the lip zone of vessels, occurring exclusively in the eastern houses. Several statistically significant results are associated with this pattern, as it is also linked to vessel form, overall decorative complexity, and has temporal implications. Even though a plain lip was most common for the entire assemblage, individuals living in longhouses 11 through 15 incorporated lip zone decoration within a 'community of practice' that shared a mental template of acceptable pottery décor. A few other idiosyncratic spatial patterns emerged for groups of houses, which may relate to closer social ties between these houses, concerning pottery practices. A distinctive Untyped Stamped vessel, consistently of vertical or oblique linear stamps and a plain neck zone, is one of the most common vessel types found within houses 1 to 5. A related rim motif of simples vertical with superimposed horizontal dash connects the northwest houses 1 and 2 to the central houses 9 and 10, and occurs exclusively in these areas of the village. Notably, this is the only spatial pattern linking the central houses to another area of the village, and potentially indicates a 'community of practice' connecting these northwest and central houses that are also linked through their common lack of characteristically earlier vessel types. Five instances of a similar rim motif, simples right oblique with superimposed horizontal dash, occurs in houses 14 and 15, as well as midden 1. The relatively small number of vessels suggests that that the presence of this decorative motif in the eastern houses could be due to social interaction rather than an indication of an existing shared practice. If the Tillsonburg Village were exhibiting formative processes of community coalescence, the presence of an idiosyncratic pattern from the northwest within the east could indicate the beginnings of social or communal integrative processes between these two groups.

The significant results presented above suggest that subtle variation in pottery form and decoration exists between houses and groups of houses spatially within the settlement, perhaps relating to social or organizational ties between the peoples inhabiting them, which can be better understood through a 'communities of practice' approach that emphasizes social boundaries and influences, as well as group membership (Hegmon, 1998). The presence of spatially distinct social groups, represented by 'communities of practice', is convincing evidence that the Tillsonburg Village is a formative coalescent community, which was involved in dynamic social negotiations that created and maintained both separation and integration of community groups or households in the larger village (Birch, 2012; Stone, 2016). Nevertheless, the primary pattern exhibited by the spatial statistical results is a substantial degree of uniformity in vessel form, size, and general decoration that likely relates to regional ‘communities of practice’ existing in broader social networks beyond a single village.

5.3 Longhouse Attribute Data

The longhouse attribute analyses indicated a few significant patterns of variability, particularly in terms of post mould densities, as well as one exterior and three interior attributes. As previously discussed, however, there were a greater number of exterior and interior attributes that did not result in significant differences between house groups (Table 5). In other words, the averages for the non-significant attributes can be considered more similar than different between each group of houses, denoting a fairly high degree of consistency in longhouse construction within the village’s built environment. The raw data tables are available in Appendix E (Tables E.1-E.3), and the statistical results for attributes exhibiting significant relationships can be found in Appendix G (Figures G.9-G26). Three significant patterns emerged for the longhouse analysis involving the following attributes: post mould densities, linear taper lengths, as well as lengths and areas of end storage cubicles or vestibules. It should be noted that the patterns involving taper lengths and storage vestibules could have emerged due to a multitude of functional or resource-related reasons, social distinctions between longhouse groups being only one possible explanation. Thus the longhouse attribute results should be considered supplementary to patterns previously discussed for the ceramic attributes.

Table 5: Summary of Statistical Outcomes for Longhouse Attributes

<table>
<tr><th colspan="2">Significant</th><th colspan="2">Non-Significant</th></tr>
<tr><th>Exterior</th><th>Interior</th><th>Exterior</th><th>Interior</th></tr>
<tr>
<td>• Average Post-Mould Densities
• Maximum Average Post-Mould Densities
• Linear Taper Lengths (Average (Avg.) & Subdivided (SD)</td>
<td>• End Storage Cubicle Lengths (Avg. & SD)
• End Storage Cubicle Areas (Avg. & SD)
• Feature Density of 3 Four-squared Metre Areas</td>
<td>• Length
• Width
• Area
• Midline Width
• End Widths (Avg. & SD)
• Difference between Midline Width & End Widths</td>
<td>• Bench Area Lengths (Avg. Support Posts to Wall)
• Central Corridor Length
• Central Corridor Width
• Average Feature Density of 3 (4 sq.m.) Areas
• General Feature Density
• Interior (Int.) Post Density of 3 Four-squared Metre Areas
• Average Int. Post Density of 3 (4 sq.m.) Areas
• General Int. Post Density
• Total Number of Cultural Features</td>
</tr>
</table>

5.3.1 Post Mould Densities

Post mould densities were calculated by dividing the number of posts by the total number of metres to produce an average post mould density per linear metre for each side wall of the house. Side wall averages in the northwest, particularly houses 1-3, as well as houses 11 to 15 in the east, resulted in high post densities, ranging from 3.4 to 5.3 posts per metre. Longhouses in the southern tier of the village, houses 6 to 8, resulted in considerably lower post densities, ranging from 2.2-2.5 posts per metre (Figure 22). Houses 4, 5, 9 and 10 are exceptions to these patterns, with house 5 and 9 having average post densities slightly greater than 3 posts per metre, and Houses 4 and 10 having lower average post densities at 2.2 and 2.1 posts per metre respectively. Preservation issues and lack of feature data for these four houses may be skewing the results and has to be considered for interpretations. For instance house 4 is one of the most severely impacted from construction grading, and due to its proximity to houses 1-3, the low post mould density for this specific house is questionable.

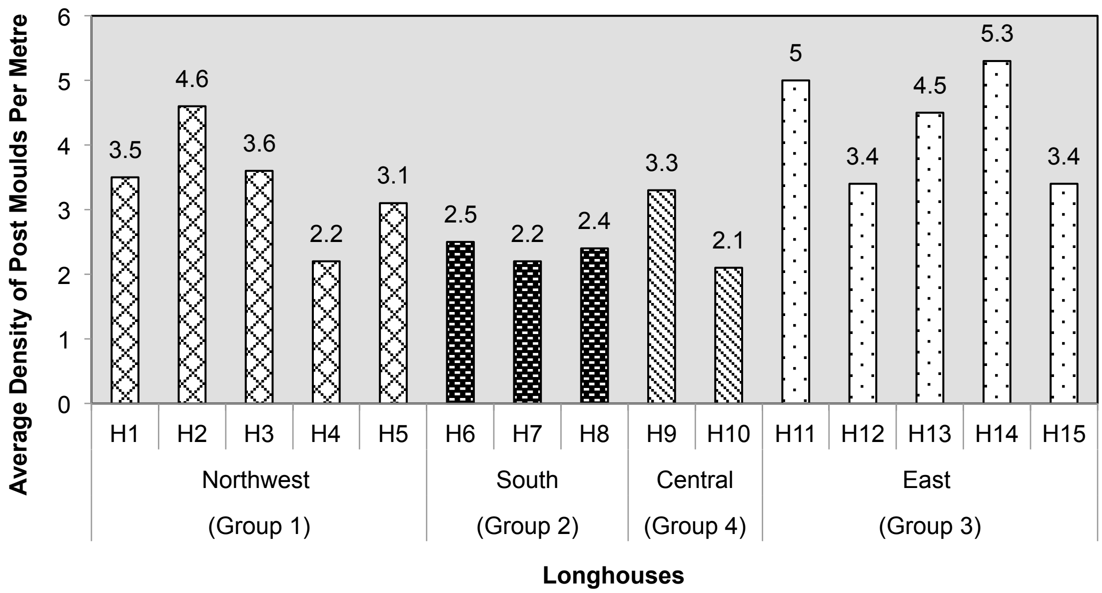

Figure 22: Average Post Mould Densities of Longhouses

In order to try and mitigate potential preservation biases, a maximum average post mould density was calculated for each house, using the most intact five-metre segment of side or end wall with the highest number of posts. The results of this analysis were similar to the pattern exhibited by the overall side wall averages. Houses 1-3, 5, and 11-15 resulted in post mould a density of 4.8 posts per metre or higher, reaching a peak result of 7.2 posts per metre. Houses 4 and 6-10 resulted in maximum average post mould densities less than 4.8 posts per metre, ranging from 3 to 4.4.

Significant differences were found between the means of group 2 and group 3 for both average (Figures G.9-G.10) and maximum (Figures G.11-G.12) post mould densities, and are summarized in Table 6.

Table 6: Summarized Statistical Results for Average and Maximum Post Mould Densities of House Groups

Classic or Welch's ANOVA					
Attributes				*F-Value*	*P-Value*
Avg. PMD (Per Linear Metre)				F(3, 11) = 4.449	.028
Max. Avg. PMD (5m Segment)				F(3, 11) = 3.409	.057
Post-Hoc Test (Games-Howell or Dunnett's T3)					
Attributes	House Groups	Means	Std. Dev.	*Significant Group Comparison Outcomes*	*P-Values*
Avg. PMD	1	3.4	0.87	Group 2 and Group 3	.030
	2	2.4	0.15		
	3	4.3	0.89		
	4	2.7	0.85		
Max. Avg. PMD	1	5.8	1.5	Group 2 and Group 3	.058
	2	3.9	0.23		
	3	5.9	1.11		
	4	3.7	1		

Figure 23 represents the means and ranges of variation for each group in regards to average post densities. The lack of overlap between group 2 and 3 denotes the aforementioned variance.

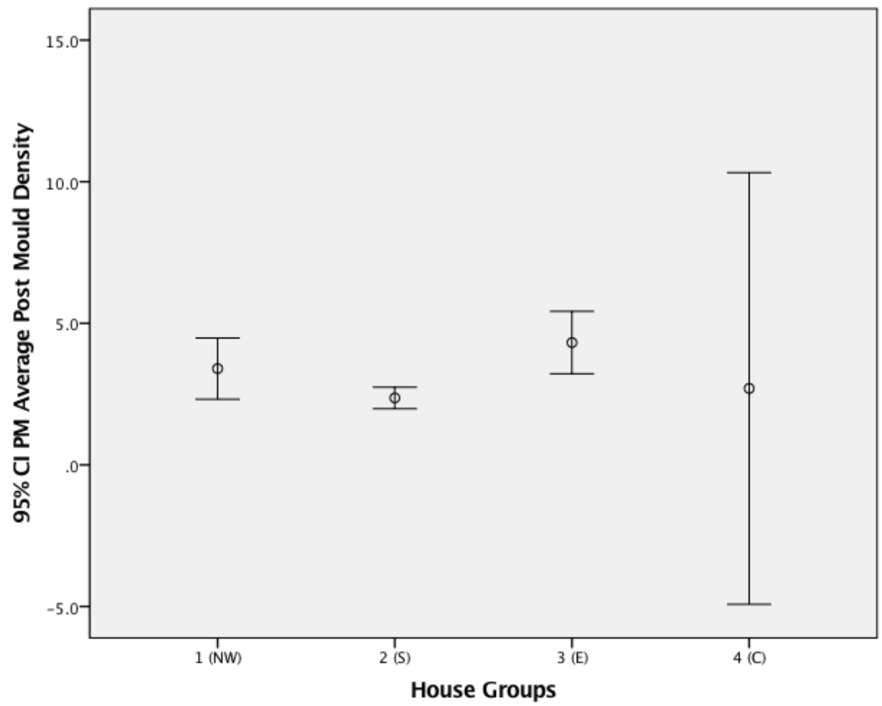

Figure 23: Error Bar Graph of Average Post Mould Densities for House Groups

Interpreting the average and maximum post mould density analyses, houses 1, 2, 3, 5 (and probably 4), in the northwest, and houses 11-15 in the east, may have been occupied or maintained longer than houses 6-8 in the south, and the centrally located houses 9 and 10. It is also important to note that, although not statistically significant, the east houses have the highest post mould density on average, which supports the idea that the east houses were established first and occupied the longest. The trend of houses 6-8 having overall lower post mould densities is likely not merely a result of prior construction impacts, given that houses 6 and 7 are considered two of the better preserved houses from the 2001 excavation, and more intact segments of wall should be representative of how many post moulds were present before ground disturbance. In the eastern group of houses, unlike in the west, post mould density appears to correlate to house length or size, which has resulted in a wider range of maximum averages, from 4.8 to 7.2 posts per metre. The exception to this trend is that the longest house in this area, house 15 has a lower post mould density then the marginally shorter houses 11 and 14. The post mould density analysis supports the temporal sequence shown in the ceramic vessel analysis, given that the east houses appear to have been maintained and occupied the longest, followed by the northwest houses, and finally the southern houses. The poor preservation of house 9 and 10 makes it difficult to accurately place them within a temporal sequence based on post mould densities. The sequence suggested by post densities is given greater credence alongside the intra-site occupational sequence indicated by the ceramic vessel analysis, which strongly suggests that houses 11 to 15 in the east predate houses 1 to 5 in the northwest, along with inadequate or conflicting temporal evidence for houses 6 to 8, and 9 and 10.

5.3.2 Exterior and Interior Longhouse Attributes

The linear taper lengths (LTLs) of longhouse ends exhibited the sole significant pattern for exterior attributes. Depending on house preservation, linear taper lengths were either based on the combined average of both ends or the sole average of one end. Houses in the more southern and central portions of site (group 2), 6-8 & 10, had averages less than four metres overall. A majority of houses in the northwest portion of site (group 1), as well as in the east (group 3), with the exception of 3 and 13, had averages over four metres (Figure 24). House 3 is solely based on the northwest end of the house and it remains unknown whether the other side of the house would have contributed to an overall LTL average greater than four metres, if it had been available for analysis. The other exception to the trend was house 13, which is the smallest complete house in the village, and its size and different housing capacity are likely correlated to its variation in linear taper length. Interestingly, the houses in the south, even though similar in length and width dimensions to other houses, have much shorter average linear taper lengths.

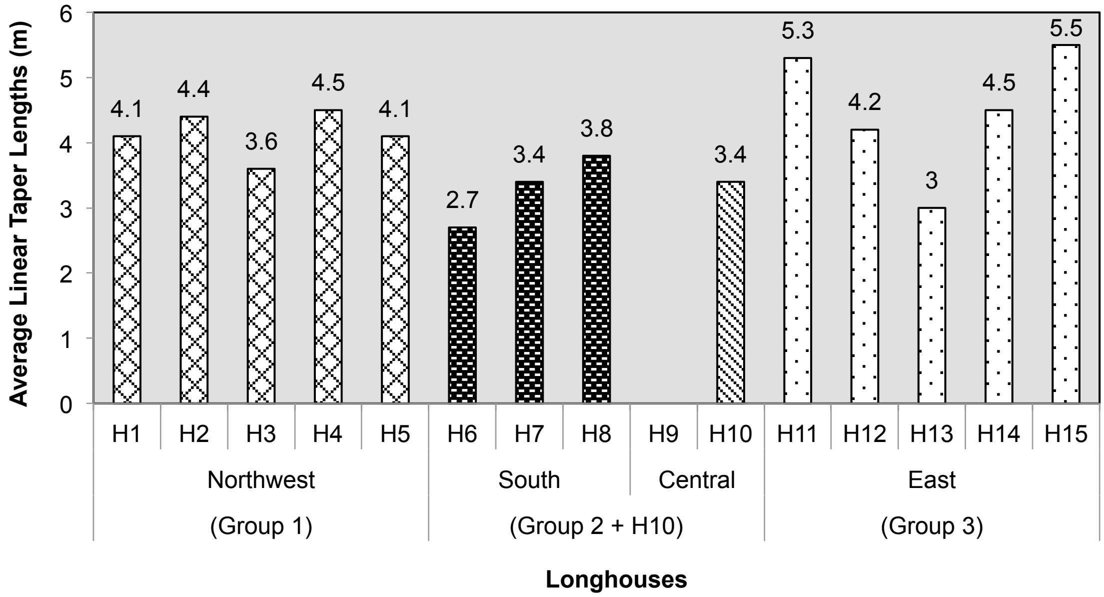

Figure 24: Average Linear Taper Lengths for Longhouses

For the statistical computations, the data formatting for linear taper lengths was twofold. As discussed above, the overall average linear taper lengths for each structure were used for one of the calculations. Secondly, the data was subdivided by house end to allow for almost double the observations per group, and was aptly termed linear taper lengths. Group 4 was omitted for the statistical testing of this variable, and house 10 was included with group 2, given the complete lack of data for house 9. Statistical differences were found between group 1 and group 2 for average LTLs (Figures G.15-G16), as well as groups 1 and 2, and 2 and 3, for subdivided LTLs (Figures G.13-G.14). The statistical results are summarized in Table 7.

Table 7: Summarized Statistical Results of Significant Exterior and Interior Longhouse Attributes for House Groups

Classic or Welch's ANOVA		
Attributes	*F-Value*	*P-Value*
Linear Taper Length (LTL) Avg.	F(2, 11) = 3.400	.071
LTL Subdivided (Sub.)	F(2, 11.711) = 7.637	.008
Storage Cubicle Length (SCL) Avg.	F(2, 11) = 13.437	.001

SCL Sub.	F(2, 20) = 7.525	.004
Storage Cubicle Area (SCA) Avg.	Not Significant for one-way ANOVA	
SCA Sub.	F(2, 20) = 7.377	.004
Feature Density (per m^2) of 3 Four-Square Metre Areas (3 Areas)	F(3, 10.220) = 6.023	.013

Post-Hoc Test (Games-Howell or Dunnett's T3)

Attributes	House Groups	Means (m)	Std. Dev.	*Significant Group Comparison Outcomes*	*P-Values*
LTL Avg.	1	4.14	0.35		
	2	3.32	0.46	Group 1 and Group 2	.074
	3	4.50	1		
LTL Sub.	1	4.13	0.37	Group 1 and Group 2	.010
	2	3.22	0.48		
	3	4.46	1.5	Group 2 and Group 3	.098
SCL Avg.	1	6.60	0.99	Group 1 and Group 2	.004
	2	3.75	0.58		
	3	3.98	1.10	Group 1 and Group 3	.012
SCL Sub.	1	6.36	1	Group 1 and Group 2	.011
	2	3.83	1.38		
	3	4.22	1.61	Group 1 and Group 3	.013
SCA Avg.	1	49.18	9.56		
	2	24.98	5.44	Group 1 and Group 2	.007
	3	37.14	23.34		
SCA Sub.	1	47.13	8.73	Group 1 and Group 2	.009
	2	25.6	11.34		
	3	30.4	13.2	Group 1 and Group 3	.020
3 Areas	1	.44	.23	Group 1 and Group 3	.018
	2	.55	.25		
	3	.91	.41	Group 3 and Group 4	.006
	4	.35	.07		

One could also argue that groups 1 and 3 are markedly similar in terms of linear taper length means. Figure 25 represents the range of variation for each group's LTLs, visually demonstrating a lack of intersection between groups 1 and 2, and a greater degree of intersection between groups 1 and 3, and even 2 and 3. Given that the variation is so subtle, motivations for differences in linear taper lengths cannot be directly related to social or community distinctions between longhouse groups, as functional explanations are equally as probable.

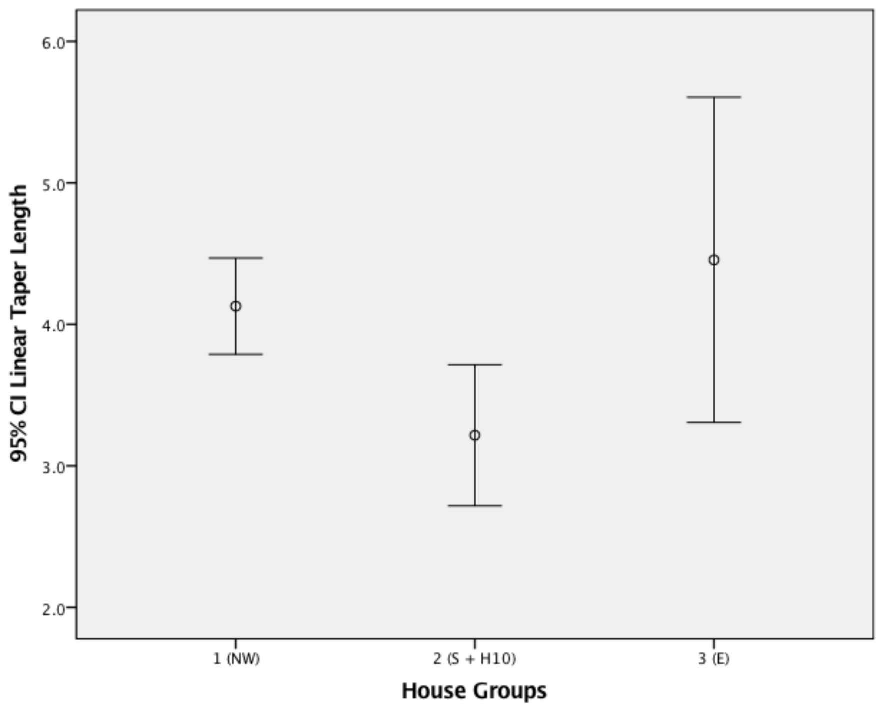

Figure 25: Error Bar Graph of Linear Taper Lengths for House Groups

For interior attributes, storage cubicle lengths and storage cubicle areas exhibit significant patterns. Houses 1-5 appear to have longer and more equal storage cubicle lengths and higher overall storage space, than houses 6-8, 10, and 11-15, represented in Figure 26a and 26b. Also, houses 6-8, 10, 11, 12, 14 and 15 all tend to have one storage cubicle that is considerably smaller, generally half the size, of the other cubicle. House 13 is an exception as it is by far the smallest structure on site and has equally small storage cubicles on each end. This trend could represent a difference in construction of storage cubicle space between areas of the village, possibly reflecting the need or preference for more interior storage space in the northwest houses of the village. There does not appear to be a visible trend as to whether or not a house will have a partition wall separating the storage cubicle from the central corridor.

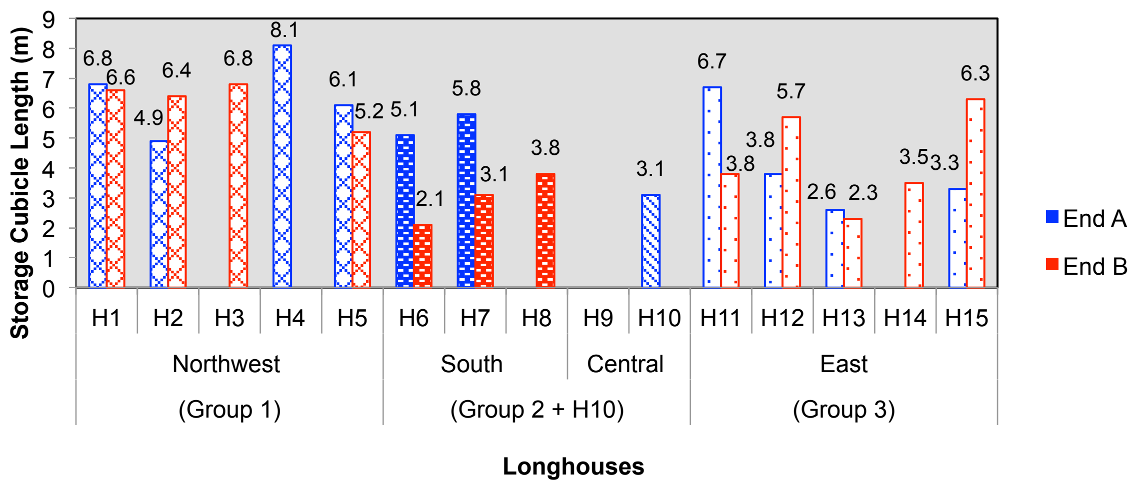

Figure 26a: Storage Cubicle Lengths for Longhouse Ends A & B

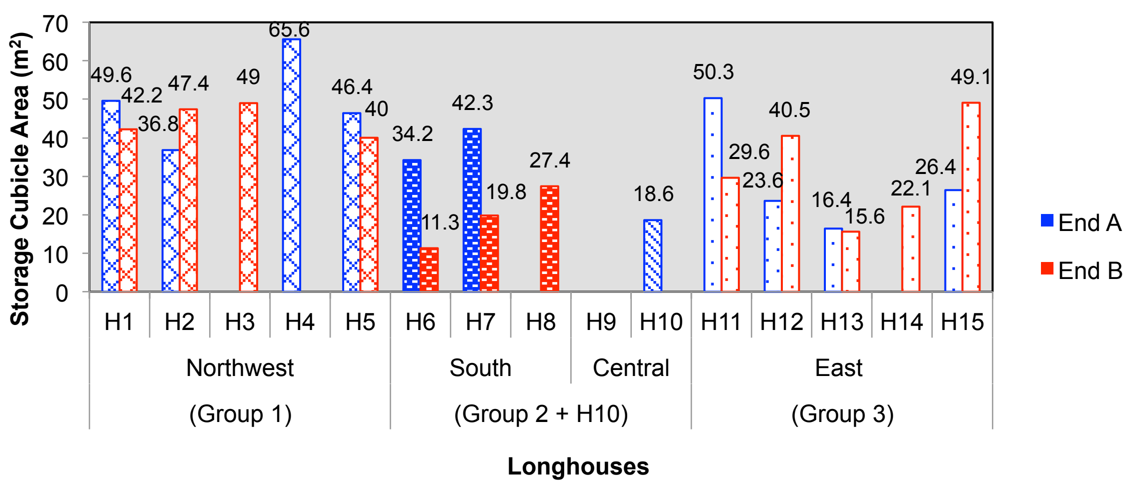

Figure 26b: Storage Cubicle Area for Longhouse Ends A & B

The storage cubicle variables were tested twice, in formats mirroring those used for the linear taper lengths. For example there was the combined average storage cubicle length (Avg. SCL) for each structure, as well as storage cubicle lengths (SCLs) from each end, which represents the subdivided variable. The same configuration was applied to storage cubicle areas, one combined average (Avg. SCA) per house and one subdivided (SCAs) by house end. The latter format once again increased the total number of observations per house, and hence per group, used in the statistical comparisons. Group 4 was once again omitted for the statistical testing of these variables, and house 10 was included with group 2, given the complete lack of data for house 9.

For average SCLs, SCLs, and SCAs, (Figures G.17-G.20, G.23-G.24) statistical differences were found between group 1 and groups 2 and 3, summarized in Table 7. The average SCAs (Figures G.21-G.22) produced a non-significant outcome for house groups, diverging from the results of the previous three variables. However, the post hoc comparison indicated a significant difference between group 1 and 2, with the exclusion of group 3 in this instance. Figure 27a represents this distinction between groups 1 and 2, along with a considerably wider range of variation for group 3 for the average SCAs variable. Figure 27b is an error graph of SCLs for house groups, but also serves to illustrate the identical outcomes for average SCAs and average SCLs, as it clearly identifies the significant variation between group 1 and the other two groups, as well as the similarity between groups 2 and 3. These results further suggest distinctiveness in storage cubicle spaces for the northwest houses, while at the same time reinforcing a possible connection in the spatial construction of storage cubicles between individuals in the south and east.

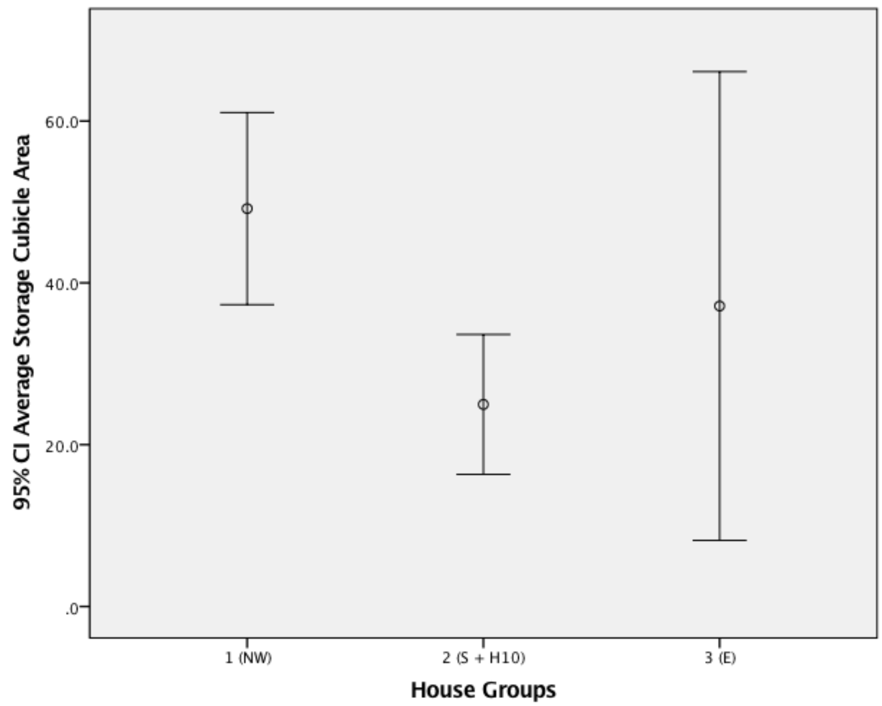

Figure 27a: Error Bar Graph of Average Storage Cubicle Areas for House Groups

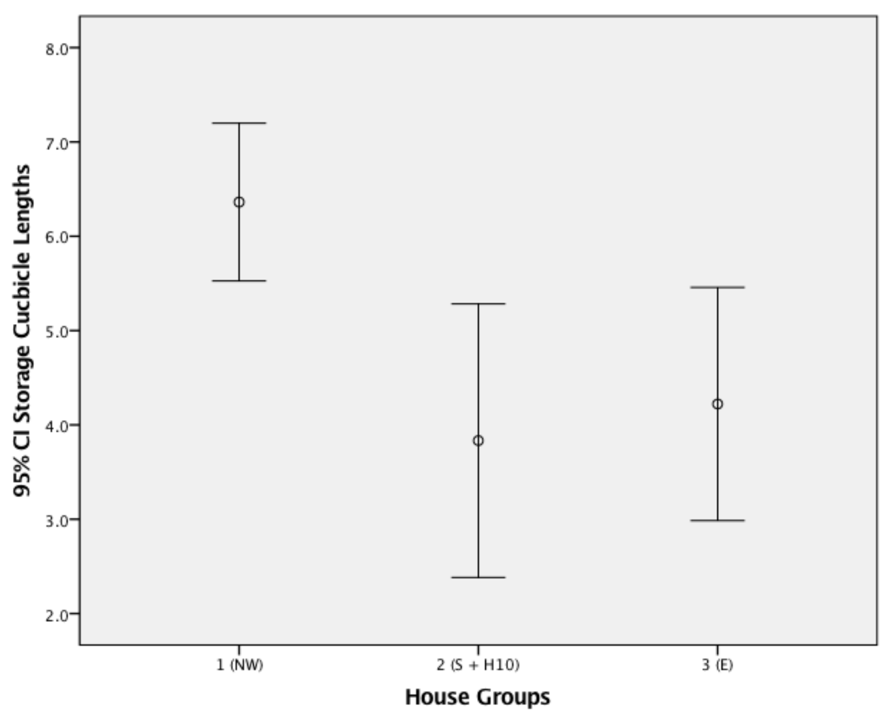

Figure 27b: Error Bar Graph of Storage Cubicle Lengths for House Groups

One other interior attribute yielded a significant result, the feature density (per m^2) of the three, four-metre square, central corridor areas for each longhouse (Figures G.25-G.26). For this variable there were three observations per house, thus increasing the number of observations for house groups. Differences were found between groups 1 and 3, and are summarized within Table 7. Group 4 was included in the testing of this variable, as there was adequate data from both house 9 and 10. This particular pattern was not visibly discernable before statistical testing, as each longhouse or group of longhouses appeared to have comparable feature densities. Figure 28 represents the range of variation for each group's average central corridor feature density. Group's 4 wider range of variation is a result of having only two, particularly diffuse, observations representing the group. Due to severe preservation issues associated with at least two of the northwest houses, and the considerably higher degree of preservation in the east, I consider these results tentative. Alternatively, if one were to interpret these results without considering preservation bias, the results would support the interpretation that the longhouses in the east might have been occupied for a longer period of time than the houses located in the northwest, south, or central areas of the village.

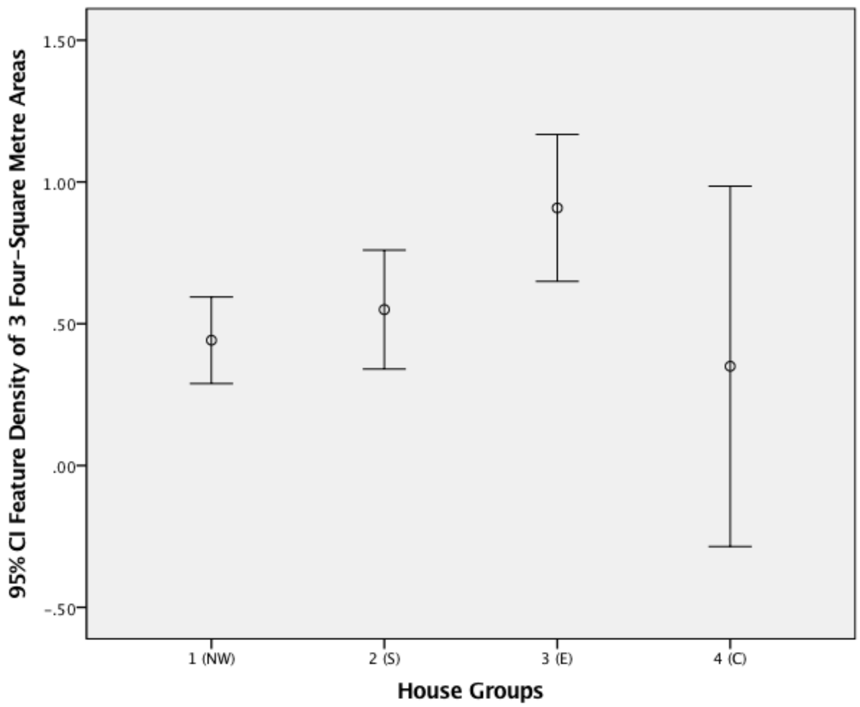

Figure 28: Error Bar Graph of Feature Density of 3 Four-Square Metre Areas for House Groups

5.3.3 Discussion

In regards to longhouse architecture or construction, the northwest houses have consistent house lengths, relatively high maximum post density averages, longer and more equal storage cubicles, and are closer in proximity to each other than houses in the other groups. In conjunction with ceramic attribute patterns, the results could indicate that these households are more closely related, having similar mental templates for longhouse construction, and pottery production. The northwest longhouses were occupied or maintained for a similar duration to houses in the East, and perhaps for a longer period of time than houses in the central and south areas. Houses 11-15 are located a substantial distance from the more western longhouses in terms of proximity, and exhibit the highest average post mould densities for the village, only slightly greater than the northwest houses. Similar to the ceramic type patterning, the post mould analysis demonstrates that the east area houses may have been the longest-lived, followed by the northwest houses. Difficulties arise when attempting to place the central and southern houses into temporal sequences, given the lack of data for the central houses and the conflicting results for the southern houses. The conflict arises from the southern houses having significantly lower post mould densities, indicating a shorter-lived occupation, as well as the presence of some earlier ceramic types. The lack of any idiosyncratic ceramic vessel patterns, along with the low post densities, suggests that houses 6 to 8 may have joined the village later or for a shorter period of time, or at some point decided that living on the southern slope was not entirely advantageous. Interestingly, houses 6 to 8 and 11 to 15 all had one considerably smaller end storage cubicle, regardless of overall house length, revealing another possible connection between the individuals living in these two areas of the village. Unfortunately, not as much can be said about houses 9 and 10 due to their lack of preservation, only that they also could have been occupied for a shorter duration of time, based on their maximum post densities. These longhouse attribute findings tentatively suggest that the internal community distinctions suggested in the ceramic vessel analysis may also be reflected in some aspects of longhouse construction, further delineating the distinct social groups that appear to have coalesced to form the Tillsonburg Village.

5.4 Considerations of Other Artifact Classes

A consideration of some of the other artifact classes, beyond ceramic vessels, can provide further insight into the occupational history and patterns of variability within the Tillsonburg Village. The Archaeologix (2002) and Golder Associates (2009) reports provided the data for a brief examination into projectile point types and ceramic pipe bowls.

A majority of projectile points recovered throughout the village were typed as Middleport Notched or variants, followed closely by Middleport, Levanna, and Madison type triangular points. These types are all common to the middle Late Woodland Period and the Tillsonburg Site's approximate date of occupation, further supporting the notion that longhouses were generally contemporary. A number of earlier type points, spanning the Early Archaic to the early Late Woodland, made up the site's remaining assemblage. The earlier points were most prevalent in the east area, particularly in the middens, but two Jack's Reef type points were found within the houses. A single Early Archaic, Nettling point was recovered in house 3, as well as one Early Woodland Kramer-variant point in house 8. The presence of these earlier types throughout the settlement suggests that this area may have been re-occupied by peoples over thousands of years prior to the eventual establishment of the Tillsonburg Village, although it is also possible that the Tillsonburg Village residents found and collected them. Also, a single Nanticoke projectile point was recovered within house 8, a type most common to pre-contact Neutral peoples after AD 1400. The presence of this projectile point type only further complicates the situating of houses 6 to 8 into the site's occupational history, and tentatively supports the aforementioned notion that these houses could be a later addition to the village community (Archaeologix, 2002; Golder Associates, 2009). It should be pointed out, however, that Late Woodland projectile point types are generally considered to be less sensitive temporal indicators than ceramics.

The ceramic pipes recovered at Tillsonburg give further weight to the elaborate Middleport pipe complex documented for the Middleport period (AD 1350-1420). Pipes were decorated with elements of opposed obliques, horizontals, and punctates, as well as other more complex combinations of these elements. The most common decorative motifs at Tillsonburg were opposed, ring, and ring and punctate motifs. A notable pattern exhibited by the pipe bowls is that there are more equal percentages of both plain and decorated pipes in the eastern houses and middens, whereas there is not a single example of a plain pipe bowl found in longhouses 1 to 4. Overall, there is greater disparity in percentages of decorated versus plain pipe bowls in the northwestern longhouses (92% vs. 7%), as well as in the southern houses (70% vs. 30%), and more equal percentages for the eastern longhouses or middens (51% vs. 49%). There is a general temporal trend involving increased decoration of pipe bowls over time, and more equal amounts of plain and decorated pipes on Middleport period villages (Dodd et al., 1990). Thus, this pattern is again consistent with the temporal sequence found for the ceramic vessel analysis. A majority of the pipe bowls were too fragmentary to determine form, but for those that could be analyzed a conical form was most common and is the prevailing bowl form for Middleport villages (Dodd et al., 1990). Interestingly, house 1 exhibits a fairly high combined percentage (80%) of barrel and vasiform bowl forms, and the latter are known as a more frequent form at Late Pre-Contact Neutral sites (Archaeologix, 2002; Lennox & Fitzgerald, 1990). Therefore, this brief investigation into pipe bowls further suggests that the northwest longhouses may have coalesced later in to the village community, and that the eastern longhouses were the initial and longest-lived occupation. These decorative and form-related patterns could also suggest idiosyncrasies or 'communities of practice' for pipe production, which once again distinguish the northwest and east groups of longhouses, but past research suggests that the observed trends also have temporal significance.

The analysis of floral and faunal remains would have been a valuable addition to this section, however, the bulk of the assemblage has not been analyzed. Despite this lack of detailed analysis, the 2009 report suggests that a majority of the recovered faunal elements belong to white tail deer, small mammals, and a variety of birds. Also, several fragments of carbonized corn and one carbonized nut were identified. The general interpretation of Tillsonburg Site's subsistence economy is a year-round occupation with a subsistence pattern based on a combination of maize agriculture and hunting. The bone artifact assemblage throughout the Tillsonburg Site consists of objects common to Middle Iroquoian village life, such as awls, needles, beads, bodkins, antler pressure flakers, hair pins, and modified deer phalanges (Archaeologix, 2002; Golder Associates, 2009).

This brief investigation into other artifact classes provides additional evidence to strengthen the proposition that the Tillsonburg Village exhibits evidence of coalescence. The larger village community exhibits distinctions in ceramic pipe production in particular, supporting the social and temporal trends established in the ceramic vessel and longhouse analyses.

5.5 Methodological Limitations

There are a number of methodological limitations to consider when analyzing and interpreting the Tillsonburg Village Site data. These limitations are primarily a result of the nature of the salvage excavations on the western portion of the site, and a water trench disturbance on the eastern portion of the site. Unfortunately, salvage excavations by Cultural Resource Management (CRM) companies and the Ontario Ministry of Culture were a common occurrence in the late 20th century and earlier 2000s, and many of these earlier collections would have these same challenges. Nevertheless, research on these earlier collections from a salvage or CRM context are no less valuable than research on academic collections, and allows for some of the “grey literature” arising from CRM activities to be better understood and accessible.

The construction grading processes that affected the northwest, central and southern areas of site had a particularly adverse effect on the longhouse attribute analyses, as portions of several of the longhouses were not available for study, diminishing the already small number of attributes for observation. Adjustments were made to data processing and analytical techniques to mitigate these challenges. For example, a maximum post mould density was recorded for each house, along with average post densities, to compare and assess the accuracy of the findings. Also, the choice of statistical analyses was based on the test’s ability to correct for non-normality and smaller sample sizes.

Sample size was also the primary issue for the ceramic vessel attribute analysis. Due to the prior grading activities, archaeological deposits and artifacts were more poorly preserved, and in some cases destroyed completely. Thus, sample sizes are inherently smaller on the western portion versus the eastern portion of the village. However, for the spatial analyses of the ceramic attribute data, I did try to mitigate this somewhat by converting the quantity of the artifacts into percentages. This conversion helped to normalize the data, and then these percentage columns were further analyzed both spatially and statistically. Also, the parameters of the spatial tests were adjusted to reduce the effect of the skewed data caused by uneven vessel samples per house. Nevertheless, sample size was still rigorously taken into account during interpretations of the results to ensure patterns were not a product of this limitation. Issues of sample size do not negate the resulting patterns, in which valuable insights emerged on the organizational, temporal, and social variability present at the Tillsonburg Village Site.

Another challenge for this study is the paucity of detailed intra-site investigations, as well as inter-site comparative research available for the region surrounding the site. No previous research exists for this region regarding processes of community coalescence, which are known to be historically and socially contingent. Many sites found in CRM contexts are not examined for research purposes and remain unanalyzed. Nonetheless, I still attempt to make some regional connections in the concluding chapter of this thesis, although the comparator sites are slightly further afield. CRM collections are becoming more frequently researched and perhaps in the future regional data will be available to situate the Tillsonburg Village within a community sequence.

5.6 Conclusion

This chapter has presented the results of the major ceramic vessel attribute analysis and the supplementary longhouse attribute investigations. Even though an overall result of uniformity was found for ceramic vessel form and decoration, as well as longhouse architecture, there is still a substantial amount of localized variation between the individual longhouses or groups of longhouses. These patterns aided in the formation of a sequence of occupation and possible aggregation that led to the formation of the village community. The analysis also demonstrates idiosyncrasies specific to groups of longhouses that relate to 'communities of practice,' and could indicate distinct social groups or sub-communities within the larger village. Patterns exhibited by other artifact classes also support the temporal patterns found during the two main analyses. Therefore, the social and temporal evidence presented in this chapter supports the conceptual approach of coalescence, rather than alternative processes previously discussed in Chapter 1 and further evaluated in Chapter 6. The next chapter aims to situate the patterns conveyed by these results in to a framework of formative community coalescence, considering how the Tillsonburg Village exhibits coalescent processes similar to other Late Woodland sites and sequences, as well as how the village exhibits processes unique to them.

Chapter 6

6 Discussion and Conclusions

This chapter will explore the ways in which the Tillsonburg community exhibits coalescent processes or strategies common to other ancestral Iroquoian communities in southern Ontario, as well as how the village differs from other communities in its own historically constituted local and regional contexts. I will incorporate the ceramic vessel and longhouse attribute patterns from the previous chapter, and explore some possible regional connections between the Tillsonburg Site and nearby Iroquoian village sites. The discussion of regional connections will also include an exploration of idiosyncratic patterns similar to those presented in chapter 5 with more geographically distant Iroquoian sites. I will also discuss features within the Tillsonburg Village's built environment that may have served as integrative social mechanisms for the aggregated community. The chapter will conclude with some future directions for study.

6.1 Formative Community Coalescence

Community aggregation or coalescence is considered to be formative when physical distance or separation still appears to be valued by the inhabitants (Birch, 2012; Finlayson, 1978, 1985). This spatial separation between village segments suggests that the village community had yet to become a socially integrated whole. The use of the term formative in this study does not necessarily equate with temporally earlier villages, but rather the formative or experimental processes of coalescence that involve spatial, and likely social, distinctions between groups, which occurred at both earlier and later Iroquoian villages throughout the Late Woodland. The organization of the Tillsonburg settlement is particularly large and dispersed, and spatially distinct groups of longhouses or village segments are apparent. The occupants of the Tillsonburg Village perhaps manipulated open space similar to the way palisades marked divisions between community segments in later phase coalescent communities, such as the Draper Site. The built environment creates connections or boundaries between spaces that encourages or limits physical or social interaction (Bagwell, 2005). The spatial aspects of human activity become bound by the construction of structures, dividing spaces into "ours" and "theirs" that convey information among and within social groups (Birch, 2010; Ramsden 1990; Bourdieu, 1970; Rapoport, 1990). "The separation of different architectural units, such as households and groups of households, may then be interpreted as denoting the boundaries of smaller social units within the larger group" (Birch, 2010, p. 100; Riggs, 2002; Stone, 2000). The frequency of interaction and communication becomes managed through the construction and position of structures relative to one another, which reflects social relationships between domestic groups and the broader social whole (Birch, 2010).

The temporal and social evidence summarized in Chapter 5 better supports the conceptual approach of coalescence in understanding the Tillsonburg Village community plan, rather than one of the alternative processes outlined in Chapter 1. To reiterate, these alternative processes include significant temporal differences between houses or groups of houses indicating major gaps in the occupation of the village areas, the establishment of the village by a single community with all areas occupied concurrently, or the sequential occupation of groups of longhouses by the same community. These alternatives are further evaluated in the discussion below.

The overarching pattern of uniformity in the ceramic vessel and longhouse attribute analyses strongly suggests that the Tillsonburg longhouses were part of a largely contemporary late Middle Iroquoian village community. No major temporal differences were evident between individual houses or groups of houses based on relative dating methods. Moreover, the patterns of subtle variation among longhouse groups for both ceramic vessel and longhouse attributes, suggest that this community was experiencing formative processes of coalescence in which at least two separate social groups aggregated into one communal settlement over a fairly rapid period of time. Specifically, the results suggest that the village was initially established in the east and then expanded northwest and southwest as additional social groups joined the village community. The evidence for a short-term, fine-grained temporal sequence of occupation strongly suggests that a single community did not establish the village at one time. Furthermore, evidence shows distinct 'communities of practice' in pottery production within longhouse groups, as well as subtle architectural differences between these same groups of houses.

In this study, the longhouse is the social and analytical unit of analysis to which these patterns are being ascribed, however, I recognize that a subset of primarily female individuals were likely the pottery producers within these ‘communities of practice’ (Sassaman & Rudolphi, 2001). These idiosyncrasies in ceramic decoration and longhouse architecture suggest that the northwest and east groups of houses were socially distinct sub-communities, rather than the same community occupying the village sequentially. The next section will summarize this study’s major findings in support of formative community coalescence in greater detail.

6.1.1 Ceramic Vessels and Longhouse Architecture

Previous research has demonstrated that analyses of ceramic vessels and architecture are reliable lines of evidence to examine the organizational, social, and temporal variability between houses or community segments within a village (Birch, 2010, 2012; Birch & Williamson, 2013b; Creese, 2011, 2012, 2013; Dodd, 1984; Howie-Langs, 1998; Kapches, 1990, 1997, 2007; Pearce, 1978; Sherratt, 2003; Stone, 2016).

A number of spatial patterns related to ceramic types and decorative complexity were presented in chapter 5 and suggest that the eastern longhouses and middens were established initially. Specifically, the presence of earlier ceramic types, such as Iroquois Linear, Ontario Oblique, Ontario Horizontal and Uren Dentate, as well as the greater number of exterior bands and motifs, horizontal lines, and interior neck decoration on vessels all point to a slightly earlier initial use of this area. The post mould density analysis also provides evidence for the east houses as the initial core village. In the Late Pre-Contact period, mid-15th century coalescent communities are thought to have begun with a ‘core village’ segment, consisting of the initial occupants. For example, the Draper Site also had the greatest post densities within the core village area or Segment A, and post mould densities tended to exhibit consistency of duration within house clusters rather than between them (Birch, 2010; Finlayson, 1978, 1985). The Tillsonburg Village Site also fits this pattern, given that post mould densities are most consistent within groups of longhouses. The east and northwest longhouse groups have relatively similar post densities, suggesting that the areas were occupied for similar lengths of time, however, the east houses actually have the slightly higher post densities, indicating that these houses may have been occupied longer and slightly predate the northwest houses. The presence of minute temporal differences between longhouse groups or village segments supports the idea that coalescent processes formed the Tillsonburg community, given that the process of village aggregation usually involves new groups joining an existing village community over a period of time.

The analysis of the Tillsonburg ceramic vessels shows that distinct ‘communities of practice’ are present for the occupants of the northwest group of longhouses and east group of longhouses. The lack of idiosyncratic patterns in vessel form or decoration for the southern or central house groups reduces my ability to comment on these village areas regarding possible social distinctions or ‘communities of practice.’ The reproduction of material culture patterns is situated in social life, as craft learning happens through observation and emulation. The often-unintended consequences of numerous choices made by social actors will lead to broader material culture patterning, as these actors followed varied strategies linked by common structurally conditioned tendencies toward action (Dietler & Herbich, 1998). The collar motif, Simples Vertical / Obliques with Superimposed Horizontal Dash, was spatially significant in the northwest group but also exists in smaller percentages within the east, indicating that it may have been a shared practice between the two community segments (Appendix D, Table D.15). The distinctive horizontal lip motif is exclusively present within the eastern houses and middens, and this practice was not reciprocally shared with other segments of the village (Appendix D, Table D.16). A few present-day ethnographic studies have found that various technological differences corresponded to social differences or ethnic boundaries, exhibiting the links between learning context and stylistic similarities (Gosselain, 1998; Longacre, 1991). However, even though material culture boundaries may relate to past social boundaries, they should not be equated with ethnic boundaries.

The subtle variation among longhouse architectural attributes could tentatively denote distinctive ‘communities of practice’ in the construction of these structures particular to each group of houses. However, given the subtlety of these differences, they may also represent functional or resource-based differences rather than having social explanations. Architecture can be influenced by a multitude of cultural components, including technology, symbolism, worldview, economics, as well as social and political organization (Kent, 1990). An argument can be made that an understanding of context is necessary to overcome the former issue (Locock, 1994; Hodder, 1986). Nevertheless, the consistency between patterns of variability from the two attribute analyses cannot be disregarded, since the east and northwest groups of longhouses shared both similar decorative vessel traits, as well as common architectural traits.

The ceramic vessel and longhouse architectural analyses together reveal an intra-site temporal sequence of occupation involving groups of longhouses or village segments, which appear to be socially distinct on the basis of idiosyncratic patterns of vessel decoration that reflect separate, but possibly interacting, 'communities of practice.' All together the evidence strongly suggests that the Tillsonburg residents were experiencing formative processes of coalescence, which led to the formation of the village's large and dispersed community plan.

6.1.2 Regional Connections

The immediate region surrounding the Tillsonburg Village has not been extensively surveyed or researched in comparison to other regions of southern Ontario and there have been few extensive excavations of Iroquoian sites. Many sites that have been recorded close to Tillsonburg lack detailed analyses. Therefore, formulating reliable community sequences or village relocations for the site is presently not possible. Nevertheless, archaeologists have surveyed and reported the presence of a number of Iroquoian village sites further north and south on the Big Otter Creek drainage, as well as in adjacent drainages, such as Catfish Creek (Fox, 1977; Poulton, 1980). I consider the Tillsonburg Village to be part of the Big Otter Creek drainage, as it is located on Stoney Creek, a tributary to the larger watercourse. This midsection of the Big Otter Creek drainage has been subjected to relatively less archaeological survey than areas to the north and south.

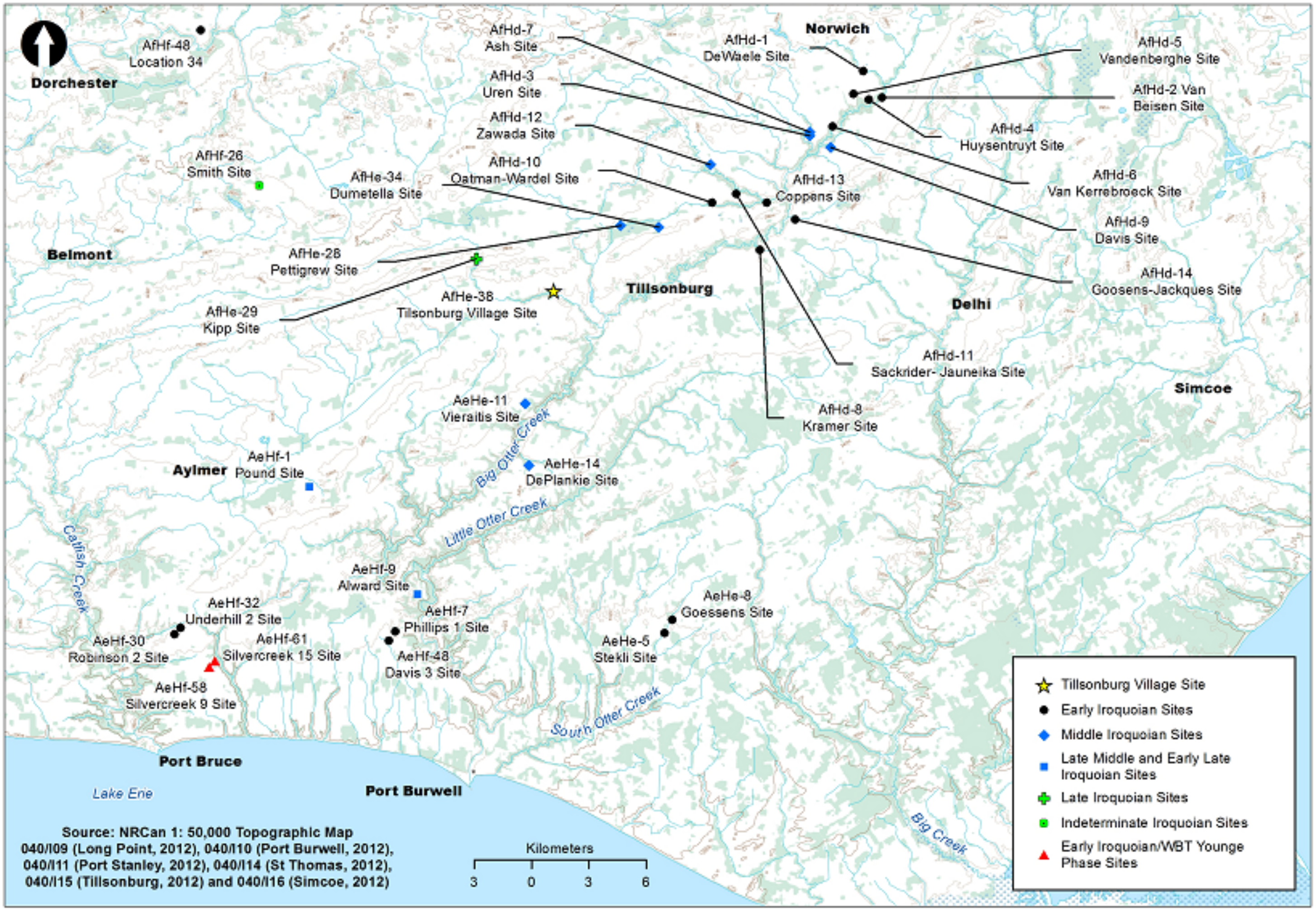

Figure 29: Regional Iroquoian Sites in a 20 km radius around the Tillsonburg Village Site (Map compiled by Timmins Martelle Heritage Consultants, 2017, and data retrieved from MTCS Database, 2017)

The Uren, Ash, and Davis Sites are located approximately fifteen kilometres northeast of the Tillsonburg Village, in Norwich Township. While it is uncommon for communities to relocate at this far a distance, it is still possible that these early Middle Iroquoian communities could have moved south along the Big Otter Creek drainage to the Tillsonburg area. Some similarities exist between the Uren Site's ceramic assemblage and the Tillsonburg assemblage, including high percentages of plain and rib-paddled surface treatments on neck sherds, and a predominance of the linear stamped technique for the overall assemblage. Interestingly, in Wright's (1986) comparative study of the Uren Site and other Early and early Middle Iroquoian sites, all the sites in the more immediate region, such as Van Besian, Reid, and Goessens, have a predominance of linear stamped technique, versus the sites further afield, such as Bennett and Gunby, which have a predominance of push-pull and incised respectively. A similar pattern is seen in the Tillsonburg assemblage, thus, the former sites present a possible pattern of similarity and continuity in the local context surrounding the Tillsonburg Site.

The Pettigrew and Dumetella Sites are the nearest early Middle Iroquoian villages to Tillsonburg, they have been recorded to date to the 14th century and AD 1350 respectively (Ministry of Tourism, Culture, and Sport (MTCS), 2017). The Dumetella Site was recorded as a small hamlet, and the Pettigrew Site was recorded as a one hectare village. Therefore, these two sites are possible antecedent communities that may have contributed to the larger Tillsonburg Village. The closest village site to Tillsonburg is the Kipp Site, which is also located on the Stony Creek tributary, and is thought to date to the 15th century (MTCS, 2017). A number of other Early and Middle Iroquoian Period villages have been recorded within a twenty kilometre radius around the Tillsonburg Site (see Figure 29) (MTCS, 2017). Unfortunately, with the exception of a few sites (Noble, 1975; Wright, 1986), many of these village sites do not have extensive site reports available, thus, making comparisons or definitive connections with the Tillsonburg Village community difficult.

Another avenue of regional connections is to explore whether the idiosyncratic patterns of vessel decoration in the Tillsonburg assemblage exist within other village site assemblages in nearby drainages or even across wider geographic distances. The Myers Road Site in Cambridge, Ontario exhibits a similar collar motif to the Simples Vertical with superimposed Horizontal Dash motif primarily found in Tillsonburg longhouses 1, 2, 9 and 10. At Myer's Road this motif, Type 2, consisted of 12.2% of the sample, and was characterized as a Middleport Oblique type variant, thought to be transitional between Middleport Oblique and Lawson Incised. Another village, the early 15th century Hubbert Site, is located much further afield in Innisfil Township, Simcoe County, and examples of this collar decoration make up 30% of the sample (MacDonald & Williamson, 2001; Ramsden et al., 1998). The mid-15th century Dunsmore Site also has evidence of this motif, consisting of 13% of the site's sample (Ramsden et al., 1998; Williamson & Powis, 1996). The presence of these similarities in vessel rim decoration over wide geographical areas is supported by recent literature on social signaling networks in southern Ontario, based on ceramic rim sherd data from 125 Iroquoian sites. Hart et al. (2016) found that social "signaling networks transcend geographic sub-regions [and that] while there are often strong ties among sites in any given area, there are also strong ties between sites separated by relatively great distances" (p. 11).

In terms of the incised horizontal lip motif, it was more difficult to find regional connections, perhaps suggesting that the preference for this particular lip motif is a pattern specific to the local context in and around the Tillsonburg Village. Furthermore, many Early and early Middle Iroquoian site assemblages have higher overall percentages of lip decoration and these decorative motifs are highly variable, thus, making comparisons more convoluted (Dodd et al., 1990). For instance, there are a variety of decorations present on vessel lips from the Uren Site, including linear stamped obliques or verticals, push-pull horizontals, and a few incised horizontals (Wright, 1986).

6.1.3 Integrative Social Mechanisms

Semi-subterranean sweat lodge features and central plaza areas have been suggested to function in part as integrative social mechanisms used by village communities to facilitate newly aggregated situations. In southern Ontario, archaeological evidence suggests that semi-subterranean sweat lodge features first emerge in the archaeological record during the mid to late 13th century. These features disappear from the record around the 16th century, at which time they were replaced by ground level sweat lodges. These semi-subterranean features, sometimes referred to as 'turtle pits,' have a characteristic large sub-rectangular or round shape, usually with an attached lobate extension (MacDonald, 1988). Other basic attributes include a flat bottom, straight sides, ramped entryway, interior perimeter posts, and a basal living floor. Commonly, there is evidence of rare and symbolic items, as well as human remains, within sweat lodge features (MacDonald, 1992; Ramsden et al 1998, Robertson et al 1995).

The practice of sweat bathing has a long history among Indigenous groups in North America, and this practice occurred in both above ground and semi-subterranean structures. Sweat lodges seemed to have served similar functions cross-culturally, specifically spiritual or religious fulfillment, but also hygienic and social integrative purposes (Hodge, 1960; MacDonald, 1988). Tyyska (2015) suggests that the practice of communal sweat bathing in above-ground structures likely served a socially integrative function for ancestral Huron peoples, given the parallel development of large ossuary burials at this time, which also served to socially integrate groups. Ethnohistoric accounts repeatedly mention that groups of Huron men would commonly use sweat lodges for "curing ceremonies, religious convocation, ritual purification, maintenance of physical/spiritual health, recreation, and social interaction" (MacDonald, 1988, p. 18). The importance of mechanisms for strengthening identity and male bonding would have increased as matrilineality and matrilocality became more formal and complex social organizations (Kapches 1995; MacDonald & Williamson, 2001). However, MacDonald and Williamson (2001) argue that the socially integrative purpose of semi-subterranean sweat lodges was less focused on these formal aspects and more concerned with the processes of on-going cohabitation in which men used these structures as a venue to host other kinsmen, as well as visitors from wider social networks.

At the Tillsonburg Village, eighteen sweat lodge features were recorded in total. The majority of longhouses, except for longhouses 1, 2, 3, 10, 11 and 12, have evidence of at least one of these semi-subterranean features, and house 14 yielded the greatest number (n=5). Also, it should be noted that the lack of these features in houses, 3, 10, 11 and 12 might be in part due to disturbance and poor preservation rather than a complete absence. Interestingly, longhouses 1 through 3 in the northwest appear to have no evidence of these sweat lodge features. Given that semi-subterranean sweat lodges tend to decrease in frequency in to the Late Pre-Contact period, the lack of these features may be further evidence that these houses were a somewhat later addition to the village settlement. Also, this may indicate a regional connection with the northwest longhouse group to village communities in the London area, which tend to have little evidence of these features in the archaeological record (Pearce, 1984, 1996). However, houses 4 and 5 in the northwest area have evidence of two and three semi-subterranean sweat lodge features respectively, which may have been used by the larger northwest subcommunity.

Two central plaza areas, or communal activity areas, appear to be present within the Tillsonburg Village community plan. Longhouses 1 through 10 have a radial arrangement around a significantly large open area, and houses 11 through 15 radiate around a comparatively smaller open area. These two open areas have been interpreted as central plazas, which served as socially integrative spaces for outdoor activities and communal events (Birch, 2010, 2012). The presence of plazas indicates that the village plan or layout was intended to incorporate an open area in a central location. These central plaza areas "increased visibility and interaction between households as people went about their daily domestic tasks" (Birch, 2010, p. 123). A large activity area, activity area 1, is situated within this east plaza area, extending off the northern end of longhouse 15.

6.1.4 Discussion

The Tillsonburg Village community plan exemplifies the variable effects of coalescent processes during the Late Woodland. The dispersed and expansive organization of the village's space may represent experimentation with aggregation of previously dispersed social groups, who wished to integrate, but also valued a degree of separation in physical space. House clusters, and even individual houses, chose to retain a distinct spatiality as they were added to the larger village, similar in some respects to the later, 15th century Draper Site. Birch suggests that the Draper Site was "essentially a village composed of many small villages, each of which retained a separate spatiality, and potentially a distinct identity, within the larger community" (Birch, 2010: 128). Given the extreme spatial distinctions present at Tillsonburg, the village could also be described as being composed of a few small villages.

The Tillsonburg Village emerged between two temporal and social phases of coalescence, one in the late 13th and early 14th century, and one in the mid-15th and early 16th centuries (Birch & Williamson, in press). Given the occurrence of community coalescence throughout the Late Woodland and the ever-changing nature of social situations, it seems likely that ancestral Iroquoian peoples continued to innovate and practice coalescence-like social processes throughout the period in which the Tillsonburg Site was occupied. Even though the late Middle Iroquoian Period is considered to be relatively peaceful, this does not automatically imply that groups became less inclined to coalesce. Perhaps the population explosion of the late 14th century necessitated that previously discrete social and geographical groups coalesce into single villages, but these groups remained distinguished from one another by preserving a level of separation (Warrick, 2000). The coalescent community that formed at the Tillsonburg Village may not have been a result of increasing conflict but perhaps a result of increasing prosperity and widespread population growth. Thus, the *why* of coalescence may be different in the particular local context of this village, and the *how* is remarkably similar to a number of dispersed settlement patterns documented from the mid-14th to mid-15th centuries (ASI, 2004, 2008, 2009, 2010, 2011; Birch & Williamson, in-press; Wagner, Toombs & Reigert, 1973; Tripp, 1978). Therefore, experimenting with coalescence, while at the same time valuing physical and social space, is not an isolated incident seen only at Tillsonburg. According to Kowalewski (2006), the formation of larger villages correlates with an increase in the intensity of agriculture or resource production, and this production is maximized with a dispersed settlement. Therefore, one possible advantage for coalescence at this time may include the formation of larger communal work groups to facilitate the growing agricultural economy. Individuals may have decided that coming together would maximize the output from crops, and allow for the creation of larger communal work forces.

The Late Woodland period in southern Ontario is a period of increasing complexity regarding the fission and fusion of groups. It is possible that the communities that existed within the Tillsonburg Village eventually dispersed into smaller villages, which are also common settlement patterns for the early 15th century (Birch, 2015; Warrick, 2000). The Kipp Site may represent one of the dispersed segments of the Tillsonburg community, due to its slightly later date and small size. A case could also be made that the community may have relocated as an integrated whole, but a more exhaustive regional investigation would be necessary to support either of these suppositions. If the Tillsonburg Village occupants did eventually disperse into separate village communities during the 15th century, it may have been due to increasing social tensions and internal conflicts that are known repercussions of coalesced situations. Moreover, the lack of external threats or violence in this relatively peaceful period of time may have allowed individuals and groups the freedom to leave undesirable social situations. To summarize, this study's evidence suggests that the Tillsonburg Village residents were experimenting with coming together or coalescing, negotiating new and dynamic social situations, which were reflected in the remaining material culture and built environment. I suggest that the motivations for coalescence at Tillsonburg may have not been conflict-related in this local and temporal context, but rather a result of positive pressures that may have facilitated social and economic advantages for the communities involved.

6.2 Future Directions

An intra-site analysis is only one part of the multi-scalar analyses needed to understand processes of community coalescence. An extensive regional analysis is necessary to situate the Tillsonburg Village into a community sequence that identifies which previously dispersed social groups may have aggregated in to the larger community, as well as possible village relocation or dispersion events following the period of aggregation. Currently there is a lack of data and detailed site analyses for the immediate region surrounding Tillsonburg, and as such a detailed regional perspective is likely not possible at this moment in time. An in-depth regional investigation would be the requisite next step in this study; however, due to the amount of data that would need to be collected and analyzed, it was not within the scope of this Master's project.

Even within the intra-site analysis, a number of additional lines of evidence continue to be available for study. Detailed analyses of other artifact classes, such as ceramic pipes, or floral and faunal assemblages would assist in further deciphering the social and organizational variability within the Tillsonburg community plan. Furthermore, other aspects of the pottery production process, such as use-wear and manufacture attributes, could shed light on the 'communities of practice' determined by the decorative and morphological attributes in this study. A more exhaustive understanding of all aspects of village life can assist with the more abstract interpretations associated with social and political organization, which are not always clear cut from archaeological studies of material culture. Studies of community formation can be examined through multiple lenses, and community coalescence, specifically, is a complex and dynamic process intertwined within local and regional contexts. Another beneficial line of evidence to consider is the acquisition of AMS radiocarbon dates for the Tillsonburg Village Site. Absolute dating methods may bring further clarity to the temporal distinctions that appear to be present among the designated longhouse groups, and would either help to support or challenge my interpretations of the data at this time.

6.3 Conclusion

The Tillsonburg Village Site exhibits a dispersed and particularly large community plan that suggested a gap in our understanding of Late Woodland Iroquoian settlement patterns and social organization. This study has now removed the Tillsonburg Village data from the growing amount of CRM 'grey literature,' and the results of the study yield convincing social and temporal evidence for coalescence-like processes as a plausible narrative for the size and layout of the Tillsonburg Village community plan. The Tillsonburg occupants' experimentation with formative processes of coalescence is situated between earlier and later phases of community coalescence, and is likely related to the more widespread trend for dispersed community plans and multiple village components during the mid-14th to mid-15th centuries. The latter phenomenon requires further study to improve our understanding of the social organization of past Indigenous peoples and communities represented by the archaeological record of southern Ontario. This study exemplifies the dynamic and historically contingent nature of social processes of community coalescence, as well as the complexity and variation of Iroquoian settlement and community patterns within southern Ontario during the Late Woodland period.

References Cited

Ambrose, M. (1987). *Preliminary Report on the Middleport Site (AgHa-2), Highway 54 WP#78-79-01.* Report on file, Ontario Ministry of Culture and Communication, Toronto, Ontario.

Anderson, J. M. (2009). *The Lawson Site: An Early 16th Century Neutral Iroquoian Fortress*. Special Publication No. 2. London, ON: Museum of Ontario Archaeology.

Archaeologix Inc. (2002). Archaeological Assessment (Stage 4) Final Report on the Tillsonburg Village (AfHe-38), Town of Tillsonburg, Oxford County, Ontario. Report on file with Ontario Ministry of Tourism, Culture and Sport.

Archaeological Services Inc. (ASI). (2004). Report on the Stage 4 Salvage Excavation of the Serena Site (AhGx-274), Allison Estates, Subdivision (25T-91014), City of Hamilton, Regional Municipality of Hamilton, Ontario. Report on file, Ontario Ministry of Culture, Toronto, Ontario.

ASI. (2008). Report on the Stage 3–4 salvage excavation of the Alexandra site (AkGt-53) draft plan of subdivision SC-T20000001 (55T-00601) Geographic Township of Scarborough now in the City of Toronto, Ontario. Report on file, Ontario Ministry of Culture, Toronto, Ontario.

ASI. (2009). (The Archaeology of the Holly Site (BcGw-58)). Stage 4 Salvage Excavation of the Holly Site, Dykstra Subdivision, Holly Secondary Planning Area (43T-92026), Part of the Northeast Half of Lot 2, Concession 12, City of Barrie, Simcoe County, Ontario. Report on file, Ontario Ministry of Culture, Toronto, Ontario.

ASI. (2010). (The Archaeology of the Robb Site (AlGt-4)). A Report on the Stage 4 Mitigative Excavation of the Angus Meadows Subdivision 19T-95030 (Revised), Part of Lot 1, Concession 8, Town of Markham, Regional Municipality of York, Ontario. Report on file, Ontario Ministry of Culture, Toronto, Ontario.

ASI. (2011). The Stage 3–4 archaeological excavation of the Hope Site (AlGv- 199), draft plan of Subdivision 19T-02V07 and 19T-02V08, City of Vaughan, Regional Municipality of York, Ontario. Report on file, Ontario Ministry of Culture, Toronto, Ontario.

Bagwell, E. A. (2005). Specialization, Social Complexity and Vernacular Architecture: A Cross-Cultural Study of Space Construction. In Robertson, E.C., Seibert, J.D., Fernandez, D.C., Zender, M.U. (Eds.), *Space and spatial analysis in archaeology* (pp. 29-36). Calgary, AB: University of Calgary Press.

Bamann, S., Kuhn, R., Molnar J., & Snow D. (1992). Iroquoian archaeology. *Annual Review of Anthropology, 21*, 435–460.

Birch, J. (2010). *Coalescent Communities in Iroquoian Ontario*. Ph.D. Dissertation. *Department of Anthropology, McMaster University, Hamilton, Ontario.*

Birch, J. (2012). Coalescent Communities: Settlement Aggregation and Social Integration in Iroquoian Ontario. *American Antiquity, 77(4),* 646-670.

Birch, J. (2013). Between Villages and Cities: Settlement Aggregation in Cross-Cultural Perspective. In Birch, J. (Ed.), *From Prehistoric Villages to Cities: Settlement Aggregation and Community Transformation* (pp. 1–22). New York, NY: Routledge.

Birch, J. (2015). Current Research on the Historical Development of Northern Iroquoian Societies. *Journal of Archaeological Research*, *23*, 263–323.

Birch, J., & Williamson, R. (2013a). Organizational Complexity in Ancestral Wendat Communities. In Birch, J. (Ed.), *From Prehistoric Villages to Cities: Settlment Aggregation and Community Transformation* (pp. 153–178). New York: Routledge.

Birch, J., &Williamson, R. F. (2013b). *The Mantle Site: An Archaeological History of An Ancestral Wendat Community*. Maryland: AltaMira Press.

Birch, J., & Williamson, R. F. In-press. Initial Northern Iroquoian Coalescence. In Birch, J., & Thompson, V. D. (Eds.), *The Archaeology of Villages in Eastern North America*. Gainsville, FL: University of Florida Press.

Bourdieu, P. (1970). The Berber house or the world reversed. *Social Science Information,* 9, pp. 151-170.

Bourdieu, P. (1977). *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.

Braun, G. V. (2012). Petrography as a technique for investigating Iroquoian ceramic production and smoking rituals. *Journal of Archaeological Science,* 39, 1–10.

Bursey, J. A. (2001). Storage Behaviour in the Northeast: A Review of the Evidence. *North American Archaeologist.* 22(3), 179-199.

Cardinal, J. S. (2011). Site Identification, Delineation, and Evaluation through *Quantitative Spatial Analysis: Geostatistical and GIS Methods to Facilitate Archaeological Resource Assessment*. Unpublished MA Thesis. Department of Anthropology, University of Albany, Albany, New York.

Casto, Kara I. (2015). *Spatial Analysis of Archaeological Assemblages from the Late Ceramic Age (AD 40-1400) Site of Grand Bay, Carriacou, West Indies*. Unpublished MA Thesis. Department of Anthropology, University of South Florida, Tampa, Florida.

Chang, K. C. (1968). Toward a science of prehistoric society. In Chang, K. C. (Ed.), *Settlement Archaeology* (pp. 1-9). Pal Alto, CA: National Press Books.

Chapman, L. J., & Putnam, D. F. (1984). *The Physiography of Southern Ontario (Third Edition)*. Ontario Geological Survey Special Volume 2. Toronto, ON: Ontario Ministry of Natural Resources.

Chilton, E. S. (1998). The Cultural Origins of Technical Choice: Unraveling Algonquian and Iroquoian Ceramic Traditions in the Northeast. In Stark, M. T. (Ed.), *The*

Archaeology of Social Boundaries (pp. 132-160). Washington D.C.: Smithsonian Institution Press.

Creese, J. (2011). *Deyughnyonkwarakda – "At the Wood's Edge": The Development of the Iroquoian Village in Southern Ontario, A.D. 900-1500.* Unpublished Ph.D. Dissertation. Department of Anthropology, University of Toronto, Toronto, Ontario.

Creese, J. (2012). Post Molds and Preconceptions: New Observations about Iroquoian Longhouse Architecture. *Northeast Anthropology,* 77-78, 47-69.

Creese, J. L. (2013). Rethinking Early Village Development in Southern Ontario: Toward a History of Place-Making. *Canadian Journal of Archaeology, 37*, 185–218.

Damkjar, E. (1990). *The Coulter Site and Late Iroquoian Coalescence in the Upper Trent Valley*. Occasional Papers in Northeastern Archaeology No. 2. Dundas: Copetown Press.

Dietler, M., & Herbich, I. (1998). Habitus, techniques, style: an integrated approach to the social understanding of material culture and boundaries. In Stark, M. T. (Ed.), *The Archaeology of Social Boundaries* (pp. 232-263). Washington D.C.: Smithsonian Institution Press.

Dobres, M. A. (1999). Technology's links and chaînes: the processual unfolding of technique and technician. In Dobres, M. A. & Hoffman, C. R. (Eds.), *The Social Dynamics of Technology: practice, politics, and world views* (pp.124-146). Washington: Smithsonian Institution.

Dodd, C. F. (1984). *Ontario Iroquois Tradition Longhouses.* Mercury Series No. 124. Ottawa, Ontario: Archaeology Survey of Canda, National Museum of Man.

Dodd, C. F., Poulton, D. R., Lennox, P. A., Smith, D. G., & Warrick, G. A. (1990). The Middle Ontario Iroquoian Stage. In Ellis, C. J. & Ferris, N. (Eds.). *The Archaeology of Southern Ontario to AD 1650* (pp. 321-359). London, ON: OAS, London Chapter

Emerson, J. N. (1968). *Understanding Iroquois Pottery in Ontario: A Rethinking.* London, ON: Ontario Archaeological Society.

Engelbrecht, W. (1974). The Iroquois: Archaeological Patterning on the Tribal Level. *World Archaeology, 6, 52-65.*

Engelbrecht, W. (1985). New York Iroquois Political Development. In Fitzhugh, W. W. (Ed.), *Cultures in Contact* (pp. 163–183). Washington, D.C.: Smithsonian Institution Press.

Environmental Systems Research Institute (ESRI). (2017a). *Hot Spot Analysis (Getis-Ord Gi*).* ArcGIS Pro. Retrieved from, http://pro.arcgis.com/en/pro-app/tool-reference/spatial-statistics/hot-spot-analysis.htm.

ESRI. (2017b). *How Hot Spot Analysis (Getis-Ord Gi*) works*. ArcGIS Pro. Retrieved from, http://pro.arcgis.com/en/pro-app/tool-reference/spatial-statistics/h-how-hot-spot-analysis-getis-ord-gi-spatial-stati.htm.

ESRI. (2017c). *Optimized Hot Spot Analysis (Getis-Ord Gi*) works*. ArcGIS Pro. Retrieved from, http://pro.arcgis.com/en/pro-app/tool-reference/spatial-statistics/optimized-hot-spot-analysis.htm.

ESRI. (2017d). *How Optimized Hot Spot Analysis (Getis-Ord Gi*) works*. ArcGIS Pro. Retrieved from, http://pro.arcgis.com/en/pro-app/tool-reference/spatial-statistics/how-optimized-hot-spot-analysis-works.htm.

ESRI. (2017e). *Spatial Autocorrelation (Global Moran's I).* ArcGIS Pro. Retrieved from, http://pro.arcgis.com/en/pro-app/tool-reference/spatial-statistics/spatial-autocorrelation.htm.

ESRI. (2017f). *How Spatial Autocorrelation (Global Moran's I) works.* ArcGIS Pro. Retrieved from, http://pro.arcgis.com/en/pro-app/tool-reference/spatial-statistics/h-how-spatial-autocorrelation-moran-s-i-spatial-st.htm.

Ethridge, R., & Hudson, C. (Eds.). (2002). *The Transformation of the Southeastern*

Indians: 1540-1760. Jackson, MI: University Press of Mississippi.

Ferris, N. (1999). Telling tales: Interpretive trends in southern Ontario Late Woodland archaeology. *Ontario Archaeology*, *68*(3), 1-62.

Ferris, N., & Spence, M. W. (1995). The Woodland Traditions in southern Ontario. *Revista de Arqueologia Americana, 9,* 83–138.

Fink, A. K. (2013). *Late Woodland Communities of Practice: An Analysis of Pottery from the Engelbert Site, Nichols, NY*. Unpublished MA Thesis. Department of Anthropology, Binghamton University, Binghamton, New York.

Finlayson, W. D. (1978). *A Preliminary Report on the Settlement Pattern Data Recovered from the 1975 Rescue Excavations at the Draper Site*. Research Report No. 6. London, ON: Museum of Ontario Archaeology.

Finlayson, W. D. (1985). *The 1975 and 1978 Rescue Excavation at the Draper Site: Introduction and Settlement Patterns.* Mercury Series No. 130. Ottawa, Ontario: Archaeology Survey of Canda, National Museum of Man

Finlayson, W. D. (1998). *Iroquoian Peoples of the Land of Rocks and Water AD 1000–1650: A Study in Settlement Archaeology.* London, ON: London Museum of Archaeology.

Finlayson, W. D., & Byrne, R. (1975). Investigations of Iroquoian Settlement and Subsistence Patterns at Crawford Lake, Ontario—A Preliminary Report. *Ontario Archaeology*, *25*, 31-36.

Fitzgerald, W. R. (2001). Contact, Neutral Iroquoian transformation, and the Little Ice Age. In Brose, D. S., Cowan, C. W., and Mainfort, R. C. (Eds.), *Societies in Eclipse: Archaeology of the Eastern Woodlands Indians, AD 1400–1700* (pp. 37–47). Washington, D.C.: Smithsonian Institution Press.

Forge, A. (1972). Normative factors in settlement size of Neolithic cultivators. In Ucko, P. J., Tringham, R., and Dimbleby, G. W. (Eds.), *Man, Settlement and Urbanism* (pp. 363–376) London: Duckworth.

Fox, W. (1977). The Central North Erie Shore. In Brose, D.S. (Ed.), The Late Prehistory of the Lake Erie Drainage Basin (pp. 162-192). Cleveland, Ohio: The Cleveland Museum of Natural History.

Fox, W. A. (1986). The Elliott villages (AfHc-2) - An introduction. *Kewa, 86 (1),* 11–17.

Golder Associates. (2009). Archaeological Assessment (Stage 4) Final Report on the Tillsonburg Village (AfHe-38), Town of Tillsonburg, Oxford County, Ontario. Report on file with Ontario Ministry of Tourism, Culture and Sport.

Goodby, R. G. (1998). Technological patterning and social boundaries: ceramic variability in southern New England, AD 1000–1675. In Stark, M.T. (Ed.), *The Archaeology of Social Boundaries* (pp. 161-182). Washington, D.C.: Smithsonian Institution Press.

Gosselain, O. P. (1998). Social and Technical Identity in a Clay Crystal Ball. In Stark, M. T. (Ed.), *The Archaeology of Social Boundaries* (pp. 78-106). Washington, D.C.: Smithsonian Institution Press.

Gramly, R. M. (1977). Deerskins and hunting territories: Competition for a scarce resource of the northeastern woodlands. *American Antiquity, 42,* 601–605.

Hart, J. P. (2001). Maize, Matrilocality, Migration and Northern Iroquoian Evolution. Journal of *Archaeological Method and Theory, 8,* 151- 182.

Hart, J. P., Shafie, T., Birch, J., Dermarkar, S., & Williamson, R. F. (2016). Nation Building and Social Signaling in Southern Ontario: A.D. 1350-1650. *PLoS ONE 11(5)*: e0156178.

Hasenstab, R. J. (1996) Aboriginal settlement patterns in Late Woodland upper New York State. *Journal of Middle Atlantic Archaeology, 12,* 17–26.

Hassan, F. (1981). *Demographic Archaeology*. New York, NY: Academic Press.

Hayden, B. (1976). Corporate groups and the Late Ontario Iroquoian longhouse. *Ontario Archaeology, 28*, 3–16.

Hayden, B. (1978). Bigger is Better?: Factors Determining Ontario Iroquois Site Sizes. *Canadian Journal of Archaeology*, *2*, 107–116.

Hegmon, M. (1989). Social Integration and Architecture. In Lipe, W. D. & Hegmon, M. (Eds.), *The Architecture of Social Integration in Prehistoric Pueblos* (pp. 5-14). Cortez, CO: Crow Canyon Archaeological Center.

Hegmon, M. (1998). Technology, style, and social practices: archaeological approaches. In Stark, M. T. (Ed.), *The Archaeology of Social Boundaries* (pp. 264-79). Washington, D.C.: Smithsonian Institution Press.

Hodder, I. (1986). *Reading the Past: Current approaches to interpretation in archaeology*. Cambridge: Cambridge University Press.

Hodder, I. (2012). *Entangled: An Archaeology of the Relationships Between Humans and Things.* Oxford: Wiley-Blackwell.

Hodge, F. W. (Ed.). (1960). *Handbook of American Indians North of Mexico*. 2 volumes. New York, NY: Pageant Books, Inc.

Hoskins, P. (2010). *The Settlement Patterns of the Bark Site (BbGp-12) and the* Surrounding Trent Valley. Unpublished MA Thesis. Department of Anthropology, Trent University, Peterborough, Ontario.

Howie-Langs, L. A. (1998). *The Praying Mantis Site: A Study of Ceramic Variability and Cultural Behaviour at an Early Iroquoian Village*. Unpublished M.A. Thesis. Department of Anthropology, The University of Western Ontario, London, Ontario.

Isbell, W. H. (2000). What we should be studying? The "imagined community" and the "natural community." In Canuto, M. A. and Yaeger, J. (Eds.), *The Archaeology of Communities: A New World Perspective* (pp. 243-266). London: *Routledge.*

Johnson, M. H. (2012). Phenomenological Approaches in Landscape Archaeology. *Annual review of anthropology, 41, 269-284.*

Kapches, M. (1981). *The Middleport Pattern in Ontario Iroquoian Prehistory*. PhD dissertation. Department of Anthropology, University of Toronto, Toronto, Ontario.

Kapches, M. (1990). The spatial dynamics of Ontario Iroquoian longhouses. *American Antiquity, 55,* 49–67.

Kapches, M. (1994). The Iroquoian longhouse architectural and cultural identity. In Locock, M. (ed.), *Meaningful Architecture: Social Interpretations of Buildings* (pp. 253-270). Aldershot: Avebury.

Kapches, M. (1995). Chaos theory and social movements: A theoretical view of the formation of the Northern Iroquoian longhouse cultural pattern. In Bekerman, A., and Warrick, G. (Eds.), *Origins of the People of the Longhouse: Proceedings of the 21st Annual Symposium of the Ontario Archaeological Society* (pp. 86–96). London, ON: Ontario Archaeological Society.

Kapches, M. (2007). The Iroquoian longhouse: architectural and cultural identity. In. Kerber, J.E. (Ed.), *Archaeology of the Iroquois. Selected readings and research sources* (pp. 174-188). Syracuse, NY: Syracuse University Press.

Kent, S. (Ed.). (1990). *Domestic architecture and the use of space.* Cambridge: Cambridge University Press.

Kenyon, W. A. (1968). *The Miller Site.* Art and Archaeology Occasional Paper No. 14. *Toronto, Ontario: Royal Ontario Museum.*

Kenyon, W. (1982). *The Grimsby Site: An Historic Neutral Cemetery. Archaeological Monograph.* Toronto, Ontario: Royal Ontario Museum.

Kolb, M. J., & Snead, J. E. (1997). It's a small world after all: Comparative analyses of community organization in archaeology. *American Antiquity,* 609-628.

Kowalewski, S. A. (2006). Coalescent Societies. In Pluckhahn T.J. & Ethridge R. (Eds.), *Light on the Path: The Anthropology and History of the Southeastern Indians* (pp. 94-122). Tuscaloosa: University of Alabama Press.

Kowalewski, S. A. (2013). The work of making community. In Birch, J. (Ed.), *From Prehistoric Villages to Cities: Settlement Aggregation and Community Transformation* (pp. 201-218). New York: Routledge.

Kuhn, R. D., & Sempowski, M. L. (2001). A new approach to dating the League of the Iroquois. *American Antiquity, 66,* 301–314.

Laerd Statistics. (2013). *One-way ANOVA in SPSS Statistics.* Retrieved from, https://statistics.laerd.com/spss-tutorials/one-way-anova-using-spss-statistics.php.

Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation.* Cambridge: Cambridge University Press.

Lehmer, D. J. (1954). Archaeological Investigations in the Oahe Dam area, South Dakota, 1950-1951. Smithsonian Institution, Bureau of American Ethnology, Anthology, Bulletin 158. River Basin Survey Papers, 7, pp. 136-149.

Lemonnier, P. (1986). The study of material culture today: toward an anthropology of technical systems. *Journal of anthropological archaeology, 5(2),* 147-186.

Lemonnier, P. (1992). *Elements for an Anthropology of Technology*. Ann Arbor, MI: Museum of Anthropology, University of Michigan.

Lennox, P. A., Dodd, C. F., & Murphy, C. R. (1986). *The Wiacek Site: A Late Middleport Component in Simcoe County, Ontario*. London, Ontario: Ontario Ministry of Transportation and Communications, Environmental Unit, Planning and Design Section.

Lennox, P. A., & Fitzgerald, W. R. (1990). The culture history and archaeology of the Neutral Iroquoians. In Ellis, C. J., & Ferris, N. (Eds.), *The Archaeology of Southern Ontario to AD 1650* (pp. 405-456). Occasional Publication of the London Chapter

No. 5. London, Ontario: Ontario Archaeological Society.

Leone, M. (1984). Interpreting Ideology in Historical Archaeology: The William Paca Garden in Annapolis, Maryland. In Miller, D. & Tilley, C. (Eds.), *Ideology, power and prehistory* (pp. 25-35). Cambridge: Cambridge University Press.

Locock, M. (Ed.). (1994). *Meaningful architecture: social interpretations of buildings* (Vol. 9). Brookfield, Vermont: Ashgate.

Longacre, W. A. (1991). Sources of Ceramic Variability among the Kalinga of Northern Luzon. In Longacre W.A. (Ed.), *Ceramic Ethnoarchaeology* (pp. 95-111). Tucson, AZ: University of Arizona Press.

MacDonald, R. I. (1986). *The Coleman Site (AiHd-7): A Late Prehistoric Iroquoian Village in the Waterloo Region*. Unpublished MA thesis. Department of Anthropology, Trent University, Peterborough, Ontario.

MacDonald, R.I. (1987). Notes on Longhouse Storage Cubicles. *Arch-Notes, 87*:3, 5-11.

MacDonald, R. I. (1988). Ontario Iroquoian sweat lodges. *Ontario Archaeology, 48*, 17–26.

MacDonald, R. I. (1992). Ontario Iroquoian Semi-subterranean Sweat Lodges. In A.S. Goldsmith, S. Garvie, D. Selin and J. Smith (Eds.), *Ancient Images, Ancient Thought: The Archaeology of Ideology* (pp. 323-330). Calgary, AB: University of Calgary Archaeological Association Conference.

MacDonald, R.I., Ramsden, C. N., & Williamson, R. F. (1998). Introduction (Chap. One). In In Williamson, R. F. (Ed.), *The Myers Road Site: Archaeology of the Early to Middle Iroquoian Transition* (pp. 1-10). Occasional Publication No. 7. London, Ontario: Ontario Archaeological Society, London Chapter.

MacNeish, R. S. (1952). *Iroquois pottery types: a technique for the study of Iroquois prehistory* (Vol. 31). Ottawa, Ontario: E. Cloutier, Queen's printer.

Mallo, A. L. (2016). *Spatial Organization of Lithic Technology at the Mather-Klauer Lodge Site: A Terminal Woodland Occupation on Grand Island, Michigan.* Unpublished MSc Thesis. Department of Sociology and Anthropology, Illinois State University, Normal, Illinois.

Mather, K. E. (2015). *Situating the Pot and Potter : Ceramic Production and Use at the Silvercreek Sites, Two Early-Late Woodland Sites in Elgin County, Ontario*. Unpublished MA Thesis. Department of Anthropology, University of Western Ontario, London, Ontario.

Mesquida, C. G., & Wiener, N. I. (1999). Male age composition and severity of conflicts. *Politics and the Life Sciences, 18,* 181–189.

Ministry of Tourism, Culture and Sport. (2017). Sites within a Twenty Kilometre Radius of the Tillsonburg Village Site Accessed from the Ontario Archaeological Sites Database, July, 2017.

Newcomb, E. B. (2015). Searching for Communities of Practice with Sherds: Stylistic Variation in the Cibola Region. Department of Anthropology, Northern Arizona University, Flagstaff, Arizona.

Niemczycki, M. A. P. (1984). *The origin and development of the Seneca and Cayuga tribes of New York State* (No. 17). Rochester, NY: Research Division, Rochester Museum and Science Center.

Noble, W. C. (1975). Van Besian: A Study in Glen Meyer Development. *Ontario Archaeology*, 24, pp. 3-83.

O'Gorman, J. A. (2010). Exploring the Longhouse and Community in Tribal Society. *American Antiquity, 75(3),* 571-597.

Pauketat, T. R. (2000). Politicization and Community in the Pre-Columbian Mississippi Valley. In Canuto, M. A, & Yaeger, J. (Eds.), *The Archaeology of Communities: A New World Perspective* (pp.16-43). New York, NY: Routledge.

Pauketat, Timothy R. (2001). *The Archaeology of Traditions: Agency and History Before and After Columbus*. Gainesville, FL: University Press of Florida.

Pauketat, T. R. (2005). The forgotten history of the Mississippians. In Pauketat, T. R., and Loren, D. (Eds.), *North American Archaeology* (pp. 187–211). Oxford: Blackwell.

Pauketat, T.R. (2007). *Chiefdoms and Other Archaeological Delusions*. Lanham, Maryland: AltaMira Press.

Pauketat, T. R., & Alt, S. M. (2003). Mounds, memory, and contested Mississippian history. In Van Dyke, R.M. & Alcock, S.E. (Eds.), *Archaeologies of Memory* (pp. 151-179). Malden, MA: Blackwell Publishers.

Pearce, R. J. (1978). *A Preliminary Report on the Draper Site Rim Sherds.* Research Report Number 1. London, Ontario: Museum of Indian Archaeology.

Pearce, R. J. (1984). *Mapping Middleport: A Case Study in Societal Archaeology*. Unpublished Ph.D. Dissertation. Department of Anthropology, McGill University, Montreal, Quebec.

Pearce, R. J. (1996). *Mapping Middleport: A Case Study in Societal Archaeology*. Research Report No. 25. London, Ontario: London Museum of Archaeology.

Pearce, R. J., & Warrick, G. (1999). A cluster of Pickering sites in the Burlington area, Halton Region. Paper presented at the 32nd Annual Meeting of the Canadian Archaeological Association, Whitehorse, Yukon.

Pfaffenberger, B. (1992). Social Anthropology of Technology. *Annual Review of Anthropology,* 21, pp. 491-516.

Poulton, D. R. (1980). *A Preliminary Report on the 1980 Archaeological Survey of the Catfish Creek Drainage, East Elgin County, Ontario*. Research Report No. 11. London, Ontario: The Museum of Indian Archaeology at the University of Western Ontario.

Poulton, D. R. (1985). *Salvage Archaeology in London: The 1983-1984 C.O.E.D. Program and the Magrath, Willcock and Pond Mills sites.* London, Ontario: Museum of Indian Archaeology.

Ramsden, C. N. (1989). *The Kirche Site: A 16th Century Huron Village in the Upper Trent Valley*. Occasional Papers in Northeastern Archaeology No. 1. Dundas: Copetown Press.

Ramsden, C. N., Williamson, R. F., MacDonald, R. I., & Short, C. (1998a) Settlement Patterns (Chap. 2). In R. F. Williamson (Ed.), *The Myers Road Site: Archaeology of the Early to Middle Iroquoian Transition* (pp. 11- 84). London, Ontario: Ontario Archaeological Society, London Chapter.

Ramsden, C. N., Williamson, R. F., Thomas, S. C., & Hanley, T. 1998b Artifact Analysis (Chap. 5). In R. F. Williamson (Ed.), *The Myers Road Site: Archaeology of the Early to Middle Iroquoian Transition* (pp. 133-192). Occasional Publication 7. London, Ontario: Ontario Archaeological Society, London Chapter.

Ramsden, P. G. (1977). *A Refinement of Some Aspects of Huron Ceramic Analysis.* Mercury Series No. 63. Ottawa, Ontario: Archaeology Survey of Canda, National Museum of Man.

Ramsden, P. G. (1988). Palisade Extensions, Village Expansions and Immigration in Trent Valley Huron Villages. *Canadian Journal of Archaeology, 12*, 177–183.

Ramsden, P. G. (1990). Death in winter: Changing symbolic patterns in southern Ontario prehistory. *Anthropologica, 32(2),* 167-181.

Rapoport, A. (1990). *The Meaning of the Built Environment: A Nonverbal Communication Approach*. Tucson, Arizona: University of Arizona Press.

Rautman, A. (2013). Social Interaction and the Built Environment of Aggregated Communities in the North American Puebloan Southwest. In Birch, J. (Ed.), *From*

Prehistoric Villages to Cities: Settlement Aggregation and Community Transformation (pp. 111-133). New York, NY: Routledge.

Ridley, F. (1961). *Archaeology of the Neutral Indians*. Port Credit, ON: Etobicoke Historical Society.

Riggs, C. R. (2002). *The Architecture of Grasshopper Pueblo*. Salt Lake City, Utah: The University of Utah Press.

Robertson, D. A., Monckton, S.G., & Williamson, R.F. (1995). The Wiacek Site Revisited: The Results of the 1990 Excavations. *Ontario Archaeology, 60,* 40-91.

Robertson, D. A., Welsh, B. M., & Williamson, R. F. (1998). Settlement Patterns at the Parsons Site. In Williamson, R. F., & Robertson, D. A. (Eds.), *The Archaeology of the Parsons Site: A Fifty Year Perspective* (pp. 21-52). Mississauga, ON: *The Journal of the Ontario Archaeological Society* (Vol. 65/66).

Robertson, D. A., & Williamson, R. F. (2003). The Archaeology of the Dunsmore Site: A 15th Century Community Transformations in Southern Ontario. *Canadian Journal of Archaeology*, *27*(1), 1–62.

Rotenberg, R. (1996). Tearing Down the Fences: Public Gardens and Municipal Power in Nineteenth- Century Vienna. In D. Pellow (Ed.), *Setting Boundaries: The Anthropology of Spatial and Social Organization* (pp. 55-70). Westport, CT: Bergin and Garvey.

Sackett, J.R. (1982). Approaches to Style in Lithic Archaeology. *Journal of Anthropological Archaeology* 1: 59–112.

Sassaman, K. E., & Rudolphi, V. (2001). Communities of Practice in the Early Pottery Traditions of the American Southeast. *Journal of Anthropological Research, 57(4),* 407-425.

Sherratt, J. T. (2003). *The Chypchar Site (AiGx-73): A Study of Ceramic Variability and Social Organization at a Middle Ontario Iroquoian Village.* Unpublished MA

Thesis. Department of Anthropology, University of Western Ontario, London, Ontario.

Shingala, M. C., & Rajyaguru, A. (2015). Comparison of Post Hoc Tests for Unequal Variances. *International Journal of New Technologies in Science and Engineering, 2(5),* 22-33.

Smith, D. G. (1983). *An Analytical Approach to the Seriation of Iroquoian Pottery*. Unpublished MA Thesis. Department of Anthropology, McGill University, *Montreal, Quebec.*

Smith, D. G. (1987). *Archaeological Systematics and the Analysis of Iroquoian Ceramics: A Case Study from the Crawford Lake Area, Ontario. PhD Dissertation.* Department of Anthropology, McGill University, Montreal, Quebec.

Smith, D. G. (1990). Iroquoian societies in southern Ontario: Introduction and historical overview. In Ellis, C. J., & Ferris, N. (Eds.), *The Archaeology of Southern Ontario to AD 1650* (pp. 279–290). Occasional Publication of the London Chapter No. 5. London, Ontario: Ontario Archaeological Society.

Smith, D. G. (1997a). Radiocarbon dating the Middle to Late Woodland transition and earliest maize in southern Ontario. *Northeast Anthropology, 54,* 37–73.

Smith, D. G. (1997b). *Archaeological Systematics and the Analysis of Iroquoian Ceramics: A Case Study from the Crawford Lake Area, Ontario.* London, Ontario: London Museum of Archaeology Research, Bulletin No. 15.

Snow, D. R. (1994). *The Iroquois*. Cambridge, Massachusetts: Blackwell.

Soja, E. W. (1989). *Postmodern geographies: The reassertion of space in critical social theory*. New York, NY: Verso.

Stark, M. T. (1998). Technical choices and social boundaries in material culture patterning: an introduction. In Stark, M. T. (Ed.), *The Archaeology of Social Boundaries* (pp. 1-11). Washington, D.C.: Smithsonian Institution Press.

Statistics How To. (2017). *Welch's ANOVA: Definitions, Assumptions.* Retrieved from, http://www.statisticshowto.com/welchs-anova/.

Stone, T. (2000). Prehistoric Community Integration in the Point of Pines Region of Arizona. *Journal of Field Archaeology, 27*, 197-208.

Stone, T. (2016). Organizational Variability in Early Aggregated Communities in Middle-Range Societies: An Example from the Kayenta Region of the American Southwest. *American Antiquity, 81(1),* 58-73.

Sutton, R. (1996). *The Middle Iroquoian Colonization of Huronia*. PhD dissertation, Department of Anthropology, McMaster University, Hamilton, Ontario.

Thwaites, R. G. (1896-1901). The Jesuit Relations and Allied Documents. 73 volumes. Cleveland, Ohio: Burroughs Brothers.

Timmins, P. A. (1985). *The Analysis and Interpretation of Radiocarbon Dates in Iroquoian Prehistory*. London, Ontario: Museum of Indian Archaeology Research Report No. 19.

Timmins, P. A. (1997). *The Calvert Site: An Interpretive Framework for the Early Iroquoian Village*. Mercury Series, Archaeological Survey of Canada, Paper 156. Hull, Quebec: Canadian Museum of Civilization.

Timmins Martelle Heritage Consultants Inc. (2006). Stage 4 Archaeological Assessment: Preliminary Report AfHe-41 Tillsonburg Village 2, Part of Lot 8, Concession 11, Geographic Township of Dereham, Town of Tillsonburg, Oxford County, Ontario. Report on file with Ontario Ministry of Tourism, Culture and Sport.

Trigger, B. G. (1967). Settlement archaeology-its goals and promise. *American antiquity*, *32*(2), 149-160.

Trigger, B. G. (1984). Alternative archaeologies: Nationalist, colonialist, imperialist. *Man, New Series, 19,* 355–370.

Trigger, B. G. (1985). *Natives and Newcomers. Canada's 'Heroic Age' Reconsidered.* Montreal, QC: McGill-Queen's University Press.

Trigger, B. G. (1990). Maintaining economic equality in opposition to complexity: An Iroquoian case study. In Upham, S. (Ed.), *The Evolution of Political Systems* (pp. 119–145). Cambridge: Cambridge University Press.

Trigger, B. G. (2001). The liberation of Wendake. *Ontario Archaeology, 72,* 3–14.

Trigger, B. G. (2006). *A History of Archaeological Thought*, 2nd ed. Cambridge: Cambridge University Press.

Tripp, G. (1978). *The White Site: A Southern Division Huron Component*. Manuscript on file. London, Ontario: Museum of Ontario Archaeology, University of Western Ontario.

Tyyska, A. E. (2015). Huron-Wendat Sweat Baths. *Ontario Archaeology, 95*, 64-78.

Van der Leeuw, S. E. (1984). Dust to Dust: A Transformational View of Ceramic Cycle. In Van der Leeuw, S.E., & Pritchard, A.C. (Eds.), *The Many Dimensions of Pottery: Ceramics in Ethnoarchaeology and Anthropology* (pp. 707-778). Amsterdam: University of Amsterdam.

Varien, M. D., & Potter, J. M. (2008). The Social Construction of Communities: Structure, Agency, and Identity. In Varien, M.D., and Potter, J.M. (Eds.), *The Social Construction of Communities: Structure, Agency, and Identity in the Prehispanic Southwest* (pp. 1-18). Toronto: AltaMira Press.

Wagner, N. E, Toombs, L. E., & Riegert, E. R. (1973). *The Moyer Site: A prehistoric village in Waterloo County*. Waterloo, Ontario: Wilfred Laurier University.

Warrick, G. (1984). *Reconstructing Ontario Iroquoian Village Organization*. Mercury Series No. 124. Ottawa, Ontario: Archaeology Survey of Canda, National Museum of Man.

Warrick, G. A. (1988). Estimating Ontario Iroquoian village duration. *Man in the Northeast*, *36*, 21-60.

Warrick, G. A. (1990). *A Population History of the Huron–Petun, A.D. 900–1650*. PhD dissertation. Department of Anthropology, McGill University, Montreal, Quebec.

Warrick, G. A. (1996). Evolution of the Iroquoian longhouse. In Coupland, G., and Banning, E. B. (Eds.), *People Who Lived in Big Houses: Archaeological Persepectives on Large Domestic Structures* (pp. 11–26). Madison, WI: Prehistory Press.

Warrick, G. A. (2000). The Precontact Iroquian Occupation of Southern Ontario. *Journal of World Prehistory*, *14*(4), 415–466.

Warrick, G. A. (2008). *A Population History of the Huron-Petun, AD 500–1650.* Cambridge: Cambridge University Press.

Watts, C. M. (2006). *Pots as Agents: A Phenomenological Approach to Late Woodland Period (CA. AD 900-1300) Pottery Production in Southwestern Ontario, Canada*. Unpublished Ph.D. Dissertation. Department of Anthropology, University of Toronto, Toronto, Ontario.

Whallon, R. (1968). Investigations of Late Prehistoric Social Organization in New York State. In Binford, S.R. & Binford, L.R. (Eds.), *New Perspectives in Archaeology* (pp. 223-44). Chicago: Aldine.

Wilcox, D. R. (1996). Pueblo III people and polity in relational context. In Adler, M. A. (Ed.), *The Prehistoric Pueblo World, A.D. 1150–1350* (pp. 241–254). Tucson, AZ: University of Arizona Press.

Williamson, R. F. (1985). *Glen Meyer: People in Transition*. Unpublished Ph.D. Dissertation. Department of Anthropology, McGill University, Montreal, Quebec.

Williamson, R. F. (1990). The Early Iroquoian period of southern Ontario. In Ellis, C. J., and Ferris, N. (Eds.), *The Archaeology of Southern Ontario to AD 1650* (pp. 291–

320). Occasional Publication of the London Chapter No. 5. London, Ontario: Ontario Archaeological Society.

Williamson, R. F., & Powis, T.G. (1996). Ceramic Vessels. In MacDonald, R.I. & Williamson, R.F. (Eds.), *Sweat Lodges and Solidarity: The Archaeology of the Hubbert Site* (pp. 51- 67). Toronto, Ontario: Ontario Ministry of Culture.

Williamson, R. F., & Ramsden, C. N. (1998). Summary and conclusions (Chap. Six). In Williamson, R. F. (Ed.), *The Myers Road Site: Archaeology of the Early to Middle Iroquoian Transition* (pp. 193–203). Occasional Publication No. 7. London, Ontario: Ontario Archaeological Society, London Chapter.

Williamson, R. F., & Robertson, D. G. (1994). Peer polities beyond the periphery: Early and Middle Iroquoian regional interaction. Ontario Archaeology, 58, 27-40.

Wintemberg, W. J. (1948). *The Middleport Prehistoric Village Site*. Ottawa, ON: National Museum of Canada, Bulletin 109.

Wonderley, A. (2005). Effigy pipes, diplomacy, and myth: Exploring interactions between St. Lawrence Iroquoians and eastern Iroquoians in New York State. *American Antiquity, 70,* 211–240.

Wright, J. V. (1966). *The Ontario Iroquois Tradition.* Ottawa, ON: National Museum of Canada, Bulletin Number 210.

Wright, J. V. (1967). Type and Attribute Analysis: Their Application to Iroquois Culture History. In Tooker, E. (Ed.), *Iroquois Culture, History, and Prehistory: Proceedings of the 1965 Conference on Iroquois Research* (pp. 99–100). Albany, NY: The University of the State of New York, the State Education Department, and the New York State Museum and Science Service. (Reprinted with a short addendum in Ontario Archaeology (1968) 11:65–69).

Wright, J.V., & Anderson, J. (1969). *The Bennett Site.* Ottawa, Ontario: National Museums of Canada, Bulletin No. 229.

Wright, M. J. (1986). *The Uren Site AfHd-3 An Analysis and Reappraisal of the Uren Substage Type Site*. Monographs in Ontario Archaeology No. 2. Toronto, ON: Ontario Archaeological Society.

Yaeger, J., & Canuto, M.A. (2000). Introducing and archaeology of communities. In Canuto M.A. & Yaeger, J. (Eds.). .), *The Archaeology of Communities: A New World Perspective* (pp. 1-15). London: Routledge.

Appendices

Appendix A: Iroquoian Village Site Plans (Referenced in Text)

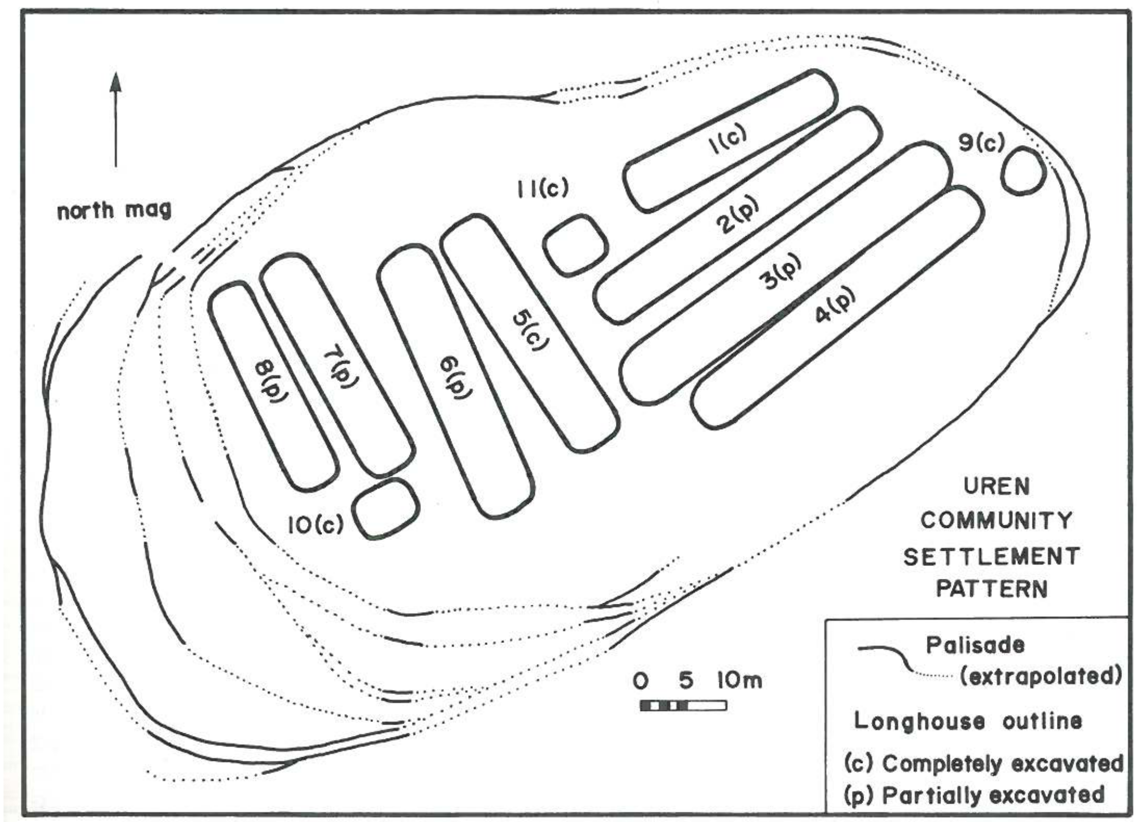

Figure A.1: Uren Site (Source: Wright, 1986, p. 13)

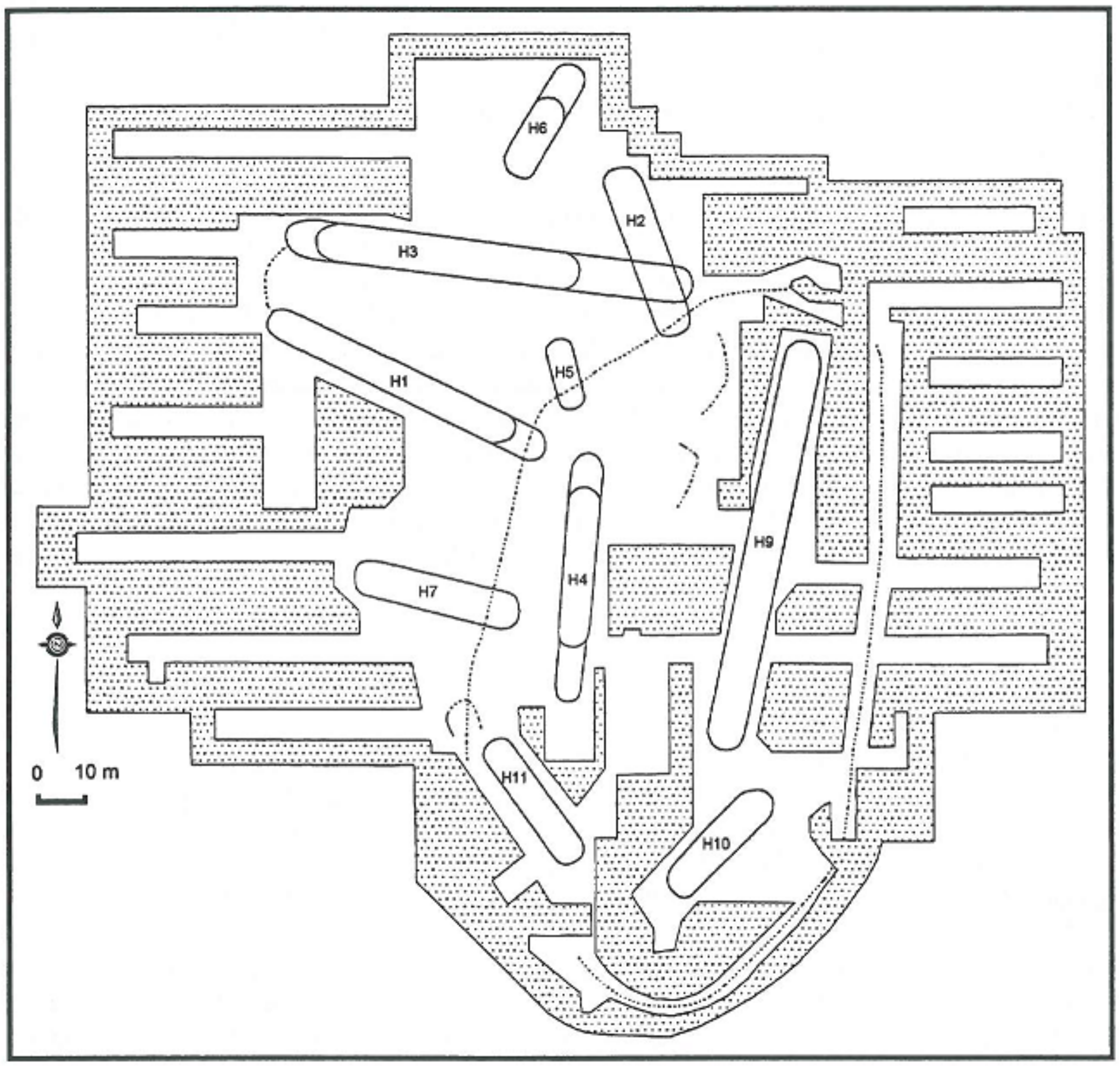

Figure A.2: Myers Road Site (Source: MacDonald, Ramsden & Williamson, 1998, p. 5)

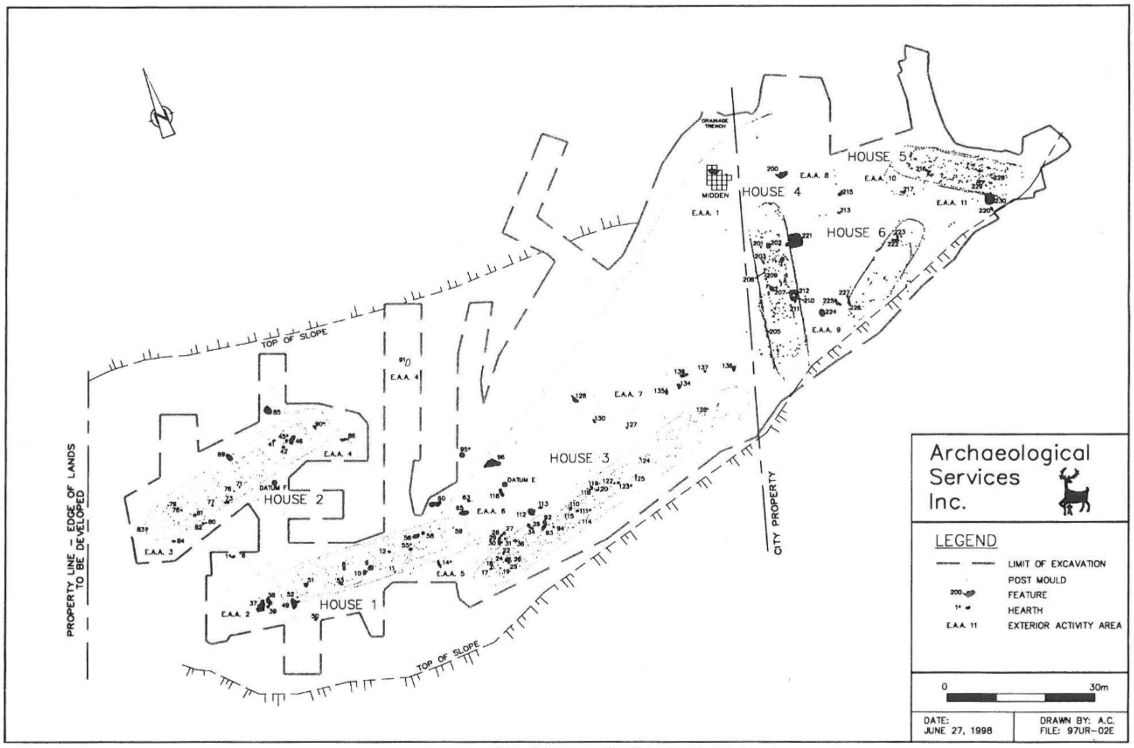

Figure A.3: Serena Site (Source: Archaeological Services Inc. (ASI), 2004, p. 5)

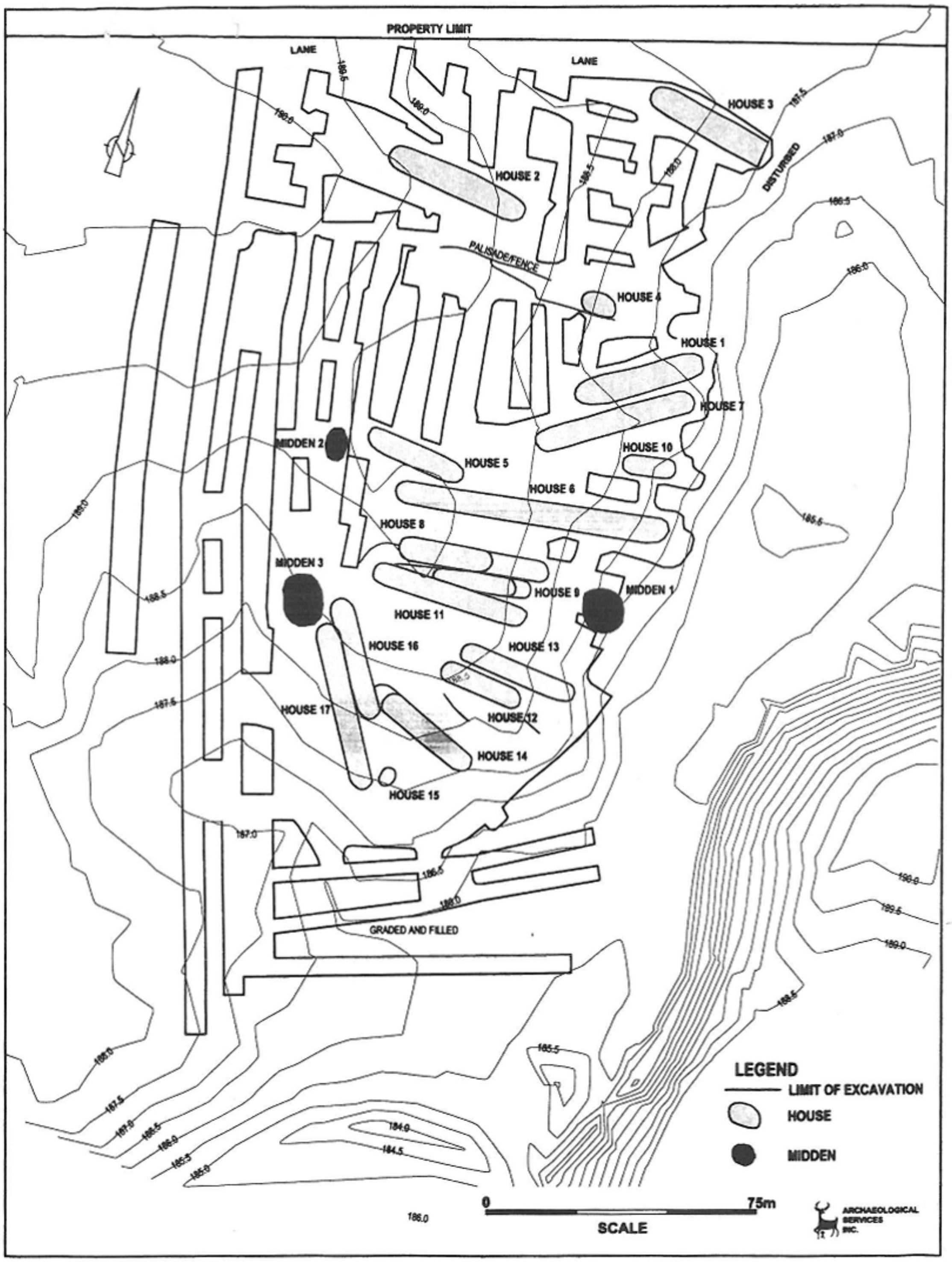

Figure A.4: Alexandra Site (Source: ASI, 2008, p. 5)

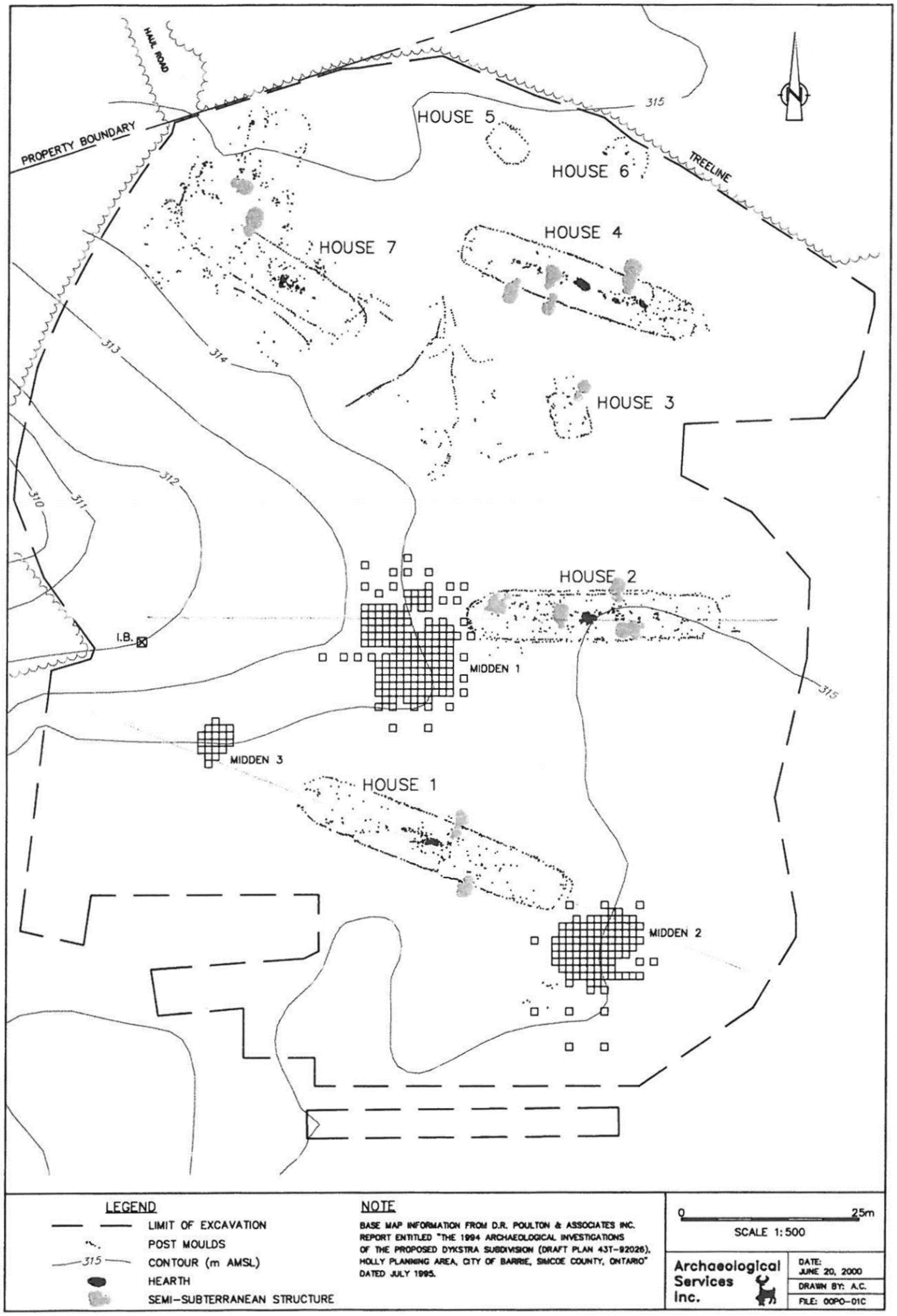

Figure A.5: Holly Site (Source: ASI, 2009, p. 8)

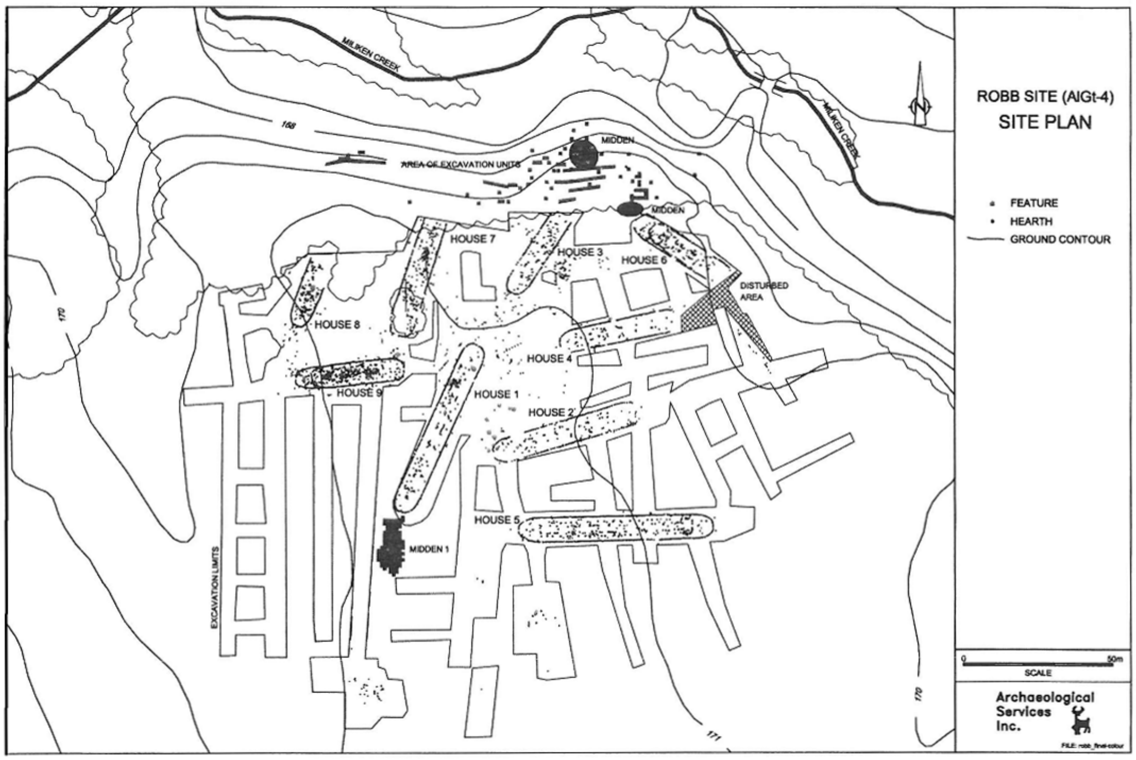

Figure A.6: Robb Site (Source: ASI, 2010, p. 8)

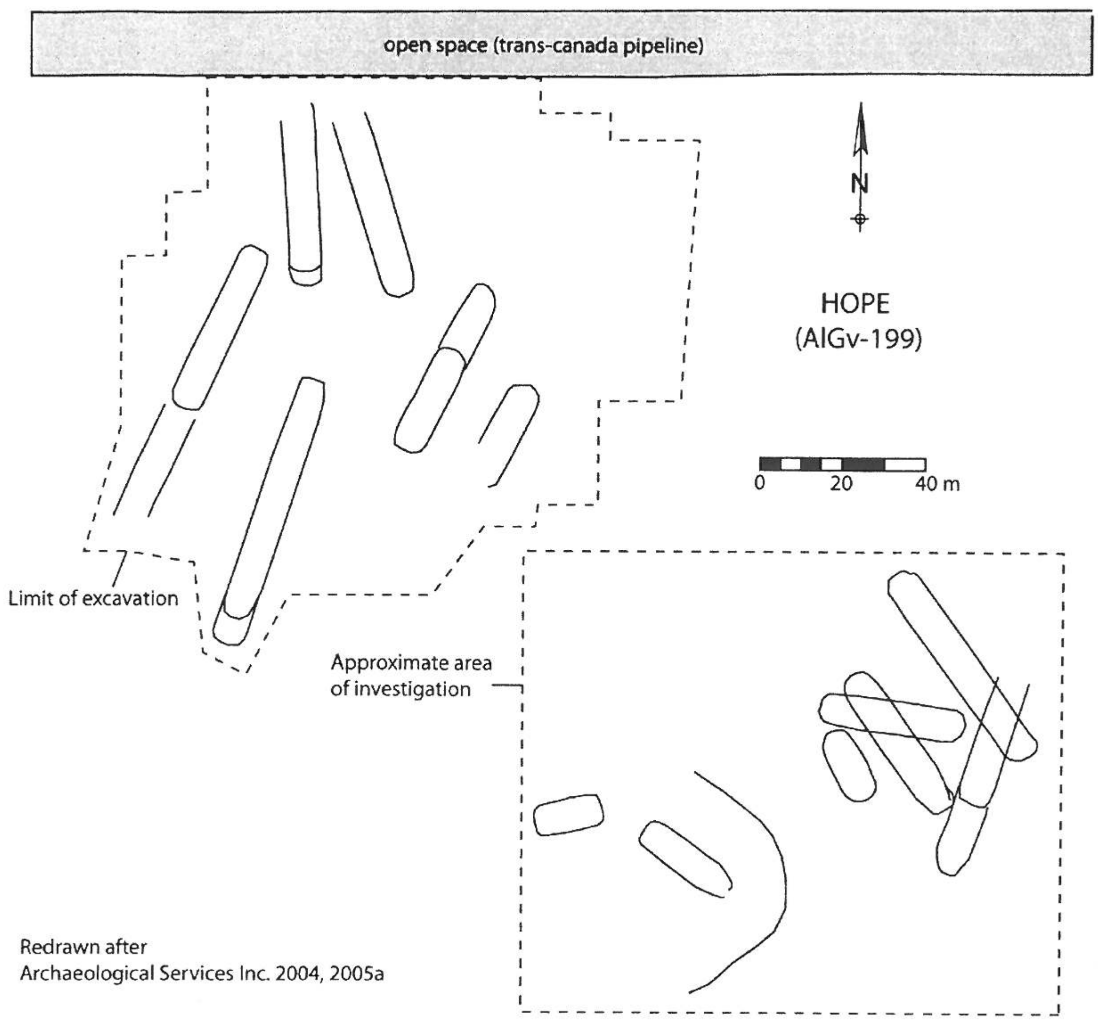

Figure A.7: Hope Site (Source: ASI, 2011, p.8)

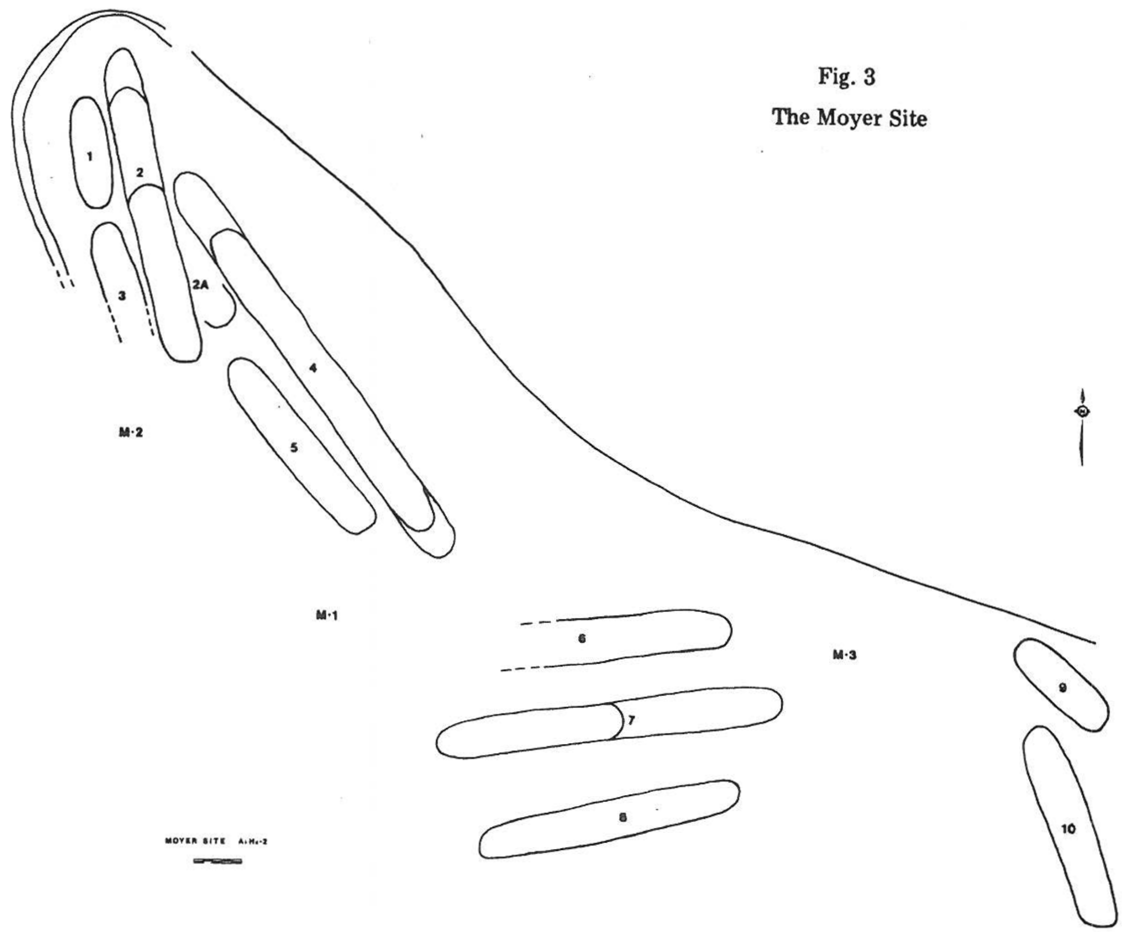

Figure A.8: Moyer Site (Source: Wagner, Toombs & Reigert, 1973, p. 5)

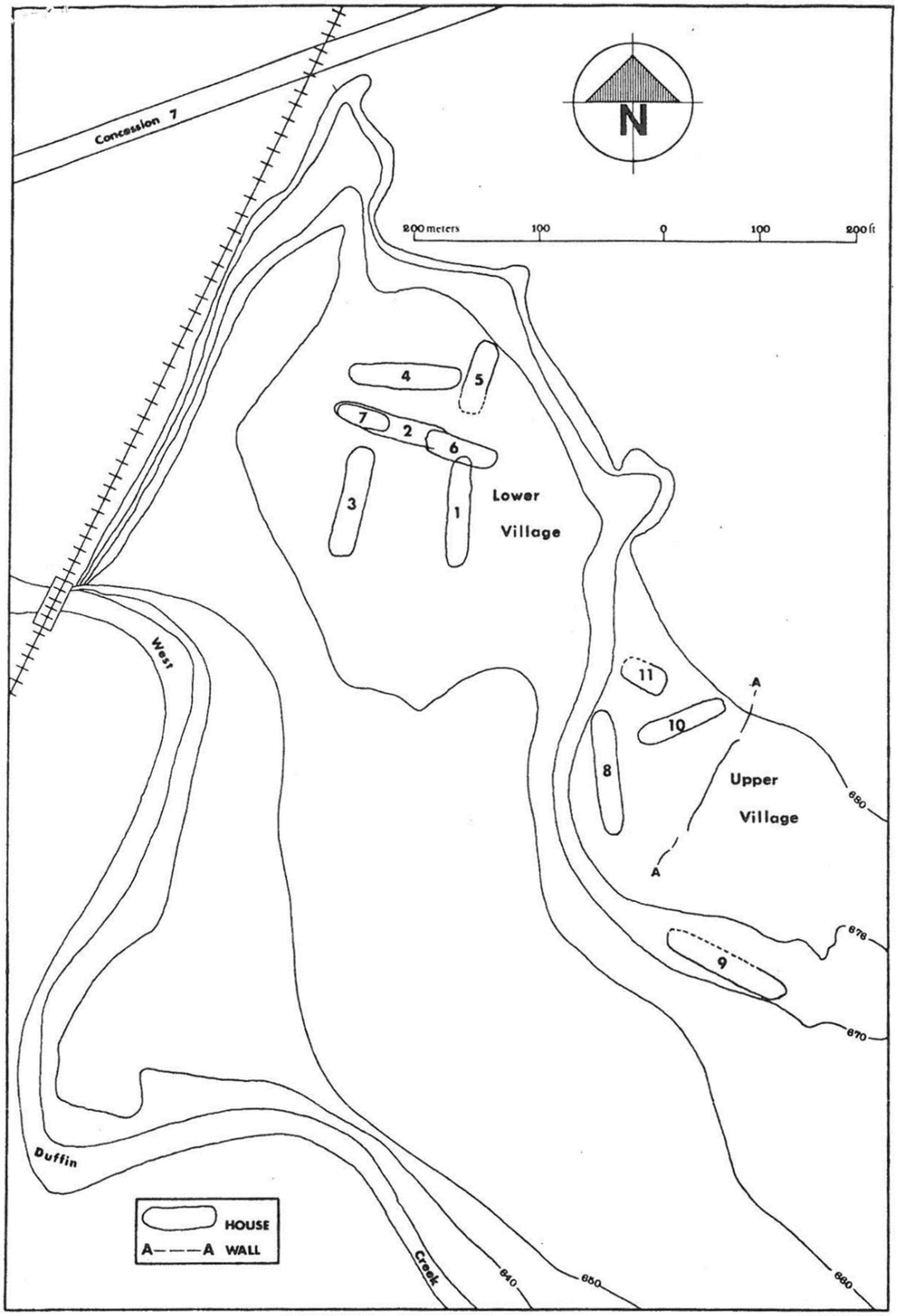

Figure A.9: White Site (Source: Tripp, 1978, p. 3)

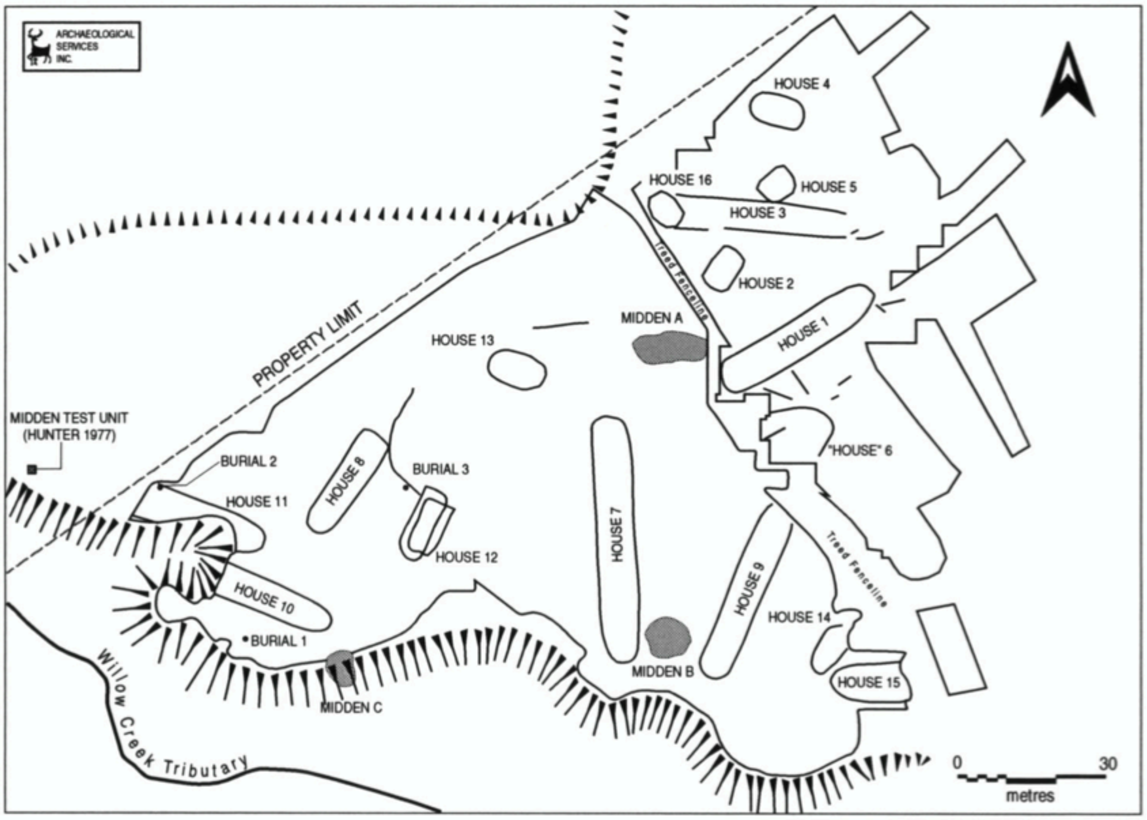

Figure A.10: Dunsmore Site (Source: Robertson & Williamson, 2003, p. 15)

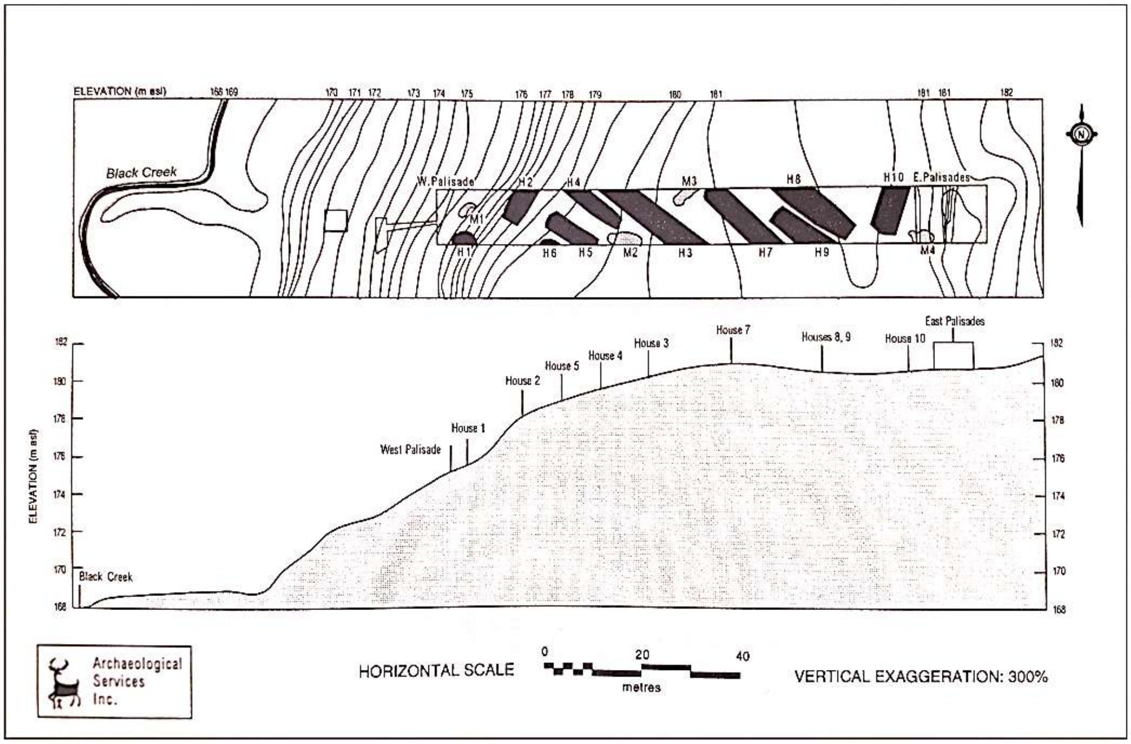

Figure A.11: Parsons Site (Source: Robertson, Welsh & Williamson, 1998, p. 22)

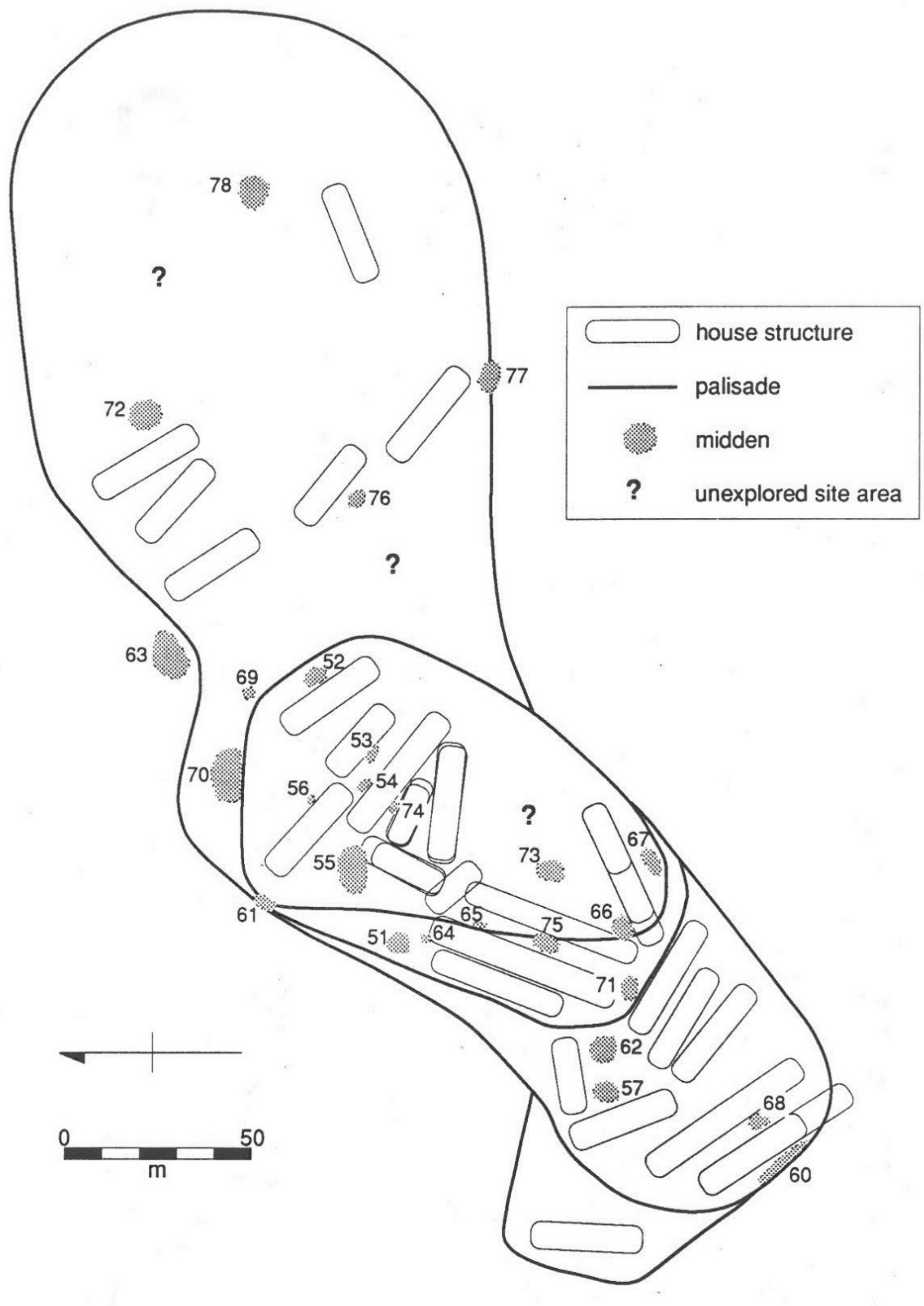

Figure A.12: Coulter Site (Source: Damkjar, 1990, p. 6)

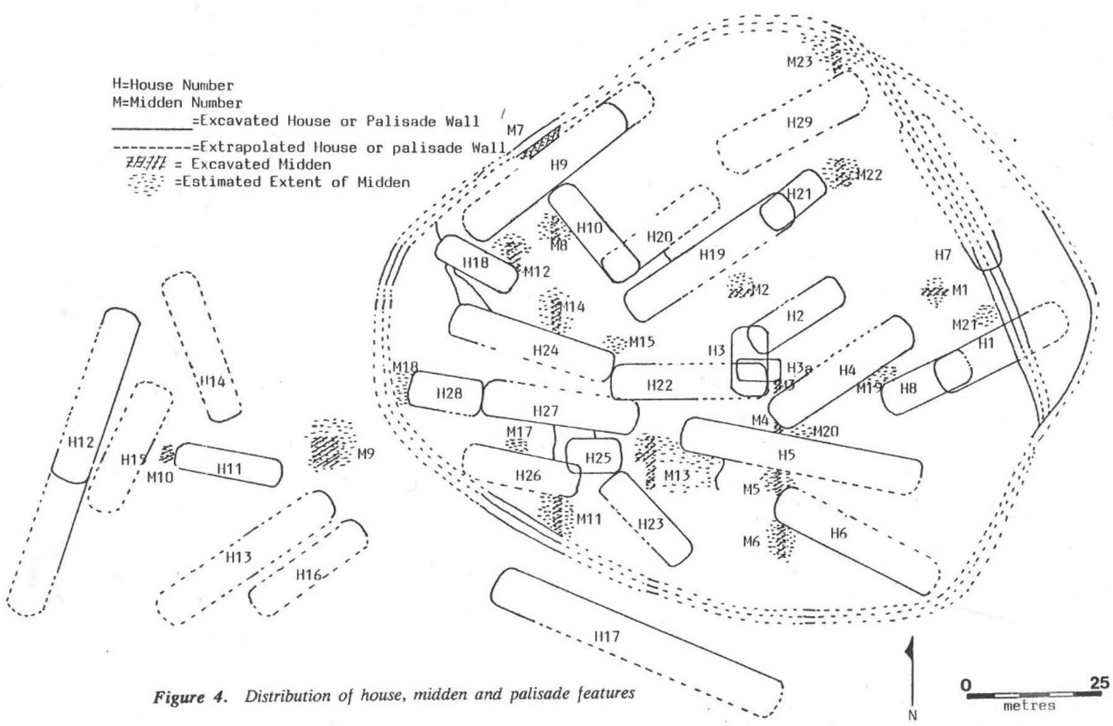

Figure A.13: Kirche Site (Source: Ramsden, 1989, p. 9)

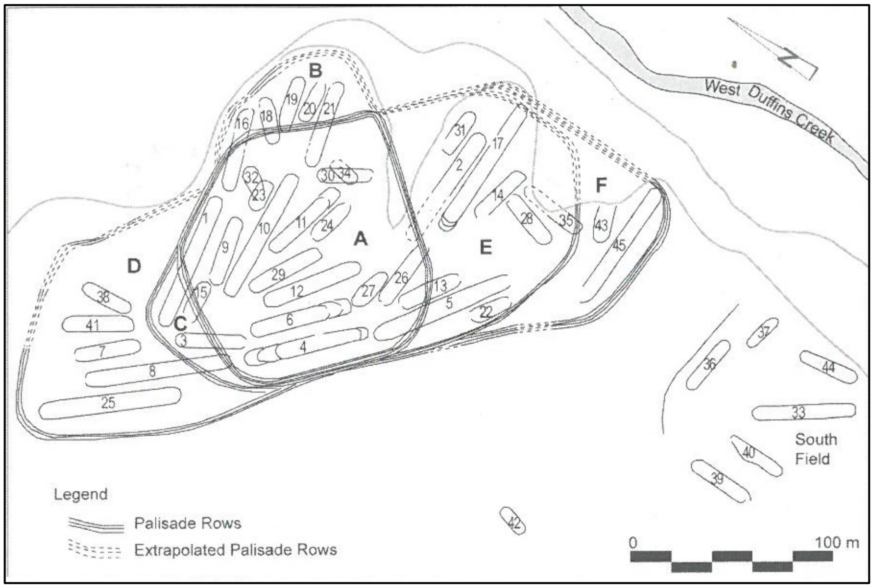

Figure A.14: Draper Site (Source: Birch & Williamson, 2013b, p. 57)

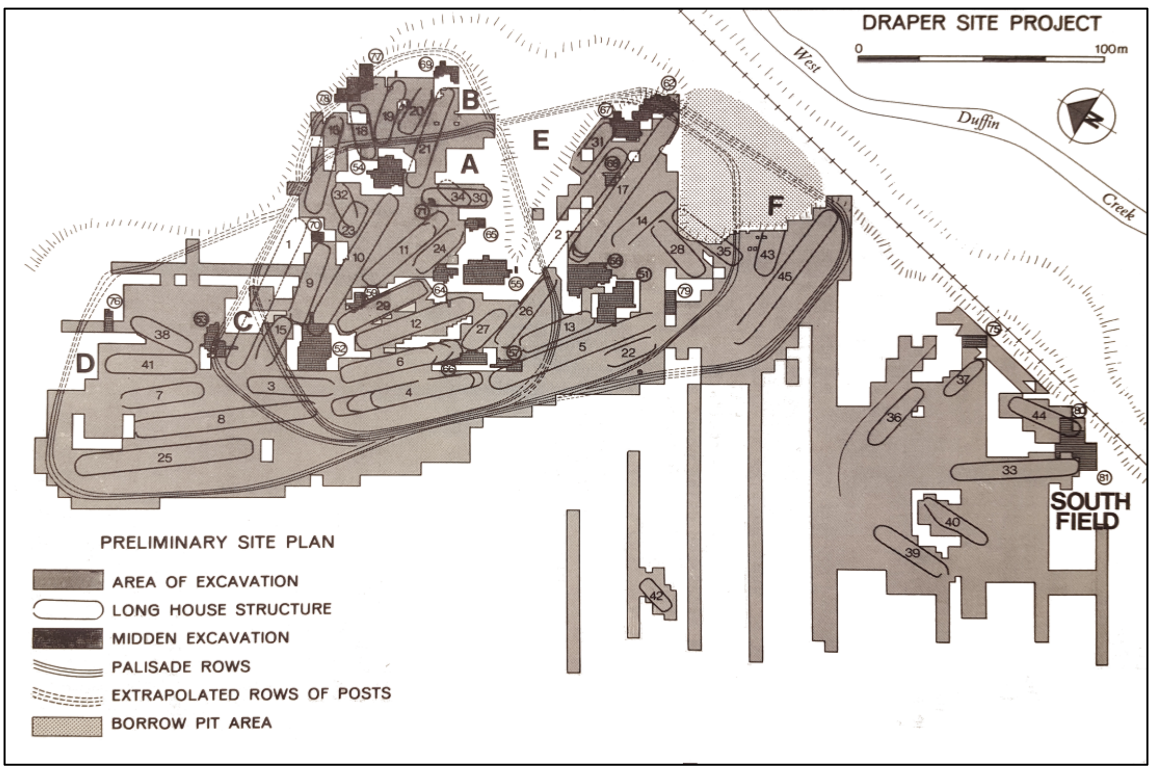

Figure A.15: Draper Site (Source: Finlayson, 1985, p. 60)

Figure A.16: Mantle Site; Site Plan (A), Early Occupation Phase (B), Later Occupation Phase (C). (Source: Birch & Williamson, 2013b, p.66 (A), p.73 (B), p. 76 (C).

Appendix B: Longhouse Geospatial Figures

Figure B.1: Tillsonburg Village Site plan with northwest, south, central and east areas of the village indicated by dotted red outlines (Adapted from Timmins Martelle Heritage Consultants (TMHC) shape file and South-Western Ontario Orthophotography Project (SWOOP) digital imagery)

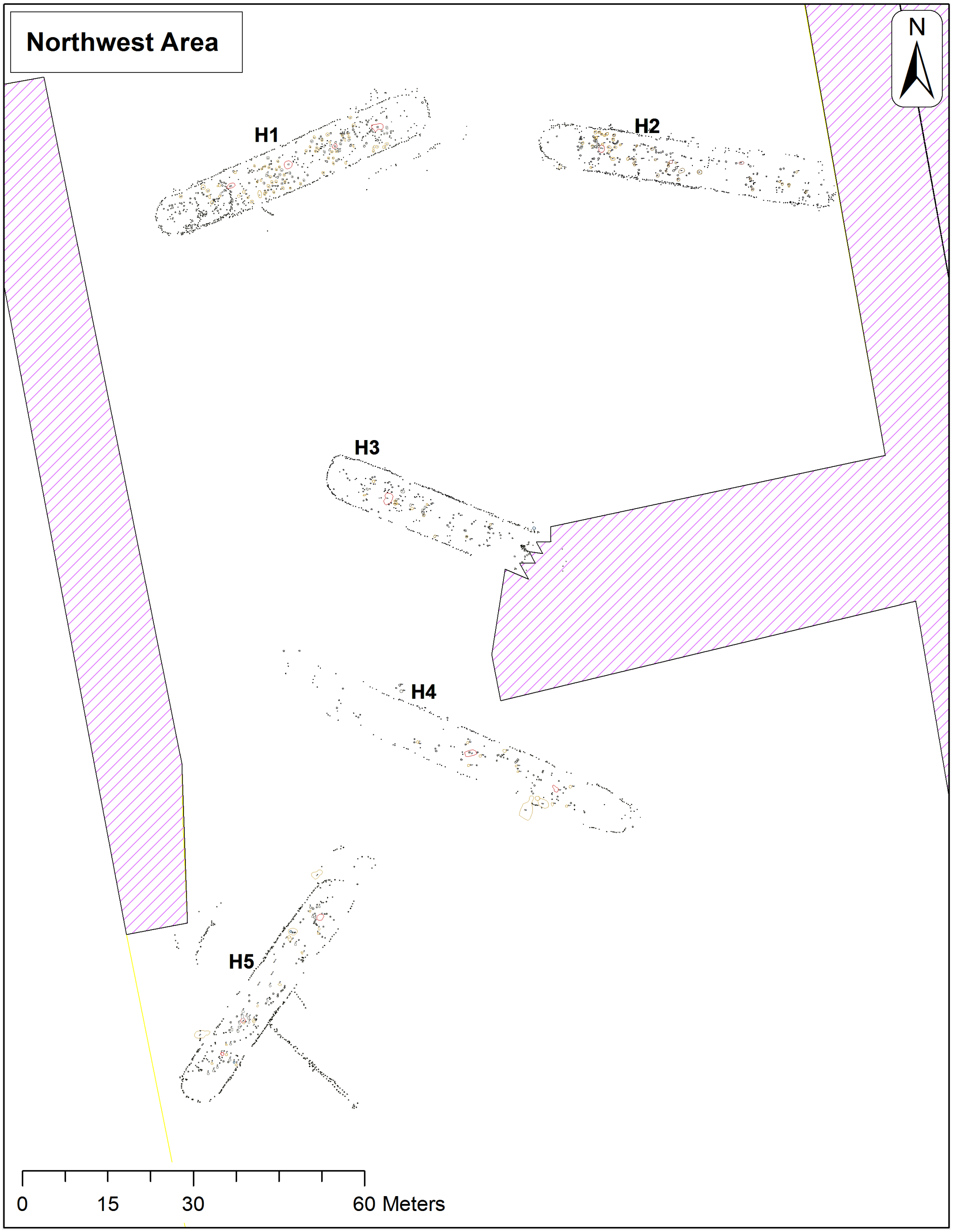

Figure B.2: Northwest Area of the Tillsonburg Village, longhouses 1 to 5

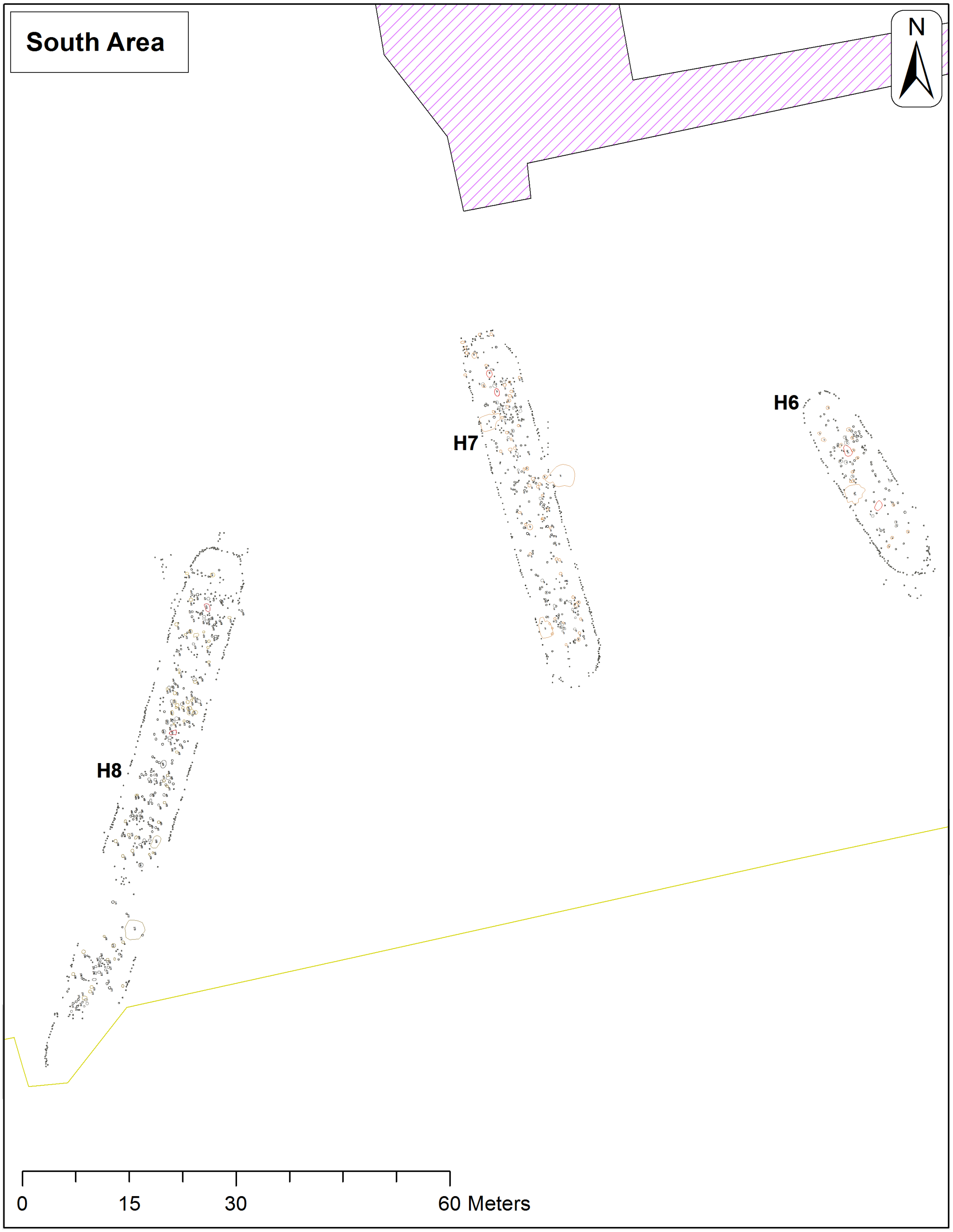

Figure B.3: South Area of the Tilllsonburg Village, longhouses 6 to 8.

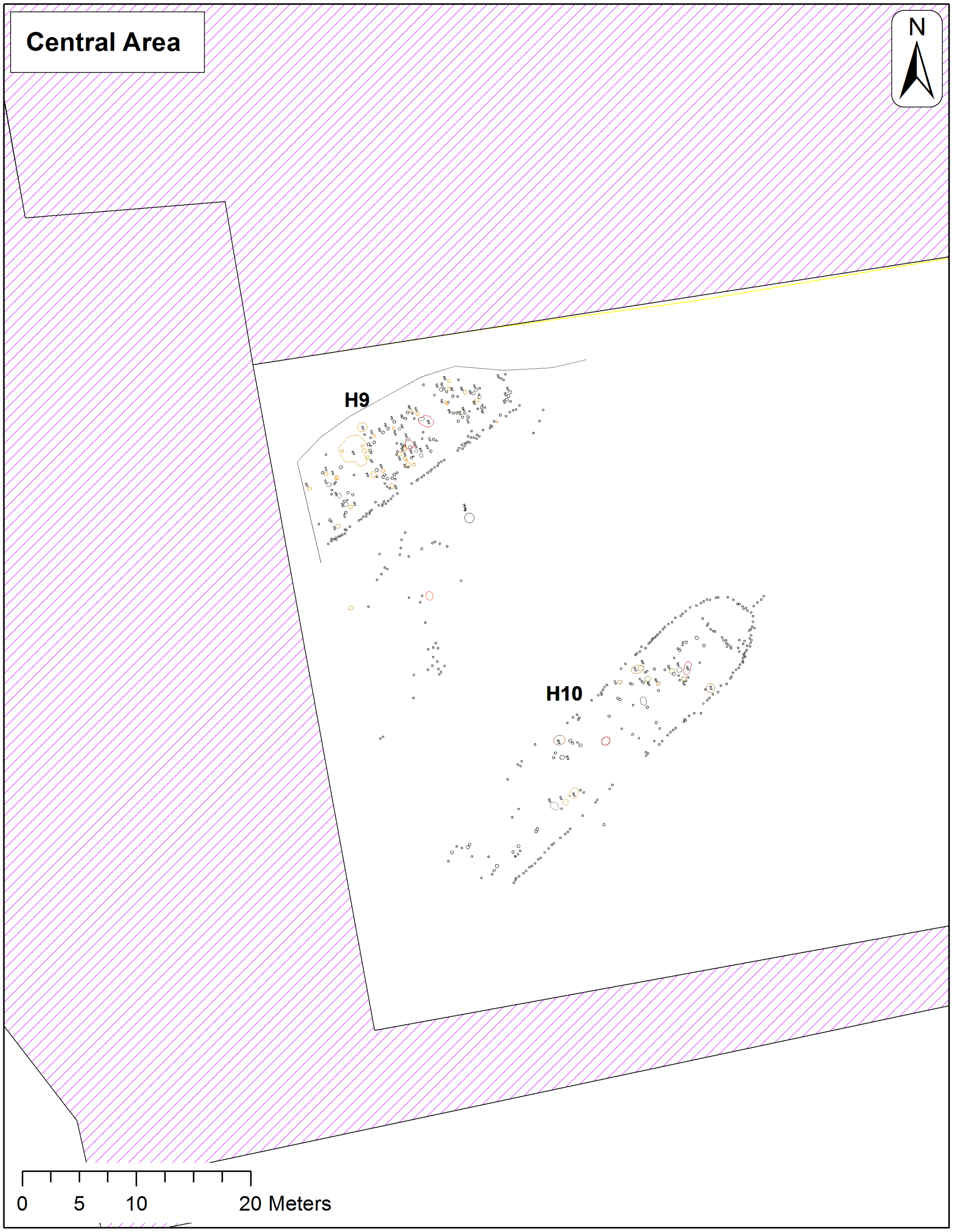

Figure B.4: Central Area of the Tillsonburg Village, longhouses 9 and 10

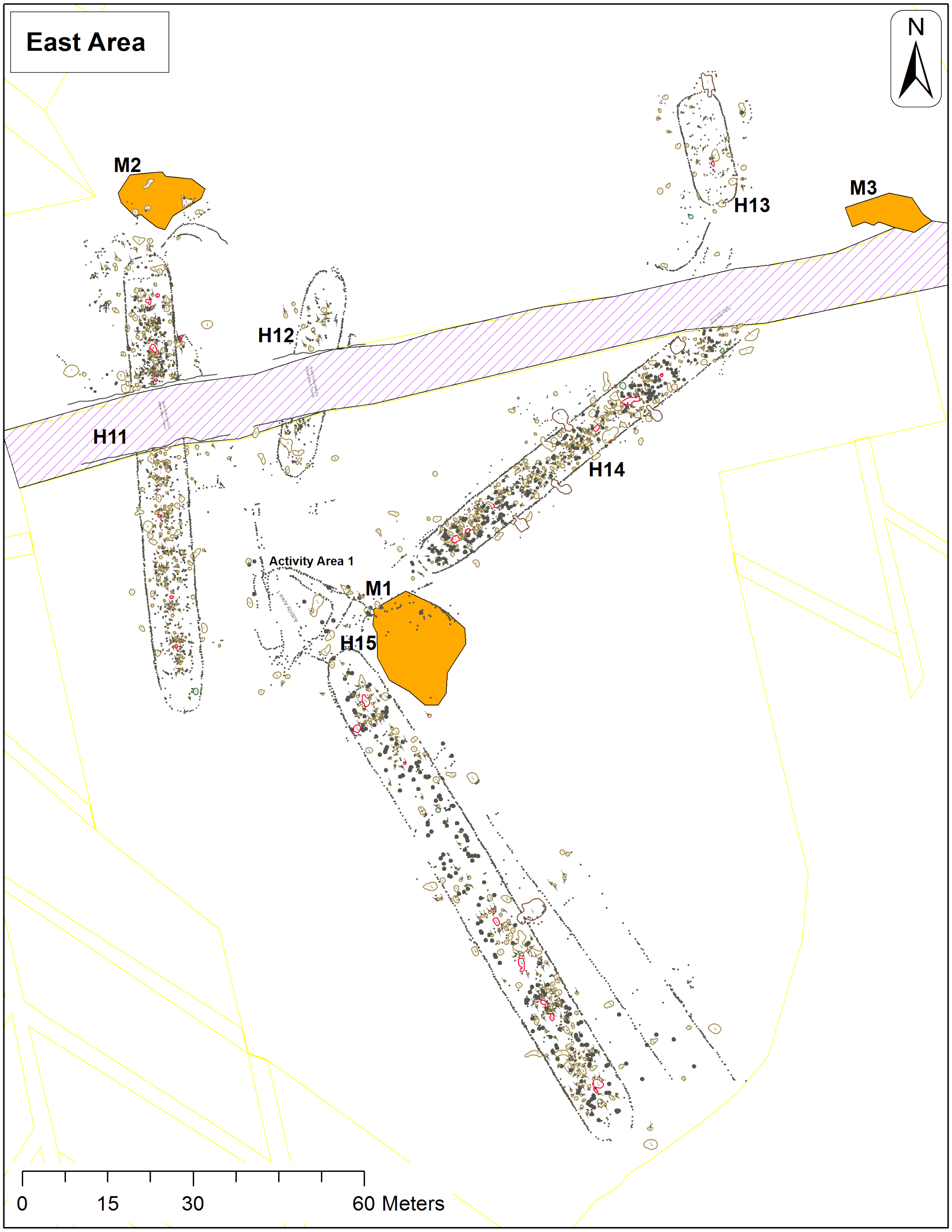

Figure B.5: East Area of the Tillsonburg Village, longhouses 11 to 15, middens 1 to 3, and activity area 1

Appendix C: Attribute Code for Ceramic Vessel Analysis

Document was adapted from the following sources: Howie-Langs 1998; MacNeish 1952; Mather 2015; Sherratt 2003; Smith 1983, 1987; Pearce 1978; Watts 2006.

CONTEXTUAL							
Vessel Number							
Catalogue or Sub-Catalogue Number							
House/Midden							
Feature or Square or Support Post Number							
0. Representation	0A – Collar /Upper Rim (UR)	0B – Collar/ UR Fragment	0C – Collar /UR & Partial Neck	0D – Castellation	0E – Collar / UR, Neck & Partial Shoulder	0F – Collar/UR, Neck, Shoulder	0G – Castellation & Partial Neck

MORPHOLOGICAL									
1. Rim Form	1A – Collared	1B - Collarless	1C – Incipient Collar	1D – High Collared	1E – Low Collared	1F – Indeterminate		1G – Everted Collar	
2. Rim Orientation	2A – Vertical/ Straight	2B – Outflaring	2C – Inflaring	2D – Indeter-minate					
3. Upper Rim Profile - Exterior	3A – Convex	3B – Concave	3C – Straight	3D – Indeter-minate	3E – Concave /Convex	3F – Convex/ Concave			
4. Upper Rim Profile - Interior	4A – Convex	4B – Concave	4C – Straight	4D – Indeter-minate	4E – Concave /Convex	4F – Convex/ Concave			
5. Collar Base Shape (If Collared)	5A – Rounded	5B – Angular	5C – Indeter-minate						
6. Lip Form	6A – Flat	6B – Rounded	6C – Pointed	6D – Deep Notches	6E – Splayed	6F – Indeter-minate	6G – Notched (Ext.) & Flat	6H - Scalloped	6I - Bevelled
7. Angle of Lip to Interior	7A – Obtuse	7B – Right	7C - Acute						
8. Lip Thickness (mm)	Thickness of the vessel lip, measured with electronic calipers (Mather, 2015).								
9. Rim Wall Thickness (mm)	Thickness of the rim, measured with electronic calipers, taken at 10mm below the lip (Mather, 2015).								
10. Collar Height (mm)	Length of the collar from the lip to the inflection point of the neck, measured with electronic calipers (Mather, 2015). Only applicable to collared vessels.								
11. Rim to Neck Height (mm)	Length of the exterior rim area, from the lip to inflection point of the neck, measured with electronic calipers. If castellation was present, uncastellated portion of rim was measured (Mather, 2015). Only applicable to collarless vessels.								
12. Basal Collar Width (mm)	Width from the base of the collar on the exterior surface to the counterpoint on the interior surface, measured with electronic calipers.								
13. Neck Length (If	Length of the vertical neck area associated with the inflection points on the vessel, measured with electronic calipers (Howie-Langs,								

Applicable) (mm)	1998).
14. Neck Thickness (If Applicable)(mm)	Thickness of the neck, measured with electronic calipers (Mather, 2015).
15. Rim Diameter (If Applicable) (cm)	The diameter of a vessel where the lip intersects a horizontal plane. Measured on a diameter board, and taken from the interior wall (Howie-Langs, 1998). The rim diameter attribute was not analyzed for sherds with less than 5 cm of intact lip.
16. Neck Diameter (If Applicable) (cm)	The diameter of a vessel where the inflection point intersects a horizontal plane. Measured on a diameter board, and taken from the interior wall (Howie-Langs, 1998).
17. Shoulder Diameter (If Applicable) (cm)	The diameter of a vessel where the shoulder (the point of maximum diameter on vessel) intersects a horizontal plane. Measured on a diameter board, and taken from the interior wall (Howie-Langs, 1998).

DECORATIVE			
Complexity			
18. Number of Exterior Bands of Decoration	The number of bands of decoration (motifs) on the exterior surface of the rim, neck, and shoulder areas of the vessel (Howies-Langs, 1998)		
19. Number of Exterior Motifs	The number of motifs on the exterior surface of the rim, neck, and shoulder areas of the vessel (Howie-Langs 1998).		
Techniques Over – Indicates a vertical difference, techniques occur on separate decorative bands / - Indicates the presence of techniques on the same decorative band, either horizontal difference or superimposed			
100 – Absent	120 – LS over I	142 – LS over Plain over LS	163 – LS over Plain
101 – Plain	121 – Notched over T	143 – LS over I over LS	164 – TS over I
102 – Incised (I)	122 – ES over T	144 – Superimposed CS over Plain	165 – Intermittent LS
103 – Trailed (T)	123 – T over I	145 – LS over DS	166 – LS over I over Notched
104 – Linear Stamped (LS)	124 – I over Plain	146 – LS over CS	167 – I over TS
105 – Circular Stamped (CS)	125 – ES over I	147 – ES / I	168 – TS (over Plain)
106 – Elliptical Stamped (ES)	126 – I over LS	148 – LS over T over I over Ind.	169 – LS over ES / I
107 – Notched	127 – LS over T	149 – T over DS	170 – I / T over LS
108 – Push-Pull (PP)	128 – T over Ind.	150 – ES over T over Ind.	171 – Plain over T
109 – Rocker Stamped	129 – I over Ind.	151 – LS / I / ES	172 – Plain over LS
110 – Dentate Stamped (DS)	130 – Notched over I	152 – T over Plain	173 – CS over Plain
111 – Check Stamped	131 – I over ES	153 – LS / Superimposed Intermittent LS	174 – Circular Bossed
112 – Turtle Suture Stamped	132 – I over ES over Plain	154 – LS over Plain over CRS	175 – ES over Plain over ES
113 – Crescent Stamped (CRS)	133 – Notched / Plain	155 – ES over I over Ind.	176 – Plain over I
114 – Fingernail Impressed	134 – T over LS	156 – ES over Plain	177 – LS over Plain / ES / CS
115 – Corded (Cord Wrap Stick)	135 – LS over T over LS	157 – I over T (over Ind.)	178 – CS over ES
116 – Pseudo Scalloped Shell Stamped	136 – I over PP	158 – T over ES (over Plain)	
117 – Triangular Stamped (TS)	137 – PP over Ind. or Plain	159 – T over LS over Plain	
118 – Superimposed Circular Stamped (SCS)	138 – I over LS over Plain	160 – Superimposed CS over I	
119 – Indeterminate (Ind.)	139 – LS over Ind.	161 – I over Superimposed CS over Plain	
	140 – ES over Ind.	162 – LS over PP	
	141 – Incised / Intermittent Superimposed LS		
20. Rim Technique (Upper Rim/Collar)	Options Listed Above		

21. Lip Technique	Options Listed Above
22. Interior Rim Technique	Options Listed Above
23. Neck Technique	Options Listed Above
24. Shoulder Technique	Options Listed Above

Motifs

Over – Indicates a vertical difference, techniques occur on separate decorative bands

/ - Indicates the presence of techniques on the same decorative band, either horizontal difference or superimposed

Simples – Refers to Linear Elements (Oblique or Vertical)

300 – Absent 301 – Plain 302 – Simples Vertical (SV) 303 – Simples Right Oblique (SRO) 304 – Simples Left Oblique (SLO) 305 – Simples Opposed (SO) 306 – Simples Blanked (SB) 307 – Simples Alternating (SA) 308 – Opposed Triangles Filled with Obliques 309 – Horizontal (Hor.) 310 – Notched 311 – SRO over Plain 312 – SV over Plain 313 – Opposed Triangles Alternating Blank and Filled with Obliques 314 – SRO over Hor. 315 – SLO over Hor. 316 – SV over Hor. 317 – SRO over SLO 318 – Hor. over SLO 319 – Hor. over SRO 320 – Hor. over SV 321 – Hor. over Plain	324 – Hor. over Ind. 325 – Punctates Hor. - Right Oblique (RO) 326 – Hor. over SRO over Plain 327 – Notched / Plain 328 – SRO over Hor. over SRO 329 – Punctates Hor. RO over Hor. 330 – SLO over Plain 331 – Hor. over SV over Plain 332 – Hor. over Punctates Hor. RO over Plain 333 – SLO over Ind. 334 – SRO / Superimposed Intermittent Hor. Dash 335 – Simples Crossed 336 – Opposed & Intersecting Hor. and Obliques 337 – SRO over Ind. 338 – SV / Superimposed Intermittent Hor. Dash 339 – SV over Ind. 340 – Plain over SV (over Plain) 341 – SRO over Hor. over SV 342 – Opposed & Intersecting Obliques & Verticals 343 – SO over Hor. 344 – SRO over Hor. over Ind.	346 – SO (Verticals & Obliques) with Alternating Blank and Punctate Filled Triangles 347 – Plain over Hor. 348 – Hor. over SRO over Ind. 349 – Hor. Over Punctates Hor. over Plain 350 – SLO over Plain over SLO 351 – SA over Ind. 352 – SRO over Plain over SLO 353 – SRO over Hor. over Notching 354 – Punctates Hor. over Opposed & Intersecting Hor. & Obliques over Ind. 355 – Opposed & Interesecting Hor. & Obliques over SRO over Ind. 356 – SLO / Superimposed Hor. 357 – SV over Hor. over SA / SO 358 – SRO over Plain over SRO 359 – SA over Hor. 360 – Plain over SRO (over Ind.) 361 – Opposed & Intersecting Hor., Obliques & Verticals 362 – Intermittent Punctates Hor. over Plain 363 – SV over SRO 364 – Hor. over SLO over Ind. 365 – Simples Hatched 366 – Punctates Horizontal	368 – SLO over SRO 369 – SLO over Punctates Hor. RO 370 – SO / Punctates Hor. 371 – Punctates Hor. over Hor. 372 – SRO over Hor. over SLO 373 – Hor. over Punctates Hor. over Plain 374 – Punctates Hor. over Plain 375 – Punctates Hor. Left Oblique over Ind. 376 – Punctates Hor. RO over Plain 377 – Punctates Hor. RO over Hor. over Ind. 378 – Punctates Hor. over Hor. over Ind. 379 – Opposed & Intersecting SRO over Punctates Hor. / Hor. 380 – Punctates Hor. RO over Plain over Punctates Hor. RO 381 – SLO over Punctates Right Oblique / Punctates Left Oblique 382 – Bossed Horizontal

322 – Notched over Hor. 323 – Indeterminate (Ind.)	345 – SC over Hor.	367 – Hor. over SRO over Hor.								
25. Rim Motif (Upper Rim/Collar)	Options Listed Above									
26. Lip Motif	Options Listed Above									
27. Interior Rim Motif	Options Listed Above									
28. Neck Motif	Options Listed Above									
29. Shoulder Motif	Options Listed Above									
30. Number of Horizontals on Exterior Collar/Upper Rim (Only Applicable if Zone is Complete)										
31. Number of Horizontals on Neck (Only Applicable if Zone is Complete)										
32. Number of Horizontals on Exterior Lip										
33. Castellation	33A – Present with Discontinuous (Dis.) Decoration (Dec.) – Chevron or Inverted Chevron 33B – Present with Continuous Decoration 33C – Present with Dis. Dec. – Punctate Face or Inverted Punctate Face 33D – Absent 33E – Indeterminate 33F – Present with Decoration Consistency Unknown 33G – Present with Dis. Dec. – Extended Parallel Obliques on Rim/Neck Zones 33H – Present with Dis. Indeterminate Dec. 33I – Present with Dis. Dec. – Chevron & Punctate Face									
34. Castellation Form	34A - Nubbin	34B – Pointed	34C – Pointed Multiple	34D - Rounded	34E – Rounded Multiple	34F – Indeter-minate	34G - Absent	34H - Incipient	34I - Flattened	
35. Interior Punctate	35A – Present without corresponding exterior bosses 35B – Present with corresponding exterior bosses 35C - Absent 35D – Present with punctate face (under castellation)									
36. Interior Punctate Form	36A - Elliptical	36B – C-Shaped	36C - Circular	36D - Square	36E - Triangular	36F - Absent				
37. Exterior Surface Treatment - Neck	37A - Smooth	37B - Wiped	37C – Cord Malleated	37D – Ribbed-Paddle Marked	37E – Textured (Fabric) Impressed	37F – Geometric	37G - Combing	37H – Ind.	37I - Absent	37J – Wiped & Smooth
38. Exterior Surface Treatment - Shoulder	38A - Smooth	38B - Wiped	38C – Cord Malleated	38D – Ribbed-	38E – Textured	38F – Geometric	38G - Combing	38H – Ind.	38I - Absent	38J – Wiped &

				Paddle Marked	(Fabric) Impressed					Smooth
39. Interior Surface Treatment - Neck	39A - Smooth	39B - Wiped	39C – Cord Malleated	39D – Ribbed-Paddle Marked	39E – Textured (Fabric) Impressed	39F – Geometric	39G - Combing	39H – Ind.	39I - Absent	39J – Wiped & Smooth
40. Interior Surface Treatment - Shoulder	40A - Smooth	40B - Wiped	40C – Cord Malleated	40D – Ribbed-Paddle Marked	40E – Textured (Fabric) Impressed	40F – Geometric	40G - Combing	40H – Ind.	40I - Absent	40J – Wiped & Smooth
41. Type	41A – Lawson Opposed 41B – Lawson Incised 41C – Pound Necked 41D – Pound Blank 41E – Ontario Horizontal 41F – Middleport Oblique 41G – Middleport Criss-Cross 41H – Ontario Oblique					41I – Iroquois Linear 41J – Ripley Plain 41K – Huron Incised 41L – Black Necked 41M – Untyped 41N – Indeterminate 41O – Uren Dentate 41P – Untyped Stamped				
42. Interior Surface Treatment – Upper Rim/Collar	42A - Smooth	42B - Wiped	42C – Cord Malleated	42D – Ribbed-Paddle Marked	42E – Textured (Fabric) Impressed	42F – Geometric	42G - Combing	42H – Ind.	42I - Absent	42J – Wiped & Smooth
43. Interior Neck Technique	Options Listed Above in Techniques									
44. Interior Neck Motif	Options Listed Above in Motifs									

Appendix D: Ceramic Attribute Summary Tables and Graphs

Table D.1: Representation

Representation		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Collar/ Upper Rim	Count					1	1	2	3			2			4	2	2		2	1			20
	%					33.33%	100.00%	12.50%	25.00%			7.14%			4.08%	6.06%	5.88%		3.23%	16.67%			5.92%
Collar/ Upper Rim Fragment	Count	4	1		3	1		4	2	1	1	5	1	1	13	5	12	2	15				71
	%	23.53%	33.33%	0.00%	60.00%	33.33%	0.00%	25.00%	16.67%	25.00%	25.00%	17.86%	50.00%	33.33%	13.27%	15.15%	35.29%	66.67%	24.19%				21.01%
Collar/Upper Rim & Partial Neck	Count	13	2	1	2			9	7	2	3	19	1	2	76	26	19	1	43	4	2	1	230
	%	76.47%	66.67%	100.00%	40.00%			56.25%	58.33%	50.00%	75.00%	67.86%	50.00%	66.67%	77.55%	78.79%	55.88%	33.33%	69.35%	66.67%	100.00%	100.00%	68.05%
Castellation	Count					1				1					1	1	1		2				7
	%					33.33%				25.00%					1.02%	3.03%	2.94%		3.23%				2.07%
Collar/Upper Rim, Neck, & Partial Shoulder	Count											2			1	2							5
	%											7.14%			1.02%	6.06%							1.48%
Collar/Upper Rim, Neck & Shouder	Count														1								1
	%														1.02%								
Castellation & Partial Neck	Count							1							2					1			4
	%							6.25%							2.04%					16.67%			1.18%
Totals	Count	17	3	1	5	3	1	16	12	4	4	28	2	3	98	33	34	3	62	6	2	1	338
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Morphological Attributes of Vessel Form

Table D.2: Rim Form

Rim Form		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Collared	Count	7						5	2	2	2	12		1	32	7	8	1	13	1	1		94
	%	50.00%						35.71%	20.00%	100.00%	66.67%	44.44%		33.33%	35.16%	25.93%	36.36%	100.00%	27.66%	16.67%	50.00%		33.45%
Collarless	Count	1	1		2	2		5	2			5	1	1	25	3	3		12	2			65
	%	7.14%	33.33%		100.00%	100.00%		35.71%	20.00%			18.52%	50.00%	33.33%	27.47%	11.11%	13.64%		25.53%	33.33%			23.13%
Incipient Collared	Count	5	2	1			1	4	6		1	10	1	1	32	17	11		21	2	1	1	117
	%	35.71%	66.67%	100.00%			100.00%	28.57%	60.00%		33.33%	37.04%	50.00%	33.33%	35.16%	62.96%	50.00%		44.68%	33.33%	50.00%	100.00%	41.64%
High Collared	Count	1													2				1	1			5
	%	7.14%													2.20%				2.13%	16.67%			1.78%
Totals	Count	14	3	1	2	2	1	14	10	2	3	27	2	3	91	27	22	1	47	6	2	1	281
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.3: Rim Orientation

Rim Orientation		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Vertical/Straight	Count	10	3	1	1	2	1	11	7	1	2	16	1		58	20	25	2	28	3	2		194
	%	58.82%	100.00%	100.00%	25.00%	66.67%	100.00%	68.75%	58.33%	25.00%	50.00%	57.14%	50.00%		62.37%	64.52%	89.29%	100.00%	52.83%	50.00%	100.00%		61.98%
Outflaring	Count	4			2	1		3	3	2	2	6		3	30	7	3		25	1			92
	%	23.53%			50.00%	33.33%		18.75%	25.00%	50.00%	50.00%	21.43%		100.00%	32.26%	22.58%	10.71%		47.17%	16.67%			29.39%
Inflaring	Count	3			1			2	2	1		6	1		5	4				2			27
	%	17.65%			25.00%			12.50%	16.67%	25.00%		21.43%	50.00%		5.38%	12.90%				33.33%			8.63%
Totals	Count	17	3	1	4	3	1	16	12	4	4	28	2	3	93	31	28	2	53	6	2		313
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%

Table D.4: Upper Rim Profile - Exterior

Upper Rim Profile - Exterior		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Convex	Count	4	2	1		1		4	4	2	2	18	1	2	48	16	18	2	40	4		1	170
	%	23.53%	66.67%	100.00%		33.33%		25.00%	36.36%	50.00%	50.00%	64.29%	50.00%	66.67%	48.98%	48.48%	54.55%	66.67%	66.67%	66.67%		100.00%	51.05%
Concave	Count	1			1	1						2			7	1			3				16
	%	5.88%			25.00%	33.33%						7.14%			7.14%	3.03%			5.00%				4.80%
Straight	Count	12	1		3	1	1	12	7	2	2	8	1	1	41	16	15	1	13	2	2		141
	%	70.59%	33.33%		75.00%	33.33%	100.00%	75.00%	63.64%	50.00%	50.00%	28.57%	50.00%	33.33%	41.84%	48.48%	45.45%	33.33%	21.67%	33.33%	100.00%		42.34%
Convex-Concave	Count														2				4				6
	%														2.04%				6.67%				1.80%
Totals	Count	17	3	1	4	3	1	16	11	4	4	28	2	3	98	33	33	3	60	6	2	1	333
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.5: Upper Rim Profile - Interior

Upper Rim Profile - Interior		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Convex	Count	2			1	1		2	1	1		5			6	1	3		1				24
	%	11.76%			20.00%	33.33%		13.33%	8.33%	25.00%		17.86%			6.19%	3.03%	9.09%		1.64%				7.21%
Concave	Count	9	2		2	2		9	7	2	2	22	2	2	69	21	18	2	50	5	2	1	229
	%	52.94%	100.00%		40.00%	66.67%		60.00%	58.33%	50.00%	50.00%	78.57%	100.00%	66.67%	71.13%	63.64%	54.55%	66.67%	81.97%	83.33%	100.00%	100.00%	68.77%
Straight	Count	6		1	2		1	4	4	1	2	1		1	20	10	10	1	8	1			73
	%	35.29%		100.00%	40.00%		100.00%	26.67%	33.33%	25.00%	50.00%	3.57%		33.33%	20.62%	30.30%	30.30%	33.33%	13.11%	16.67%			21.92%
Concave-Convex	Count														2	1			1				4
	%														2.06%	3.03%			1.64%				1.20%
Convex-Concave	Count																2		1				3
	%																6.06%		1.64%				0.90%
Totals	Count	17	2	1	5	3	1	15	12	4	4	28	2	3	97	33	33	3	61	6	2	1	333
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.6: Collar Base Shape

Collar Base Shape		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Rounded	Count	9	2	1				7	8	1	3	17	1	2	55	23	14	1	28	3	2	1	178
	%	69.23%	100.00%	100.00%				77.78%	100.00%	50.00%	100.00%	77.27%	100.00%	100.00%	83.33%	92.00%	77.78%	100.00%	80.00%	75.00%	100.00%	100.00%	82.79%
Angular	Count	4						2		1		5			11	2	4		7	1			37
	%	5.33%	50.00%	100.00%				8.64%	12.50%	25.00%	33.33%	3.51%	100.00%	50.00%	1.26%	3.68%	4.32%	100.00%	2.29%	18.75%	50.00%	100.00%	0.39%
Totals	Count	13	2	1				9	8	2	3	22	1	2	66	25	18	1	35	4	2	1	215
	%	100.00%	100.00%	100.00%				100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.7: Lip Form

Lip Form		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Flat	Count	16	3	1	5	3	1	16	12	4	4	26	2	2	75	27	31	1	49	3	1	1	283
	%	94.12%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	92.86%	100.00%	66.67%	78.13%	81.82%	91.18%	33.33%	80.33%	50.00%	50.00%	100.00%	84.48%
Rounded	Count																		1				1
	%																		1.64%				0.30%
Pointed	Count	1														1							2
	%	5.88%														3.03%							0.60%
Deep Notches	Count											1											1
	%											3.57%											0.30%
Splayed	Count											1		1	19	4	3	2	11	3	1		45
	%											3.57%		33.33%	19.79%	12.12%	8.82%	66.67%	18.03%	50.00%	50.00%		13.43%
Scalloped	Count														1								1
	%														1.04%								0.30%
Bevelled	Count														1	1							2
	%														1.04%	3.03%							0.60%
Totals	Count	17	3	1	5	3	1	16	12	4	4	28	2	3	96	33	34	3	61	6	2	1	335
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.8: Angle of Lip to Interior

Angle of Lip to Interior		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Obtuse	Count	5	1		2			3	2	1	1	2	1		16	4	9	1	9	2			59
	%	29.41%	50.00%		40.00%			18.75%	16.67%	25.00%	25.00%	7.14%	50.00%		16.84%	12.90%	26.47%	33.33%	15.79%	33.33%			18.04%
Right	Count	5	1	1	1	1	1	8	5	1	1	18	1	1	47	17	17	2	37	4	2		171
	%	29.41%	50.00%	100.00%	20.00%	33.33%	100.00%	50.00%	41.67%	25.00%	25.00%	64.29%	50.00%	33.33%	49.47%	54.84%	50.00%	66.67%	64.91%	66.67%	100.00%		52.29%
Acute	Count	7			2	2		5	5	2	2	8		2	32	10	8		11			1	97
	%	41.18%			40.00%	66.67%		31.25%	41.67%	50.00%	50.00%	28.57%		66.67%	33.68%	32.26%	23.53%		19.30%			100.00%	29.66%
Totals	Count	17	2	1	5	3	1	16	12	4	4	28	2	3	95	31	34	3	57	6	2	1	327
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Decorative Attributes

Table D. 9: Number of Exterior Bands of Decoration

Number of Exterior Bands of Decoration		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Zero	Count		1			1			1			1	1		3	1			1				10
	%		33.33%			33.33%			9.09%			3.57%	50.00%		3.06%	3.03%			1.61%				2.99%
One	Count	9	1	1	2		1	2	3	1	1	3			18	5	11	1	16				75
	%	52.94%	33.33%	100.00%	40.00%		100.00%	12.50%	27.27%	25.00%	25.00%	10.71%			18.37%	15.15%	34.38%	33.33%	25.81%				22.39%
Two	Count	6			3	1		9	6	2		15	1	3	49	25	19	2	27	2	2	1	173
	%	35.29%			60.00%	33.33%		56.25%	54.55%	50.00%		53.57%	50.00%	100.00%	50.00%	75.76%	59.38%	66.67%	43.55%	33.33%	100.00%	100.00%	51.64%
Three	Count	2	1			1		5	1	1	3	8			25	1	2		16	4			70
	%	11.76%	33.33%			33.33%		31.25%	9.09%	25.00%	75.00%	28.57%			25.51%	3.03%	6.25%		25.81%	66.67%			20.90%
Four	Count											1			3	1			2				7
	%											3.57%			3.06%	3.03%			3.23%				2.09%
Totals	Count	17	3	1	5	3	1	16	11	4	4	28	2	3	98	33	32	3	62	6	2	1	335
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.10: Number of Exterior Motifs

Number of Exterior Motifs		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Zero	Count		1			1			1			1	1		3	1			1				10
	%		33.33%			33.33%			9.09%			3.57%	50.00%		3.06%	3.03%			1.61%				2.99%
One	Count	9	1	1	2		1	2	3	1	1	3			23	5	11	1	20	1			85
	%	52.94%	33.33%	100.00%	40.00%		100.00%	12.50%	27.27%	25.00%	25.00%	10.71%			23.47%	15.15%	34.38%	33.33%	32.26%	16.67%			25.37%
Two	Count	6			3	1		11	7	2		19	1	2	55	25	21	2	36	4	2	1	198
	%	35.29%			60.00%	33.33%		68.75%	63.64%	50.00%		67.86%	50.00%	66.67%	56.12%	75.76%	65.63%	66.67%	58.06%	66.67%	100.00%	100.00%	59.10%
Three	Count	2	1			1		3		1	3	5		1	15	2			5	1			40
	%	11.76%	33.33%			33.33%		18.75%		25.00%	75.00%	17.86%		33.33%	15.31%	6.06%			8.06%	16.67%			11.94%
Four	Count														2								2
	%														2.04%								0.60%
Totals	Count	17	3	1	5	3	1	16	11	4	4	28	2	3	98	33	32	3	62	6	2	1	335
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.11: Rim Technique

Rim Technique		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count		1			1			1			1	1		3	1			1				10
	%		33.33%			33.33%			9.09%			3.57%	50.00%		3.06%	3.03%			1.64%				3.01%
Incised (I)	Count	2					1	1				5		1	7	5	8		11		1		42
	%	11.76%					100.00%	6.67%				17.86%		33.33%	7.14%	15.15%	25.81%		18.03%		50.00%		12.65%
Trailed (T)	Count							1	1			3	1		2	1	3		2				14
	%							6.67%	9.09%			10.71%	50.00%		2.04%	3.03%	9.68%		3.28%				4.22%
Linear Stamped (LS)	Count	3		1	2			2	1		1	2			19	7	3	1	16	2	1		61
	%	17.65%		100.00%	40.00%			13.33%	9.09%		25.00%	7.14%			19.39%	21.21%	9.68%	33.33%	26.23%	33.33%	50.00%		18.37%
Circular Stamped (CS)	Count														1								1
	%														1.02%								0.30%
Elliptical Stamped (ES)	Count											2					2						4
	%											7.14%					6.45%						1.20%
Push-Pull (PP)	Count											1			1								2
	%											3.57%			1.02%								0.60%
Dentate Stamped (DS)	Count														1				1				2
	%														1.02%				1.64%				0.60%
Fingernail Impressed (FI)	Count																					1	1
	%																					100.00%	0.30%
LS over I	Count	2	1		2			6	3	1	1	9		2	29	10	6		9	4			85
	%	11.76%	33.33%		40.00%			40.00%	27.27%	25.00%	25.00%	32.14%		66.67%	29.59%	30.30%	19.35%		14.75%	66.67%			25.60%
ES over T	Count									1		4			3								8
	%									25.00%		14.29%			3.06%								2.41%
T over I	Count	1													1	1	3						6
	%	5.88%													1.02%	3.03%	9.68%						1.81%
I over Plain	Count																		1				1
	%																		1.64%				0.30%
ES over I	Count							1							3				1				5
	%							6.67%							3.06%				1.64%				1.51%
I over LS	Count							2											2				4
	%							13.33%											3.28%				1.20%
LS over T	Count	1				1			1						5	1	2		6				17
	%	5.88%				33.33%			9.09%						5.10%	3.03%	6.45%		9.84%				5.12%
I over Ind.	Count								1	1					1	1	2	1	3				10
	%								9.09%	25.00%					1.02%	3.03%	6.45%	33.33%	4.92%				3.01%
Notched over I	Count															1							1
	%															3.03%							0.30%
LS over T over LS	Count											1			1				1				3
	%											3.57%			1.02%				1.64%				0.90%
LS over Ind.	Count	2									1				1								4
	%	11.76%									25.00%				1.02%								1.20%
I / Intermittent Superimposed LS	Count														1								1
	%														1.02%								0.30%
LS over Plain over LS	Count				1										1								2
	%				20.00%										1.02%								0.60%
LS over I over LS	Count					1									1				1				3
	%					33.33%									1.02%				1.64%				0.90%
Superimposed CS over Plain	Count														1								1
	%														1.02%								0.30%

Table D.11: Rim Technique (Cont'd)

Rim Technique		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
LS over DS	Count																1						1
	%																3.23%						0.30%
LS over CS	Count																	1					1
	%																	33.33%					0.30%
ES / I	Count																		1				1
	%																		1.64%				0.30%
LS over T over I over Ind.	Count																		1				1
	%																		1.64%				0.30%
T over DS	Count							1															1
	%							6.67%															0.30%
ES over T over Ind.	Count							1															1
	%							6.67%															0.30%
LS / Superimposed Intermittent LS	Count	5	1						2	1	1				2	1	1						14
	%	29.41%	33.33%						18.18%	25.00%	25.00%				2.04%	3.03%	3.23%						4.22%
LS over Plain over CRS	Count								1														1
	%								9.09%														0.30%
ES over Plain	Count														1	1							2
	%														1.02%	3.03%							0.60%
I over T (over Ind.)	Count																		1				1
	%																		1.64%				0.30%
Superimposed CS over I	Count														1								1
	%														1.02%								0.30%
LS over PP	Count														1								1
	%														1.02%								0.30%
LS over Plain	Count	1													2				1				4
	%	5.88%													2.04%				1.64%				1.20%
TS over I	Count														2								2
	%														2.04%								0.60%
LS over I over Notched	Count														1								1
	%														1.02%								0.30%
I over Triangular Stamped	Count														1								1
	%														1.02%								0.30%
LS over ES / I	Count															1							1
	%															3.03%							0.30%
I / T over LS	Count														1								1
	%														1.02%								0.30%
Plain over T	Count														1				2				3
	%														1.02%				3.28%				0.90%
Plain over LS	Count														2								2
	%														2.04%								0.60%
CS over Plain	Count														1								1
	%														1.02%								0.30%
ES over Plain over ES	Count															1							1
	%															3.03%							0.30%
Plain over I	Count															1							1
	%															3.03%							0.30%
Total	Count	17	3	1	5	3	1	15	11	4	4	28	2	3	98	33	31	3	61	6	2	1	332
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.12: Lip Technique

Lip Technique		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count	16	3	1	5	3	1	16	12	4	4	26	2	2	72	27	29		44	3	1	1	272
	%	94.12%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	92.86%	100.00%	66.67%	75.00%	81.82%	85.29%	0.00%	72.13%	50.00%	50.00%	100.00%	81.19%
Incised (I)	Count											1		1	14	2	2	2	6	2	1		31
	%											3.57%		33.33%	14.58%	6.06%	5.88%	66.67%	9.84%	33.33%	50.00%		9.25%
Trailed (T)	Count														6	2	1	1	3	1			14
	%														6.25%	6.06%	2.94%	33.33%	4.92%	16.67%			4.18%
Linear Stamped (LS)	Count														3	1	1		5				10
	%														3.13%	3.03%	2.94%		8.20%				2.99%
Ellipitcal Stamped (ES)	Count	1																					1
	%	5.88%																					0.30%
Dentate Stamped (DS)	Count																1		1				2
	%																2.94%		1.64%				0.60%
Crescent Stamped (CRS)	Count																		1				1
	%																		1.64%				0.30%
I over Ind.	Count																		1				1
	%																		1.64%				0.30%
Notched / Plain	Count											1											1
	%											3.57%											0.30%
Plain over LS	Count														1	1							2
	%														1.04%	3.03%							0.60%
Totals	Count	17	3	1	5	3	1	16	12	4	4	28	2	3	96	33	34	3	61	6	2	1	335
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.13: Interior Rim Technique

Interior Rim Technique		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count	15	2		4	1	1	9	11	3	3	16	2	1	77	29	25	2	44	5	2	1	253
	%	88.24%	100.00%		80.00%	33.33%	100.00%	60.00%	91.67%	75.00%	75.00%	57.14%	100.00%	33.33%	79.38%	87.88%	78.13%	100.00%	72.13%	83.33%	100.00%	100.00%	76.44%
Incised (I)	Count																		2				2
	%																		3.28%				0.60%
Linear Stamped (LS)	Count	1				1		4	1		1	7		1	14	3	6		12				51
	%	5.88%				33.33%		26.67%	8.33%		25.00%	25.00%		33.33%	14.43%	9.09%	18.75%		19.67%				15.41%
Elliptical Stamped (ES)	Count	1			1	1		2		1		5			1					1			13
	%	5.88%			20.00%	33.33%		13.33%		25.00%		17.86%			1.03%					16.67%			3.93%
Notched	Count			1										1	3		1		3				9
	%			100.00%										33.33%	3.09%		3.13%		4.92%				2.72%
Crescent Stamped (CRS)	Count															1							1
	%															3.03%							0.30%
Intermittent LS	Count														1								1
	%														1.03%								0.30%
Circular Stamped (CS) over ES	Count														1								1
	%														1.03%								0.30%
Totals	Count	17	2	1	5	3	1	15	12	4	4	28	2	3	97	33	32	2	61	6	2	1	331
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.14: Neck Technique

Neck Technique		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count	5	2	1	2			4	3			3		1	25	5	5		13	2			71
	%	41.67%	66.67%	100.00%	100.00%			40.00%	42.86%			15.00%		50.00%	31.25%	20.83%	27.78%		34.21%	40.00%			30.60%
Incised (I)	Count	1						1				1			1	2	2		2				10
	%	8.33%						10.00%				5.00%			1.25%	8.33%	11.11%		5.26%				4.31%
Trailed (T)	Count	1										2			2								5
	%	8.33%										10.00%			2.50%								2.16%
Linear Stamped (LS)	Count											1			5								6
	%											5.00%			6.25%								2.59%
Crescent Stamped (CRS)	Count															1							1
	%															4.17%							0.43%
Fingernail Impressed	Count																					1	1
	%																					100.00%	0.43%
LS over I	Count																		1				1
	%																		2.63%				0.43%
ES over T	Count														1								1
	%														1.25%								0.43%
I over Plain	Count											1			3	6			4				14
	%											5.00%			3.75%	25.00%			10.53%				6.03%
I over LS	Count	1									1	2			2					1			7
	%	8.33%									33.33%	10.00%			2.50%					20.00%			3.02%
LS over T	Count											1											1
	%											5.00%											0.43%
T over Ind.	Count	1						1				2			3	1	3		3				14
	%	8.33%						10.00%				10.00%			3.75%	4.17%	16.67%		7.89%				6.03%
I over Ind.	Count	1						1	1	1		2			16	6	7	1	7		1		44
	%	8.33%						10.00%	14.29%	50.00%		10.00%			20.00%	25.00%	38.89%	100.00%	18.42%		50.00%		18.97%
I over ES	Count	1	1																				2
	%	8.33%	33.33%																				0.86%
I over ES over Plain	Count							1		1		2								1			5
	%							10.00%		50.00%		10.00%								20.00%			2.16%
T over LS	Count											1							3				4
	%											5.00%							7.89%				1.72%
Push-Pull (PP) over Ind. or Plain	Count											1							1				2
	%											5.00%							2.63%				0.86%

Table D.14: Neck Technique (Cont'd)

Neck Technique		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
I over LS over Plain	Count							1	1		2	1			1				1				7
	%							10.00%	14.29%		66.67%	5.00%			1.25%				2.63%				3.02%
LS over Ind.	Count	1											1		3		1						6
	%	8.33%											100.00%		3.75%		5.56%						2.59%
ES over Ind.	Count														1								1
	%														1.25%								0.43%
ES over T over Ind.	Count							1															1
	%							10.00%															0.43%
LS / I / ES	Count								1														1
	%								14.29%														0.43%
T over Plain	Count								1						3	1			1				6
	%								14.29%						3.75%	4.17%			2.63%				2.59%
ES over Plain	Count														1								1
	%														1.25%								0.43%
I over T (over Ind.)	Count														1								1
	%														1.25%								0.43%
T over ES (over Plain)	Count														3	1							4
	%														3.75%	4.17%							1.72%
T over LS over Plain	Count																		1				1
	%																		2.63%				0.43%
I over Superimposed CS over Plain	Count														1								1
	%														1.25%								0.43%
LS over Plain	Count													1	5	1			1	1	1		10
	%													50.00%	6.25%	4.17%			2.63%	20.00%	50.00%		4.31%
Triangular Stamped (TS) (over Plain)	Count														1								1
	%														1.25%								0.43%
Circular Bossed	Count														1								1
	%														1.25%								0.43%
LS over Plain / ES / CS	Count														1								1
	%														1.25%								0.43%
Totals	Count	12	3	1	2			10	7	2	3	20	1	2	80	24	18	1	38	5	2	1	232
	%	100.00%	100.00%	100.00%	100.00%			100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.15: Rim Motif

Rim Motif		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count		1			1			1			1	1		3	1			1				10
	%		33.33%			33.33%			9.09%			3.57%	50.00%		3.06%	3.03%	0.00%		1.64%				3.00%
Simples Vertical (SV)	Count						1								4		1		1				7
	%						100.00%								4.08%		3.23%		1.64%				2.10%
Simples Right Oblique (SRO)	Count	1		1	1			1	1		1	4	1		16	7	1	1	14	2	1	1	54
	%	5.88%		100.00%	20.00%			6.25%	9.09%		25.00%	14.29%	50.00%		16.33%	21.21%	3.23%	33.33%	22.95%	33.33%	50.00%	100.00%	16.22%
Simples Left Oblique (SLO)	Count	1														1			2				4
	%	5.88%														3.03%			3.28%				1.20%
Simples Opposed (SO)	Count	1										1			1	1			1				5
	%	5.88%										3.57%			1.02%	3.03%			1.64%				1.50%
Simples Alternating (SA)	Count																		1				1
	%																		1.64%				0.30%
Opposed Triangles Filled with Obliques	Count											1			1	1	2		1				6
	%											3.57%			1.02%	3.03%	6.45%		1.64%				1.80%
Horizontal (Hor.)	Count								1			3		1	4	1	2		2				14
	%								9.09%			10.71%		33.33%	4.08%	3.03%	6.45%		3.28%				4.20%
SRO over Plain	Count	1													1								2
	%	5.88%													1.02%								0.60%
SV over Plain	Count				1										1				1				3
	%				20.00%										1.02%				1.64%				0.90%
Opposed Triangles Alternating Blank & Filled with Obliques	Count															1							1
	%															3.03%							0.30%
SRO over Hor.	Count	3			2			3	2		1	8		1	28	8	6		12	2			76
	%	17.65%			40.00%			18.75%	18.18%		25.00%	28.57%		33.33%	28.57%	24.24%	19.35%		19.67%	33.33%			22.82%
SLO over Hor.	Count		1						1						1		2			2			7
	%		33.33%						9.09%						1.02%		6.45%			33.33%			2.10%
SV over Hor.	Count					1		2	1			2			1	1	1		1				10
	%					33.33%		12.50%	9.09%			7.14%			1.02%	3.03%	3.23%		1.64%				3.00%
SRO over SLO	Count														1		1						2
	%														1.02%		3.23%						0.60%
Hor. over SRO	Count							2							1				2				5
	%							12.50%							1.02%				3.28%				1.50%
Hor. over Plain	Count																		2				2
	%																		3.28%				0.60%
Notched over Hor.	Count															1							1
	%															3.03%							0.30%
Hor. over Ind.	Count														1	1	2	1	2				7
	%														1.02%	3.03%	6.45%	33.33%	3.28%				2.10%
Punctates Hor. Right Oblique (RO)	Count											1					2						3
	%											3.57%					6.45%						0.90%
SRO over Hor. over SRO	Count											2			1				1				4
	%											7.14%			1.02%				1.64%				1.20%
Punctates Hor. RO over Hor.	Count							1		1		2			3								7
	%							6.25%		25.00%		7.14%			3.06%								2.10%
SLO over Ind.	Count	1								1							1		1				4
	%	5.88%								25.00%							3.23%		1.64%				1.20%
SRO/Superimposed Hor. Dash	Count	1							1						3	1	1						7
	%	5.88%							9.09%						3.06%	3.03%	3.23%						2.10%

Table D.15: Rim Motif (Cont'd)

Rim Motif		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Simples Crossed (SC)	Count							2								1							3
	%							12.50%								3.03%							0.90%
Opposed & Intersecting Hor. & Obliques	Count	1																					1
	%	5.88%																					0.30%
SRO over Ind.	Count								1		1								1				3
	%								9.09%		25.00%								1.64%				0.90%
SV/Superimposed Hor. Dash	Count	4	1					1	1	1	1												9
	%	23.53%	33.33%					6.25%	9.09%	25.00%	25.00%												2.70%
SV over Ind.	Count	1													1								2
	%	5.88%													1.02%								0.60%
Plain over SV (over Plain)	Count														2								2
	%														2.04%								0.60%
SRO over Hor. over SV	Count					1													1				2
	%					33.33%													1.64%				0.60%
Opposed & Intersecting Obliques & Verticals	Count							1															1
	%							6.25%															0.30%
SO over Hor.	Count							1							2				1		1		5
	%							6.25%							2.04%				1.64%		50.00%		1.50%
SRO over Hor. over Ind.	Count									1				1	5	3	4		8				22
	%									25.00%				33.33%	5.10%	9.09%	12.90%		13.11%				6.61%
SC over Hor.	Count	1						1							1		2						5
	%	5.88%						6.25%							1.02%		6.45%						1.50%
Plain over Hor.	Count															1			2				3
	%															3.03%			3.28%				0.90%
SLO over Plain over SLO	Count				1																		1
	%				20.00%																		0.30%
SA over Ind.	Count	1																					1
	%	5.88%																					0.30%
SRO over Plain over SLO	Count								1														1
	%								9.09%														0.30%
SRO over Hor. over Notching	Count														1								1
	%														1.02%								0.30%
Opposed & Intersecting Hor. & Obliques over SRO over Ind.	Count														1								1
	%														1.02%								0.30%
SLO over Superimposed Hor.	Count														1								1
	%														1.02%								0.30%
SV over Hor. over SA/SO	Count														1								1
	%														1.02%								0.30%
SRO over Plain over SRO	Count														1								1
	%														1.02%								0.30%
SA over Hor.	Count														1								1
	%														1.02%								0.30%
Opposed & Intersecting Hor., Obliques & Verticals	Count														1								1
	%														1.02%								0.30%
Intermittent Punctates Hor. over Plain	Count														1								1
	%														1.02%								0.30%
SV over SRO	Count														1								1
	%														1.02%								0.30%
Hor. over SLO over Ind.	Count																1						1
	%																3.23%						0.30%

Table D.15: Rim Motif (Cont'd)

Rim Motif		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Punctates Horizontal	Count											1			1								2
	%											3.57%			1.02%								0.60%
Hor. over SRO over Hor.	Count																1						1
	%																3.23%						0.30%
SLO over SRO	Count																1						1
	%																3.23%						0.30%
SLO over Punctates Hor. RO	Count																	1					1
	%																	33.33%					0.30%
SO/Punctates Hor.	Count																		1				1
	%																		1.64%				0.30%
Punctates Hor. over Hor.	Count											2			2				1				5
	%											7.14%			2.04%				1.64%				1.50%
SRO over Hor. over SLO	Count																		1				1
	%																		1.64%				0.30%
Punctates Hor. over Plain	Count														2	1							3
	%														2.04%	3.03%							0.90%
Punctates Hor. RO over Hor. over Ind.	Count							1							1								2
	%							6.25%							1.02%								0.60%
Punctates Hor. over Hor. over Ind.	Count														1								1
	%														1.02%								0.30%
Opposed & Intersecting SRO over Punctates Hor. /Hor.	Count															1							1
	%															3.03%							0.30%
Punctates Hor. RO over Plain over Punctates Hor. RO	Count															1							1
	%															3.03%							0.30%
Totals	Count	17	3	1	5	3	1	16	11	4	4	28	2	3	98	33	31	3	61	6	2	1	333
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.16: Lip Motif

Lip Motif		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count	16	3	1	5	3	1	16	12	4	4	26	2	2	72	27	29		44	3	1	1	272
	%	94.12%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	92.86%	100.00%	66.67%	75.00%	81.82%	85.29%	0.00%	72.13%	50.00%	50.00%	100.00%	81.19%
Simples Vertical (VS)	Count																		3				3
	%																		4.92%				0.90%
Simples Right Oblique (SRO)	Count														2	1	1		3				7
	%														2.08%	3.03%	2.94%		4.92%				2.09%
Simples Alternating (SA)	Count														1								1
	%														1.04%								0.30%
Horizontals (Hor.)	Count											1		1	20	4	4	3	10	3	1		47
	%											3.57%		33.33%	20.83%	12.12%	11.76%	100.00%	16.39%	50.00%	50.00%		14.03%
Hor. over Ind.	Count																		1				1
	%																		1.64%				0.30%
Notched / Plain	Count											1											1
	%											3.57%											0.30%
Plain over SV (over Plain)	Count															1							1
	%															3.03%							0.30%
Plain over SRO (over Ind.)	Count														1								1
	%														1.04%								0.30%
Punctates Horizontal	Count	1																					1
	%	5.88%																					0.30%
Totals	Count	17	3	1	5	3	1	16	12	4	4	28	2	3	96	33	34	3	61	6	2	1	335
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.17: Interior Rim Motif

Interior Rim Motif		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count	15	2		4	1	1	9	11	3	3	16	2	1	77	29	26	2	44	5	2	1	254
	%	88.24%	100.00%		80.00%	33.33%	100.00%	60.00%	91.67%	75.00%	75.00%	57.14%	100.00%	33.33%	79.38%	87.88%	81.25%	66.67%	70.97%	83.33%	100.00%	100.00%	76.28%
Simples Vertical	Count					1						1							2				4
	%					33.33%						3.57%							3.23%				1.20%
Simples Right Oblique (SRO)	Count	1						4	1		1	6		1	13	2	4	1	11				45
	%	5.88%						26.67%	8.33%		25.00%	21.43%		33.33%	13.40%	6.06%	12.50%	33.33%	17.74%				13.51%
Simples Left Oblique (SLO)	Count															1	1						2
	%															3.03%	3.13%						0.60%
Simples Alternating (SA)	Count																		2				2
	%																		3.23%				0.60%
Notched	Count			1										1	3		1		3				9
	%			100.00%										33.33%	3.09%		3.13%		4.84%				2.70%
Punctates Hor. Right Oblique (RO)	Count	1			1			2		1		2								1			8
	%	5.88%			20.00%			13.33%		25.00%		7.14%								16.67%			2.40%
Plain over Hor.	Count														1								1
	%														1.03%								0.30%
Plain over SRO (over Ind.)	Count															1							1
	%															3.03%							0.30%
Simples Hatched	Count														1								1
	%														1.03%								0.30%
Punctates	Count					1						3			2								6
	%					33.33%						10.71%			2.06%								1.80%
Totals	Count	17	2	1	5	3	1	15	12	4	4	28	2	3	97	33	32	3	62	6	2	1	333
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.18: Neck Motif

Neck Motif		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count	5	2	1	2			4	3			3		1	25	5	5		13	2			71
	%	41.67%	66.67%	100.00%	100.00%			40.00%	42.86%			15.00%		50.00%	31.25%	20.83%	27.78%		34.21%	40.00%			30.60%
Simples Right Oblique (SRO)	Count														1								1
	%														1.25%								0.43%
Simples Left Oblique (SLO)	Count														1								1
	%														1.25%								0.43%
Simples Opposed (SO)	Count															1							1
	%															4.17%							0.43%
Simples Alternating (SA)	Count											1											1
	%											5.00%											0.43%
Horizontal (Hor.)	Count											1			2								3
	%											5.00%			2.50%								1.29%
SRO over Plain	Count													1	6	1			1		1		10
	%													50.00%	7.50%	4.17%			2.63%		50.00%		4.31%
SV over Plain	Count														2								2
	%														2.50%								0.86%
SRO over Hor.	Count											1											1
	%											5.00%											0.43%
Hor. over SRO	Count	2										3											5
	%	16.67%										15.00%											2.16%
Hor. over SV	Count											1											1
	%											5.00%											0.43%
Hor. over Plain	Count								1			1			6	7			6				21
	%								14.29%			5.00%			7.50%	29.17%			15.79%				9.05%
Hor. over Ind.	Count	2						2	1	1		6			20	7	12	1	10		1		63
	%	16.67%						20.00%	14.29%	50.00%		30.00%			25.00%	29.17%	66.67%	100.00%	26.32%		50.00%		27.16%
Hor. over SRO over Plain	Count							1	1		3				3				5				13
	%							10.00%	14.29%		100.00%				3.75%				13.16%				5.60%
SLO over Plain	Count														1	1				1		1	4
	%														1.25%	4.17%				20.00%		100.00%	1.72%
Hor. over SV over Plain	Count											1											1
	%											5.00%											0.43%
Hor. over Punctates Hor. RO over Plain	Count							1				2			2	1				1			7
	%							10.00%				10.00%			2.50%	4.17%				20.00%			3.02%
Opposed & Intersecting Hor. & Obliques	Count	2														1			1				4
	%	16.67%														4.17%			2.63%				1.72%
SRO over Ind.	Count	1											1		2		1		1				6
	%	8.33%											100.00%		2.50%		5.56%		2.63%				2.59%

Table D.18: Neck Motif (Cont'd)

Neck Motif		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
SV over Ind.	Count							1															1
	%							10.00%															0.43%
SRO over Hor. over Ind.	Count																		1				1
	%																		2.63%				0.43%
SO (Verticals & Obliques) with Alternating Blank & Punctate Filled Triangles	Count								1														1
	%								14.29%														0.43%
Hor. over SRO over Ind.	Count														2					1			3
	%														2.50%					20.00%			1.29%
Hor. over Punctates Hor. over Plain	Count														1								1
	%														1.25%								0.43%
Punctates Hor. over Opposed & Intersecting Hor. & Obliques over Ind.	Count														1								1
	%														1.25%								0.43%
Plain over SRO (over Ind.)	Count														1								1
	%														1.25%								0.43%
Hor. over Punctates Hor. over Plain	Count		1																				1
	%		33.33%																				0.43%
Punctates Hor. Left Oblique over Ind.	Count														1								1
	%														1.25%								0.43%
Punctates Hor. RO over Plain	Count														1								1
	%														1.25%								0.43%
Punctates Hor. over Hor. over Ind.	Count							1															1
	%							10.00%															0.43%
SLO over Punctates Right Oblique / Punctates Left Oblique	Count									1					1								2
	%									50.00%					1.25%								0.86%
Bossed Horizontal	Count														1								1
	%														1.25%								0.43%
Totals	Count	12	3	1	2			10	7	2	3	20	1	2	80	24	18	1	38	5	2	1	232
	%	100.00%	100.00%	100.00%	100.00%			100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.19: Number of Horizontals on the Upper Rim/Collar

Number of Horizontals - Upper Rim/Collar		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
One	Count	3						3	2	1		7			19	4	8		14		1		62
	%	60.00%						37.50%	40.00%	100.00%		41.18%			38.78%	33.33%	50.00%		60.87%		100.00%		42.76%
Two	Count	1	1					3	1		1	3			10	3	6		2	1			32
	%	20.00%	100.00%					37.50%	20.00%		100.00%	17.65%			20.41%	25.00%	37.50%		8.70%	33.33%			22.07%
Three	Count								1			6		2	12	3	2		6	1			33
	%								20.00%			35.29%		100.00%	24.49%	25.00%	12.50%		26.09%	33.33%			22.76%
Four	Count							1				1			5	2							9
	%							12.50%				5.88%			10.20%	16.67%							6.21%
Five	Count					1		1												1			3
	%					100.00%		12.50%												33.33%			2.07%
Six	Count														2				1				3
	%														4.08%				4.35%				2.07%
Seven	Count	1																					1
	%	20.00%																					0.69%
Eight	Count								1														1
	%								20.00%														0.69%
Nine	Count														1								1
	%														2.04%								0.69%
Totals	Count	5	1			1		8	5	1	1	17		2	49	12	16		23	3	1		145
	%	100.00%	100.00%			100.00%		100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%		100.00%

Table D.20: Number of Horizontals on the Neck

Number of Horizontals - Neck		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
One	Count							2				1			4				1				8
	%							100.00%				12.50%			22.22%				8.33%				12.50%
Two	Count		1						1	1	1	1			2	2	1		4	1			15
	%		100.00%						50.00%	100.00%	33.33%	12.50%			11.11%	22.22%	100.00%		33.33%	50.00%			23.44%
Three	Count	1							1		1	3			9	4		1	4				24
	%	25.00%							50.00%		33.33%	37.50%			50.00%	44.44%		100.00%	33.33%				37.50%
Four	Count	3									1	2			2	2			3	1			14
	%	75.00%									33.33%	25.00%			11.11%	22.22%			25.00%	50.00%			21.88%
Five	Count											1				1							2
	%											12.50%				11.11%							3.13%
Seven	Count														1								7
	%														5.56%								10.94%
Totals	Count	4	1					2	2	1	3	8			18	9	1	1	12	2			64
	%	100.00%	100.00%					100.00%	100.00%	100.00%	100.00%	100.00%			100.00%	100.00%	100.00%	100.00%	100.00%	100.00%			100.00%

Table D.21: Number of Horizontals on the Lip

Number of Horizontals - Lip		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
One	Count											1		1	18	1	4	3	10	3	1		42
	%											100.00%		100.00%	90.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		95.45%
One or Two	Count														1								1
	%														5.00%								2.27%
Two	Count														1								1
	%														5.00%								2.27%
Totals	Count											1		1	20	1	4	3	10	3	1		44
	%											100.00%		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%

Table D.22: Castellation

Castellation		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Present with Discontinous (Dis.) Decoration (Dec.) - Chevron or Inverted Chevron	Count											1		1	1								3
	%											20.00%		33.33%	2.78%								3.61%
Present with Continous Dec.	Count	1			1						2	4		2	23	5			8	3	1		50
	%	100.00%			100.00%						100.00%	80.00%		66.67%	63.89%	55.56%			66.67%	75.00%	50.00%		60.24%
Present with Dis. Dec. - Punctate Face or Inverted Punctate Face	Count														1								1
	%														2.78%								1.20%
Absent	Count		1												3	1			1				6
	%		100.00%												8.33%	11.11%			8.33%				7.23%
Present with Decoration Consistency Unknown	Count					1		1	1	1					7	3	2		2				18
	%					100.00%		100.00%	100.00%	100.00%					19.44%	33.33%	66.67%		16.67%				21.69%
Present with Dis. Dec. - Extended Parallel Obliques on Rim/Neck Zones	Count																		1		1		2
	%																		8.33%		50.00%		2.41%
Present with Dis. Inderminate Dec.	Count														1								1
	%														2.78%								1.20%
Present with Dis. Dec. - Chevron & Punctate Face	Count																1			1			2
	%																33.33%			25.00%			2.41%
Totals	Count	1	1		1	1		1	1	1	2	5		3	36	9	3		12	4	2		83
	%	100.00%	100.00%		100.00%	100.00%		100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%		100.00%

Table D.23: Castellation Form

Castellation Form		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Nubbin	Count																			1			1
	%																			25.00%			1.33%
Pointed	Count				1					1		2		1	13	3			5	3	2		31
	%				100.00%					100.00%		40.00%		50.00%	40.63%	37.50%			41.67%	75.00%	100.00%		41.33%
Pointed Multiple	Count													1	1	2			1				5
	%													50.00%	3.13%	25.00%			8.33%				6.67%
Rounded	Count	1						1			2				14		2		4				24
	%	100.00%						100.00%			100.00%				43.75%		100.00%		33.33%				32.00%
Absent	Count		1												3	1			1				6
	%		100.00%												9.38%	12.50%			8.33%				8.00%
Incipient	Count					1						3			1	1			1				7
	%					100.00%						60.00%			3.13%	12.50%			8.33%				9.33%
Flattened	Count															1							1
	%															12.50%							1.33%
Totals	Count	1	1		1	1		1		1	2	5		2	32	8	2		12	4	2		75
	%	100.00%	100.00%		100.00%	100.00%		100.00%		100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%		100.00%

Table D.24: Interior Punctate

Interior Punctate		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Present without Corresponding Exterior Bosses	Count							1							1		1		2	1			6
	%							0.06							0.01		0.03		0.03	0.17			0.02
Present with Corresponding Exterior Bosses	Count														1								1
	%														1.02%								0.30%
Absent	Count	17	3	1	5	3	1	15	12	4	4	28	2	3	95	33	33	3	60	5	2	1	330
	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	93.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	96.9%	100.0%	97.1%	100.0%	96.8%	83.3%	100.0%	100.0%	97.6%
Present with Punctate Face (under Castellation)	Count														1								1
	%														1.02%								0.30%
Totals	Count	17	3	1	5	3	1	16	12	4	4	28	2	3	98	33	34	3	62	6	2	1	338
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.25: Interior Punctate Form

Interior Punctate Form		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Elliptical	Count																1		1				2
	%																2.94%		1.61%				0.59%
Circular	Count							1							3				1				6
	%							6.25%							3.06%				1.61%				1.78%
Absent	Count	17	3	1	5	3	1	15	12	4	4	28	2	3	95	33	33	3	60	5	2	1	330
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	93.75%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	96.94%	100.00%	97.06%	100.00%	96.77%	83.33%	100.00%	100.00%	97.63%
Totals	Count	17	3	1	5	3	1	16	12	4	4	28	2	3	98	33	34	3	62	6	2	1	338
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.26: Exterior Surface Treatment on Neck

Exterior Surface Treatment - Neck		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Smooth	Count	1			1			1	1			3			6	5	3		17	1	1		40
	%	16.67%			50.00%			14.29%	16.67%			37.50%			11.54%	29.41%	60.00%		73.91%	33.33%	100.00%		28.57%
Wiped	Count							1	2	1		2			14	2	2			1			25
	%							14.29%	33.33%	100.00%		25.00%			26.92%	11.76%	40.00%			33.33%			17.86%
Cord-Marked	Count														2								2
	%														3.85%								1.43%
Ribbed-Paddle Marked	Count	3	2	1	1			2	2		1	2		1	10	2			1	1			29
	%	50.00%	100.00%	100.00%	50.00%			28.57%	33.33%		33.33%	25.00%		50.00%	19.23%	11.76%			4.35%	33.33%			20.71%
Smooth & Wiped	Count	2						3	1		2	1		1	20	8			5			1	44
	%	33.33%						42.86%	16.67%		66.67%	12.50%		50.00%	38.46%	47.06%			21.74%			100.00%	31.43%
Totals	Count	6	2	1	2			7	6	1	3	8		2	52	17	5		23	3	1	1	140
	%	100.00%	100.00%	100.00%	100.00%			100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%	100.00%

Table D.27: Exterior Surface Treatment on Shoulder

Exterior Surface Treatment - Shoulder		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Smooth	Count															1							1
	%															50.00%							16.67%
Wiped	Count											1											1
	%											50.00%											16.67%
Cord-Marked	Count														1								1
	%														50.00%								16.67%
Ribbed-Paddle Marked	Count											1			1	1							3
	%											50.00%			50.00%	50.00%							50.00%
Totals	Count											2			2	2							6
	%											100.00%			100.00%	100.00%							100.00%

Table D.28: Interior Surface Treatment on Neck

Interior Surface Treatment - Neck		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Smooth	Count	8	1	1	1			4	2	1		14			34	15	8		30	3	1		123
	%	61.54%	50.00%	100.00%	50.00%			57.14%	28.57%	50.00%		70.00%			47.89%	60.00%	47.06%		83.33%	75.00%	50.00%		57.48%
Wiped	Count	2	1					2	1	1		1			13	3	3		2				29
	%	15.38%	50.00%					28.57%	14.29%	50.00%		5.00%			18.31%	12.00%	17.65%		5.56%				13.55%
Smooth & Wiped	Count	3			1			1	4		2	5		2	24	7	6		4	1	1	1	62
	%	23.08%			50.00%			14.29%	57.14%		100.00%	25.00%		100.00%	33.80%	28.00%	35.29%		11.11%	25.00%	50.00%	100.00%	28.97%
Totals	Count	13	2	1	2			7	7	2	2	20		2	71	25	17		36	4	2	1	214
	%	100.00%	100.00%	100.00%	100.00%			100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%	100.00%

Table D.29: Interior Surface Treatment on Shoulder

Interior Surface Treatment - Shoulder		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Smooth	Count											1			1	1							3
	%											50.00%			50.00%	50.00%							50.00%
Smooth & Wiped	Count											1			1	1							3
	%											50.00%			50.00%	50.00%							50.00%
Totals	Count											2			2	2							6
	%											100.00%			100.00%	100.00%							100.00%

Table D.30: Interior Surface Treatment on Upper Rim/Collar

Interior Surface Treatment - Upper Rim / Collar		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Smooth	Count	3	1	1				6	1			10			12	8	13	2	20	2			79
	%	18.75%	50.00%	100.00%				37.50%	9.09%			38.46%			12.90%	26.67%	44.83%	100.00%	35.71%	33.33%			25.32%
Wiped	Count	10	1		4	2	1	6	5	3	3	12	2	2	42	9	6		14	3	1		126
	%	62.50%	50.00%		80.00%	66.67%	100.00%	37.50%	45.45%	100.00%	75.00%	46.15%	100.00%	66.67%	45.16%	30.00%	20.69%		25.00%	50.00%	50.00%		40.38%
Smooth & Wiped	Count	3			1	1		4	5		1	4		1	39	13	10		22	1	1	1	107
	%	18.75%			20.00%	33.33%		25.00%	45.45%		25.00%	15.38%		33.33%	41.94%	43.33%	34.48%		39.29%	16.67%	50.00%	100.00%	34.29%
Totals	Count	16	2	1	5	3	1	16	11	3	4	26	2	3	93	30	29	2	56	6	2	1	312
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.31: Types

Types		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Lawson Opposed	Count	1										1			2	1	2		1				8
	%	7.14%										4.17%			2.27%	3.45%	8.33%		2.56%				2.96%
Lawson Incised	Count						1																1
	%						100.00%																0.37%
Pound Necked	Count	4							1	1	2	4			9	6	3	1	8	1	1		41
	%	28.57%							10.00%	33.33%	66.67%	16.67%			10.23%	20.69%	12.50%	100.00%	20.51%	16.67%	50.00%		15.19%
Pound Blank	Count	1						1				1			1	1			2		1		8
	%	7.14%						8.33%				4.17%			1.14%	3.45%			5.13%		50.00%		2.96%
Ontario Horizontal	Count							3	1			4		1	10	5	3		8	2			37
	%							25.00%	10.00%			16.67%		33.33%	11.36%	17.24%	12.50%		20.51%	33.33%			13.70%
Middleport Oblique	Count	3	1			2		4	3	2	1	10		2	30	7	7		10	2			84
	%	21.43%	33.33%			100.00%		33.33%	30.00%	66.67%	33.33%	41.67%		66.67%	34.09%	24.14%	29.17%		25.64%	33.33%			31.11%
Middleport Criss-Cross	Count	1						3							1	1	2						8
	%	7.14%						25.00%							1.14%	3.45%	8.33%						2.96%
Ontario Oblique	Count								1			1	1		11	1	2		2	1		1	21
	%								10.00%			4.17%	50.00%		12.50%	3.45%	8.33%		5.13%	16.67%		100.00%	7.78%
Iroquois Linear	Count														2								2
	%														2.27%								0.74%
Ripley Plain	Count		1						1			1	1		3	1			1				9
	%		33.33%						10.00%			4.17%	50.00%		3.41%	3.45%			2.56%				3.33%
Huron Incised	Count																	1					1
	%																	100.00%					0.37%
Black Necked	Count							1	1						1	1							4
	%							8.33%	10.00%						1.14%	3.45%							1.48%
Untyped	Count				1				1			2			7	5	2		5				23
	%				50.00%				10.00%			8.33%			7.95%	17.24%	8.33%		12.82%				8.52%
Uren Dentate	Count														1				1				2
	%														1.14%				2.56%				0.74%
Untyped Stamped	Count	4	1	1	1				1						10		2		1				21
	%	28.57%	33.33%	100.00%	50.00%				10.00%						11.36%		8.33%		2.56%				7.78%
Totals	Count	14	3	1	2	2	1	12	10	3	3	24	2	3	88	29	24	1	39	6	2	1	270
	%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table D.32: Interior Neck Technique

Interior Neck Technique		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count	12	2	1	2			7	6	1	3	13		2	53	19	7		24	4	1	1	158
	%	100.00%	100.00%	100.00%	100.00%			100.00%	100.00%	100.00%	100.00%	92.86%		100.00%	91.38%	90.48%	77.78%		92.31%	80.00%	50.00%	100.00%	91.86%
Linear Stamped (LS)	Count														3	1	1		1	1	1		8
	%														5.17%	4.76%	11.11%		3.85%	20.00%	50.00%		4.65%
Circular Stamped (CS)	Count														1								1
	%														1.72%								0.58%
Elliptical Stamped (ES)	Count											1				1	1		1				4
	%											7.14%				4.76%	11.11%		3.85%				2.33%
Superimposed Circular Stamped (SCS)	Count														1								1
	%														1.72%								0.58%
Totals	Count	12	2	1	2			7	6	1	3	14		2	58	21	9		26	5	2	1	172
	%	100.00%	100.00%	100.00%	100.00%			100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%	100.00%

Table D.33: Interior Neck Motif

Interior Neck Motif		House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10	House 11	House 12	House 13	House 14	House 15	Midden 1	Midden 2	Midden 3	H14/M3	H15/M3	H15/M1	Totals
Plain	Count	12	2	1	2			7	6	1	3	13		2	53	19	7		24	4	1	1	158
	%	100.00%	100.00%	100.00%	100.00%			100.00%	100.00%	100.00%	100.00%	92.86%		100.00%	91.38%	90.48%	77.78%		92.31%	80.00%	50.00%	100.00%	91.86%
Simples Right Oblique (SRO)	Count														2	1	1		2	1	1		8
	%														3.45%	4.76%	11.11%		7.69%	20.00%	50.00%		4.65%
Simples Left Oblique (SLO)	Count														1		1						2
	%														1.72%		11.11%						1.16%
Punctates Horizontal	Count											1			2	1							4
	%											7.14%			3.45%	4.76%							2.33%
Totals	Count	12	2	1	2			7	6	1	3	14		2	58	21	9		26	5	2	1	172
	%	100.00%	100.00%	100.00%	100.00%			100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%	100.00%

Morphological Attributes of Vessel Size

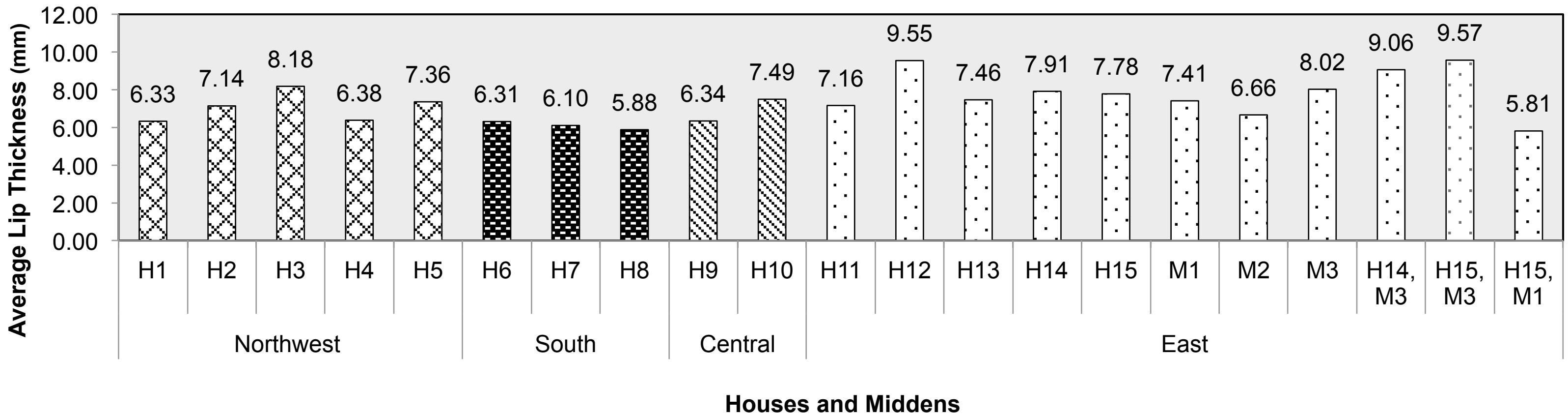

Figure D.1: Average Vessel Lip Thickness for Longhouses and Middens

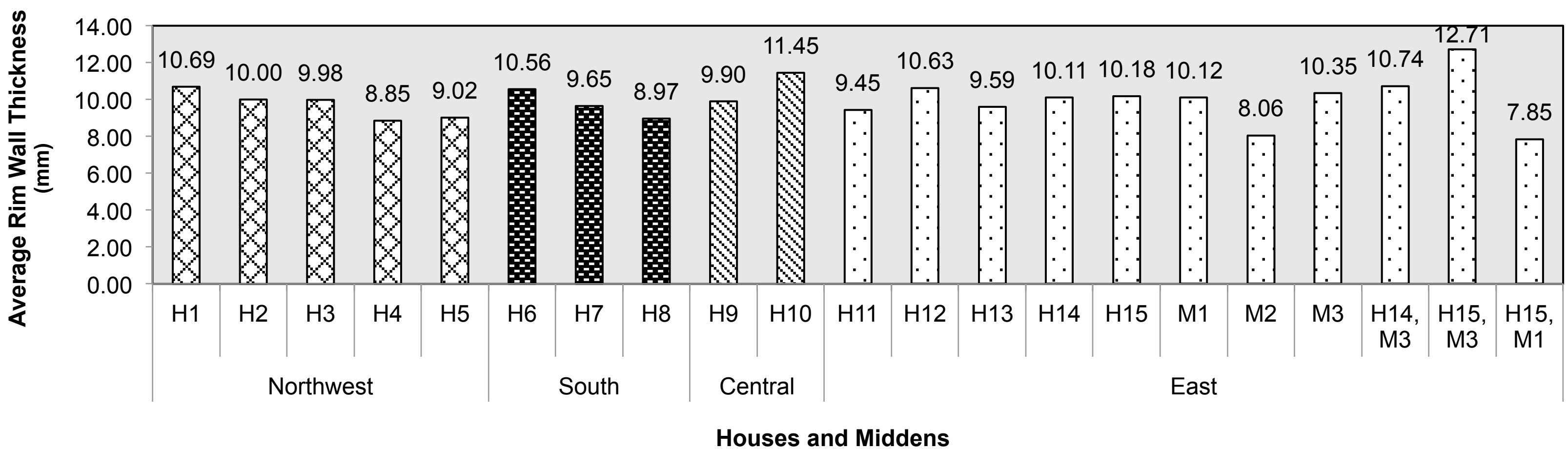

Figure D.2: Average Vessel Rim Wall Thickness for Longhouses and Middens

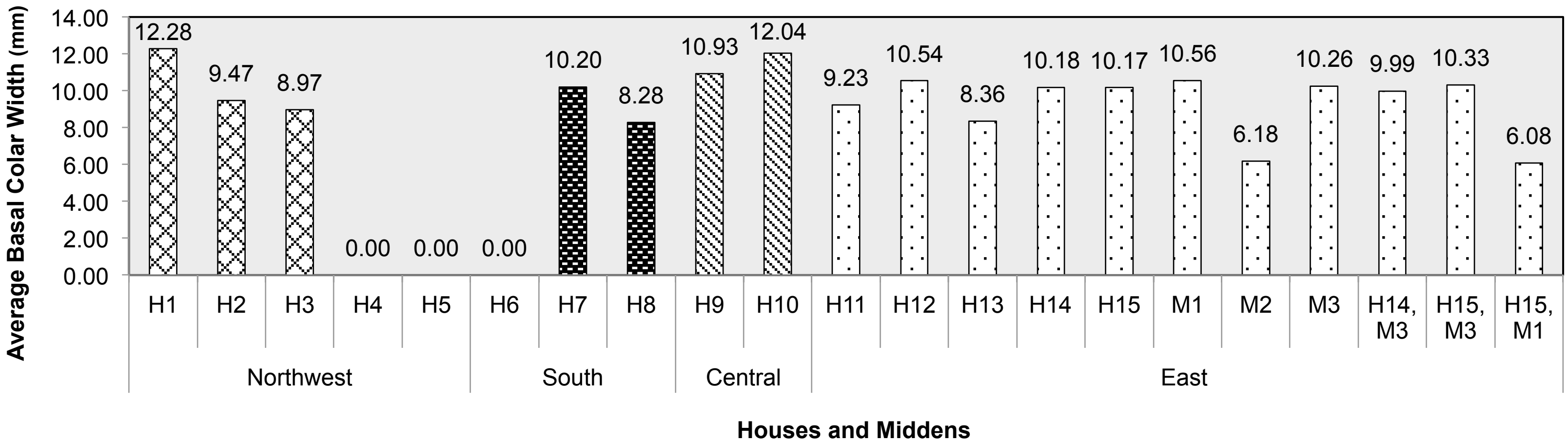

Figure D.3: Average Vessel Basal Collar Width for Longhouses and Middens

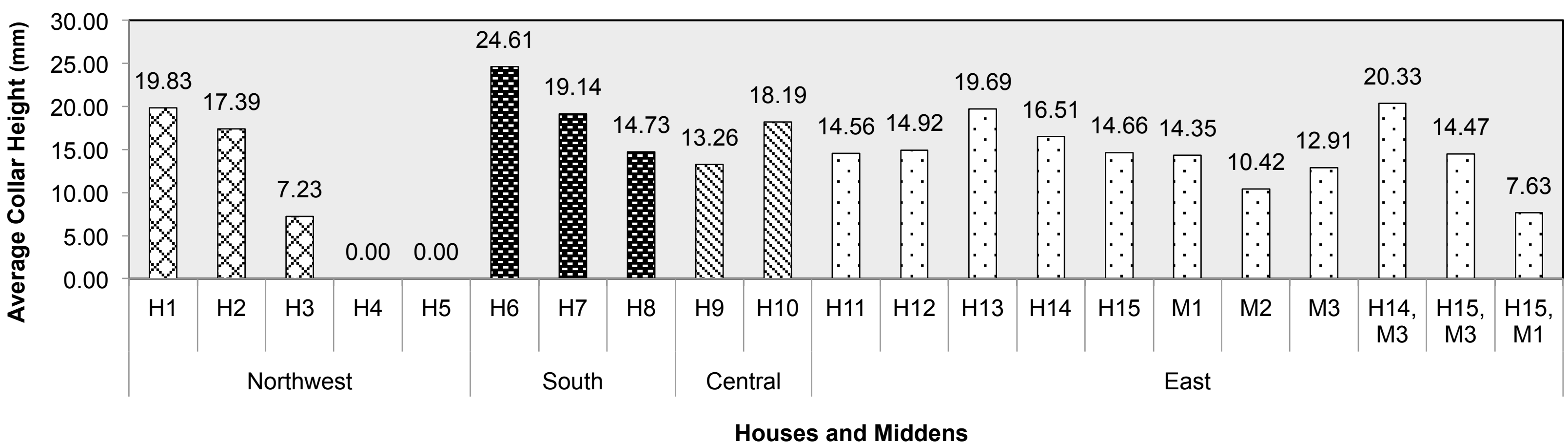

Figure D.4: Average Vessel Collar Height for Longhouses and Middens

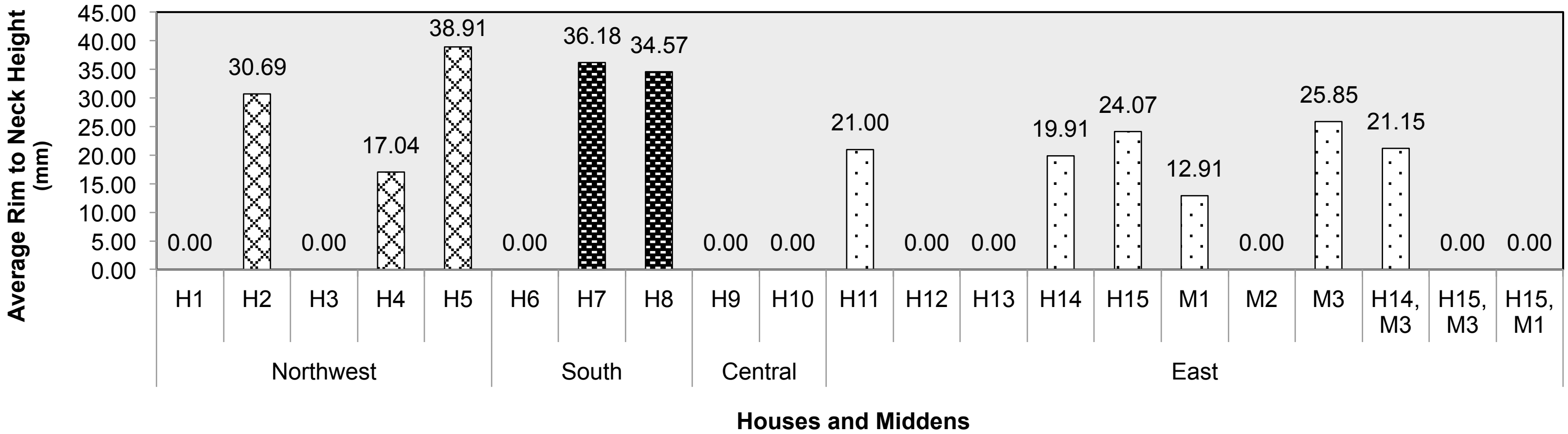

Figure D.5: Average Vessel Rim to Neck Height for Longhouses and Middens

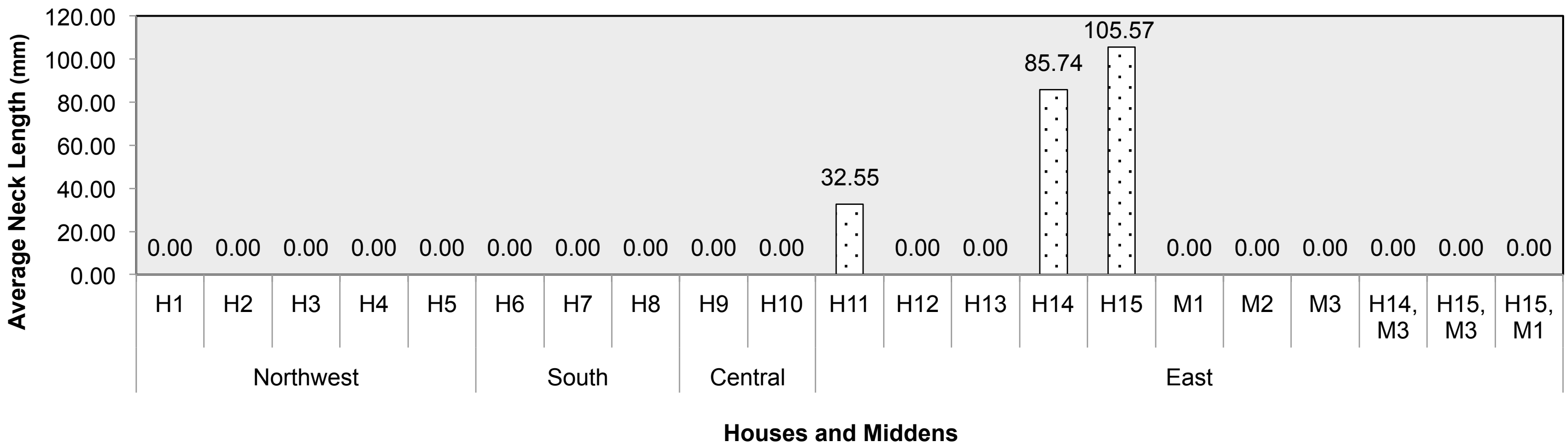

Figure D.6: Average Vessel Neck Length for Longhouses and Middens

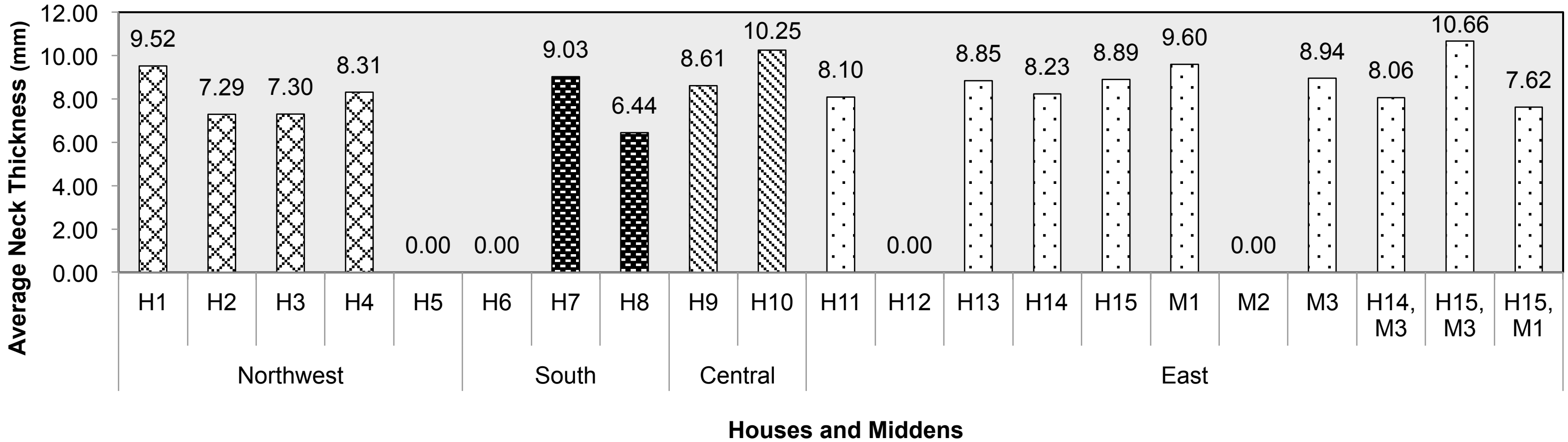

Figure D.7: Average Vessel Neck Thickness for Longhouses and Middens

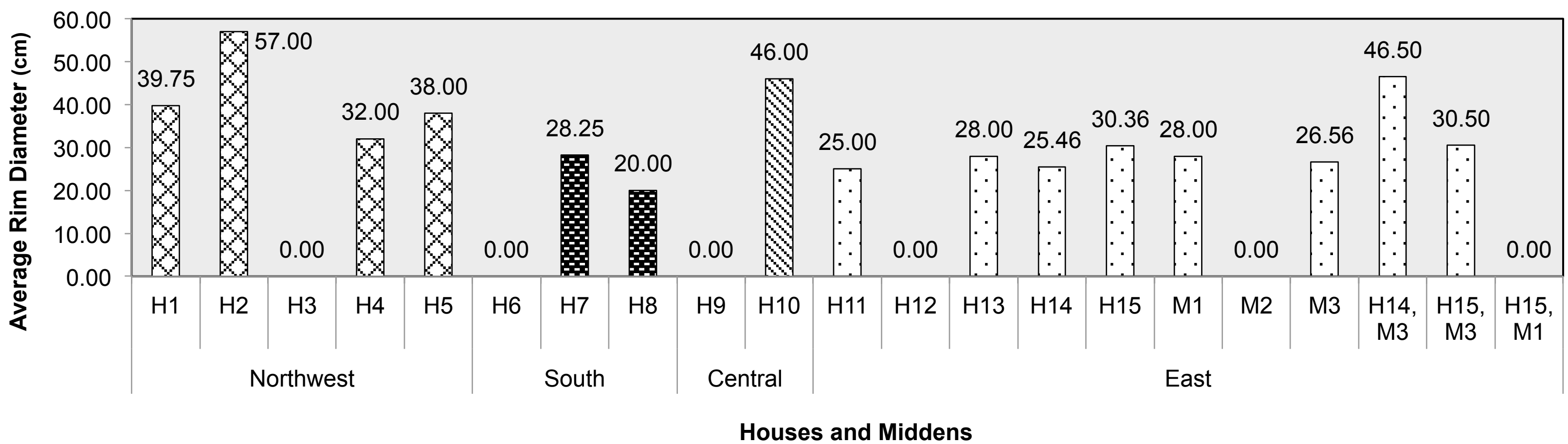

Figure D.8: Average Vessel Rim Diameter for Longhouses and Middens

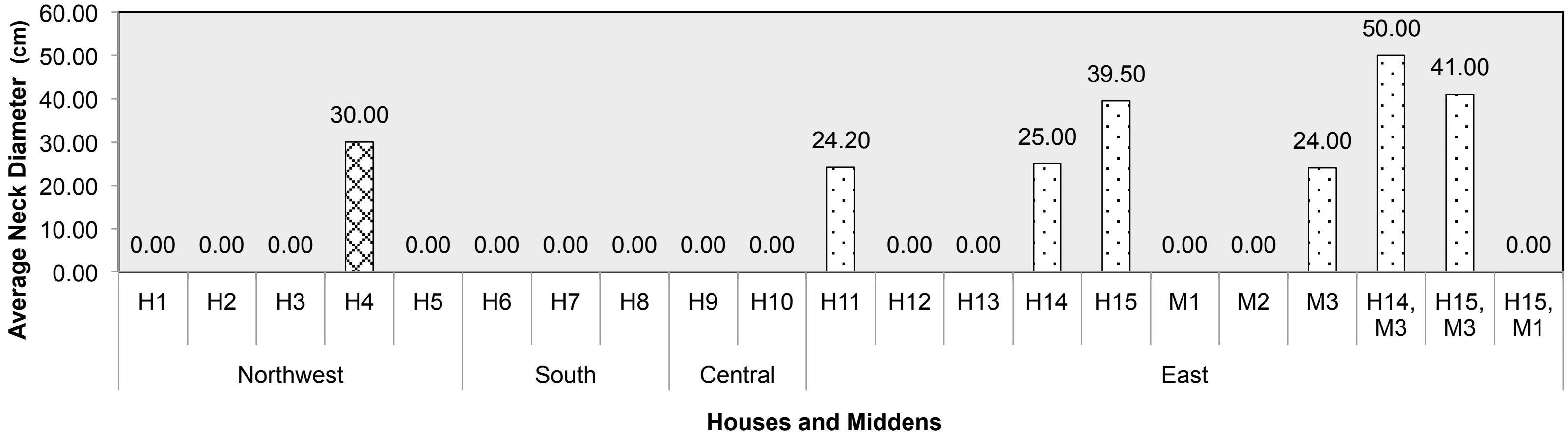

Figure D.9: Average Vessel Neck Diameter for Longhouses and Middens

Appendix E: Longhouse Attribute Tables

Table E.1: Longhouse Post Mould Density

Houses	Average Post Mould Density Per Metre	Average Maximum Post Mould Density Per Metre
House 1	3.5	7.2
House 2	4.6	7.2
House 3	3.6	6
House 4	2.2	3.8
House 5	3.1	4.8
House 6	2.5	4
House 7	2.2	3.6
House 8	2.4	4
House 9	3.3	4.4
House 10	2.1	3
House 11	5	6.8
House 12	3.4	4.8
House 13	4.5	4.8
House 14	5.3	7.2
House 15	3.4	5.8

Table E.2: Longhouse Exterior Attributes

Houses	Length	Width	Area	Midline Width (MW)	End Width (EW)	End Width (EW)	Avg. End Width	Diff. between MW & EW (%)	LTLs (Avg. house end)	LTLs (Avg. house end)	Avg. LTLs (combined from both house ends)
House 1	50.5	7.8	393.9	7.5	3.6 (E)	3 (W)	3.3	56	4.1 (E)	4.1 (W)	4.1
House 2	51.8	7.5	388.5	7.4	N/D (E)	2.2 (W)	2.2*	70.3*	N/D (E)	4.4 (W)	4.4
House 3	44*	8	352*	7.2*	N/D (SE)	3.9 (NW)	3.9*	45.8*	N/D (SE)	3.6 (NW)	3.6
House 4	68*	8	544*	8.2*	4.5 (SE)	N/D (NW)	4.5*	45.1*	4.5 (SE)	N/D (NW)	4.5
House 5	49.6	7.8	386.88	7.7	N/D (NE)	2.4 (SW)	2.4*	68.8*	4.5 (NE)*	3.7 (SW)	4.1
House 6	27.7	7	193.9	7	2.7 (S)	2.8 (N)	2.8	60	3 (S)	2.4 (N)	2.7
House 7	52	7.6	395.2	7.4	4 (S)	3.4 (N)	3.7	50	3.4 (S)	3.3 (N)	3.4
House 8	74*	8	592*	8	N/D (S)	3.8 (N)	3.8*	52.5*	N/D (S)	3.8 (N)	3.8
House 9	23*	8	184*	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
House 10	33*	7.6	250.8*	6.8	2.8 (E)	N/D (W)	2.8*	58.8*	3.4 (E)	N/D (W)	3.4
House 11	84	8.5	714	8.9	2.5 (S)	3.9 (N)	3.2	64	6.9 (S)	3.6 (N)	5.3
House 12	38	8	304	7.1	2 (S)	3.4 (N)	2.7	62	3.7 (S)	4.6 (N)	4.2
House 13	18.5	7.5	138.75	7.3	3.4 (S)	2.6 (N)	3	59	3.2 (S)	2.6 (N)	3
House 14	76*	7.7	585.2*	7.2	N/D (E)	2.4 (W)	2.4*	66.7*	N/D (E)	4.5 (W)	4.5
House 15	89	9	801	9.1	4.6 (S)	3.5 (N)	4.1	55	4.2 (S)	6.8 (N)	5.5

Notes:

All measurements are in metres (m)

* - Refers to measurement or calculation adjustments due to disturbance or incomplete houses

N/D - No Data

Red text denotes that combined average is only based on one house end

Table E.3: Longhouse Interior Attributes

Houses	Storage Cubicle Length	Storage Cubicle Length	Avg. Storage Cubicle Length	Storage Cubicle Area	Storage Cubicle Area	Avg. Storage Cubicle Area	Bench Area Avg. Lengths - SPs to Wall (Based on report data)	CC Length	CC Width
House 1	6.8 (E)	6.6 (W)	6.7	49.6 (E)	42.2 (W)	46	1.9	35.7	4.5
House 2	4.9 (E)*	6.4 (W)	5.7	36.8 (E)*	47.4 (W)	42.1	2	41	4.3
House 3	N/D (SE)	6.8 (NW)	6.8	N/D (SE)	49 (NW)	49	2.3	35.6*	4.5
House 4	8.1 (SE)	N/D (NW)	8.1	65.6 (SE)	N/D (NW)	65.6	2.1	66.8*	4.4
House 5	6.1 (NE)	5.2 (SW)	5.7	46.4 (NE)	40 (SW)	43.2	2	39.4	4
House 6	5.1 (S)	2.1 (N)	3.6	34.2 (S)	11.3 (N)	22.8	1.8	20.7	3.9
House 7	5.8 (S)	3.1 (N)	4.5	42.3 (S)	19.8 (N)	31.1	2	42.2	4.3
House 8	N/D (S)	3.8 (N)	3.8	N/D (S)	27.4 (N)	27.4	2.2	63.4	4.4
House 9	N/D (E)	N/D (W)		N/D (E)	N/D (W)		1.8	N/D	3.9*
House 10	3.1 (E)	N/D (W)	3.1	18.6 (E)	N/D (W)	18.6	2	32.7	3.5
House 11	6.7 (S)	3.8 (N)	5.3	50.3 (S)	29.6 (N)	40	1.8	72.1	4.9
House 12	3.8 (S)	5.7 (N)	4.8	23.6 (S)	40.5 (N)	32.1	1.8	27.6	3.4
House 13	2.6 (S)	2.3 (N)	2.5	16.4 (S)	15.6 (N)	16	1.7	14	3.8
House 14	N/D (E)	3.5 (W)	3.5	N/D (E)	22.1 (W)	22.1	N/D	65.3	4.1
House 15	3.3 (S)	6.3 (N)	3.8	26.4 (S)	49.1 (N)	75.5	2	83.3	5.2

Notes:

All measurements are in metres (m) or metres squared (m^2)

* - Refers to measurement or calculation adjustments due to disturbance or incomplete houses

SP - Support Posts

CC - Central Corridor

Table E.3: Longhouse Interior Attributes Continued

Houses	Feature Density CC-Midpoint	Feature Density CC-End	Feature Density CC-End	Avg. Feature Density of 3 CC Areas	General Density of Features	Interior PMD CC-Midpoint	Interior PMD CC-End	Interior PMD CC-End	Avg. PMD of 3 CC Areas	General Density of Int. PM	Total Number of Cultural Features
House 1	0.6	0.3(E)	0.4(W)	0.4	0.2	1	2(E)	1.7(W)	1.6	1	103
House 2	0.5	N/D(E)	0.9(W)	0.7	0.1	0.8	N/D(E)	1(W)	0.9	0.5	58
House 3	N/D	N/D(SE)	0.4(NW)	0.4*	0.06*	N/D	N/D(SE)	1.1(NW)	1.1*	0.5*	26
House 4	0.3	0.06(SE)	N/D(NW)	0.5	0.02*	0.5	0.7(SE)	N/D(NW)	0.6	0.1*	15
House 5	0.7	0.4(NE)	0.3(SW)	0.5	0.1*	0.5	0.8(NE)	0.8(SW)	0.7	0.3*	44
House 6		0.3(S)	0.7(N)	0.5	0.1		0.6(S)	1.4(N)	1	0.4	35
House 7	0.2	0.7(S)	0.9(N)	0.6	0.2	1.1	0.6(S)	1.1(N)	0.9	0.6	97
House 8	0.6	0.7(S)	0.3(N)	0.5	0.2	1.1	0.7(S)	2.3(N)	1.4	0.5	144
House 9	0.4	N/D(E)	N/D(W)	0.4*	0.2*	0.6	N/D(E)	N/D(W)	0.6*	0.5*	60
House 10	N/D	0.3(E)	N/D(W)	0.3*	0.07*	N/D	0.8(E)	N/D(W)	0.8*	0.3*	17
House 11	1.3	1.3(S)	0.8(N)	1.1	0.5	1.4	1.3(S)	2(N)	1.6	0.8	358
House 12	N/D	0.4(S)	0.5(N)	0.5	0.2	N/D	1.1(S)	0.5(N)	0.8	0.4	37
House 13	0.2	N/D(S)	N/D(N)	0.2*	0.1	1.3	N/D(S)	N/D(N)	1.3*	0.5	37
House 14	1.3	1.2(E)	1.4(W)	1.3	0.6	0.6	0.9(E)	2.4(W)	1.3	1	355
House 15	1	0.6(S)	0.9(N)	0.8	0.2	0.9	0.6(S)	0.6(N)	0.7	0.5	245

Notes:

* - Refers to measurement or calculation adjustments due to disturbance or incomplete houses

N/D - No Data

CC - Central Corridor

PMD - Post Mould Density

Appendix F: Spatial Statistical Results

Table F.1: Spatial Autocorrelation and Hot Spot Analysis Statistical Results for Morphological (Vessel Form) and Decorative Ceramic Attributes

Attribute Category	Attribute	Sub-Attribute	Spatial Autocorrelation (Global Moran's I)			Optimized Hot-Spot Analysis (Local Getis-Ord Gi)			Hot Spot Analysis (Local Getis-Ord Gi)			
			Moran's I Index	Z-Score	P-Value	Location	Z-Score	P-Value	Location	Z-Score	P-Value	Fixed Dis.
Morphological	Lip Form	Splayed	0.379828	5.380317	0	N/A			H1S1, H2S1, H2S2, H5S1, H8S2	-2.172429	0.029823	150
									H3S1, H7S1	-2.337653	0.019405	150
									H4S1	-2.686629	0.007218	150
									H5S2, H3S2	-2.508505	0.012124	150
									H8S1, H7S2	-1.852653	0.063932	150
									H4S2	-3.284403	0.001022	150
									H1S2	-2.011278	0.044296	150
									H14S1, H14S2, H15S1, H15S2, H12S2, M1	3.513284	0.000443	150
									H13, M3	3.762757	0.000168	150
									M2, H12S1	3.284403	0.001022	150
									H11S1	2.873853	0.004055	150
									H11S2	3.072278	0.002124	150
Morphological	Upper Rim Profile - Exterior	Convex-Concave	0.079851	2.37427	0.017584	H14S2	3.930753	0.000085	N/A			
						M3, H13	3.597459	0.000321				
Decorative	Type	Iroquois Linear	0.077659	1.818867	0.068932	H14S1	2.878492	0.003996				
						H14S2	3.218252	0.00129				
Decorative	Type	Uren Dentate	0.079666	1.851425	0.064108	H13, M3	4.317738	0.000016				
						H14S2	3.669371	0.000243				
Decorative	Type	Untyped Stamped	0.09852	2.03947	0.041957	H1S2, H2S2	2.87328	0.004062				
						H3S2	2.638286	0.008333				
Decorative	Type - Grouped	Earlier with Ontario Horizontal	0.215908	3.372783	0.000744	N/A			H1S1, H1S2, H2S1	-2.543926	0.010961	125
									H3S1, H4S1	-2.983017	0.002854	125
									H5S1, H5S2	-2.009787	0.044454	125
									H8S1	2.035012	0.04185	125
									H3S2	-3.209891	0.001328	125
									H2S2	-2.761737	0.005749	125
									H4S2	-3.131094	0.001742	125
									H14S1, H14S2, H12S1, M1	1.87483	0.060816	125
									H15S2	1.742886	0.081353	125
									M3	1.80059	0.071768	125

Attribute Category	Attribute	Sub-Attribute	Spatial Autocorrelation (Global Moran's I)			Optimized Hot-Spot Analysis (Local Getis-Ord Gi)			Hot Spot Analysis (Local Getis-Ord Gi)			
			Moran's I Index	Z-Score	P-Value	Location	Z-Score	P-Value	Location	Z-Score	P-Value	Fixed Dis.
Decorative	Rim Technique	Dentate Stamped	0.053877	1.796742	0.072377	H14S2	3.468705	0.000523	N/A			
						H13, M3	4.081614	0.000045				
Decorative	Rim Technique	Fingernail Impressed	0.031454	3.03087	0.002438	N/A			H15S2	2.913668	0.003572	40
									H15S1, M1	3.496402	0.000472	40
Decorative	Rim Technique	Trailed over Incised	0.085098	1.896567	0.057885				H15S1	3.61215	0.000304	40
									M1	3.936109	0.000083	40
Decorative	Rim Technique	Linear Stamped / Superimposed Intermitten LS	0.107438	1.816007	0.069369	H1, H2S1	2.75509	0.005868	N/A			
Decorative	Lip Technique	Incised	0.244346	3.846663	0.00012	H14S1	3.031034	0.002437	N/A			
						H14S2	3.246263	0.001169				
						H13	3.423492	0.000618				
						H12S1	3.000388	0.002696				
						H12S2	2.851731	0.004348				
						M1	2.771022	0.005588				
						M2	2.876368	0.004023				
						M3	2.562957	0.010378				
Decorative	Lip Technique	Trailed	0.105971	2.051627	0.040206	H12S1, H12S2, H14S1, H14S2, H15S1, M1	2.494846	0.012601	N/A			
						H11S2	2.332313	0.019684				
						H13	2.867288	0.00414				
						H15S2	2.406885	0.016089				
						M2	2.672001	0.00754				
						M3	3.08536	0.002033				
						H4S2	-2.181679	0.029133				
Decorative	Lip Technique	Linear Stamped	0.153173	2.616495	0.008884	H12S1, H14S1, H14S2, M1	2.500325	0.012408	N/A			
						H12S2	2.677869	0.007409				
						M3	2.55344	0.010666				

Attribute Category	Attribute	Sub-Attribute	Spatial Autocorrelation (Global Moran's I)			Optimized Hot-Spot Analysis (Local Getis-Ord Gi)			Hot Spot Analysis (Local Getis-Ord Gi)			
			Moran's I Index	Z-Score	P-Value	Location	Z-Score	P-Value	Location	Z-Score	P-Value	Fixed Dis.
Decorative	Neck Technique	Fingernail Impressed	0.05872	3.190271	0.001421	N/A			H15S1, M1	3.667916	0.000245	40
									H15S2	2.852824	0.004333	40
Decorative	Neck Technique	Incised over Plain	0.167074	2.959048	0.003086	H15S2	2.854882	0.004305	N/A			
						H15S3	4.443648	0.000009				
Decorative	Neck Technique	Linear Stamped over Plain	0.086644	3.149019	0.001638	H13	2.937546	0.003308	N/A			
						M3	3.514095	0.000441				
Decorative	Rim Motif	Opposed Triangles Filled with Obliques	0.102484	2.352438	0.018651	N/A			H15S1, M1	3.321644	0.000895	40
Decorative	Rim Motif	Simples Vertical / Superimposed Intermittent Horizontal Dash	0.185872	2.858555	0.004258	H1, H2S1	3.107239	0.001888	N/A			
						H9, H10	2.965592	0.003021				
Decorative	Lip Motif	Simples Right Oblique	0.106465	1.971826	0.048629	N/A			N/A			
Decorative	Lip Motif	Horizontals	0.279791	4.488635	0.000007	N/A			H1S1, H2S1, H2S2,H5S1, H8S2	-1.99383	0.046171	150
									H3S1, H7S1	-2.145471	0.031915	150
									H4S1	-2.465758	0.013672	150
									H5S2, H3S2	-2.302277	0.02132	150
									H1S2	-1.845928	0.064903	150
									H4S2	-3.014388	0.002575	150
									H14S1, H14S2, H12S2, H15S1, H15S2, M1	3.22452	0.001262	150
									H13, M3	3.453415	0.000554	150
									H12S1, M2	3.014388	0.002575	150
									H11S2	2.819702	0.004807	150
									H11S1	2.637589	0.00835	150
Decorative	Neck Motif	Simples Right Oblique over Plain	0.05646	2.62945	0.008552	H13, M3	3.392324	0.000693	N/A			
Decorative	Neck Motif	Horizontal over Plain	0.102059	1.808841	0.070476	H15S3	4.002383	0.000063	N/A			
Decorative	Neck Motif	Horizontal over Indeterminate	0.120459	2.02461	0.042907	N/A			N/A			

Attribute Category	Attribute	Sub-Attribute	Spatial Autocorrelation (Global Moran's I)			Optimized Hot-Spot Analysis (Local Getis-Ord Gi)			Hot Spot Analysis (Local Getis-Ord Gi)			
			Moran's I Index	Z-Score	P-Value	Location	Z-Score	P-Value	Location	Z-Score	P-Value	Fixed Dis.
Decorative	Neck Motif	Simples Left Oblique over Plain	0.166058	3.110493	0.001868	H15S1	3.003471	0.002669	N/A			
						H15S2	3.758775	0.000171				
						H15S3	4.08096	0.000045				
Decorative	Neck Motif	Horizontal over Simples Right Oblique over Indeterminate	0.087006	2.239382	0.025131	H14S2	4.098418	0.000042	N/A			
Decorative	Castellation	Present with Dis. Decoration - Chevron & Punctate Face	0.015425	1.650647	0.098811	N/A			H14S1	3.119889	0.001809	40
									M1	3.296867	0.000978	40
									H15S1	2.800351	0.005105	40
Decorative	Interior Neck Technique	Linear Stamped	0.224859	3.743488	0.000181	N/A			H14S1	2.657729	0.007867	100
									M1	2.318795	0.020406	100
									H15S1	2.534734	0.011253	100
									H15S2	3.052409	0.00227	100
									H15S3	3.928492	0.000085	100
Decorative	Interior Neck Motif	Simples Right Oblique	0.169212	2.949722	0.003181	N/A			H14S1	2.493736	0.012641	100
									M1	1.896309	0.057919	100
									H15S1	2.092706	0.036375	100
									H15S2	2.559586	0.01048	100
									H15S3	3.62233	0.000292	100
Decorative	Number of Exterior Bands of Decoration	Two	0.137477	2.119347	0.034061	H1S1, H1S2, H2S1	-2.593622	0.009497	N/A			
						H2S2	-2.411956	0.015867				
						H3S2	-2.120809	0.033938				
						H3S1, H4S1	-2.256346	0.024049				
						H14S1, H14S2, H12S1, M1	2.421307	0.015465				
						H15S1	2.433088	0.014971				

Attribute Category	Attribute	Sub-Attribute	Spatial Autocorrelation (Global Moran's I)			Optimized Hot-Spot Analysis (Local Getis-Ord Gi)			Hot Spot Analysis (Local Getis-Ord Gi)			
			Moran's I Index	Z-Score	P-Value	Location	Z-Score	P-Value	Location	Z-Score	P-Value	Fixed Dis.
Decorative	Number of Exterior Bands of Decoration	Four	0.092328	1.768123	0.07704	H14S1	2.500325	0.012408	N/A			
						H14S2	2.677869	0.007409				
						H11S1, H15S	2.459654	0.013907				
						H15S2	2.951623	0.003161				
Decorative	Number of Exterior Motifs	Two	0.173579	2.554296	0.01064	H1S1, H1S2	-3.134937	0.001719	N/A			
						H2S1	-2.802668	0.005068				
						H2S2	-2.638608	0.008325				
						H3S1, H3S2, H4S1	-2.500905	0.012388				
						H4S2	-2.355944	0.018476				
						H12S1, H12S2, H14S2	2.016399	0.043758				
						H14S1, M1	2.50906	0.012105				
						H11S1, H15S1	2.139099	0.032428				
						H15S3	2.269643	0.023229				
Decorative	Number of Exterior Motifs	Four	0.077659	1.818867	0.068932	H14S1	2.878492	0.003996	N/A			
						H14S2	3.218252	0.00129				
Decorative	Number of Horizontal Lines - Upper Rim/Collar	Three	0.238386	3.973824	0.000071	H12S1	3.005663	0.00265	N/A			
						H12S2	2.77415	0.005535				
						H14S1	3.193218	0.001407				
						H14S2	2.942467	0.003256				
						M3	3.085725	0.002031				

Attribute Category	Attribute	Sub-Attribute	Spatial Autocorrelation (Global Moran's I)			Optimized Hot-Spot Analysis (Local Getis-Ord Gi)			Hot Spot Analysis (Local Getis-Ord Gi)			
			Moran's I Index	Z-Score	P-Value	Location	Z-Score	P-Value	Location	Z-Score	P-Value	Fixed Dis.
Decorative	Number of Horizontal Lines - Upper Rim/Collar	Six	0.152079	2.626975	0.008615	H14S2	4.57651	0.000005	N/A			
						H13, M3	3.390659	0.000697				
Decorative	Number of Horiztonal Lines - Neck	Three	0.129248	2.139822	0.032369	N/A			N/A			
Decorative	Number of Horizontal Lines - Lip	One	0.40431	5.425089	0	N/A			H1S1, H2S1, H2S2, H5S1, H8S2	-2.294825	0.021743	150
									H1S2	-2.124595	0.03362	150
									H3S1, H7S1	-2.469358	0.013536	150
									H4S1	-2.837995	0.00454	150
									H3S2, H5S2	-2.649835	0.008053	150
									H4S2	-3.469449	0.00522	150
									H7S2, H8S1	-1.957033	0.050344	150
									H11S1	3.035767	0.002399	150
									H11S2	3.245372	0.001173	150
									H12S2, H14S1, H14S2, H15S1, H15S2, M1	3.711225	0.000206	150
									H12S1, M2	3.469449	0.000522	150
									H13, M3	3.974753	0.00007	150

Appendix G: Detailed Statistical Results

Ceramic Attributes of Vessel Size (Metric Morphological)

ANOVA

Lip Thickness

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	172.146	15	11.476	2.387	.003
Within Groups	1557.668	324	4.808		
Total	1729.814	339			

Figure G.1: Classic ANOVA for (vessel) lip thickness between houses and middens

Multiple Comparisons

Dependent Variable: Lip Thickness

Dunnett T3

					95% Confidence Interval	
(I) House Midden	(J) House Midden	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
1	2	-.44353	1.29119	1.000	-12.9806	12.0935
	4	-.05353	1.19888	1.000	-7.1256	7.0185
	5	-1.03020	.59322	.974	-4.0454	1.9850
	7	.22335	.51628	1.000	-1.8079	2.2545
	8	.44897	.63387	1.000	-2.0723	2.9702
	9	-.01353	.61553	1.000	-2.9239	2.8969
	10	-1.16603	1.29649	1.000	-10.3233	7.9913
	11	-.83603	.59960	1.000	-3.1197	1.4477
	12	-3.21853	2.47241	.964	-98.0424	91.6053

	13	-1.13686	1.24763	1.000	-13.0519	10.7782
	14	-1.65735	.48184	.164	-3.5719	.2572
	15	-1.59029	.57165	.515	-3.7700	.5894
	16	-1.03753	.60960	.999	-3.3427	1.2677
	17	-.33686	1.24188	1.000	-12.1698	11.4961
	18	-1.83165	.50962	.104	-3.8154	.1522
2	1	.44353	1.29119	1.000	-12.0935	12.9806
	4	.39000	1.65449	1.000	-9.5649	10.3449
	5	-.58667	1.28528	1.000	-13.4286	12.2553
	7	.66688	1.25163	1.000	-13.1254	14.4592
	8	.89250	1.30454	1.000	-11.3143	13.0993
	9	.43000	1.29573	1.000	-12.0972	12.9572
	10	-.72250	1.72653	1.000	-11.3327	9.8877
	11	-.39250	1.28823	1.000	-13.0017	12.2167
	12	-2.77500	2.72265	.996	-53.4579	47.9079
	13	-.69333	1.69015	1.000	-12.2087	10.8220
	14	-1.21382	1.23782	.999	-15.5447	13.1170
	15	-1.14676	1.27547	1.000	-14.1286	11.8351
	16	-.59400	1.29292	1.000	-13.0716	11.8836
	17	.10667	1.68592	1.000	-11.3828	11.5962
	18	-1.38812	1.24890	.997	-15.2784	12.5022
4	1	.05353	1.19888	1.000	-7.0185	7.1256
	2	-.39000	1.65449	1.000	-10.3449	9.5649
	5	-.97667	1.19251	1.000	-8.1872	6.2338
	7	.27688	1.15617	1.000	-7.0433	7.5970
	8	.50250	1.21325	1.000	-6.5171	7.5221
	9	.04000	1.20377	1.000	-7.0952	7.1752
	10	-1.11250	1.65863	1.000	-9.9614	7.7364
	11	-.78250	1.19570	1.000	-7.8631	6.2981
	12	-3.16500	2.68011	.986	-56.8799	50.5499
	13	-1.08333	1.62073	1.000	-10.6985	8.5318
	14	-1.60382	1.14120	.992	-9.0346	5.8270
	15	-1.53676	1.18193	.998	-8.6897	5.6161
	16	-.98400	1.20075	1.000	-8.0376	6.0696
	17	-.28333	1.61631	1.000	-9.8550	9.2883

	18	-1.77812	1.15321	.982	-9.1162	5.5600
5	1	1.03020	.59322	.974	-1.9850	4.0454
	2	.58667	1.28528	1.000	-12.2553	13.4286
	4	.97667	1.19251	1.000	-6.2338	8.1872
	7	1.25354	.50132	.697	-2.0100	4.5170
	8	1.47917	.62175	.764	-1.6203	4.5786
	9	1.01667	.60304	.966	-2.6473	4.6806
	10	-.13583	1.29061	1.000	-9.4572	9.1855
	11	.19417	.58676	1.000	-2.7715	3.1599
	12	-2.18833	2.46933	.997	-98.0608	93.6841
	13	-.10667	1.24151	1.000	-12.3385	12.1251
	14	-.62716	.46578	.991	-4.2189	2.9646
	15	-.56010	.55817	1.000	-3.5508	2.4306
	16	-.00733	.59699	1.000	-2.9528	2.9381
	17	.69333	1.23574	1.000	-11.4580	12.8446
	18	-.80145	.49446	.970	-4.0745	2.4716
7	1	-.22335	.51628	1.000	-2.2545	1.8079
	2	-.66688	1.25163	1.000	-14.4592	13.1254
	4	-.27688	1.15617	1.000	-7.5970	7.0433
	5	-1.25354	.50132	.697	-4.5170	2.0100
	8	.22562	.54883	1.000	-2.0393	2.4906
	9	-.23687	.52754	1.000	-3.1909	2.7171
	10	-1.38937	1.25710	.999	-11.0335	8.2548
	11	-1.05937	.50885	.963	-2.9904	.8716
	12	-3.44187	2.45198	.948	-105.0563	98.1726
	13	-1.36021	1.20665	.996	-14.5347	11.8143
	14	-1.88070*	.36275	.001	-3.2735	-.4879
	15	-1.81364*	.47560	.043	-3.6031	-.0242
	16	-1.26088	.52061	.806	-3.2154	.6936
	17	-.56021	1.20071	1.000	-13.6529	12.5325
	18	-2.05499*	.39891	.001	-3.5576	-.5524
8	1	-.44897	.63387	1.000	-2.9702	2.0723
	2	-.89250	1.30454	1.000	-13.0993	11.3143
	4	-.50250	1.21325	1.000	-7.5221	6.5171
	5	-1.47917	.62175	.764	-4.5786	1.6203
	7	-.22562	.54883	1.000	-2.4906	2.0393

	9	-.46250	.64308	1.000	-3.4749	2.5499
	10	-1.61500	1.30979	.998	-10.6481	7.4181
	11	-1.28500	.62784	.960	-3.7489	1.1789
	12	-3.66750	2.47941	.937	-96.3218	88.9868
	13	-1.58583	1.26144	.993	-13.1761	10.0044
	14	-2.10632	.51656	.066	-4.2884	.0757
	15	-2.03926	.60120	.178	-4.4170	.3384
	16	-1.48650	.63740	.847	-3.9680	.9950
	17	-.78583	1.25576	1.000	-12.2948	10.7231
	18	-2.28062*	.54256	.041	-4.5082	-.0531
9	1	.01353	.61553	1.000	-2.8969	2.9239
	2	-.43000	1.29573	1.000	-12.9572	12.0972
	4	-.04000	1.20377	1.000	-7.1752	7.0952
	5	-1.01667	.60304	.966	-4.6806	2.6473
	7	.23687	.52754	1.000	-2.7171	3.1909
	8	.46250	.64308	1.000	-2.5499	3.4749
	10	-1.15250	1.30101	1.000	-10.3425	8.0375
	11	-.82250	.60932	1.000	-3.6835	2.0385
	12	-3.20500	2.47478	.965	-97.3500	90.9400
	13	-1.12333	1.25233	1.000	-13.0396	10.7929
	14	-1.64382	.49388	.396	-4.7249	1.4373
	15	-1.57676	.58183	.596	-4.4228	1.2692
	16	-1.02400	.61917	.991	-3.8786	1.8306
	17	-.32333	1.24661	1.000	-12.1590	11.5124
	18	-1.81812	.52102	.321	-4.7617	1.1255
10	1	1.16603	1.29649	1.000	-7.9913	10.3233
	2	.72250	1.72653	1.000	-9.8877	11.3327
	4	1.11250	1.65863	1.000	-7.7364	9.9614
	5	.13583	1.29061	1.000	-9.1855	9.4572
	7	1.38937	1.25710	.999	-8.2548	11.0335
	8	1.61500	1.30979	.998	-7.4181	10.6481
	9	1.15250	1.30101	1.000	-8.0375	10.3425
	11	.33000	1.29355	1.000	-8.8526	9.5126
	12	-2.05250	2.72517	1.000	-51.6652	47.5602
	13	.02917	1.69421	1.000	-10.3103	10.3687
	14	-.49132	1.24335	1.000	-10.3412	9.3586

	15	-.42426	1.28083	1.000	-9.7523	8.9038
	16	.12850	1.29822	1.000	-9.0015	9.2585
	17	.82917	1.68998	1.000	-9.4761	11.1344
	18	-.66562	1.25438	1.000	-10.3462	9.0150
11	1	.83603	.59960	1.000	-1.4477	3.1197
	2	.39250	1.28823	1.000	-12.2167	13.0017
	4	.78250	1.19570	1.000	-6.2981	7.8631
	5	-.19417	.58676	1.000	-3.1599	2.7715
	7	1.05937	.50885	.963	-.8716	2.9904
	8	1.28500	.62784	.960	-1.1789	3.7489
	9	.82250	.60932	1.000	-2.0385	3.6835
	10	-.33000	1.29355	1.000	-9.5126	8.8526
	12	-2.38250	2.47086	.994	-97.6859	92.9209
	13	-.30083	1.24457	1.000	-12.2866	11.6849
	14	-.82132	.47387	.999	-2.6155	.9729
	15	-.75426	.56494	1.000	-2.8555	1.3470
	16	-.20150	.60332	1.000	-2.4396	2.0366
	17	.49917	1.23881	1.000	-11.4042	12.4026
	18	-.99562	.50209	.985	-2.8747	.8835
12	1	3.21853	2.47241	.964	-91.6053	98.0424
	2	2.77500	2.72265	.996	-47.9079	53.4579
	4	3.16500	2.68011	.986	-50.5499	56.8799
	5	2.18833	2.46933	.997	-93.6841	98.0608
	7	3.44187	2.45198	.948	-98.1726	105.0563
	8	3.66750	2.47941	.937	-88.9868	96.3218
	9	3.20500	2.47478	.965	-90.9400	97.3500
	10	2.05250	2.72517	1.000	-47.5602	51.6652
	11	2.38250	2.47086	.994	-92.9209	97.6859
	13	2.08167	2.70226	1.000	-50.4525	54.6158
	14	1.56118	2.44496	1.000	-102.7199	105.8423
	15	1.62824	2.46423	1.000	-95.7967	99.0531
	16	2.18100	2.47331	.997	-92.3516	96.7136
	17	2.88167	2.69962	.994	-49.9065	55.6698
	18	1.38688	2.45059	1.000	-100.7357	103.5095
13	1	1.13686	1.24763	1.000	-10.7782	13.0519
	2	.69333	1.69015	1.000	-10.8220	12.2087

	4	1.08333	1.62073	1.000	-8.5318	10.6985
	5	.10667	1.24151	1.000	-12.1251	12.3385
	7	1.36021	1.20665	.996	-11.8143	14.5347
	8	1.58583	1.26144	.993	-10.0044	13.1761
	9	1.12333	1.25233	1.000	-10.7929	13.0396
	10	-.02917	1.69421	1.000	-10.3687	10.3103
	11	.30083	1.24457	1.000	-11.6849	12.2866
	12	-2.08167	2.70226	1.000	-54.6158	50.4525
	14	-.52049	1.19231	1.000	-14.2440	13.2030
	15	-.45343	1.23135	1.000	-12.8106	11.9037
	16	.09933	1.24942	1.000	-11.7556	11.9543
	17	.80000	1.65279	1.000	-10.4508	12.0508
	18	-.69478	1.20381	1.000	-13.9685	12.5789
14	1	1.65735	.48184	.164	-.2572	3.5719
	2	1.21382	1.23782	.999	-13.1170	15.5447
	4	1.60382	1.14120	.992	-5.8270	9.0346
	5	.62716	.46578	.991	-2.9646	4.2189
	7	1.88070*	.36275	.001	.4879	3.2735
	8	2.10632	.51656	.066	-.0757	4.2884
	9	1.64382	.49388	.396	-1.4373	4.7249
	10	.49132	1.24335	1.000	-9.3586	10.3412
	11	.82132	.47387	.999	-.9729	2.6155
	12	-1.56118	2.44496	1.000	-105.8423	102.7199
	13	.52049	1.19231	1.000	-13.2030	14.2440
	15	.06706	.43797	1.000	-1.5628	1.6969
	16	.61982	.48647	1.000	-1.1986	2.4383
	17	1.32049	1.18630	.996	-12.3226	14.9636
	18	-.17429	.35320	1.000	-1.4463	1.0977
15	1	1.59029	.57165	.515	-.5894	3.7700
	2	1.14676	1.27547	1.000	-11.8351	14.1286
	4	1.53676	1.18193	.998	-5.6161	8.6897
	5	.56010	.55817	1.000	-2.4306	3.5508
	7	1.81364*	.47560	.043	.0242	3.6031
	8	2.03926	.60120	.178	-.3384	4.4170
	9	1.57676	.58183	.596	-1.2692	4.4228
	10	.42426	1.28083	1.000	-8.9038	9.7523

	11	.75426	.56494	1.000	-1.3470	2.8555
	12	-1.62824	2.46423	1.000	-99.0531	95.7967
	13	.45343	1.23135	1.000	-11.9037	12.8106
	14	-.06706	.43797	1.000	-1.6969	1.5628
	16	.55276	.57555	1.000	-1.5734	2.6790
	17	1.25343	1.22553	.999	-11.0211	13.5280
	18	-.24135	.46836	1.000	-1.9691	1.4864
16	1	1.03753	.60960	.999	-1.2677	3.3427
	2	.59400	1.29292	1.000	-11.8836	13.0716
	4	.98400	1.20075	1.000	-6.0696	8.0376
	5	.00733	.59699	1.000	-2.9381	2.9528
	7	1.26088	.52061	.806	-.6936	3.2154
	8	1.48650	.63740	.847	-.9950	3.9680
	9	1.02400	.61917	.991	-1.8306	3.8786
	10	-.12850	1.29822	1.000	-9.2585	9.0015
	11	.20150	.60332	1.000	-2.0366	2.4396
	12	-2.18100	2.47331	.997	-96.7136	92.3516
	13	-.09933	1.24942	1.000	-11.9543	11.7556
	14	-.61982	.48647	1.000	-2.4383	1.1986
	15	-.55276	.57555	1.000	-2.6790	1.5734
	17	.70067	1.24369	1.000	-11.0721	12.4734
	18	-.79412	.51400	1.000	-2.6987	1.1104
17	1	.33686	1.24188	1.000	-11.4961	12.1698
	2	-.10667	1.68592	1.000	-11.5962	11.3828
	4	.28333	1.61631	1.000	-9.2883	9.8550
	5	-.69333	1.23574	1.000	-12.8446	11.4580
	7	.56021	1.20071	1.000	-12.5325	13.6529
	8	.78583	1.25576	1.000	-10.7231	12.2948
	9	.32333	1.24661	1.000	-11.5124	12.1590
	10	-.82917	1.68998	1.000	-11.1344	9.4761
	11	-.49917	1.23881	1.000	-12.4026	11.4042
	12	-2.88167	2.69962	.994	-55.6698	49.9065
	13	-.80000	1.65279	1.000	-12.0508	10.4508
	14	-1.32049	1.18630	.996	-14.9636	12.3226
	15	-1.25343	1.22553	.999	-13.5280	11.0211
	16	-.70067	1.24369	1.000	-12.4734	11.0721

	18	-1.49478	1.19785	.990	-14.6868	11.6973
18	1	1.83165	.50962	.104	-.1522	3.8154
	2	1.38812	1.24890	.997	-12.5022	15.2784
	4	1.77812	1.15321	.982	-5.5600	9.1162
	5	.80145	.49446	.970	-2.4716	4.0745
	7	2.05499*	.39891	.001	.5524	3.5576
	8	2.28062*	.54256	.041	.0531	4.5082
	9	1.81812	.52102	.321	-1.1255	4.7617
	10	.66562	1.25438	1.000	-9.0150	10.3462
	11	.99562	.50209	.985	-.8835	2.8747
	12	-1.38688	2.45059	1.000	-103.5095	100.7357
	13	.69478	1.20381	1.000	-12.5789	13.9685
	14	.17429	.35320	1.000	-1.0977	1.4463
	15	.24135	.46836	1.000	-1.4864	1.9691
	16	.79412	.51400	1.000	-1.1104	2.6987
	17	1.49478	1.19785	.990	-11.6973	14.6868

*. The mean difference is significant at the 0.05 level.

Figure G.2: Dunnett's T3 Post Hoc test for lip thickness between houses and middens

ANOVA

Average Lip Thickness

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.593	3	2.198	3.696	.038
Within Groups	8.324	14	.595		
Total	14.917	17			

Figure G.3: Classic ANOVA for average lip thickness among house groups

Multiple Comparisons

Dependent Variable: Avg LT

Dunnett T3

(I) LT Group	(J) LT Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	2	.97975	.36468	.181	-.4576	2.4171
	3	-.70500	.45889	.579	-2.1899	.7799
	4	.16038	.67042	1.000	-5.7844	6.1051
2	1	-.97975	.36468	.181	-2.4171	.4576
	3	-1.68476*	.32983	.004	-2.7725	-.5970
	4	-.81937	.58963	.728	-13.2611	11.6224
3	1	.70500	.45889	.579	-.7799	2.1899
	2	1.68476*	.32983	.004	.5970	2.7725
	4	.86538	.65211	.734	-5.7110	7.4417
4	1	-.16038	.67042	1.000	-6.1051	5.7844
	2	.81937	.58963	.728	-11.6224	13.2611
	3	-.86538	.65211	.734	-7.4417	5.7110

*. The mean difference is significant at the 0.05 level.

Figure G.4: Dunnett's T3 Post Hoc test for average lip thickness among house groups

ANOVA

Rim to Neck Height

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	851.038	6	141.840	1.684	.152
Within Groups	3115.900	37	84.214		
Total	3966.938	43			

Figure G.5: Classic ANOVA for rim to neck height between houses and middens

Multiple Comparisons

Dependent Variable: Rim to Neck Height

Dunnett T3

(I) HouseMidden	(J) HouseMidden	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
4	7	-19.14000	3.43448	.252	-92.0665	53.7865
	11	-3.96500	3.34947	.919	-90.4834	82.5534
	14	-2.93182	3.92308	.997	-39.1088	33.2452
	15	-7.03500	8.15360	.993	-67.1638	53.0938
	16	4.13000	3.52821	.928	-58.7143	66.9743
	18	-8.38682	3.88951	.624	-46.1072	29.3336
7	4	19.14000	3.43448	.252	-53.7865	92.0665
	11	15.17500	1.39804	.051	-.1287	30.4787
	14	16.20818*	2.47511	.000	7.2779	25.1385
	15	12.10500	7.56418	.814	-58.6231	82.8331
	16	23.27000*	1.78433	.032	4.7815	41.7585
	18	10.75318*	2.42155	.024	1.2580	20.2483
11	4	3.96500	3.34947	.919	-82.5534	90.4834
	7	-15.17500	1.39804	.051	-30.4787	.1287

	14	1.03318	2.35573	1.000	-7.0584	9.1248
	15	-3.07000	7.52596	1.000	-75.0639	68.9239
	16	8.09500	1.61466	.220	-12.7775	28.9675
	18	-4.42182	2.29938	.684	-13.1174	4.2737
14	4	2.93182	3.92308	.997	-33.2452	39.1088
	7	-16.20818*	2.47511	.000	-25.1385	-7.2779
	11	-1.03318	2.35573	1.000	-9.1248	7.0584
	15	-4.10318	7.79819	1.000	-67.9988	59.7924
	16	7.06182	2.60361	.274	-3.0636	17.1872
	18	-5.45500	3.07552	.791	-15.6285	4.7185
15	4	7.03500	8.15360	.993	-53.0938	67.1638
	7	-12.10500	7.56418	.814	-82.8331	58.6231
	11	3.07000	7.52596	1.000	-68.9239	75.0639
	14	4.10318	7.79819	1.000	-59.7924	67.9988
	16	11.16500	7.60720	.859	-58.2527	80.5827
	18	-1.35182	7.78136	1.000	-65.7132	63.0095
16	4	-4.13000	3.52821	.928	-66.9743	58.7143
	7	-23.27000*	1.78433	.032	-41.7585	-4.7815
	11	-8.09500	1.61466	.220	-28.9675	12.7775
	14	-7.06182	2.60361	.274	-17.1872	3.0636
	15	-11.16500	7.60720	.859	-80.5827	58.2527
	18	-12.51682*	2.55274	.022	-23.2102	-1.8235
18	4	8.38682	3.88951	.624	-29.3336	46.1072
	7	-10.75318*	2.42155	.024	-20.2483	-1.2580
	11	4.42182	2.29938	.684	-4.2737	13.1174
	14	5.45500	3.07552	.791	-4.7185	15.6285
	15	1.35182	7.78136	1.000	-63.0095	65.7132
	16	12.51682*	2.55274	.022	1.8235	23.2102

*. The mean difference is significant at the 0.05 level.

Figure G.6: Dunnett's T3 Post Hoc test for rim to neck height between houses and middens

ANOVA

Average Rim to Neck Height

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	342.438	2	171.219	3.522	.087
Within Groups	340.298	7	48.614		
Total	682.736	9			

Figure G.7: Classic ANOVA for average rim to neck height among house groups

Multiple Comparisons

Dependent Variable: Average Rim to Neck Height

Dunnett T3

(I) RNH Group	(J) RNH Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	2	-6.49500	6.42846	.715	-45.8887	32.8987
	3	8.20600	6.73974	.609	-26.4091	42.8211
2	1	6.49500	6.42846	.715	-32.8987	45.8887
	3	14.70100*	2.32271	.004	6.6844	22.7176
3	1	-8.20600	6.73974	.609	-42.8211	26.4091
	2	-14.70100*	2.32271	.004	-22.7176	-6.6844

*. The mean difference is significant at the 0.05 level.

Figure G.8: Dunnett's T3 Post Hoc test for average rim to neck height among house groups

Post Mould Densities

ANOVA

Average Post Mould Density

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.415	3	2.805	4.449	.028
Within Groups	6.935	11	.630		
Total	15.349	14			

Figure G.9: Classic ANOVA for average post mould densities among house groups

Multiple Comparisons

Dependent Variable: Average Post Mould Densities (PM Avg.)

Dunnett T3

(I) PM Avg Groups	(J) PM Avg Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	2	1.0333	.3985	.216	-.624	2.691
	3	-.9200	.5553	.513	-2.789	.949
	4	.7000	.7148	.870	-5.003	6.403
2	1	-1.0333	.3985	.216	-2.691	.624
	3	-1.9533*	.4064	.030	-3.647	-.260
	4	-.3333	.6064	.977	-14.698	14.031
3	1	.9200	.5553	.513	-.949	2.789
	2	1.9533*	.4064	.030	.260	3.647
	4	1.6200	.7193	.415	-3.973	7.213
4	1	-.7000	.7148	.870	-6.403	5.003
	2	.3333	.6064	.977	-14.031	14.698
	3	-1.6200	.7193	.415	-7.213	3.973

*. The mean difference is significant at the 0.05 level.

Figure G.10: Dunnett's T3 Post Hoc test for average post mould densities among house groups

ANOVA

Average Maximum Post Mould Densities

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13.921	3	4.640	3.409	.057
Within Groups	14.975	11	1.361		
Total	28.896	14			

Figure G.11: Classic ANOVA for maximum average post mould densities among house groups

Multiple Comparisons

Dependent Variable: Average Maximum Post Mould Densities

Dunnett T3

(I) PM Max Groups	(J) PM Max Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
1	2	1.9333	.6825	.172	-.934	4.801
	3	-.0800	.8333	1.000	-2.945	2.785
	4	2.1000	.9685	.377	-2.930	7.130
2	1	-1.9333	.6825	.172	-4.801	.934
	3	-2.0133	.5140	.058	-4.118	.091
	4	.1667	.7126	1.000	-15.600	15.933
3	1	.0800	.8333	1.000	-2.785	2.945
	2	2.0133	.5140	.058	-.091	4.118
	4	2.1800	.8581	.338	-3.949	8.309
4	1	-2.1000	.9685	.377	-7.130	2.930
	2	-.1667	.7126	1.000	-15.933	15.600
	3	-2.1800	.8581	.338	-8.309	3.949

*. The mean difference is significant at the 0.05 level

Figure G.12: Dunnett's T3 Post Hoc test for average maximum post mould densities among house groups

Exterior Longhouse Attributes

ANOVA

Linear Taper Lengths

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.661	2	2.831	2.713	.092
Within Groups	19.825	19	1.043		
Total	25.486	21			

Figure G.13: Classic ANOVA for linear taper lengths among house groups

Multiple Comparisons

Dependent Variable: Linear Taper Lengths

Games-Howell

					95% Confidence Interval	
(I) LTL Groups	(J) LTL Groups	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
1	2	.9119*	.2387	.010	.251	1.573
	3	-.3270	.5174	.807	-1.765	1.111
2	1	-.9119*	.2387	.010	-1.573	-.251
	3	-1.2389	.5348	.098	-2.699	.222
3	1	.3270	.5174	.807	-1.111	1.765
	2	1.2389	.5348	.098	-.222	2.699

*. The mean difference is significant at the 0.05 level.

Figure G.14: Games-Howell Post Hoc test for linear taper lengths among house groups

ANOVA

Average Linear Taper Length

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.153	2	1.576	3.400	.071
Within Groups	5.099	11	.464		
Total	8.252	13			

Figure G.15: Classic ANOVA for average linear taper lengths among house groups

Multiple Comparisons

Dependent Variable: Average Linear Taper Lengths (LTL Avg.)

Dunnett T3

(I) LTL Avg Groups	(J) LTL Avg Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	2	.8150	.2773	.074	-.092	1.722
	3	-.3600	.4729	.830	-1.971	1.251
2	1	-.8150	.2773	.074	-1.722	.092
	3	-1.1750	.5013	.149	-2.789	.439
3	1	.3600	.4729	.830	-1.251	1.971
	2	1.1750	.5013	.149	-.439	2.789

*. The mean difference is significant at the 0.05 level

Figure G.16: Dunnett's T3 Post Hoc test for average linear taper lengths among house groups

Interior Longhouse Attributes

ANOVA

Average Storage Cubicle Length

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	23.937	2	11.968	13.437	.001
Within Groups	9.798	11	.891		
Total	33.735	13			

Figure G.17: Classic ANOVA for average storage cubicle length among houses

Multiple Comparisons

Dependent Variable: Average Storage Cubicle Length (SCL Avg)

Dunnett T3

(I) SCL Avg Groups	(J) SCL Avg Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	2	2.8500*	.5293	.004	1.204	4.496
	3	2.6200*	.6629	.012	.654	4.586
2	1	-2.8500*	.5293	.004	-4.496	-1.204
	3	-.2300	.5723	.967	-2.035	1.575
3	1	-2.6200*	.6629	.012	-4.586	-.654
	2	.2300	.5723	.967	-1.575	2.035

*. The mean difference is significant at the 0.05 level.

Figure G.18: Dunnett's T3 Post Hoc test for average storage cubicle length among house groups

ANOVA

Storage Cubicle Lengths

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28.045	2	14.022	7.525	.004
Within Groups	37.268	20	1.863		
Total	65.312	22			

Figure G.19: Classic ANOVA for storage cubicle lengths among house groups

Multiple Comparisons

Dependent Variable: Storage Cubicle Lengths (SCL)

Games-Howell

(I) SCL Groups	(J) SCL Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	2	2.5292*	.6662	.011	.659	4.399
	3	2.1403*	.6425	.013	.452	3.828
2	1	-2.5292*	.6662	.011	-4.399	-.659
	3	-.3889	.7784	.873	-2.466	1.688
3	1	-2.1403*	.6425	.013	-3.828	-.452
	2	.3889	.7784	.873	-1.688	2.466

*. The mean difference is significant at the 0.05 level.

Figure G.20: Games-Howell Post Hoc test for storage cubicle lengths among house groups

ANOVA

Average Storage Cubicle Area

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1307.245	2	653.622	2.731	.109
Within Groups	2632.588	11	239.326		
Total	3939.832	13			

Figure G.21: Classic ANOVA for average storage cubicle area among house groups

Multiple Comparisons

Dependent Variable: Average Storage Cubicle Area (SCA Avg)

Dunnett T3

					95% Confidence Interval	
(I) SCA Avg Groups	(J) SCA Avg Groups	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
1	2	24.2050*	5.0675	.007	8.391	40.019
	3	12.0400	11.2779	.660	-25.467	49.547
2	1	-24.2050*	5.0675	.007	-40.019	-8.391
	3	-12.1650	10.7845	.629	-50.297	25.967
3	1	-12.0400	11.2779	.660	-49.547	25.467
	2	12.1650	10.7845	.629	-25.967	50.297

*. The mean difference is significant at the 0.05 level.

Figure G.22: Dunnett's T3 Post Hoc test for average storage cubicle areas among house groups

ANOVA

Storage Cubicle Areas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1896.697	2	948.349	7.377	.004
Within Groups	2570.935	20	128.547		
Total	4467.632	22			

Figure G.23: Classic ANOVA for storage cubicle areas among house groups

Multiple Comparisons

Dependent Variable: Storage Cubicle Areas (SCA)

Games-Howell

					95% Confidence Interval	
(I) SCA Groups	(J) SCA Groups	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
1	2	21.5250*	5.5644	.009	6.033	37.017
	3	16.7250*	5.3749	.020	2.651	30.799
2	1	-21.5250*	5.5644	.009	-37.017	-6.033
	3	-4.8000	6.3882	.739	-21.844	12.244
3	1	-16.7250*	5.3749	.020	-30.799	-2.651
	2	4.8000	6.3882	.739	-12.244	21.844

*. The mean difference is significant at the 0.05 level.

Figure G.24: Games-Howell Post Hoc test for storage cubicle areas among house groups

Robust Tests of Equality of Means

Feature Density 3 Four-Squared Metre Areas

	Statistic[a]	df1	df2	Sig.
Welch	6.023	3	10.220	.013

a. Asymptotically F distributed.

Figure G.25: Welch's ANOVA for feature density of 3 four-squared metre areas among house groups

Multiple Comparisons

Dependent Variable: Feature Density of 3 Four-Squared Metre Areas (DF 3CC Areas)

Dunnett T3

(I) DF 3CC Areas Groups	(J) DF 3CC Areas Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	2	-.10818	.11203	.903	-.4458	.2294
	3	-.46652*	.13620	.018	-.8667	-.0663
	4	.09182	.08482	.841	-.2169	.4005
2	1	.10818	.11203	.903	-.2294	.4458
	3	-.35833	.14736	.136	-.7901	.0734
	4	.20000	.10177	.364	-.1534	.5534
3	1	.46652*	.13620	.018	.0663	.8667
	2	.35833	.14736	.136	-.0734	.7901
	4	.55833*	.12790	.006	.1584	.9583
4	1	-.09182	.08482	.841	-.4005	.2169
	2	-.20000	.10177	.364	-.5534	.1534
	3	-.55833*	.12790	.006	-.9583	-.1584

*. The mean difference is significant at the 0.05 level.

Figure G.26: Dunnett's T3 Post Hoc test for feature density of 3 four-squared metre areas among house groups

Curriculum Vitae

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Presentations:

Parry, R.J. (2016). Reconsidering Coalescence: A Preliminary Spatial Analysis of a Late 14^{th} Century Ancestral Iroquoian Community. Poster Presentation. Ontario Archaeological Society (OAS) Symposium, Waterloo, ON.

Parry, R.J. (2017). The Tillsonburg Village Site (AfHe-38): A Study of Formative Community Coalescence in the Middle Ontario Iroquoian period of Southern Ontario. Paper Presentation. 5^{th} Annual Western Anthropology Graduate Student Conference – Community and Anthropology. Department of Anthropology, the University of Western Ontario, London, ON.