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# A Spatial Analysis of Artifacts Using a Geographic Information System at the Grand Portage North West Company Fur Trade Depot (21CK06)

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**A Spatial Analysis of Artifacts Using a Geographic Information System at  
the Grand Portage North West Company Fur Trade Depot (21CK06)**

by

Andrew L. Craft

A Thesis

Submitted to the Graduate Faculty of

St. Cloud State University

in Partial Fulfillment of the Requirements

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Cultural Resource Management

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### **Abstract**

From around 1780 to 1803, the Grand Portage North West Company Fur Trade Depot stood on the western shores of Lake Superior in northern Minnesota. The location served as the company's inland headquarters along their primary trade route through the region now called the Boundary Waters. Some areas of the site have been partially excavated and examined, but none of the artifact datasets or structural features discovered through archaeology has been analyzed using the computer technology of geographic information systems (GIS). For the first time, GIS is used to spatially distribute one of the site's artifact datasets from archaeological excavations conducted in 1963. This research exposes potentially overlooked relationships between these artifacts and previously discovered structural features. The results add new data to existing interpretations of how people in the late 1700s utilized this historic place.

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“Grand Portage was well known in its day, but there are no adequate written descriptions of it at hand today. No contemporary maps or illustrations of the site are available. Therefore, all possible archaeological evidence becomes vital for interpretative purposes. Obviously, almost the full burden of interpretation of the structures at the site will fall upon archaeology.”

-Archaeologist Alan R. Woolworth (1963:3)

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## Chapter I: Introduction

### Overview

This document describes the historical context, previous research conducted, methods used for the analysis, data collected, and interpretive results of the spatial distribution analysis of fur trade artifacts and structure features at the Grand Portage North West Company Depot Site (21CK06). The site is located in northeastern Minnesota on the western shore of Grand Portage Bay, on the northwest shore of Lake Superior, approximately 20 miles west of Isle Royal National Park and about five miles south of the Canadian border (Figure 1). The trade depot was strategically built as an administrative supply center, staging area, and place for the yearly gathering (called *Rendezvous*) between the Great Lakes and the eastern end of an eight-and-a-half-mile trail called the Grand Portage. The portage linked Lake Superior west to a network of rivers and lakes known now as the Boundary Waters and a series of canoe routes reaching further north and west called the Voyageur's Highway (Nute 1941). The goal of this thesis is to obtain a more detailed understanding of how fur trade era artifacts are spatially distributed at the Grand Portage site and whether or not the artifact data indicate anything new about the function of various areas within the site.

Although the exact construction date of the trade depot is unknown, most literature agrees that the North West Company probably began some construction in the early to mid-1780s, and expanded with new buildings and stockade enclosures as their number of employees grew and trade boomed throughout the late 1780s and 90s (Gilman 1992). By the mid-1790s, the trade depot had expanded to its greatest size, which included a 14-foot tall wooden stockade that enclosed at least 16 structures (Woolworth and Woolworth 1982).

In the early 1920s, the site gained local preservation interest and a small museum was constructed near the depot's remains (Gilman 1992). By the 1930s, the site was selected to have archaeological excavations as part of the federal New Deal employment program by the Works Progress Administration, which was established during the Great Depression (Woolworth 1963). Once

these excavations were completed, reconstruction of the trade depot occurred in order for it to serve as a tourism attraction. Then in 1958, the site was designated a National Monument to be administered under the National Parks Service. New excavations and reconstructions were again conducted in 1963-64 and 1970 (Woolworth 1969 and 1975).

Previous archaeologists who worked on the site only analyzed a portion of the total recovered archaeological record and only using the techniques and methods that were common in the field of archaeology nearly 40 years ago. The questions they left unanswered include an interpretation of most of the depot's layout as well as the functions for the majority of the depot's structures. The present research uses new computer technology to create a geographic information system (GIS) to spatially distribute Woolworth's 1963 artifact collection to their excavated locations. These new artifact distribution maps are then linked to previously found structural remains and combined with historical and archaeological data to allow for new interpretations of the site's layout and functional areas for the first time.

### **Beginning of the Fur Trade**

One of the principal commercial enterprises in North America during the 17<sup>th</sup>, 18<sup>th</sup>, and 19<sup>th</sup> centuries was the fur trade (Dolin 2010). The fur trade began in the 16<sup>th</sup> century, when European ships harvested the fisheries off the east coast of Canada. The fishermen made camps on shore where they dried and pickled their fish in preparation for the journey to Europe across the Atlantic Ocean. During their stays, an informal trade developed with local Native Americans, who exchanged food and animal furs to the Europeans for metal and cloth items (Richter 2011).

By the early 17<sup>th</sup> century, fur bearing animal populations in Eastern Europe and Russia had dwindled (Dolin 2010). Some European capitalists realized the prospects of gathering animal furs in North America. Several countries sponsored similar expeditions, each constructing trading posts along the eastern shores and rivers of North America and claiming the right to monopolize trade with the surrounding Native Americans. France established a trading colony along the St. Lawrence Riverway in

New France (Canada); the Dutch constructed posts along the Hudson River in New Netherlands (New York); and the English constructed their trading posts in Chesapeake Bay (New England) (Richter 2011).

Animal furs obtained by Native Americans through hunting or trapping, were then transported to European trading posts for exchange. The furs were packed into ships bound for Europe, to be used as material for clothing (Dolin 2010). Beaver was the most valuable of the furs due to its high quality felt used for hats (Richter 2011). As a result of the fur trade, beaver and other animal populations in eastern North America declined while Native American cultures changed, and the fur trade continuously shifted westward in order to find new more easily exploitable environments (Dolin 2010). By 1660, French fur traders were making their first expeditions to the western Great Lakes region (Gilman 1992).

### **The Beaver Wars**

Native Americans involved in the fur trade belonged to three broad groups, primarily based on language and shared customs: Iroquoian, Algonquian, and Siouan, with each group being composed of smaller tribes or clans (Nute 1941). As the fur trade became more established in North America, European goods became more widely used by Native Americans, eventually replacing many of their traditional survival skills as they became more technologically reliant on the fur trade to sustain their new way of living (Dolin 2010). Epidemics also followed the Europeans and destroyed much of the Native American populations, continuing to further the loss of their traditional lifeways (Richter 2011). From the 17<sup>th</sup> to mid-18<sup>th</sup> century, Native American tribes, supported by their European trade allies, battled one another in the Ohio River Valley and eastern Great Lakes; a time period that is sometimes called the Beaver Wars (Dolin 2010). Groups of Native American refugees fled the fighting westward towards the Mississippi River and the western Great Lakes (Gilman 1992).

Some of the Algonquians tried to maintain their status as middlemen with the Canadian French, but were being attacked by groups of the Iroquois who were allied with Great Britain's

American colonies (Dolin 2010). The Iroquois pushed many of the Algonquians westward through the eastern Great Lakes where they reached Lake Superior and Lake Michigan around the mid-17<sup>th</sup> century (Gilman 1992). Together with French-Canadian allies, the groups of Algonquians in turn pressed some of the Siouan tribes occupying the western Great Lakes onto the Great Plains (Gilman 1992). Groups of Algonquians remained the chief allies of New France (Canada) throughout the first half of the 18<sup>th</sup> century, fighting together against tribes and European colonies that threatened the French and Algonquian trade system (Gilman 1992).

One of the Algonquian tribes that moved west was known as the Ojibwe, also called Chippewa, and they settled in the area around Lake Superior and Grand Portage Bay (Nute 1941). Their descendants still live in the area today on the Grand Portage Chippewa Reservation. The Ojibwe are an alliance of family based clans related to the Ottawa and Pottawatomi (Gilman 1992). During the 18<sup>th</sup> century, the Ojibwe lived in small dome-shaped "wigwam"-style houses and large multi-family longhouses (Nute 1941). In addition to being skilled fishers, hunters and canoe-builders, they gathered plants including wild rice and berries, as well as harvested maple sugar from trees (Nute 1941).

### **The Grand Portage**

The Grand Portage is an eight-and-a-half mile trail that begins on the western shore of Lake Superior from Grand Portage Bay and heads eastward to end up on the Pigeon River. Fur traders built the first structures on the bay and began to improve the trail around 1731, using it until the outbreak of the French and Indian War (Woolworth 1993). The war lasted from 1754 to 1763 in North America and was part of the greater Seven Years War, a global conflict between European empires over control of their colonies (Dolin 2010). In North America, French Canadians and their Algonquian allies fought against a coalition of British Americans and Iroquois (O'Meara 1979). The British alliance defeated the French alliance and gained control of the fur-rich lands in the Ohio River Valley and

eastern Great Lakes. Additionally, the territories in Canada were conquered and changed to British rule (O'Meara 1979).

As a result of the war, the French fur trade system was removed, and the relationship between fur traders and Native Americans changed significantly (Dolin 2010). The defeated Native Americans, who were allied with the French, resented the new strict British trading rules, and especially the removal of traditional gift-giving ceremonies that the French traders had partaken in (Dolin 2010). French Canadian residents who remained in North America after the war encouraged tribes to attack the newly occupied British American forts (Harburn and Todish 2006). One Algonquin leader named Pontiac, gathered together warriors, who besieged and captured several of the isolated frontier forts in a conflict known as Pontiac's Rebellion (Harburn and Todish 2006). Peace came in 1764 when Native American anger subsided as the British adjusted their trade policies (Dolin 2010). The fur trade was soon in a rebound, as a new influx of merchants and explorers began using the Grand Portage.

### **The North West Company**

Trade resumed flowing through the Grand Portage, and surpassed its previous levels of usage that had occurred under the old French trade system. Around 1779, a group of fur traders merged to create a new partnership, naming themselves the North West Company (Gilman 1992). This coalition would come to dominate the Grand Portage trade route in the coming years.

The firm organized itself into several hierarchical levels. Leadership consisted primarily of *bourgeois* English and Scotsmen, called company partners because each owned financial shares in the enterprise and they collectively directed the organization, planning, and logistics of the business (Nute 1941). Company partners primarily operated out of Montreal but also made special visits to trading posts; especially to the depot they built at Grand Portage. Then, in the middle ranks of the company, were the clerks who managed individual trading posts along the route; they were usually educated and sometimes became company partners (Nute 1941).

At the lowest company position, and the most numerous, were the laborers known as *voyageurs* (Nute 1941). Most *voyageurs* were recruited from the rural French Canadian people living around Montreal and Quebec, who had been part of the fur trade prior to British takeover (Podruchny 2006). It was a *voyageur's* duty to transport tons of trade cargo over land and by canoe along the trade routes; they consisted of two distinct groups: Montrealers and Northmen (Nute 1941). Montrealers moved the trade goods between Montreal and the Grand Portage depot, while Northmen carried cargo from deep in the western continental interior to the Grand Portage depot (Nute 1941). Northmen and Montrealers converged in Grand Portage Bay around mid-summer, at a gathering that became known as the *Rendezvous* (Gilman 1992). Both groups camped outside the depot and indulged in a festive atmosphere that included being paid their yearly company salaries in addition to the opening of shops along the bay that catered to the *voyageurs* (Gilman 1992). Meanwhile inside the depot, clerks and company partners conducted their own social and business meetings (Gilman 1992).

Structures at North West Company trading posts usually included warehouses for storing trade goods and animal furs, with simple living quarters or cabins for the employees, and sometimes tall wooden stockades that created an appearance of a fort-type complex (Nute 1941). Larger depots, such as the Grand Portage depot, were also valuable for the availability of specialized craftsmen including blacksmiths, tinsmiths, and coopers (Gilman 1992). Throughout the 1780s and 90s, the North West Company expanded their network of trade depots, reaching farther north and west into Canada and the northern plains (Woolworth 1993). The company's strategy of setting up trading posts close to Native American communities successfully lured a substantial portion of the fur trade away from their main rival, the Hudson's Bay Company (Nute 1941). The North West Company also tried to monopolize the regional fur trade by buying out and harassing the smaller traders that used the Grand Portage (Gilman 1992).



Around 1800, increased pressure from the recently established United States forced the foreign North West Company to move its operations out of the new American territory (Birk 2005). The company built a new depot, called Fort William, roughly 40 miles to the north in Thunder Bay. After 1803, only a small number of North West Company employees remained at the Grand Portage depot, maintaining a small trading shop and hindering rivals from using the route (Birk 2005). Following a violent struggle with the Hudson's Bay Company, the North West Company was eventually bought out and absorbed by its longtime rival in 1821 (Birk 2005).

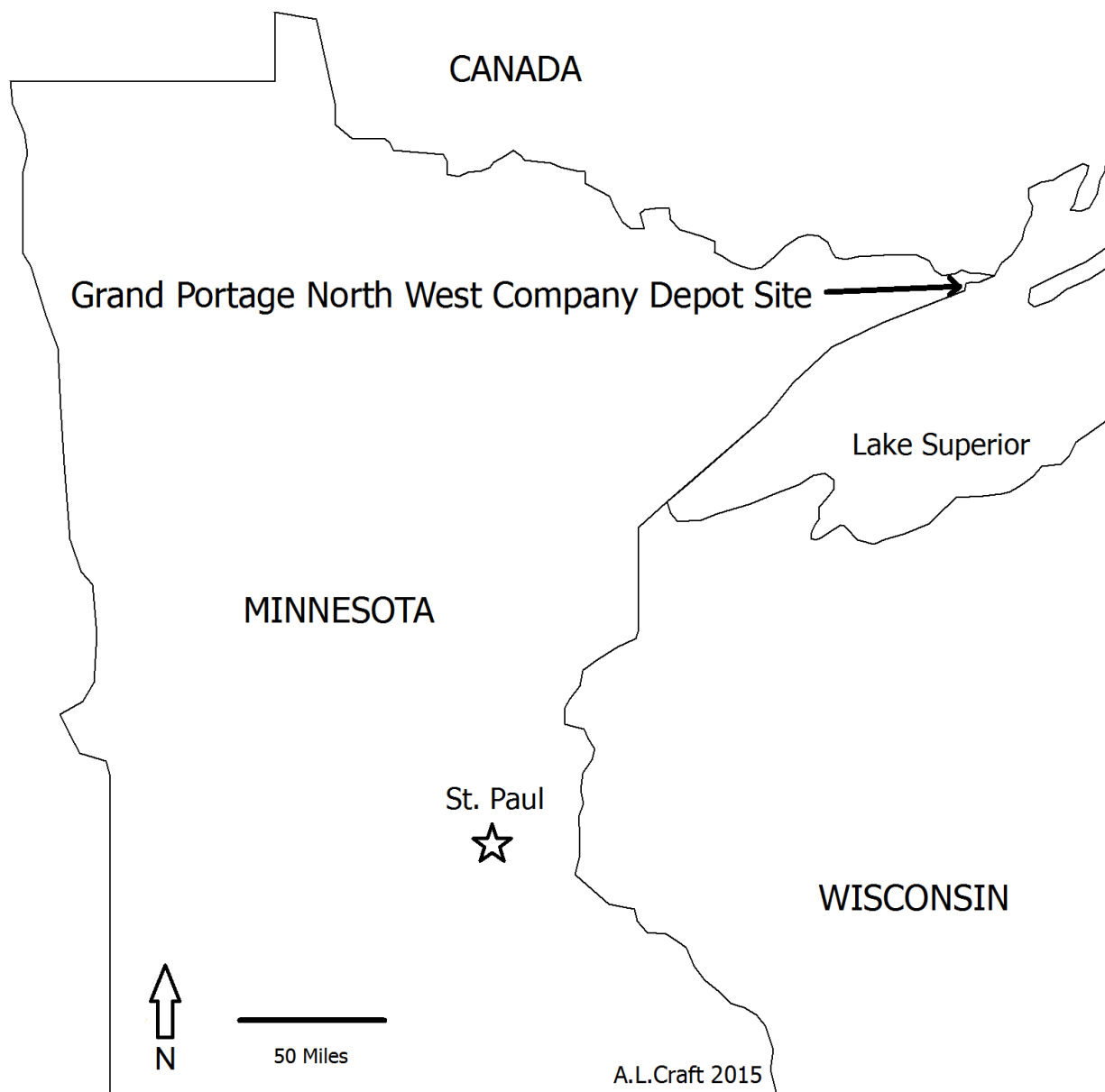


Figure 1

Location of the Grand Portage North West Company Depot Site

## **Chapter II: Site Research History**

### **Overview**

#### **Archaeological Record**

Three periods of archaeological excavations at the Grand Portage North West Company depot site are summarized in this chapter: 1936-37, 1963, and 1970-71. Only excavations that were associated with the interior of the North West Company depot and provided relevant data for the research goals of this project are described. Additional excavations have occurred on Grand Portage National Monument property, but these were either unassociated with the North West Company depot, or were small-scale actions that did not produce any pertinent archaeological data.

From 1936 to 1937, Archaeologist Ralph Brown conducted two excavation seasons at the site. His primary intention was simply to recover enough information and artifacts to reconstruct a historic tourist attraction at the site (Woolworth 1963). Brown's archaeology crew first cleared the vegetation from the surface of the site in order to reveal depressions in the soil that signified the wooden stockade remains which had once surrounded the depot (Woolworth 1963). After excavating the stockade, they shifted to the interior of the depot in order to search for structures, utilizing two methods: exploratory trenching, and local excavation grids (Woolworth 1963). The crew first used exploratory trenching to search for evidence of structures. They crisscrossed the depot's interior with a total of 25 trenches that varied from two-and-a-half to eight feet wide, and seven to 213 feet long; uncovering at least 14 structural features (Woolworth 1963). Unfortunately, they did not excavate in measured or recorded vertical subsurface levels, nor did they use wire mesh screens to recover small artifacts (Woolworth 1963). The artifacts that Brown did recover during the excavations were mostly decorative or high value objects, collected to create colorful displays in museums, rather than for conducting archaeological research (Woolworth 1963).

Brown set up local excavation grids to more closely examine areas that had significant structural remains. These grids were measured into five-by-five foot excavation squares, more similar

to how modern archaeology is performed. Each square was excavated in vertical levels of six inches or greater increments. The crew sketched maps of the features and used wire mesh screens to collect artifacts (Woolworth 1963). Following Brown's excavations, they assembled a replica reconstruction of the stockade, great hall, and main gate (Woolworth 1963). Although Ralph Brown did not create a report of his archaeology conducted at the site, Alan Woolworth synthesized his records while preparing for his own excavation at the Grand Portage depot site (Woolworth 1963).

In 1963 Alan Woolworth began excavations at the site. His goals were to excavate the exterior and interior of the reconstructed stockade wall in order to salvage any data that Brown might have missed (Woolworth 1969). They excavated five foot wide trenches along the walls in three inch levels using wire mesh screens to recover smaller artifacts (Woolworth 1969). On the exterior stockade wall of the depot, they found few fur trade artifacts and no significant structure remains (Woolworth 1969). On the interior side of the stockade, a substantial amount of artifacts and structural features was recovered. Woolworth created a report detailing the excavation, with maps, an artifact catalog, and a selected artifact analysis (Woolworth 1969). Through his excavations, he identified 16 new structural features.

Once the exterior and interior stockade excavations were completed, Woolworth and his crew excavated a fur trade warehouse located outside of the depot to the west. This warehouse was evidently constructed of logs and did not have a hearth. The artifacts consisted of nails, metal brackets, clay pipe fragments, beads, pocket knives, firearm components, and miscellaneous metal tools (Woolworth 1969).

Alan Woolworth returned to the site in 1970 to conduct salvage archaeology after a fire destroyed the depot's reconstructed great hall the previous year. He additionally examined an area just to the north of the great hall where he thought a kitchen structure may have been (Woolworth 1975). Woolworth's re-excavation of the great hall uncovered evidence of wooden post remains that indicated a wide outdoor porch area was attached to the southern side of the great hall. Few artifacts

were found, which Woolworth attributed to Brown's previous excavation of the area (Woolworth 1975). Next he successfully located and excavated the kitchen. The features they discovered were of a rectangular building, 27 feet by 35 feet in size, with wide porches attached to three of the structure's sides (Woolworth 1975). Within the building he uncovered the remains of a fireplace, a cellar storage area, and approximately 14,500 fur trade artifacts (Woolworth 1975). He concluded that the kitchen structure was probably built around 1785, during a time when the North West Company was expanding the size of the depot for their growing business (Woolworth 1975). He found evidence that a stockade wall had once been between the kitchen and the great hall, which must have been taken down prior to the kitchen's construction, as well as two drainage ditches to the north and south of the kitchen (Woolworth 1975:65).

Alan Woolworth created an archaeological report detailing the great hall and kitchen excavations. The report included a catalog and analysis of the artifacts that included nails, ceramic fragments, glass bottle fragments, trade beads, tinklers, clay pipes, eating utensils, tools, and building hardware (Woolworth 1975:90). He made several new interpretations regarding the kitchen: the south face of the fireplace was most often utilized, food was brought to the depot in perishable containers, food preparation occurred in the eastern area of the kitchen, leisure activities occurred on the porch, the kitchen was raised from one to one-and-a-half feet off the ground, the fireplace and subterranean cooler were used as trash pits prior to the structure's abandonment, and the structure was eventually demolished (Woolworth 1975:263-281). The kitchen was reconstructed to serve an interpretive-educational function.

Between Ralph Brown and Alan Woolworth's archaeological excavations, at least 30 remains of structures have been identified at the site. Some of these may be from occupations prior to, or after, the North West Company's use of the site (1780-1803). After the depot was abandoned in 1803, parts of it were salvaged by employees (Birk 2005). Woolworth (1963) lists several probable Grand Portage Bay inhabitants from the last 200 years: French (1731-1760) and British (1762-1803) fur

traders, American fishing companies (1836-1841), Indian Reservation personnel (1860-1890), and finally recent residential occupants (1890-1938). Ojibwe Native Americans continued living throughout the Grand Portage region and may have used the site. Unassociated fur traders also likely utilized the deteriorating depot, or at least reused some of its materials (Woolworth 1963). Lastly, before Grand Portage National Monument was established, a rough road was constructed through some areas of the depot site and a cabin was moved onto the site to serve as a museum in 1938 before later being removed (Woolworth 1963).

### **Historical Record**

The historical record of the Grand Portage North West Company depot is surprisingly scarce. Only a few first person accounts are available, giving valuable but vague descriptions of the depot's structure types, conditions, and quantities, though unfortunately lacking details regarding their specific locations. According to Alan Woolworth (1963), the lack of available descriptions may be attributed to the widespread awareness contemporaneous people had of the depot who might not have seen a need to provide descriptions of such a place.

One of the most useful observations of the depot was made by a North West Company clerk named John MacDonnell (Gates 1965):

"All the buildings within the Fort [depot] are sixteen in number made with cedar and white spruce fir split with whip saws after being squared, the Roofs are covered with shingles of Cedar and Pine, most of their posts, Doors, and windows, are painted with Spanish brown. Six of these buildings are Store Houses for the company's Merchandise and Furs, etc., the rest are dwelling houses, shops, compting, and Mess House. The Gates are shut always after sunset and the Bourgeois and clerks Lodge in houses within the palisades, where there are two Sentries keeping a look out all night chiefly for fear of accident by fire."

The account explains that the depot had gates, living quarters, store houses, shops, an accounting office (compting), and a mess house. Another first hand depiction is from Sir Alexander MacKenzie in 1798 that describes the functions of some buildings at the depot: "...the fort, picketed in with cedar pallisadoes [sic], and inclosing houses built with wood and covered with shingles. They are calculated for every convenience of trade, as well as to accommodate the proprietors and clerks during their

short residence there" (Lamb 1970: 96-97). Again the informant describes living quarters, the availability of skilled craftsmen, and enough storage to accommodate supplies for the depot's residents (Woolworth and Woolworth 1982:106). An additional North West Company clerk, Daniel Harmon, described the depot in 1800: "Within the Fort there are a number of Dwelling Houses, Shops & Stores etc. all of which appear to be temporary buildings, just to serve for this moment" (Lamb 1957:20). Harmon's comments show that by 1800, the structures at the depot appeared to be only temporarily constructed; perhaps because the company was preparing to move to Fort William, so they may have been maintaining buildings to last only a short while. Harmon goes on to describe some of his work duties at the depot: "Mr. J. Clarke & I are placed in the General Shop where we deal out to the People Dry Goods, Rum, Flour, Sugar, Butter & Meat etc., etc." (Lamb 1957). Harmon's statement allows for the inference that shops for dry and wet goods were still in operation by 1800.

The final important form of historical literature is an inventory of goods from 1794 as shown in Table 1 (Thompson 1969:74-75, Woolworth and Woolworth 1982:111). This provides insight into the provisional needs of the depot. Woolworth and Woolworth (1982) used the inventory and other historical data to estimate types and sizes of 17 structures that would likely be at the depot; these are displayed in Table 2.

Table 1  
 Depot Inventory from 1794

Provisions	Trade Goods
20 bales of hams and cheeses	600 bales of dry goods
10 kegs of sugar	40 trunks of dry goods
8 kegs of salt	8 cases of hats
32 kegs of butter	60 bales of tobacco
80 kegs of pork	22 cases of guns
230 kegs of grease	90 cases of iron
40 kegs of beef	20 cases of knives
3 kegs of sausages	2 bales of traps
17 bags of green peas	20 bales of kettles
1400 bushels of corn	400 kegs of high wines
	50 kegs of rum
	10 kegs of port wine
	10 kegs of brandy
	20 kegs of shrub



Table 2  
Structure Estimates

Name	Contents/Function	Size (Feet)
Dry Food Storage	corn, peas, flour, wild rice, etc.	15 x 30
Wet Food Storage	grease, butter, pork and beef in brine, etc.	14 x 30
Liquor Storage	liquors in wooden kegs	24 x 36 or 18 x 48
Dry Goods Storage	baled blankets, cloth, clothing, etc.	22 x 48
Hardware and Metal Trade Goods Storage	kettles, firearms, etc.	10 x 14
Fur Processing Area and Storage	baled furs, hides, etc.	20 x 60 or larger
Pack Storage	to break/pack bulk items for storage/travel	24 x 60
Accounting House	accounting records on furs, trade goods, and wages	18 x 28
Great Hall	company business meetings, eating, and dances	30 x 95
General Store or Commissary	sale of liquor, clothing, and foods	18 x 30
Kitchen	food preparation	28 x 28
Carpenter and Cooper Workshop	build and repair furniture, buildings, and casks	20 x 30
Blacksmith and Tinsmith Workshop	repair tools, etc., make and repair tinware	20 x 24
Clerks' Quarters	seasonal living quarters for clerks	22 x 36 or 24 x 48
Guides' and Interpreters' Quarters	seasonal living quarters for guides	24 x 60
Manager's Quarters	year-round living quarters for depot manager	24 x 54
Company Partners' Quarters	seasonal living quarters for North West Company partners	24 x 72

## **Chapter III: Analysis Methods**

### **Overview**

This chapter describes the methods for the spatial distribution analysis of artifacts and structural features at the Grand Portage North West Company depot site. Alan Woolworth's 1963 excavation around the interior of the reconstructed stockade was selected for the spatial distribution analysis because the recorded artifact locations used a grid system that could more easily be reconstructed into a digital format. Woolworth's 1963 excavation also covered a broad area of the archaeological site, allowing for a site wide comparison of the artifacts and structural features. The methods for the new spatial distribution analysis were designed help answer the following research questions:

- 1) How are the artifacts distributed around the site?
- 2) What do the artifact data show regarding the overall function of larger areas that contain multiple structures or activities within the depot?

In order to answer these two primary questions, a new artifact dataset and geographic information system (GIS) needed to be created. In addition to the research questions, this project should offer something of a template for using data from archaeology conducted prior to geographic information systems. This project can provide an example of the possibilities and difficulties of integrating existing data into new technological platforms.

### **Dataset**

The first step to reach the goal for the spatial analysis was to create a new artifact dataset that could be integrated into a GIS. The artifact data originates from two sources: Grand Portage National Monument's cultural objects database, and Woolworth's 1963 artifact catalog. To begin preparing for the spatial analysis, artifact data from Woolworth's 1963 archaeological excavation were extracted from Grand Portage National Monument's cultural objects database. Because the 1963 excavation was conducted along the exterior in addition to the interior of the stockade, the selection

of artifacts was reduced to show only those artifacts that came from the interior, leaving 1340 artifacts.

The next step was to gather artifact information that was not in the National Monument's database. These data were found in the 190-page artifact catalog within Alan Woolworth's 1963 report under "Discarded" and "Not Collected" headings. These sections contain lists of artifacts, mostly common structural objects like nails, glass, and metal scraps, which Woolworth recorded but did not collect. As a result, they were never entered into the database of artifacts kept by Grand Portage National Monument, but have been added to the new spatial distribution dataset.

Woolworth's records described the uncollected artifacts with enough detail to allow deciphering of the fur trade artifacts from the modern objects. For example, he identified ceramic artifact material types that were unavailable during this period such as 19<sup>th</sup> century ceramics (Hume 1969). Through his descriptions, modern objects were separated from the fur trade artifacts. The uncollected fur trade artifacts totaled 1570 objects, which were added to my analytical dataset. The complete dataset is comprised of 1340 artifacts listed in the Grand Portage National Monument database, in addition to 1570 artifacts from the uncollected sections of Alan Woolworth's excavation catalog, amounting to a total of 2910 artifacts.

These artifacts were divided into 16 categories based on Woolworth's other functional artifact analyses conducted for the site: 1) Adornment, 2) Blacksmithing, 3) Construction Materials, 4) Cooking, 5) Crafting, 6) Drinking, 7) Eating, 8) Entertainment, 9) Faunal Remains, 10) Furnishing, 11) Hardware, 12) Hunting, 13) Husbandry, 14) Pocket Tools, 15) Recordkeeping, and 16) Smoking. These categories assist in answering this project's function-oriented research questions, and they work in conjunction with the same categories used in Woolworth's artifact analyses in his 1963, 1969, and 1975 reports.

## **Geographic Information System**

A GIS of the 1963 excavation at the Grand Portage Depot site did not exist, so the first step was to create a new GIS capable of showing the quantities of the 16 artifact categories. Then the GIS could be used to visualize the distribution of the new artifact dataset in conjunction with structural features. First, a scanned version of the 1963 excavation map was used to trace the depot's extent and to form a boundary for the site in the GIS. The version of Woolworth's excavation map used was modified and updated by Hamilton, Graham, and Norris (2005:25) of the Department of Anthropology at Lakehead University, Ontario, Canada, which improved the accuracy of Woolworth's site-wide grid system. The software I used to generate the digital map used for this thesis was ArcGIS 10.1. Once the site boundaries were traced, the roughly 10-foot long by 5-foot wide excavation locations were drawn to represent the locations where the artifacts were found adjacent to the stockade.

During the drawing and tracing processes, previously unknown conflicts were discovered between Woolworth's report and his maps. Contradictions between his grid system and the artifacts' recorded locations were evident. In his report, Woolworth described excavating trenches along the interior of the stockade in 5-foot wide by 10-foot long segments (Woolworth 1969:31). However, his two maps reflect different excavation dimensions: the first displays interior excavation trenches that are 20 feet long instead of 10, and on his other map, the entire excavation area is shown as a single continuous trench (Woolworth 1969). This conflict occurs with the exterior palisade excavation trenches as well.

From his report, it was evident that Woolworth (1969) recorded the artifact locations on a site-wide grid system according to their distance in feet from the site-wide datum point of "0 North and 0 East", located outside the southwest corner of the depot. Woolworth's artifact location recording method used groupings of artifacts, listed under headings such as "South trench interior, 230." Most of Woolworth's artifact locations were recorded based on 10-foot intervals, for example: 10 East, 20 East, 30 East, etc. So for the GIS to be able to show where the artifacts originated, each 10-foot

interval was called an "excavation location", signifying a 10-foot area along the stockade where groups of artifacts were recorded in 1963. Using this method, 115 excavation locations from Woolworth's 1963 excavation were identified around the interior of the depot and drawn into the GIS. The excavation locations were assigned number identifiers from the central area of the south wall moving counter-clockwise to the south end of the west wall (Figure 2).

Another discrepancy was revealed between written locations versus map locations when comparing Woolworth's map with the locations of the structure features (Woolworth 1969). His report's structure feature coordinates did not match exactly what his map showed. Since the artifact locations were drawn using the listed coordinates, and to stay consistent with the artifact locations, the structural features' coordinates from the report were used to draw the structure features in the GIS.

A final conflict with the map and grid system arose in the northeast corner of the depot, where the furthest location is recorded as 390 North. By measuring the distance using Woolworth's grid system, the northeast corner appears to be at 380 North, a 10-foot difference. The discrepancy may have been caused by miscalculations of coordinates by Woolworth or his crew. Since this is the farthest corner from the grid's datum, the location might have been harder to calculate correctly, especially given its awkward angle from the datum point. Very few artifacts and no structural features are in that area, so the issue had a negligible effect on this spatial analysis.

After the conflicts were resolved with the digitized map, frequencies for each artifact class (e.g., beads, rosehead nails, pipe fragments, faunal remains, etc.) within the 16 primary functional categories were entered for each 5-foot by 10-foot excavation location in order to be mapped with the ArcGIS 10.1 software. The resulting maps are illustrated in the following chapter.

## Chapter IV: Results

### Overview

#### Introduction

By integrating the dataset with GIS, a spatial distribution of the 1963 artifact collection was available for the first time at the North West Company Grand Portage depot site. The following maps were designed to display a plan-view of the entire depot site, showing the quantities for each artifact category in graduated colors that symbolize the artifact quantities in each excavation location using the Jenks' Natural Breaks algorithm, which automatically defines natural groupings within the dataset (De Smith, Goodchild, and Longley 2015). This was additionally modified to express zero quantity excavation locations to help define concentrations of artifacts.

Preceding the artifact distribution maps is a list with the basic descriptions for the features, structures, and hearths at the site. Another reference for reading the distribution maps is Figure 2, which indicates each excavation location's numeric identifier from one to 115. This map will be necessary to refer to when reading the artifact distributions, since the excavation location numbers could not be fit onto the artifact distribution maps. Preceding each map, the artifact distribution data is presented as a narrative in addition to a list form.

#### Features, Hearths, and Structures

The names of features, hearths, and structures are abbreviated to F, H, and S on the maps. Their primary names are those used in Woolworth and Woolworth (1982). Those in parentheses are other known names. This list is a summary meant to serve as a quick reference to the artifact distribution maps. Greater details for them can be found in Woolworth (1963), Woolworth (1969), Woolworth and Woolworth (1982), Hamilton et al. (2005), and Bahr Vermeer Haecker Architects (2009).

The features, hearths, and structures at the site are as follows:

Feature 4 (CR-4): An unknown feature that was disturbed by a modern road.

Feature 22: Stone slabs and log remains along the west wall.

- Feature 23: A line of boulders parallel to the west wall.
- Feature 24: Stone slabs in a north and south orientation parallel to the west wall.
- Feature 25: A layer of charcoal along the south wall.
- Feature 26: A layer of charcoal on the south wall.
- Feature 28: Stone slabs and boulders orientated east and west on the south wall.
- Feature 29: Log foundation remains along the south wall.
- Feature 30: Two rows of boulders on the south wall in east and west direction.
- Feature 32: Trenches in a north and south orientation near the southeast corner.
- Feature 33: Boulders and wood remains along the east palisade.
- Feature 34: Boulders along the east wall.
- Feature 35: Boulders along the east wall near the southeast corner.
- Feature 36: Stone slabs along the east wall.
- Feature 38: A row of shale slabs.
- Feature 39: Blacksmith slag deposits.
- Hearth 3 (CR-3): A 6-by-6 foot stone fireplace feature on the south wall.
- Hearth 8 (CR-8): Squared stone slabs and three large flat boulders.
- Hearth 10 (CR-10): Squared stone slabs that formed a hearth.
- Hearth 15 (CR-15): Stones that may form a hearth.
- Hearth 27: A stone fireplace along the south wall.
- Structure 2 (CR-31): A small gateway in the southeast corner of the depot.
- Structure 5 (CR-5): A stone foundation forming the Great Hall.
- Structure 6 (CR-6): A stone foundation forming two rooms, each with a fireplace.
- Structure 7 (CR-7): Burned wood remains with trenches and a hearth.
- Structure 9 (CR-9): Foundation stones, trenches, post-holes, and a hearth.
- Structure 11 (CR-11): Post-holes east of the Great Hall.
- Structure 12 (Structure 1): Trenches with post-holes near the Great Hall.
- Structure 13 (CR-13): Trenches, post-holes, and a cellar.
- Structure 14 (CR-14): Trenches with post-holes forming a gate and tower.
- Structure 16 (CR-16): Used to prepare and serve meals near the Great Hall.

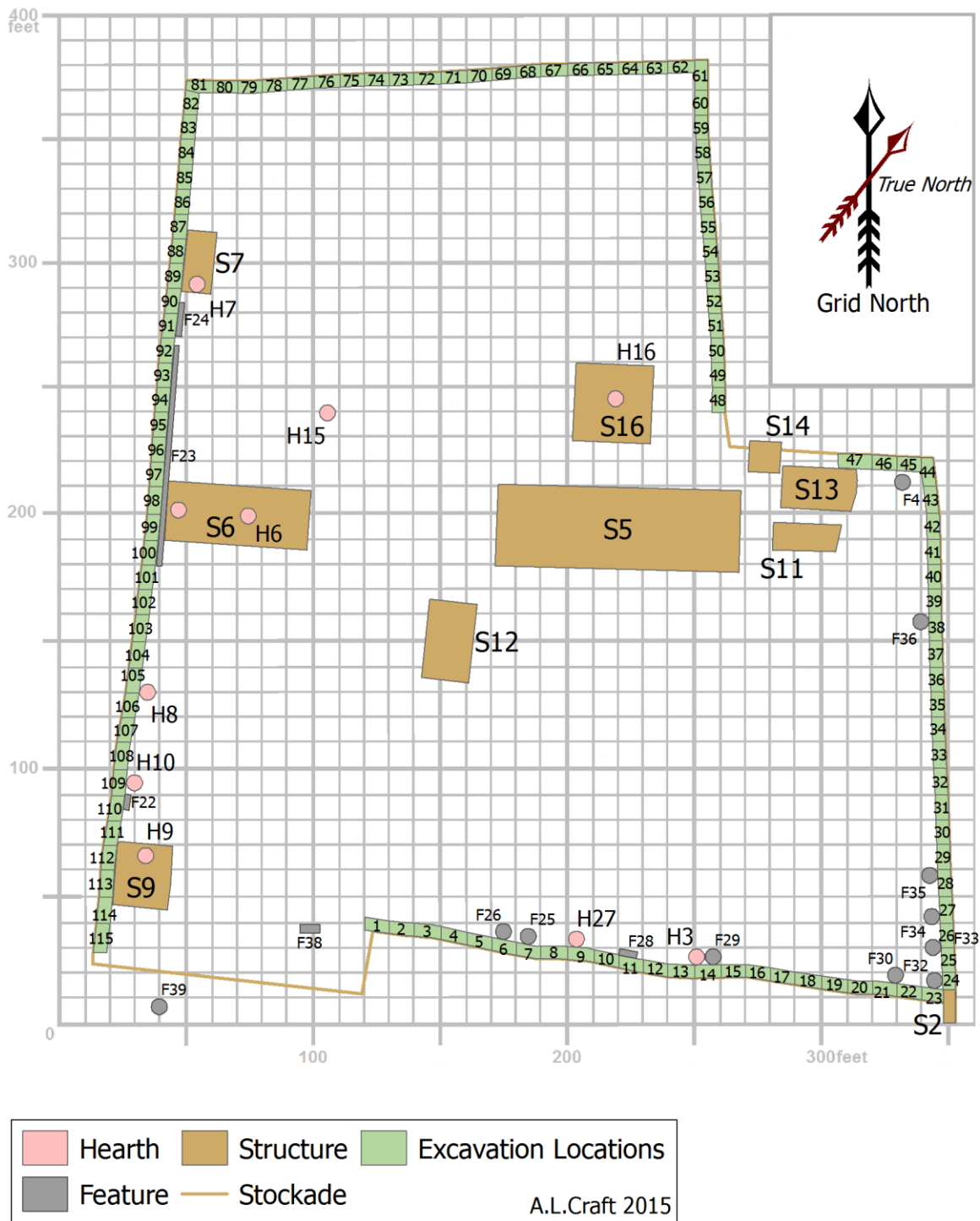


Figure 2

Artifact Excavation Locations



## Artifact Distribution Maps

### Adornment

There are 1004 total artifacts in the adornment category, making this the largest portion of the dataset at 34.4% of its total. The artifacts include beads, bells, bracelets, buckles, buttons, a pendant, rings, and tinklers. Many of these objects may have served dual functions, as personal possessions of North West Company employees, or as trade goods to Native Americans. These artifacts likely come from several sources. Until around 1850, all glass beads were imported from Europe (Hume 1969). *Tinklers*, small cone-shaped bells worn as a clothing fashion, were sometimes produced from worn out kettles and other common metal items (Hume 1969). Buttons were also at times crafted from makeshift materials (Hume 1969). Many of these artifacts' small sizes also made them potentially easier to lose.

The distribution map shows the adornment artifacts in low to high quantities along most of the south wall (Figure 3). Low quantities of artifacts are in Locations (Loc.) 1-4, including one buckle, four buttons, 12 beads, and one ring. Zero artifacts occur in Loc. 5-6. Location 7 has a large spike in artifacts, with 211 total artifacts comprising of 206 beads, two tinklers, one buckle, one button, and one ring. Low artifact quantities return in Loc. 8 with just seven beads and one bracelet. In Loc. 9, adornment numbers increase slightly with 26 beads, three copper tinklers, and one brass button, then the quantity more than doubles in Loc. 10, which includes 83 beads and two tinklers. A drastic drop in artifact amount occurs again with only one iron button in Loc. 11, then that amount rises in Loc. 12 to 50 beads and one catlinite pendant. The largest concentration of artifacts on the south wall follows in Loc. 13, consisting of 207 beads, one copper bell, one brass buckle, and one tinkler. Artifact quantity drops down in Loc. 14, with only 13 beads and one copper bell. With the exception of just one brass buckle, one glass button, and one bead in Loc. 16, the east end of the south wall is a mostly empty space until the southeast gateway. The next concentration of adornment artifacts from the south wall occurs near the southeast corner gateway, named Structure 2 (S2, Figure 2). Location 20 has eight

total artifacts, all glass beads; followed by Loc. 21 with 47 beads and one glass button. No further artifacts occur along the south wall.

The adornment artifacts continue just north of the southeast gateway (S2), however overall the east wall has much fewer of these types of artifacts than the south wall, and they are much more sparsely populated (Figure 2). The first isolated artifact group is in Loc. 25, with 33 beads and one iron buckle. Next is Loc. 28 with just one bead, followed by Loc. 29 with four beads, and 16 beads in Loc. 31. No further artifact deposits occur until Loc. 48, with 93 beads total. The final artifact along the east wall is in Loc. 61 with a single glass bead.

The north wall is the least populated and most sparse of the four walls (Figure 2). Only one spot has artifacts, Loc. 73, which contains six glass beads. No other artifacts occur until the west wall.

The west wall has fewer adornment artifacts than the south wall and slightly greater than the east wall. The first, and most dense, artifact concentration occurs in Loc. 87, where 79 beads and one brass ring are located. No further artifacts are present until further south along the wall in Loc. 97 with one silver button, and Loc. 99 containing four beads. Moving southward, a long space of roughly 80 feet is void of artifacts until Loc. 108, which has seven beads and one brass buckle. Location 111 has 54 beads and three buttons, and the final location, Loc. 115, has five buckles and five buttons.

The artifacts in the adornment category include the following distributions:

- Bells (n = 2): **Loc. 13 = 1 copper; Loc. 14 = 1 copper**
- Bracelet (n = 1): Loc. 8 = 1 copper
- Buckles (n = 12): Loc. 4 = 1 iron; Loc. 7 = 1 iron; Loc. 13 = 2 (1 iron, 1 brass); Loc. 16 = 1 brass; Loc. 25 = 1 iron; Loc. 108 = 1 brass; Loc. 115 = 5 (2 brass, 1 copper, 2 iron)
- Buttons (n = 19)

South Wall: Loc. 1 = 2 bone; Loc. 2 = 1 iron; Loc. 3 = 1 brass; Loc. 7 = 1 glass; Loc. 9 = 1 brass; Loc. 11 = 1 iron; Loc. 13 = 1 iron; Loc. 16 = 1 glass; Loc. 21 = 1 glass

West Wall: Loc. 97 = 1 silver; Loc. 111= 3 (1 bone, 1 copper, 1 glass); Loc. 115 = 5 (2 bone, 1 brass, 2 glass)

- Beads (n = 958)

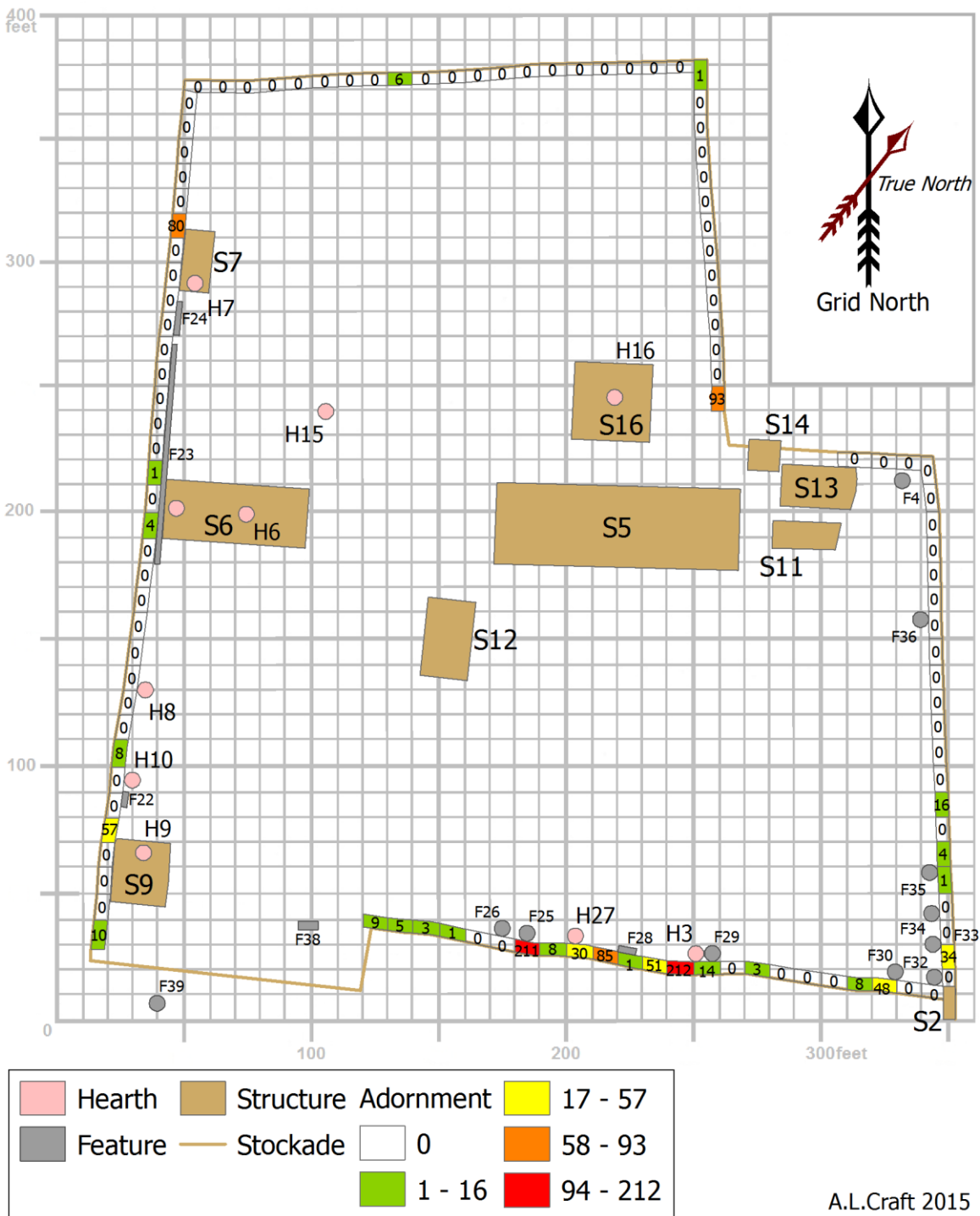
South Wall: Loc. 1 = 6; Loc. 2 = 4; Loc. 3 = 2; Loc. 7 = 206; Loc. 8 = 7; Loc. 9 = 26;  
Loc. 10 = 83; Loc. 12 = 50; Loc.13 = 207; Loc. 14 = 13; Loc. 16 = 1; Loc. 20 = 8; Loc.  
21 = 47

East wall: Loc.25 = 33; Loc.28 = 1; Loc.29 = 4; Loc.31 = 16; Loc.48 = 93; Loc.61=1

North Wall: Loc. 73 = 1

West Wall: Loc. 87 = 79; Loc. 99 = 4; Loc. 108 = 7; Loc. 111 = 54

- Pendant (n = 1): Loc. 12 = 1
- Rings (n = 3): Loc. 1 = 1; Loc. 7 = 1; Loc. 87 = 1
- Tinklers (n = 8): Loc. 7 = 2; Loc. 9 = 3; Loc. 10 = 2; Loc. 13 = 1



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Figure 3  
Adornment Artifact Distribution

## Blacksmithing

Blacksmithing artifacts comprise 7.6% of the dataset, with 221 total items. These objects are used in blacksmithing processes and include iron, lead, and tin scraps as well as *clinkers*, a byproduct of a forge (Light and Unglik 1987). A blacksmith could have provided an important service for not only for this depot, but also many of the smaller depots further inland without smiths of their own.

Blacksmithing remnants could also be considered garbage, to be deposited in specific places where they would be out of the way.

The south wall has the greatest amount of blacksmithing artifacts for the depot (Figure 4). Beginning at the center of the south wall: Location (Loc.) 1 has five iron scraps, one clinker, and one lead scrap. Location 2 has three iron scraps, and Loc. 3 has five clinkers, three iron scraps, and two tin scraps. Another 10 artifacts are in Loc. 4, with nine iron scraps and one clinker. Artifact quantities more than triple in Loc. 5, with 28 iron scraps, three clinkers, and two lead scraps, then they fall to only three iron scraps in Loc. 6, and finally jump to the greatest concentration at the depot in Loc. 7, with 60 iron scraps and one lead scrap. With zero blacksmithing artifacts in Loc. 8, the space eastward from this location slowly rises to two iron scraps in Loc. 9, one clinker and one iron scrap in Loc. 10, and up to four iron scraps and one clinker in Loc. 11. Eastward the artifacts drop to two iron scraps and one clinker in Loc. 12, and then level off at six artifacts in the following locations: Loc. 13 with three clinkers and three iron scraps, and Loc. 14 with four clinkers and two iron scraps. Location 15 goes back down to just one clinker and one iron scrap. Location 16 has the same amount of artifacts with one clinker and one iron scrap. Only three artifacts are scattered in the space east of here to the southeast gateway (S2), one iron scrap in Loc. 18, one iron scrap in Loc. 20, and one clinker in Loc. 21.

The east wall has much fewer and more sparse blacksmithing artifacts than the south wall. Heading northward from Structure 2, the first artifact is in Loc. 25, a single iron scrap. The next artifact is in Loc. 29, also a single iron scrap, followed by two iron scraps in Loc. 30. An empty space

of roughly 160 feet is interrupted by one iron scrap in Loc. 48, then five more in Loc. 57, ending the east wall artifact distribution. No blacksmithing artifacts are found along the north wall.

The west wall contains the second greatest amount of blacksmithing artifacts, but they are all concentrated at its southern end. No artifacts occur until Loc. 105 with two iron scraps, another two in Loc. 106, in addition to two iron scraps in Loc. 107. Location 108 grows in artifact quantity slightly, with three iron scraps, and then the amount doubles to six in Loc. 109, and doubles again to twelve iron scraps in Loc. 110. The quantity of artifacts sharply drops in Loc. 111 with only one iron scrap, and then rises to eight iron scraps in Loc. 112. The blacksmithing artifacts at the site finish off with six iron scraps and one clinker in Loc. 114, and then eight iron scraps and two lead scraps in Loc. 115.

Artifacts in the blacksmithing category include the following distributions:

- Clinkers (n = 23)  
 Loc. 1 = 1; Loc. 3 = 5; Loc. 4 = 1; Loc. 5 = 3; Loc. 10 = 1; Loc. 11 = 1; Loc. 12 = 1;  
 Loc. 13 = 3; Loc. 14 = 4; Loc. 16 = 1; Loc. 21 = 1; Loc. 114 = 1
- Iron Scrap (n = 189)  
 South Wall: Loc. 1 = 5; Loc. 2 = 3; Loc. 3 = 3; Loc. 4 = 9; Loc. 5 = 28; Loc. 6 = 3; Loc.  
 7 = 60; Loc. 9 = 2; Loc. 10 = 1; Loc. 11 = 4; Loc. 12 = 2; Loc. 13 = 3; Loc. 14 = 2; Loc.  
 15 = 1; Loc. 16 = 1; Loc. 18 = 1; Loc. 20 = 1; East Wall: Loc. 25 = 1; Loc. 29 = 1; Loc.  
 30 = 2; Loc. 48 = 1; Loc. 57 = 5; West Wall: Loc. 105 = 2; Loc. 106 = 2; Loc. 107 = 2;  
 Loc. 108 = 3; Loc. 109 = 6; Loc. 110 = 12; Loc. 111 = 1; Loc. 112 = 8; Loc. 114 = 6;  
 Loc. 115 = 8
- Lead Scrap (n = 7): Loc. 1 = 1; Loc. 5 = 2; Loc. 7 = 1; Loc. 15 = 1; Loc. 115 = 2
- Tin Scrap (n = 2): Loc. 3 = 2

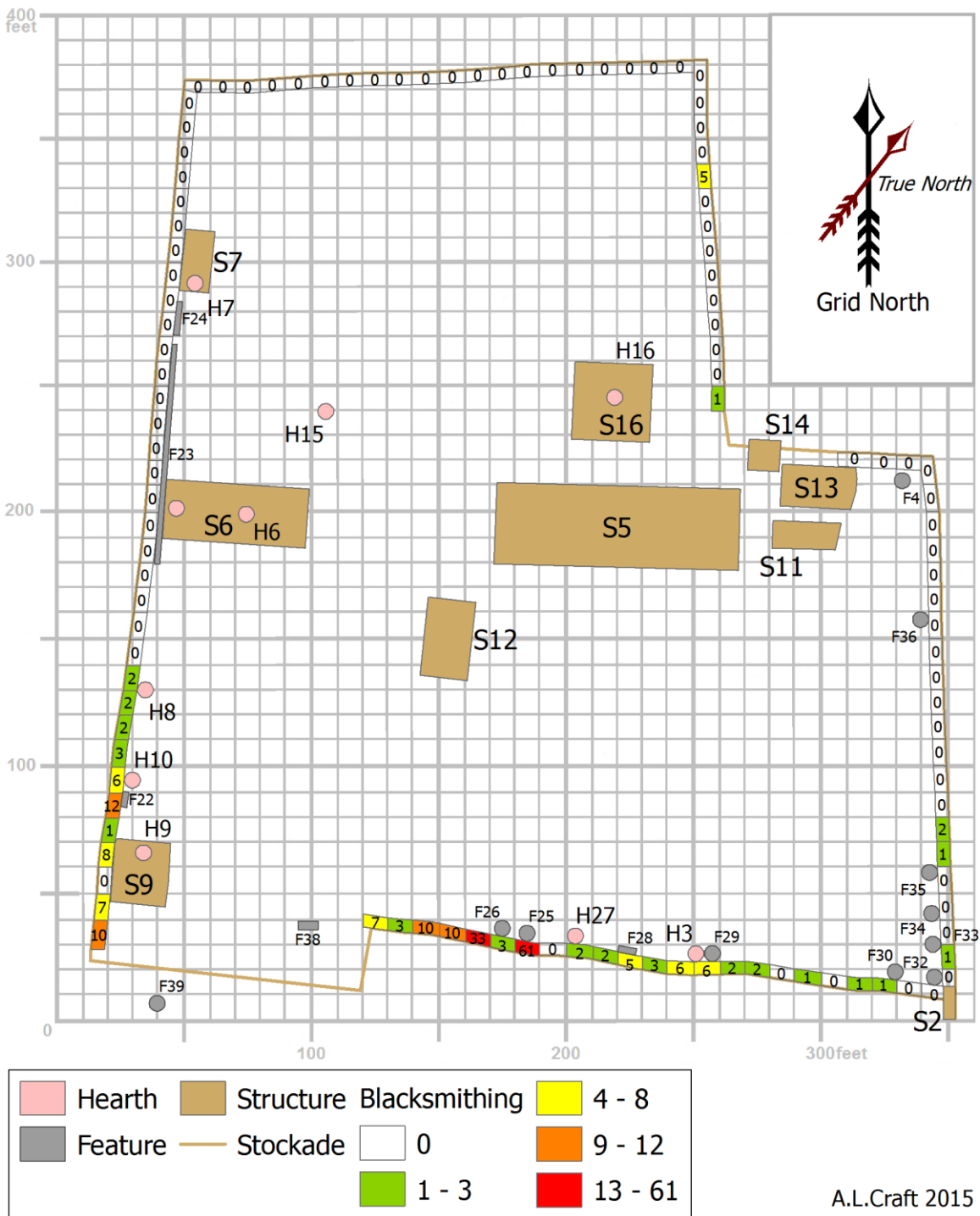


Figure 4

Blacksmithing Artifact Distribution

## Construction Material

Figure 5 shows 211 construction materials that comprise 7.6% of the total artifact dataset. Artifacts in this category consist of nearly all window glass except one piece of *chinking*, a clay-like substance used in wooden building construction. Distribution of construction materials begins in the central area of the south wall in Location (Loc.) 1, with two window glass shards, followed by seven window glass shards in Loc. 3, and 22 in Loc. 4. Location 5 has seven window glass pieces, with a sharp increase to 21 shards in Loc. 7. Location 9 and Loc. 10 both have four window glass shards each. Location 12 jumps up nearly double to 28 pieces, followed by 14 in Loc. 13. Location 14 has nine glass shards and the sole piece of chinking. The next four locations, Loc. 15-18 each contain two window glass pieces each. Lastly along the south wall are three pieces of window glass in Loc. 20, and seven in Loc. 21. The east wall has much fewer artifacts. Location 29 has three window glass pieces, Loc. 57 has two, and Loc. 61 has just one window glass piece. The north wall has only one piece of window glass in Location 73. The west wall has fewer artifacts than the south wall, but more than the north and east walls. Just one window glass fragment is at the northern end, in Loc. 85. The rest of the artifacts are all at the south end of the wall, beginning in Loc. 108 with two window glass pieces, followed by a spike of 12 in Loc. 109. At half that much, Loc. 110 has six window glass pieces; followed by zero in Loc. 111, ten in Loc. 112, zero in Loc. 113, and ending with a spike of 21 in Location 114.

The construction material category comprises the following artifact distribution:

- Chinking (n = 1): Loc. 14 = 1
- Window Glass (n = 210): Loc. 1 = 2; Loc. 3 = 7; Loc. 4 = 22; Loc. 5 = 7; Loc. 7 = 21; Loc. 9 = 4; Loc. 10 = 4; Loc. 11 = 15; Loc. 12 = 28; Loc. 13 = 14; Loc. 14 = 9; Loc. 15 = 2; Loc. 16 = 2; Loc. 17 = 2; Loc. 18 = 2; Loc. 20 = 3; Loc. 21 = 7; Loc. 29 = 3; Loc. 57 = 2; Loc. 61 = 1; Loc. 73 = 1; Loc. 85 = 1; Loc. 108 = 2; Loc. 109 = 12; Loc. 110 = 6; Loc. 112 = 10; Loc. 114 = 21



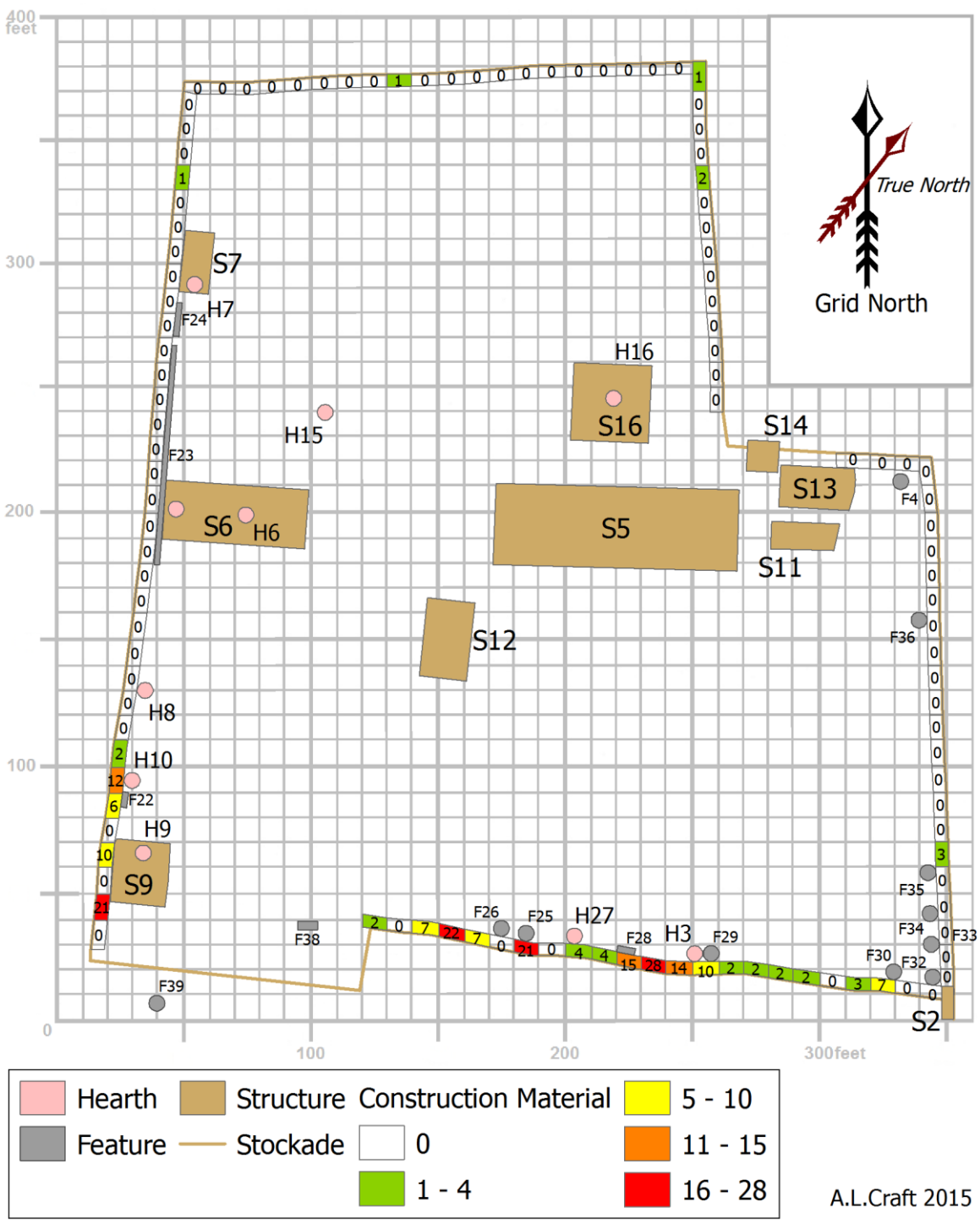


Figure 5  
Construction Material Distribution

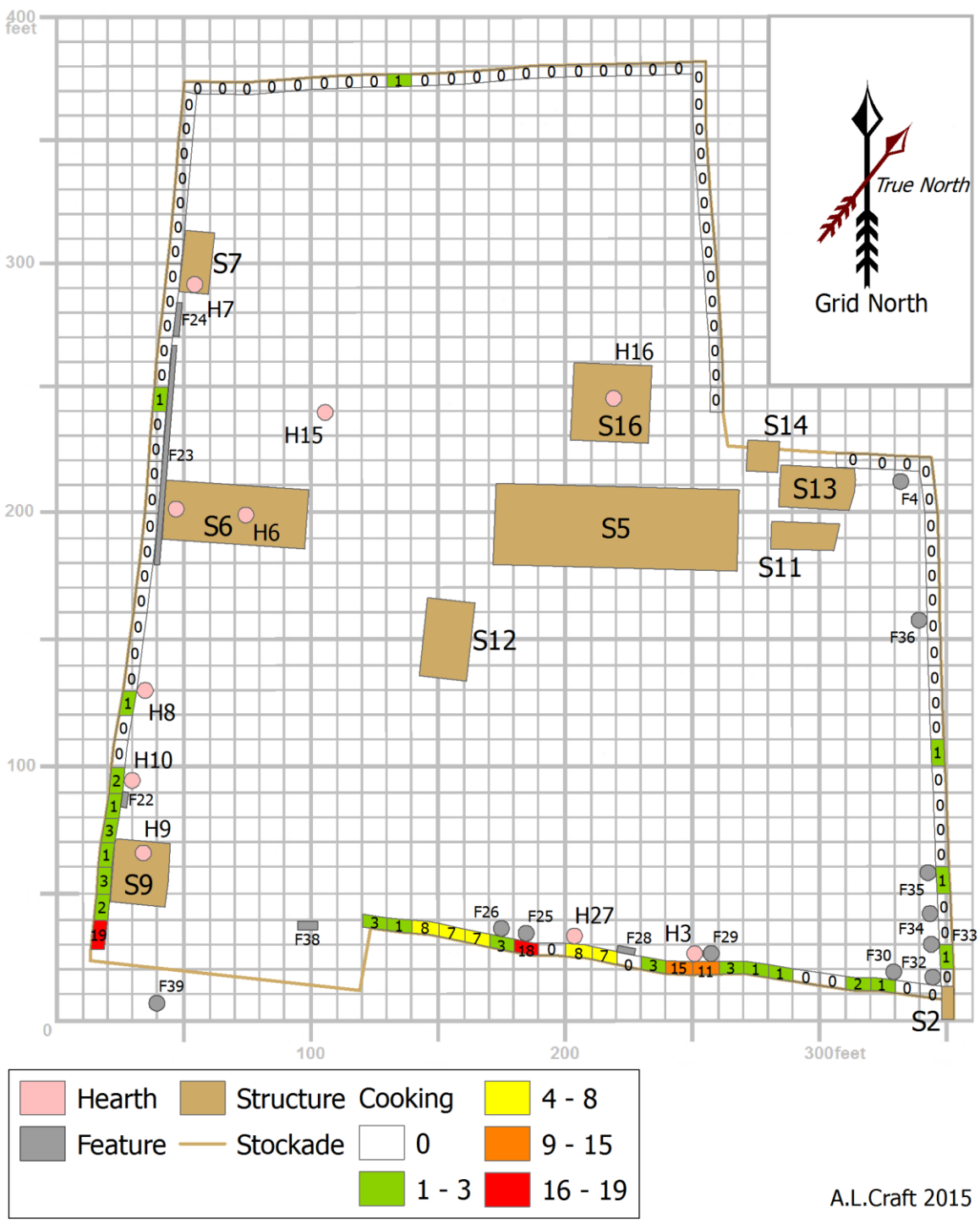
## Cooking

Cooking artifacts consist of 136 mixing bowl and kettle fragments, making up 4.7% of the total dataset. Kettles were usually made of copper, and were popular trade items and useful in many activities. Ceramic bowls and crocks could be used to prepare food or store liquid provisions.

The south wall has the greatest quantity of cooking artifacts (Figure 6). Location (Loc.) 1 has three kettle pieces, followed by another single piece in Loc. 2. Eight kettle scraps are in Loc. 3, followed by seven in Loc. 4, and six in Loc. 5. Location 6 has the first ceramic bowl sherd in addition to one kettle scrap. Eighteen kettle scraps are in Loc. 7, the largest concentration on the south wall, followed by zero in Loc. 8. Next eight kettle scraps are in Loc. 9. Two ceramic bowl sherds are in Loc. 10, along with five kettle scraps. Three kettle scraps are in Loc. 12, followed by 15 in Loc. 13, 11 in Loc. 14, two in Loc. 15, one in Loc. 16, one in Loc. 17, and two kettle scraps in Loc. 20. The east wall has much fewer artifacts, just one kettle scrap in Loc. 25 and in Loc. 28. The north wall has only one artifact, a ceramic bowl sherd in Loc. 73. The west wall has a kettle scrap in Loc. 94, and a ceramic bowl sherd in Loc. 106. A concentration of artifacts then begins at Loc. 109 with two kettle scraps, then one in Loc. 110, three in Loc. 111, one in Loc. 112, three in Loc. 113, one in Loc. 114, and 16 in Loc. 115.

The artifacts in the cooking category are distributed as follows:

- Bowls (n = 10): Loc. 6 = 1; Loc. 10 = 2; Loc. 15 = 1; Loc. 21 = 1; Loc. 33 = 1; Loc. 73 = 1; Loc. 106 = 1; Loc. 114 = 1; Loc. 115 = 1
- Kettles (n = 126): South Wall: Loc. 1 = 3; Loc. 2 = 1; Loc. 3 = 8; Loc. 4 = 7; Loc. 5 = 6; Loc. 6 = 1; Loc. 7 = 18; Loc. 9 = 8; Loc. 10 = 5; Loc. 12 = 3; Loc. 13 = 15; Loc. 14 = 11; Loc. 15 = 2; Loc. 16 = 1; Loc. 17 = 1; Loc. 20 = 2; East Wall: Loc. 25 = 1; Loc. 28 = 1; West Wall: Loc. 94 = 1; Loc. 109 = 2; Loc. 110 = 1; Loc. 111 = 3; Loc. 112 = 1; Loc. 113 = 3; Loc. 114 = 1; Loc. 115 = 16



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Figure 6  
Cooking Artifact Distribution

## Crafting

Crafting artifacts comprise 0.8% of the dataset with 24 objects total. Crafting artifacts include awls, files, pins, rasps, saws, spikes, thimbles, tool hafts, and wedges that may have been used in a variety of crafting activities. Crafting objects could be manufactured at the depot, stored, or used to work on projects related to the fur trade. Many crafting artifacts are along the south wall (Figure 7). Half of the first 12 locations have crafting artifacts: Location (Loc.) 1 with a single awl, Loc. 3 with another awl, a rasp in Loc. 4, a saw piece in Loc. 9, followed by a large iron staple in Loc. 10, and an awl in Loc. 12. Location 13 has the greatest amount of artifacts, there are two awls, two files, one flanged iron pin, and one wedge. Location 14 has one awl, which marks the end of the group of artifacts, and then a single tool haft is in Loc. 21. The east wall has just two artifacts, one file in Loc. 29, and one spike is in Loc. 58. The north wall has just one iron spike in Loc. 73. The west wall has one iron spike in Loc. 88, followed by a large empty space. Location 105, with one file and one rasp, begins a loose group of artifacts from here to the south. Location 108 has one iron staple, and Loc. 113 has one awl and one file.

The artifacts in the crafting category consist of the following distribution:

- Awls (n = 7): Loc. 1 = 1; Loc. 3 = 1; Loc.12 = 1; Loc.13 = 2; Loc.14 = 1; Loc.113 = 1
- Files (n = 5): Loc. 13 = 2; Loc. 29 = 1; Loc. 105 = 1; Loc. 113 = 1
- Flanged Iron Pin (n = 1): Loc. 13 = 1
- Rasps (n = 2): Loc. 4 = 1; Loc. 105 = 1
- Saw (n = 1) Loc. 9 = 1
- Spikes (n = 3): Loc. 58 = 1; Loc. 73 = 1; Loc. 88 = 1
- Staples (n = 2): Loc. 10 = 1; Loc. 108 = 1
- Thimble (n = 1): Loc. 14 = 1
- Tool Haft (n = 1): Loc. 21 = 1
- Wedge (n = 1): Loc. 13 = 1

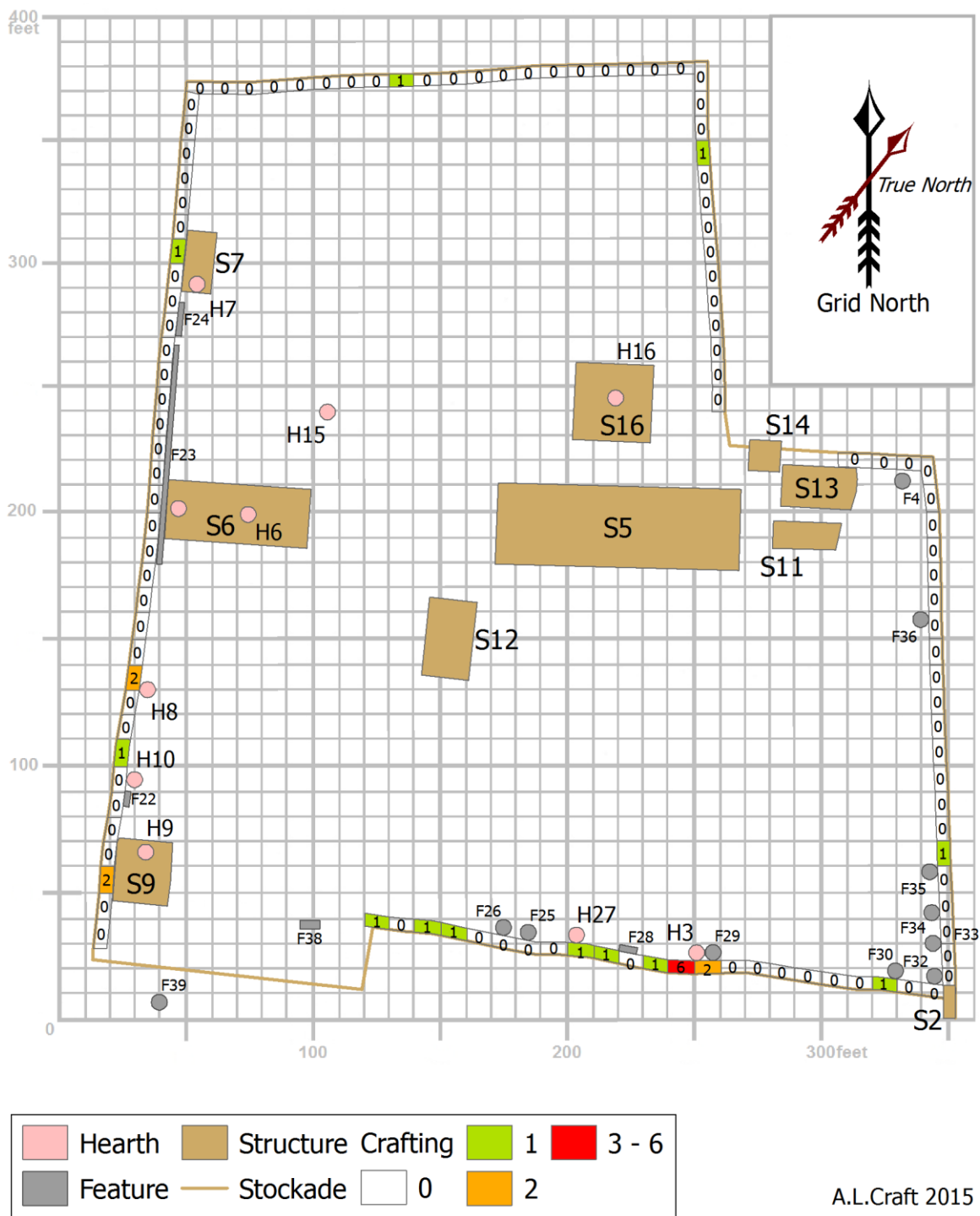


Figure 7  
Crafting Artifact Distribution

## Drinking

Drinking objects consist of 107 items making up 3.7% of the total artifact dataset. The artifacts in this category include ceramic bottle and jug sherds in addition to glass bottle fragments. These items may have contained fluids for personal, domestic or commercial use. These containers and contents were most likely all shipped in from eastern cities.

The south wall has the greatest number of drinking artifacts (Figure 8). Beginning at Location (Loc.) 1, three bottle glass shards are present, followed by another single shard in Loc. 3, as well as one in Loc. 4, followed by four bottle glass fragments in Loc. 5. The artifact quantity rises to eight glass shards in Loc. 7, and then falls to one piece in Loc. 9. Location 10 has three bottle glass fragments, and then rises slightly to four shards of bottle glass in Loc. 11 and five in Loc. 12. Location 13 tripled the number of bottle glass shards with 15 total artifacts, which then drops down to just two shards in Loc. 14, with the same amount in Loc. 15. Location 16 contains one rare deposit of ceramic bottle fragment, in addition to two bottle glass shards. Location 18 has another high quantity deposit with 15 bottle glass shards. The final drinking artifact along the south wall is one bottle glass fragment in Loc. 21.

The east wall has much fewer drinking artifacts, which occur in only five locations. The first objects show themselves in Loc. 25, just north of Structure 2, with two bottle glass shards. Location 29 has the greatest number of jug ceramics at the site with three total fragments in addition to one bottle glass fragment. These are followed by a single piece of bottle glass in Loc. 30, and two more bottle glass shards in Loc. 33. The final artifacts along the east wall occur at its north end in Loc. 61 with three bottle glass fragments. The north wall has zero artifacts from this category.

The west wall has no ceramics, but does contain 20 total pieces of bottle glass fragments. Most of the artifacts are along the southern half of the west wall. Just north of Structure 7 (S7) is one bottle glass piece in Loc. 85, and another in Loc. 87. A concentration of five bottles glass shards are in

Loc. 99. Location 107, with 1 fragment, begins a grouping of bottle glass, with one in Loc. 108, one in Loc. 109, three in Loc. 110, three in Loc. 112, and four in Loc. 114.

The artifacts in the drinking category comprise the following distribution:

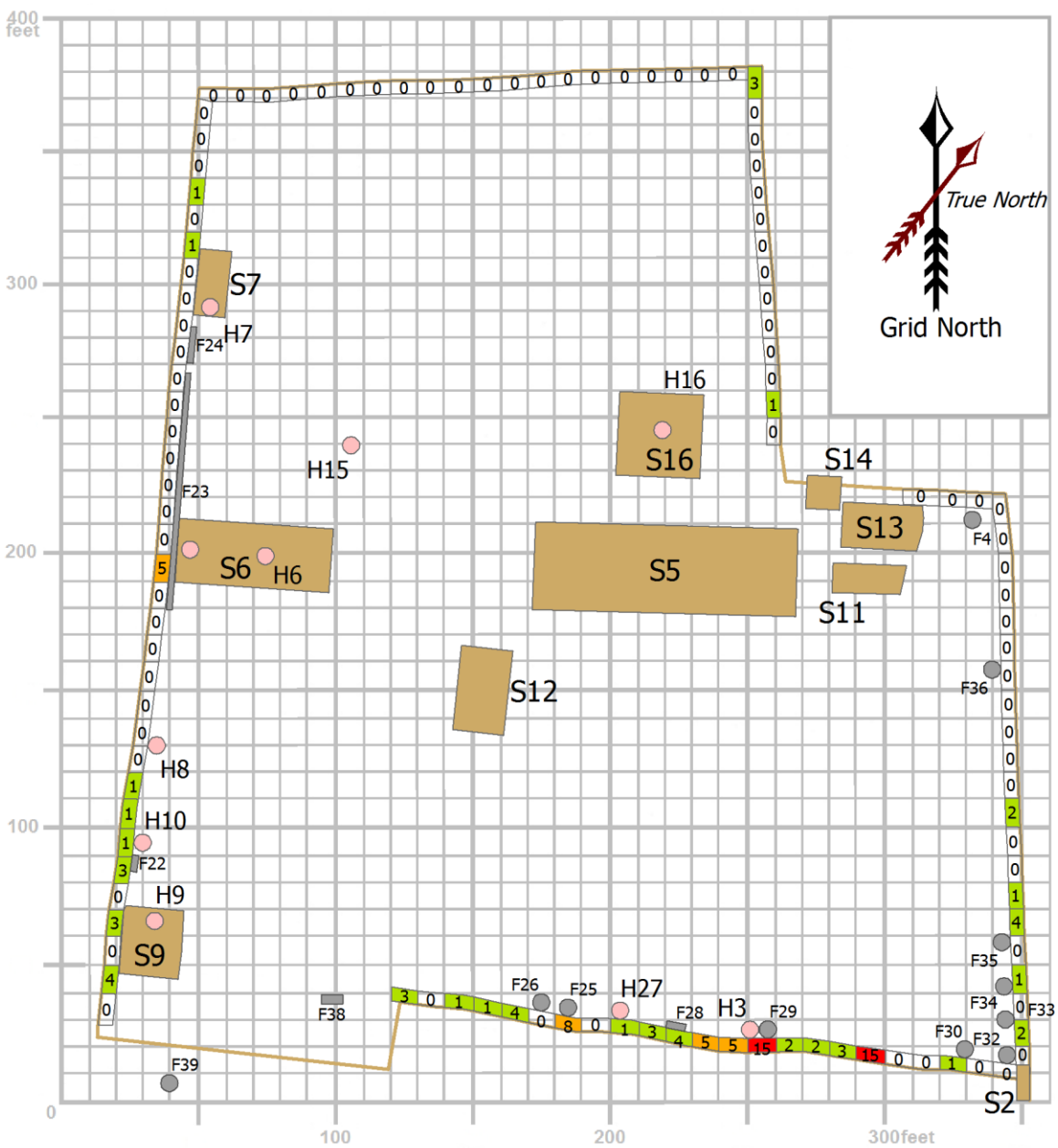
- Bottle Glass (n = 103)

South Wall: Loc. 1 = 3; Loc. 3 = 1; Loc. 4 = 1; Loc. 5 = 4; Loc. 7 = 8; Loc. 9 = 1; Loc. 10 = 3; Loc. 11 = 4; Loc. 12 = 5; Loc. 13 = 5, Loc. 14 = 15; Loc. 15 = 2; Loc. 16 = 1, Loc. 17 = 3; Loc. 18 = 15; Loc. 21 = 1

East Wall: Loc. 25 = 2; Loc. 27 = 1; Loc. 29 = 1; Loc. 30 = 1; Loc. 33 = 2, Loc. 49 = 1; Loc. 61 = 3

West Wall: Loc. 85 = 1; Loc. 87 = 1; Loc. 99 = 5; Loc. 107 = 1; Loc. 108 = 1; Loc. 109 = 1; Loc. 110 = 3; Loc. 112 = 3; Loc. 114 = 4

- Ceramics (n = 4): Loc. 16 = 1 bottle sherd; Loc. 29 = 3 jug sherds



Hearth	Structure	Drinking 1 - 4	9 - 15
Feature	Stockade	0	5 - 8

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Figure 8  
Drinking Artifact Distribution



## Eating

This category of artifacts consists of 28 objects that were most likely used for food consumption at the depot (Figure 9). These artifacts make up 1.0% of the total dataset, and comprise completely of ceramic dish fragments. Ceramic dishes would have been shipped to the depot from eastern cities, which might have made them a relatively rare item, in addition to their natural fragility (Hume 1969).

The south wall has nine total eating artifacts. The central area of the south wall has a subtle grouping of artifacts, with three ceramic dish sherds in Location (Loc.) 1, followed by a single sherd in Loc. 4, and three in Loc. 5. The only other artifacts along the south wall are in Loc. 13, with two ceramic dish fragments.

The east wall has eight total artifacts in five locations. The first single ceramic dish sherd is at the south end of the east wall in Loc. 27, followed by another single sherd in Loc. 30. The next artifact occurs in Loc. 36 with one ceramic sherd, and another one in Loc. 40. Finally at the northern end of the east wall, Loc. 57 has a relatively large concentration consisting of four ceramic dish fragments. The north wall has zero eating artifacts.

The west wall has the greatest amount of eating artifacts, which are almost exclusively grouped at its southern end. One isolated ceramic dish sherd is near the middle of the wall in Loc. 97. The artifacts are begin again in Loc. 111 with a single ceramic dish sherd, and an addition one in Loc. 112. The greatest deposit is six ceramic dish fragments in Loc. 114. Then lastly, Loc. 115 has two ceramic dish sherds.

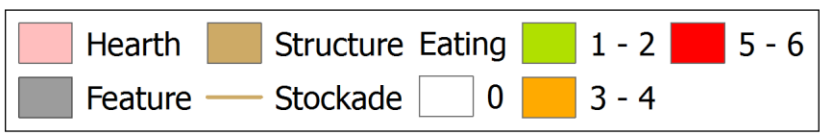
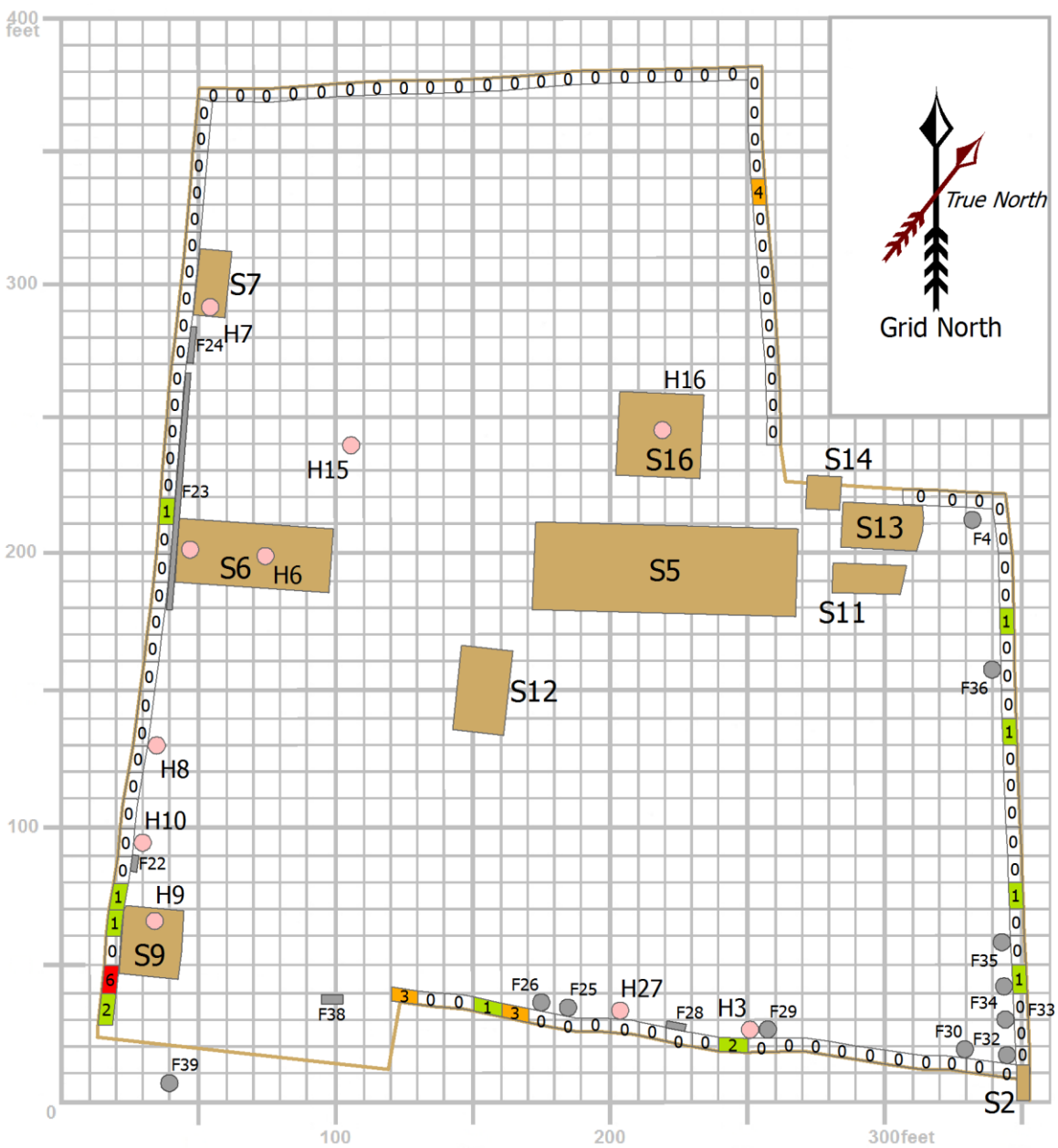
The artifacts in the eating category are included in the following distribution:

- Ceramic Dishes (n = 28)

South Wall: Loc. 1 = 3; Loc. 4 = 1; Loc. 5 = 3; Loc. 13 = 2

East Wall: Loc. 27 = 1; Loc. 30 = 1; Loc. 36 = 1; Loc. 40 = 1; Loc. 57 = 4

West Wall: Loc. 97 = 1; Loc. 111 = 1; Loc. 112 = 1; Loc. 114 = 6; Loc. 115 = 2



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Figure 9  
Eating Artifact Distribution

## Entertainment

The entertainment category consists of just six items, making up 0.2% of the total artifact dataset. This category contains game pieces and mouth harps that were probably personal possessions of people at the depot. These items would have been used in leisure activities and potentially fabricated on site from recycled miscellaneous supplies. All of the artifacts are deposited in single quantities (Figure 10). They are grouped within only two regions of the depot: the central area of the south wall, and the southern end of the west wall.

The south wall contains the greatest number of entertainment artifacts in just four locations. Location 1 has a single brass mouth harp. Location 8 has another single mouth harp made of iron, and Location 9 has a lead gaming piece. The east wall has no entertainment artifacts. The north wall also has zero entertainment artifacts. The west wall has two locations containing entertainment artifacts at its southern end, with one ceramic marble in Location 113, and one "XX" carved soapstone pebble in Location 115.

The artifacts in the entertainment category consist of the following distribution:

- Game pieces (n = 3)  
Loc. 9 = 1 lead game piece; Loc. 113 = 1 ceramic marble; Loc. 115 = 1 "XX" carved soapstone pebble
- Mouth harps (n = 3)  
Loc. 1 = 1 brass; Loc. 8 = 1 iron; Loc. 12 = 1 brass

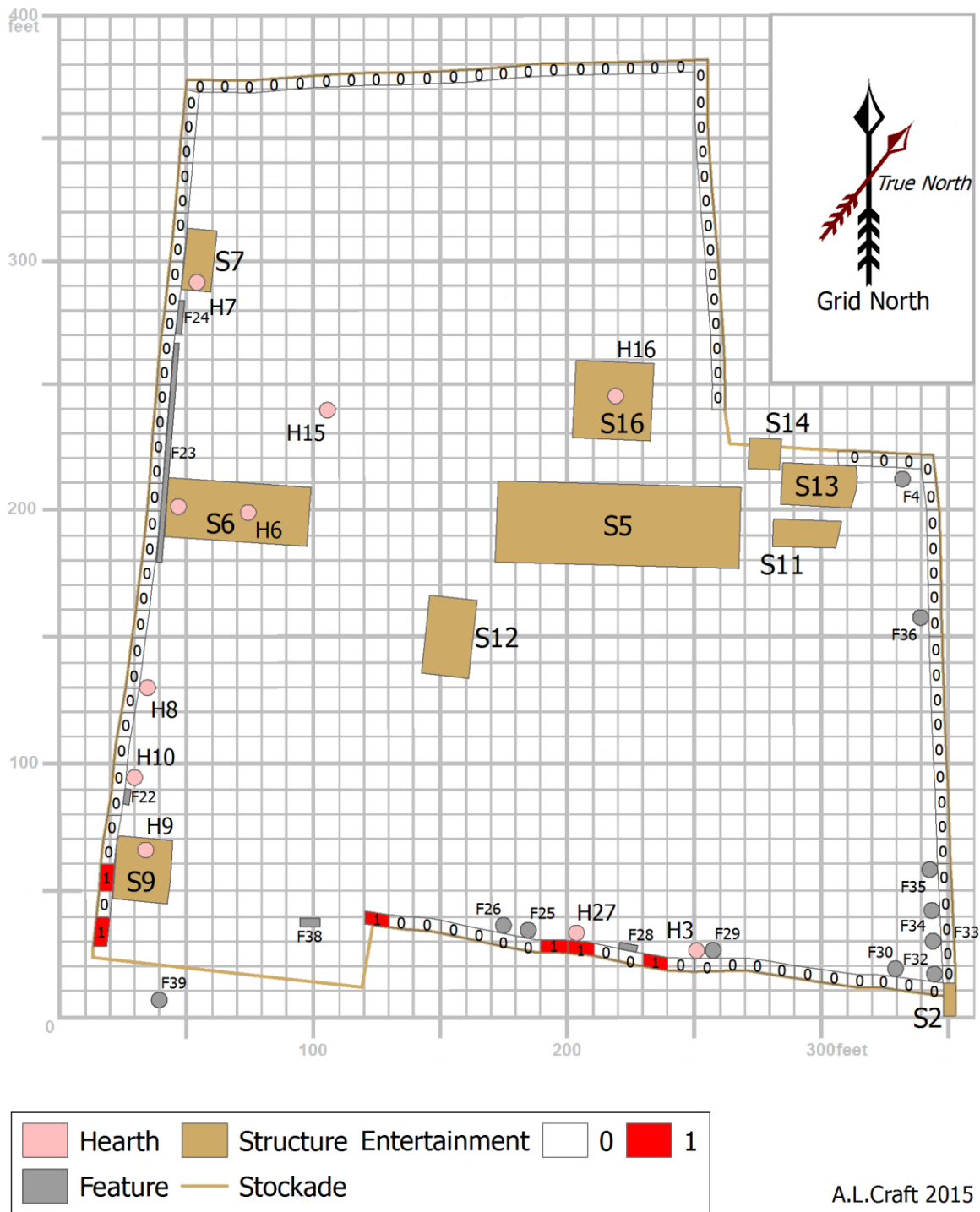


Figure 10  
Entertainment Artifact Distribution

## **Faunal Remains**

Faunal remains include 86 items, comprising 2.9% of the total artifact dataset. These objects include mostly uncategorized bone fragments as well as a lesser amount of animal tusks and teeth. Unfortunately very few details regarding most of the bone fragments were available. The presence of tusks is curious and may represent evidence that the North West Company was importing pigs as livestock to the depot or may be a modern intrusive element. The locations of the animal bone remains may represent places that the depot inhabitants stored, prepared, cooked, or consumed meat. The faunal remains appear in equal quantities ( $n = 40$ ) around the central area of the south wall, and the southern end of the west wall (Figure 11).

A grouping of artifacts begins along the south wall in Location (Loc.) 2, which has two animal bones, followed by one tooth and four more miscellaneous bones in Loc. 3. Location 4 has just one bone fragment. Three bones and one phalange in Loc. 5 end the first small grouping of faunal remains along the south wall. Location 7 has an isolated six total artifacts, with the three tusks present in addition to three miscellaneous bones. Location 9, also with six total artifacts consisting of five bones and one tooth, in addition to Loc.10 with the only rib bone, forms another small group of faunal remains. Then an additional group begins at Loc. 12 with two mandible pieces and one bone. Location 13 continues with four bones, then drops down to just one tooth in Loc. 14, but rises back to four bones in Loc.15. Location 18 has one miscellaneous bone, followed by another in Loc. 19. Location 23 has the last bone on the south wall. On the east wall only three bones and one tooth in Loc. 30 are present. The north wall has two miscellaneous bones in Loc. 76.

All the artifacts along the west wall are in its southern half. The first group of artifacts is Loc. 98 with a single leg bone, followed by three miscellaneous bones in Loc. 99. Location 102 is isolated with two bones, and Loc. 106 has the same content. Location 108 has the greatest deposit of faunal remains with 10 miscellaneous bones in addition to one tooth. Location 109 has five miscellaneous

bones, Loc. 110 has six, Loc. 111 one, followed by Loc. 112 with two, and Loc. 113 with one. Location 115 is isolated at the southern end of the wall with five miscellaneous bones and one tooth.

The faunal remains category comprises the following distribution:

- Bones (unknown type) (n = 72)
  - South Wall: Loc. 2 = 2; Loc. 3 = 4; Loc. 4 = 1; Loc. 5 = 4; Loc. 7 = 3; Loc. 9 = 5; Loc. 13 = 4; Loc. 15 = 4; Loc. 18 = 1; Loc. 19 = 1; Loc. 23 = 1
  - East Wall: Loc. 30 = 3
  - North Wall: Loc. 76 = 2
  - West Wall: Loc. 99 = 3; Loc. 102 = 2; Loc. 106 = 2; Loc. 108 = 10; Loc. 109 = 5; Loc. 110 = 6; Loc. 111 = 1; Loc. 112 = 2; Loc. 113 = 1; Loc. 115 = 5 Leg bone (n = 1): Loc. 98 = 1
- Mandible (n = 1): Loc. 12 = 2
- Phalange (n = 1): Loc. 5 = 1
- Rib (n = 1): Loc. 10 = 1
- Teeth (n = 6)
  - Loc. 3 = 1; Loc. 9 = 1; Loc. 14 = 1; Loc. 30 = 1; Loc. 108 = 1; Loc. 115 = 1
- Tusk (n = 3): Loc. 7 = 3



## Furnishing

Furnishing artifacts consist of 21 total items that make up 0.7% of the total dataset. These artifacts enhanced structures and include door handles, hinges, lamp parts, a spigot, a chain piece, an ornament, and iron rings. These objects could have been crafted and repaired by the depot's craftsmen or shipped in from the east (Sonn 1979). Most of the furnishing artifacts are along the south wall (Figure 12). Location (Loc.) 2 has one lead ornament and Loc. 3 has one lock part. Location 5 has three total artifacts: one chain link, one iron hanging ring, and one hinge part, followed by Loc. 6 with one door handle part. To the east, Loc. 10 has one door handle part isolated by an empty 30 feet until an artifact group begins with one lamp part in Loc. 14. Location 15 has one iron hanging ring, then Loc. 16 contains one lamp part, and Loc. 17 has two lamp parts. Location 20 with another lamp part is the final isolated artifact along the south wall. The east wall has two artifacts: one door handle piece in Loc. 28 and one lock part in Loc. 33. The north wall has zero artifacts. The west wall has more artifacts than the east wall, and all items are in the southern half. The first is in Loc. 99 with one secluded hinge part. Location 102 is also secluded with one iron hinge piece in addition to one lamp part. The next artifact is in Loc. 111 with one iron hinge part, and finally Loc. 115 has one brass spigot and one iron hinge part.

Furnishing artifacts consist of the following distribution:

- Brass Spigot (n = 1): Loc. 115 = 1
- Chain Link Piece (n = 1): Loc. 5 = 1
- Door Handle Parts (n = 3): Loc. 6 = 1; Loc. 10 = 1; Loc. 28 = 1
- Hinge Parts (n = 5): Loc. 5 = 1; Loc. 99 = 1; Loc. 102 = 1; Loc. 111 = 1; Loc. 115 = 1
- Iron Hanging Rings (n = 2): Loc. 5 = 1; Loc. 15 = 1
- Lamp Parts (n = 6): Loc. 14 = 1; Loc. 16 = 1; Loc. 17 = 2; Loc. 20 = 1; Loc. 102 = 1
- Lead Decorative Ornament (n = 1): Loc. 2 = 1
- Lock Parts (n = 2): Loc. 3 = 1; Loc. 33 = 1



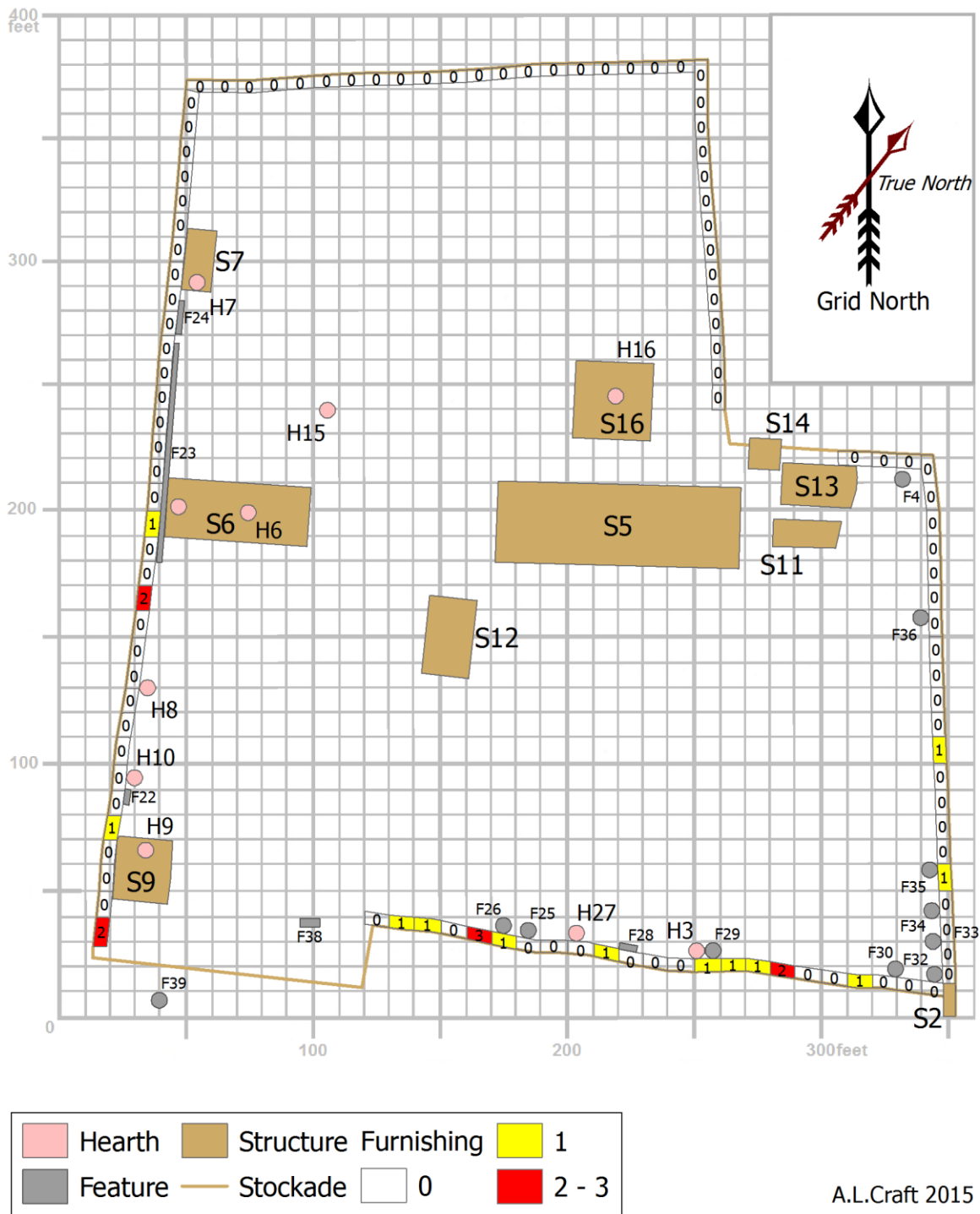


Figure 12

Furnishing Artifact Distribution

## Hardware

Figure 13 displays 593 artifacts in the hardware object category, at 20.3% of the total dataset. The artifacts are nearly all iron *rosehead* nails, a type given such name due to the rose-shaped head created from the blacksmith's hammer (Hume 1969). Other hardware objects include a bolt, a rivet, and a screw. All of these artifacts would probably have been utilized in the construction of structures at the depot. They could also have been manufactured at the depot, either for in-house use or to be sent to inland depots.

The south wall has the greatest amount of hardware artifacts (Figure 13), and also contains the only non-nail deposits: one iron bolt in Location (Loc.) 3, a brass rivet in Loc. 5, and one iron screw in Loc. 9. The nails on the south wall begin with 10 rosehead nails in both Loc. 1 and Loc. 2 each. The number doubles to 22 nails in Loc. 3, and then triples to 68 in Loc. 4, before dropping to 37 nails in Loc. 5, and to just four nails in Loc. 6. Nail quantity jumps up in Loc. 7 to 29, which then falls to zero in Loc. 8. Location 9, with 43 nails, starts another group of artifacts. These continue to Loc. 10 with 21 nails, Loc. 11 with 11, Loc. 12 with 10, and back up to 46 nails in Loc. 13. Location 14 has just 15 nails, and there are only five in Loc. 15. Location 16 rises to 12 nails, followed by Loc. 17 numbering nine, and Loc. 18 dwindles to just three rosehead nail artifacts. The last 50 feet of the south wall begins with just one iron nail in both Loc. 19 and Loc. 20. Location 21 has 18 total nails, and lastly two nails are in Loc. 23.

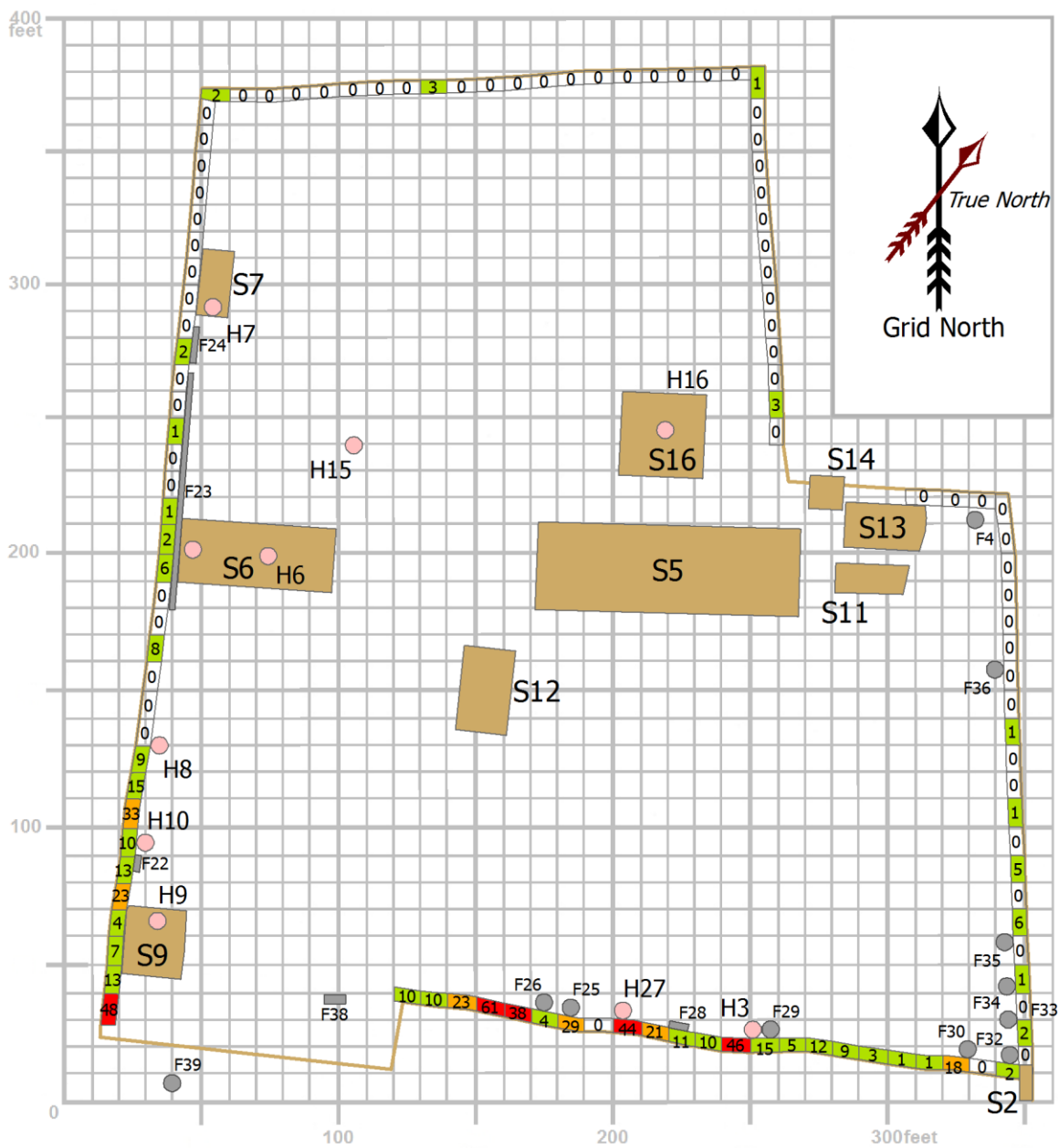
The east wall has much fewer artifacts. A sparse grouping of rosehead nail artifacts begin at the wall's southern end: Loc. 25 with two nails, Loc. 27 with one nail, Loc. 29 with six, Loc. 31 with five, and perhaps also including Loc. 33 with one nail. Location 36 has another single nail. There are two artifact deposits in the northern portion of the east wall: three nails in Loc. 49, and one in Loc. 61. Two places on the north wall have nail artifacts: Loc. 73 with three, and Loc. 81 with two.

The west wall has a high quantity of artifacts in its southern half. In the northern part of the wall, the first artifacts occur as two isolated nails in Loc. 91, followed by another isolated deposit of

one nail in Loc. 94. A small concentration of artifacts starts in Loc. 97 with one nail, followed by two in Loc. 98, and up to six in Loc. 99. Location 102 has an isolated deposit of eight nails. A new grouping begins with nine nail artifacts in Loc. 106, 15 in Loc. 107, and grows to 33 nails in Loc. 108. Location 109 has a third as many nails with just 10, followed by 13 in Loc. 110, and then 23 in Loc. 111. After lowering to just four nail artifacts in Loc. 112, the amount slowly rises to seven nails in Loc. 113, followed by 13 in Loc. 114, and then jumps to 48 rosehead nails in Loc. 115.

The hardware category comprises the following artifact distribution:

- Bolts (n = 1): Loc. 3 = 1
- Nails (n = 590)
  - South Wall: Loc. 1 = 10; Loc. 2 = 10; Loc. 3 = 23; Loc. 4 = 61; Loc. 5 = 37; Loc. 6 = 4; Loc. 7 = 29; Loc. 9 = 43; Loc. 10 = 21; Loc. 11 = 11; Loc. 12 = 10; Loc. 13 = 46; Loc. 14 = 15; Loc. 15 = 5; Loc. 16 = 12; Loc. 17 = 9; Loc. 18 = 3; Loc. 19 = 1; Loc. 20 = 1; Loc. 21 = 18; Loc. 23 = 2
  - East Wall: Loc. 25 = 2; Loc. 27 = 1; Loc. 29 = 6; Loc. 31 = 5; Loc. 33 = 1; Loc. 36 = 1; Loc. 49 = 3; Loc. 61 = 1
  - North Wall: Loc. 73 = 3; Loc. 81 = 2
  - West Wall: Loc. 91 = 2, one in Loc. 94 = 1; Loc. 97 = 1; Loc. 98 = 2; Loc. 99 = 6; Loc. 102 = 8; Loc. 106 = 9; Loc. 107 = 15; Loc. 108 = 33; Loc. 109 = 10; Loc. 110 = 13; Loc. 111 = 23; Loc. 112 = 4; Loc. 113 = 7; Loc. 114 = 13; Loc. 115 = 48
- Rivets (n = 1): Loc. 5 = 1
- Screws (n = 1): Loc. 9 = 1



Hearth	Structure Hardware	1 - 15	34 - 61
Feature	Stockade	0	16 - 33

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Figure 13

Hardware Artifact Distribution

## Hunting

The hunting category consists of 36 items and comprises 1.2% of the total artifact dataset. These objects include flintlock firearm parts, ammunition, trap parts, and a stone (lithic) projectile-point. These artifacts might have been personal possessions of people at the depot for procuring food. They may have been commercial items, stored at the depot for trading to Native Americans, or they may have been at the depot for repairs by crafters. Most of the firearms would have been made by Barnett and Co. of London and shipped here as valuable trade items (Hume 1969).

Figure 14 shows the artifacts occur in greatest number along the south wall. Location (Loc.) 1 has a single musketball isolated in the central area of the south wall. The next artifact, a single trap part in Loc. 5, begins a loose group of objects along the center of the south wall. Location 7 contains the densest concentration of hunting artifacts, with nine small lead gun-shot, two musketballs, one firearm barrel piece, one gun-screw, and one gunflint. Location 9 contains one main-spring and one musketball. Location 11 has one trap part, and Loc. 12 has one musketball. One hammer-cock and two musketballs are in Loc. 14. One main-spring is in Loc. 15, and another main-spring is in Loc. 17, leaving the eastern end of the south wall empty.

The east wall has much fewer hunting artifacts with just four deposits of single objects. The first artifacts are two lead musketballs found with one each at Loc. 28 and Loc. 29. The next artifact is an isolated main-spring in Loc. 33. The last artifact along the east wall is at the northern end, with one gun side-plate in Loc. 61.

The north wall has zero artifacts, and the west wall has just three deposits of artifacts, all in the southern half of the wall. One gunflint is in Loc. 99. One iron gun-trigger is in Loc. 111, and Loc. 115 has the greatest number of artifacts on the west wall, with two iron gun frizzen-springs, one lead gun shot, one lead musketball, and one chert lithic projectile-point.

The hunting artifacts consist of the following distribution:

- Ammunition (n = 19)

South Wall: Loc. 1 = 1; Loc. 7 = 11; Loc. 9 = 1; Loc. 12 = 1; Loc. 14 = 2

East Wall: Loc. 28 = 1; Loc. 29 = 1

West Wall: Loc. 115 = 2

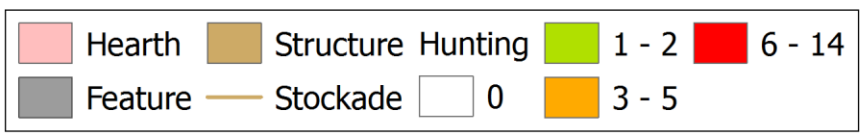
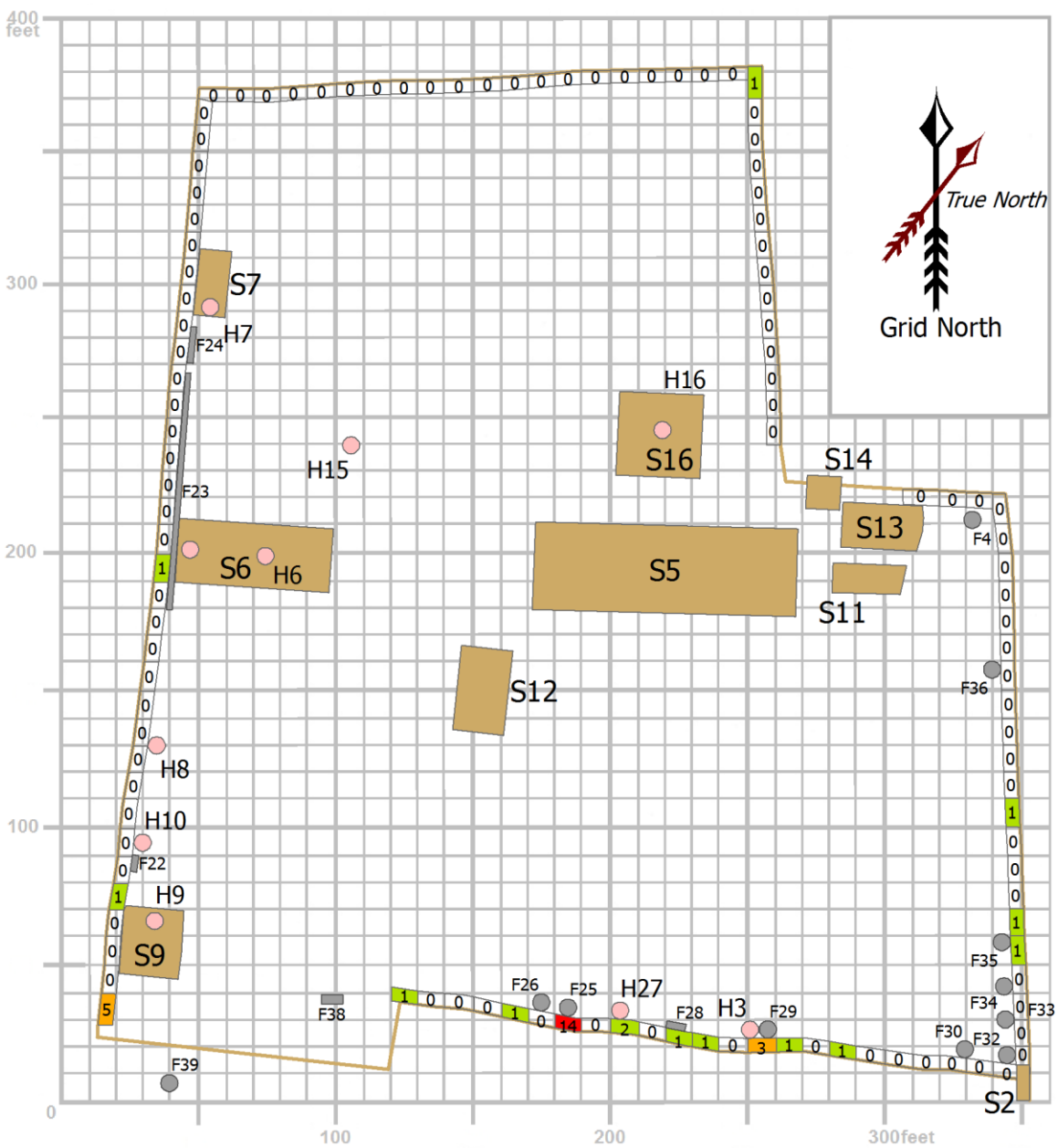
- Firearm Parts (n = 14)

South Wall: Loc. 7 = 1 barrel; Loc. 7 = 1 gun-screw; Loc. 7 = 1 gunflint; Loc. 9 = 1 main-spring; Loc. 14 = 1 hammer-cock; Loc. 15 = 1 main-spring; Loc. 17 = 1 main-spring

East Wall: Loc. 33 = 1 main-spring; Loc. 61 = 1 gun side-plate

West Wall: Loc. 99 = 1 gunflint; Loc. 115 = 2 frizzen-springs

- Lithic Projectile-Points (n = 1): Loc. 115 = 1
- Trap Parts (n = 2): Loc. 5 = 1; Loc. 11 = 1



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Figure 14  
Hunting Artifact Distribution

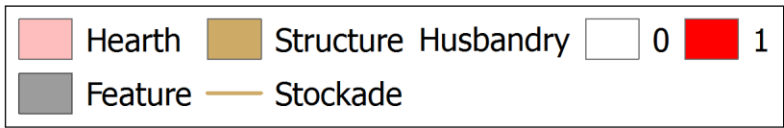
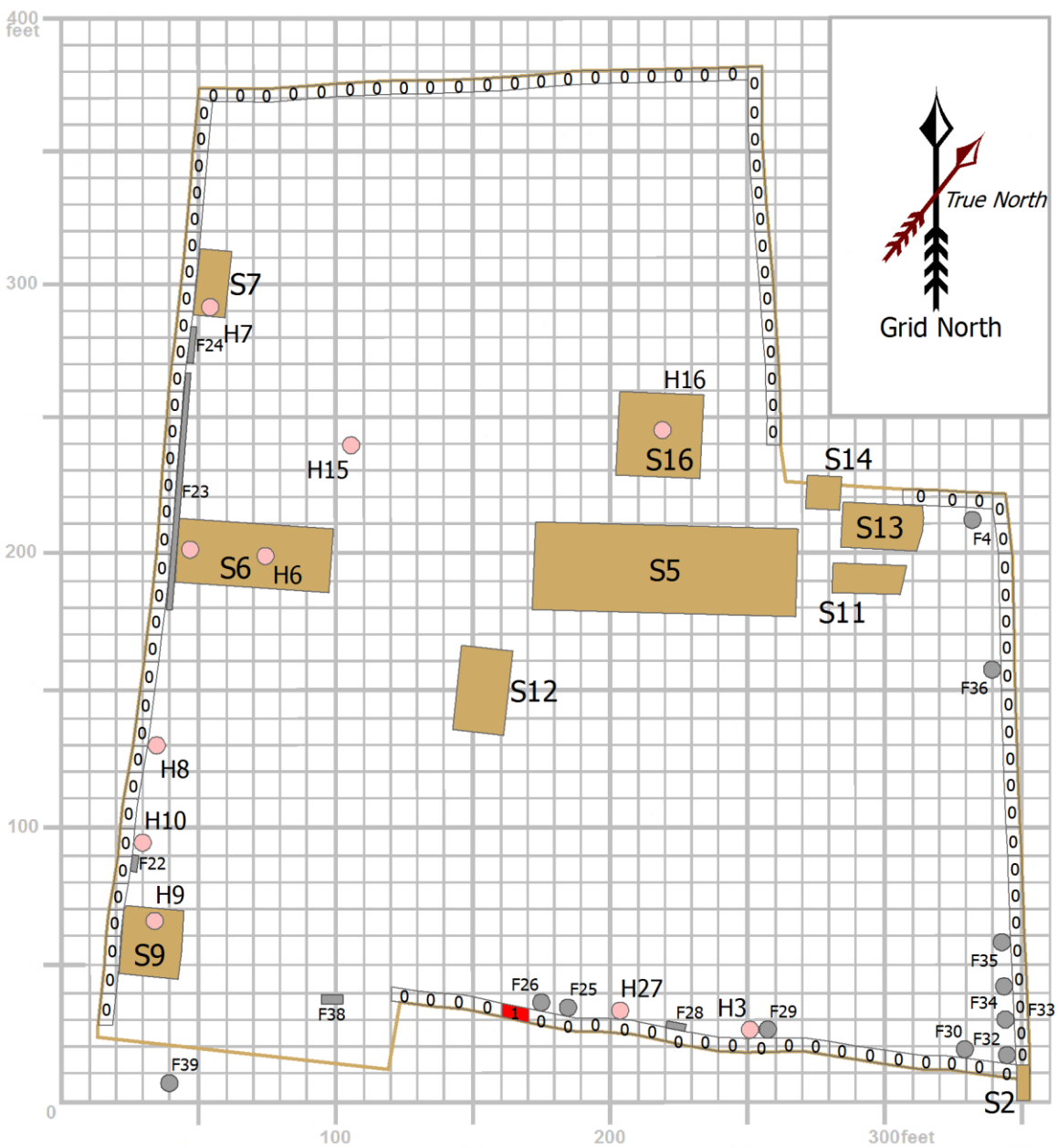
## **Husbandry**

A single husbandry artifact was in the dataset (Figure 15). The horseshoe could have been created at the site or shipped in from the east. It seems strange that a depot with blacksmithing capabilities does not have more. Horses were reportedly brought to the Grand Portage depot to examine their potential usage in transporting goods over the trail; however the idea was soon abandoned, probably due to the remoteness and roughness of the path (Gilman 1992:18-19). This low amount of husbandry equipment perhaps provides evidence of this transportation experimentation at Grand Portage.

The husbandry category is comprised of the following distribution:

- Horseshoe (n = 1): Loc. 5 = 1 iron shoe





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Figure 15  
Husbandry Artifact Distribution

## Pocket Tools

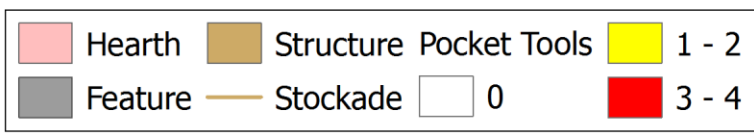
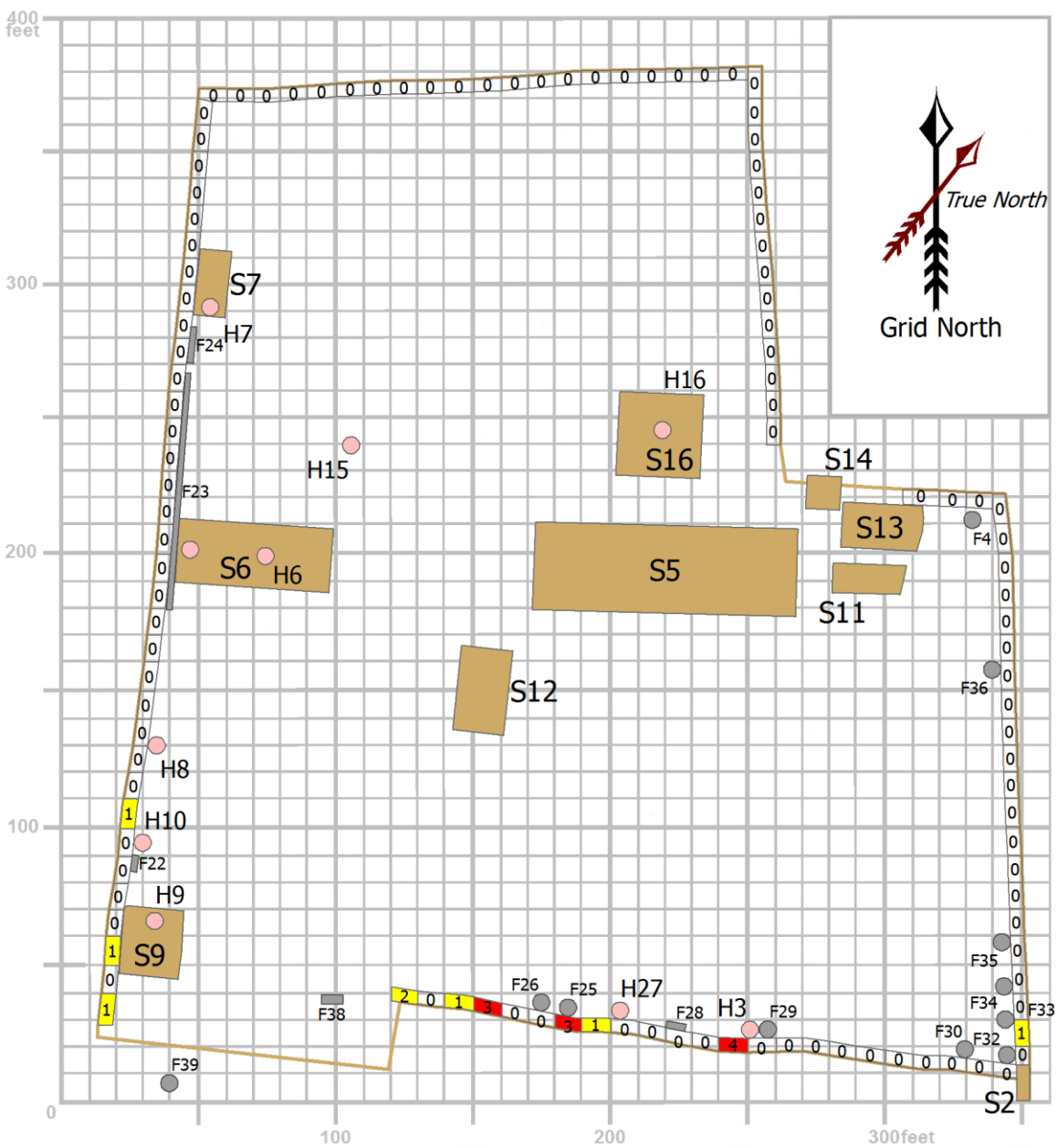
Pocket tools make up the next artifact category with 18 items at 0.7% of the total dataset. These objects include firesteels, flints, and knife parts, in addition to lithic blades and scrapers. They could have been personal tools of people at the depot, used to conduct domestic and commercial tasks. Some of the artifacts, such as firesteels and knives, were also common trade items. These were probably not constructed at the depot, but were mass-produced in cities then shipped here. The lithic artifacts may have been obtained from the local Ojibwe Native Americans, and were perhaps utilized by people who were active within the depot.

Most of the pocket tool artifacts are along the south wall (Figure 16). Location (Loc.) 1 has one flint and one firesteel. A grouping of artifacts occurs with one lithic blade in Loc. 3, and two firesteels in addition to one lithic blade in Loc. 4. A second small grouping of artifacts follows with one lithic blade and two metal knife parts in Loc. 7, and one additional knife part in Loc. 8. Four flints in Loc. 13 mark the last artifacts along the south wall.

The east wall has just one artifact, a knife part in Loc. 25. The north wall has zero artifacts. The west wall has three artifacts all in the southern area with one knife part in Loc. 108, one firesteel in Loc. 113, and one lithic scraper in Loc. 115.

The pocket tools category includes the following artifact distribution:

- Firesteels (n = 4): Loc. 1 = 1; Loc. 4 = 2; Loc. 113 = 1
- Flints (n = 5): Loc.1 = 1; Loc. 13 = 4
- Knife Parts (n = 5): Loc. 7 = 2; Loc. 8 = 1; Loc. 25 = 1; Loc. 108 = 1
- Lithic Blades (n = 3): Loc. 3 = 1; Loc. 4 = 1; Loc. 7 = 1
- Lithic Scraper (n = 1): Loc. 115 = 1



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Figure 16  
Pocket Tools Distribution

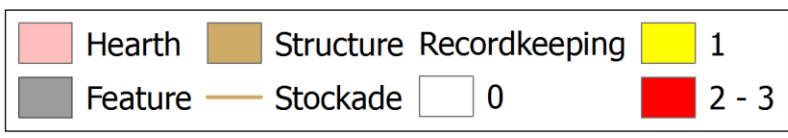
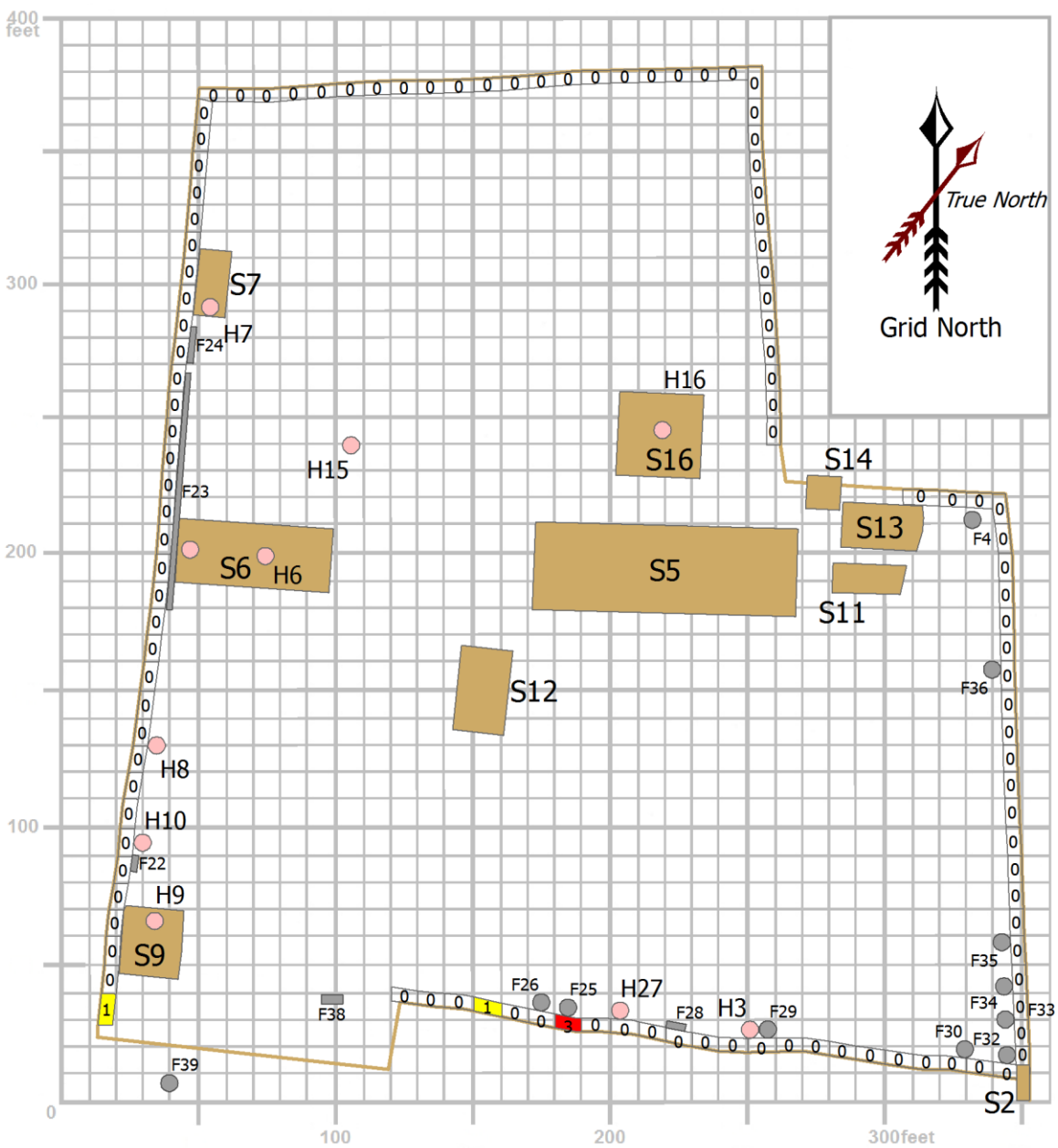
## **Recordkeeping**

The recordkeeping category includes five artifacts, making up 0.2% of the total dataset. These objects include lead and slate pencils and writing slates. These objects were used for keeping temporary notes. The pencils and slates may have been used to keep tallies of commercial inventory, so their locations could give insight into where trade goods were moved or stored. Slates would also have likely been used only by literate employees, so they may indicate where clerks or managers resided or worked.

The central area of the south wall has the majority of the artifacts (Figure 17). Location 4 has one lead pencil, and Location 7 has one writing slate in addition to two slate pencils. The east wall and the north wall have zero artifacts. The west wall has a single scored slate in Location 115.

The recordkeeping category includes the following artifact distribution:

- Pencils (n = 3): Loc. 4 = 1; Loc. 7 = 2
- Slate (n = 2): Loc. 7 = 1; Loc. 115 = 1



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Figure 17  
Recordkeeping Artifact Distribution

## Smoking

There are 413 artifacts in the smoking category, comprising 14.1% of the total dataset. Smoking artifacts include primarily clay pipe fragments, but also several stone pipes. These items were used by people to smoke tobacco as a personal or social indulgence, as was common during this time in history. Most clay pipes were produced by filling a mold with ball-clay to form a pipe; many had emblems or symbols impressed on them during this process (Hume 1969). Clay pipes were discarded as waste after they became worn-out, and so fragments of stems and bowls are most commonly found.

The south wall has the greatest amount of pipe artifacts, and Figure 18 shows they are concentrated in two potential groupings. The first artifact concentration begins in Location (Loc.) 1 with 13 clay pipe fragments and one soapstone pipe. Location 2 drops to five clay pipe fragments, and then the artifact number rises to eight fragments in Loc. 3. Location 4 has nine fragments of clay pipes and one soapstone pipe, followed by 16 clay pipe pieces in Loc. 5, 12 pieces in Loc. 6, and a large spike of 48 clay pipe fragments in Loc. 7. Location 8 is empty and ends the first artifact grouping. The next group begins in Loc. 9 with 89 clay pipe fragments in addition to one soapstone pipe piece. Location 10 lowers to 33 clay pipe pieces, and Loc. 11 drops further to five clay pipe fragments and one soapstone pipe, followed by 17 clay pipe pieces in Loc. 12, and 33 pieces in Loc. 13. Location 14 has nine clay pipe fragments, Loc. 15 has six, and Loc. 16 has seven. Three clay pipe pieces are in Loc. 17, two are in Loc. 18, one is in Loc. 19, one is in Loc. 20, and 11 pieces are in Loc. 21.

There are less smoking artifacts on the east wall. Five clay pipe fragments are isolated in Loc. 25, and another one is in Loc. 29. A small grouping occurs with three clay pipe pieces in Loc. 32, and one in Loc. 33. Four clay pipe fragments are isolated in Loc. 36, and one is isolated in Loc. 39. Another small grouping occurs with five clay pipe pieces in Loc. 48, and one in Loc. 49. There is just one deposit of artifacts along the north wall of four clay pipe fragments in Loc. 73.

The west wall has more smoking artifacts than the east wall. Most of the objects are in the southern half of the wall. On the northern half, there is one clay pipe fragment in Loc. 85, and one in Loc. 88. The southern half starts with nine isolated clay pipe pieces in Loc. 99, and one other isolated clay pipe fragment in Loc. 102. Location 107 starts a group of artifacts, with five clay pipe pieces, another five in Loc. 108, and seven in Loc. 109. Another artifact group begins in Loc. 111 with clay pipe fragments, followed by four in Loc. 112, five in Loc. 113, seven in Loc. 114, and ending with eight clay pipe pieces and one soapstone pipe in Loc. 115.

The smoking category includes the following artifact distribution:

- Clay Pipe Pieces (n = 408)

South Wall: Loc. 1 = 13; Loc. 2 = 5; Loc. 3 = 8; Loc. 4 = 9; Loc. 5 = 16; Loc. 6 = 12;

Loc. 7 = 48; Loc. 9 = 89; Loc. 10 = 33; Loc. 11 = 5; Loc. 12 = 17; Loc. 13 = 33; Loc. 14 = 9; Loc. 15 = 6; Loc. 16 = 7; Loc. 17 = 3; Loc. 18 = 2; Loc. 19 = 1; Loc. 20 = 1; Loc.

21 = 11

East Wall: Loc. 25 = 5; Loc. 29 = 1; Loc. 32 = 3; Loc. 33 = 1; Loc. 36 = 4; Loc. 39 = 1;

Loc. 48 = 5; Loc. 49 = 1

North Wall: Loc. 73 = 4

West Wall: Loc. 85 = 1; Loc. 88 = 1; Loc. 99 = 9; Loc. 102 = 1; Loc. 107 = 5; Loc. 108 = 5; Loc. 109 = 7; Loc. 111 = 2; Loc. 112 = 4; Loc. 113 = 5; Loc. 114 = 7; Loc. 115 = 8

- Soapstone/Catlinite Pipes (n = 5)

Loc. 1 = 1; Loc. 4 = 1; Loc. 9 = 1; Loc. 11 = 1; Loc. 115 = 1

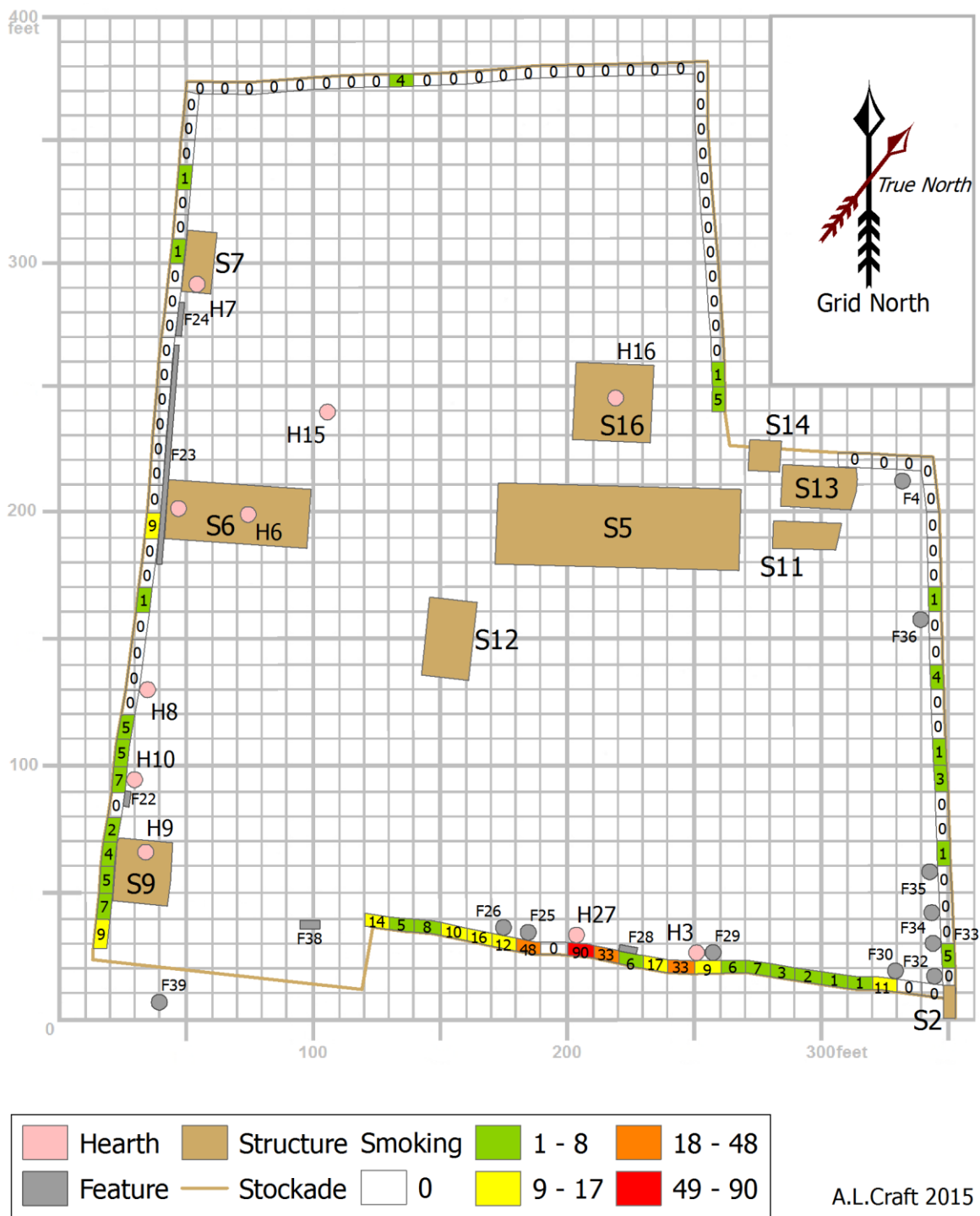


Figure 18  
Smoking Artifact Distribution



## **Chapter V: Interpretation and Conclusion**

### **Overview**

#### **Introduction**

The Grand Portage North West Company Fur Trade Depot (21CK06) played a major role in a global trading network from around 1785 to 1803. This late-Colonial period commercial enterprise and cultural exchange in North America affected overall human migration as one of the driving forces for exploration across the continent and involved some of the first interactions between Europeans and Native Americans (Dolin 2010).

The goal of this thesis was to obtain a more detailed understanding of how fur trade era artifacts are spatially distributed at the Grand Portage site and whether or not the artifact data indicate anything new about the function of various areas within the site. This research project was partly inspired from a report written by Hamilton et al. (2005), which examined the Grand Portage depot site's excavation grid systems using geographic information systems (GIS). I ran into many of their same issues regarding the difficult to work with the datasets and excavation grids. While their work helped establish ideas for future GIS research, they stopped short of organizing any of the site's datasets into a usable format that could be spatially distributed to allow for new observations. Their project also did not include the artifacts from Alan Woolworth's 1963 excavation that is covered in the research presented here. The current project distributed those artifacts at the site for the first time, and allowed for new data-supported interpretations to be made regarding the layout and the utility of areas along the interior of the depot's stockade walls.

Methods for this research project included two main steps: 1) organizing the dataset and 2) creating the GIS. To make the GIS, the grid and depot elements on Woolworth's 1963 excavation map, as modified by Hamilton et al. (2005:25), were digitally-traced into ArcGIS 10.1. Once converted into digital format, the elements of the depot were given characteristics according to structure,

hearth, or feature. The four cardinal walls of the stockade provided the platform along which the excavation locations were laid, divided by Woolworth's 10-foot interval grid system.

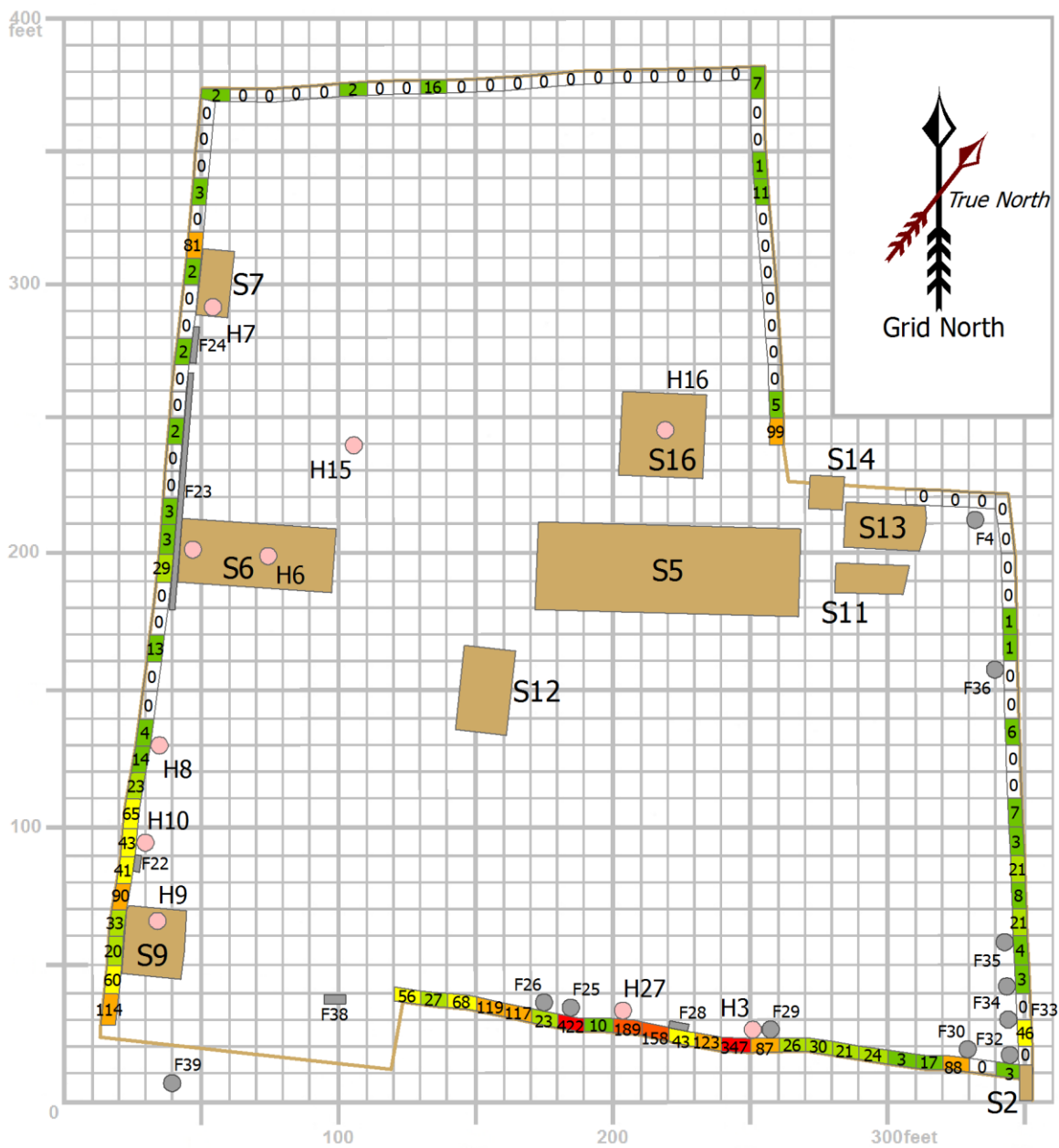
In order to create a functioning dataset to incorporate into the GIS, the artifacts were first organized into categories. This was a necessary and time consuming step because the GIS required numeric data rather than descriptive or narrative data. Once converted into categories of tallied artifacts (Appendix A), the dataset was able to be integrated with each excavation location in the GIS. The GIS was set to display the data using Jenks' Natural Breaks algorithm, which showed natural groups of the artifact quantities using graduated colors. In addition to producing the 16 artifact distribution maps that were presented in the previous chapter, one final map showing the distribution of all artifacts at the depot is displayed in the following Figure 19.

Scarce but important historical accounts of the depot were useful for interpreting the new artifact distribution maps. Several first-person written records described at least 16 structures within the depot's stockade, but only three: the main gate (S14), great hall (S5), and kitchen (S16), have been conclusively identified and examined by previous researchers. Table 1 and Table 2 (Ch. 2) contain the depot's inventory from 1794, with an estimate of the buildings' sizes that would have been necessary to hold such an amount of goods. The historical data in conjunction with archaeological structural features (listed in Ch. 4, Overview) helped to show possible locations of the additional structures at the depot. An 1816 map of Fort William (Appendix B), built by the North West Company to replace the Grand Portage depot, gave insight into the construction and layout preferences of the builders (Dawson 1970:38; Hamilton et al. 2005:51).

Examples of archaeologically excavated fur trade era structures are useful in conjunction with the artifact distribution maps. The kitchen structure located at the Grand Portage depot (S16, Figure 2) was examined in detail during Woolworth's 1975 excavation, which describes a layout of a square building with many domestic artifacts and personal possessions but few crafting artifacts. (Woolworth 1975).

An example of an excavated fur trade warehouse is provided by a site outside the west wall of the North West Company's depot, which Alan Woolworth's crews unearthed in 1964 (Woolworth 1969). The warehouse included clay pipes, guns and ammunition, scissors, a mouth harp, and supplies of provisions. No window glass was found at the warehouse site, leading him to believe they might have been salvaged or it did not have windows (Woolworth 1969:51). The small amount of personal artifacts could be representative of the small size of most personal objects, making them easier to lose. The personal and domestic artifacts suggest that a guard or clerk was posted in the warehouse (Woolworth 1969).

Historic structures archaeologically examined representing crafting use include Steven De Vore's (1990) report of a fur trade blacksmith shop at Fort Union Trading Post in North Dakota. He discusses an 1829-1867 shop that contained a domestic area where ceramics and bottle glass artifacts were found. John Light and Henry Unglick (1984) completed a study of another blacksmith shop from a frontier trade post occupied 1796-1812. This shop contained a living space for the craftsmen. The artifacts recovered included the usual crafting tools and blacksmith waste such as clinkers, but also had domestic and personal possessions including ceramic containers and dishes, bottle glass fragments, clay pipes pieces, faunal remains, trap parts, and firearm parts (Light and Unglick 1984).



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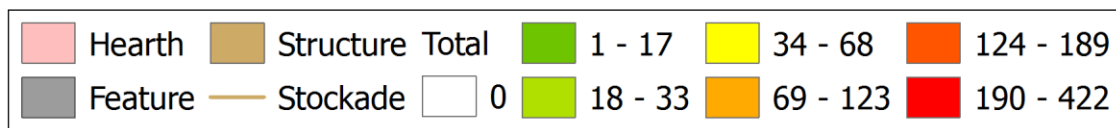


Figure 19

Total Artifact Distribution

## The South Wall

### Group 1 (Loc. 1-5)

The western end of the south wall lacks any structural features but contains a significant number of artifacts (Figure 19). Despite this, quantities of structure-related artifacts are within this area with 142 rosehead nails (Figure 13) and 38 window glass fragments (Figure 5). In addition several furnishing items are present including a hanging ring, a hinge, a chain link, a lock part, and one lead ornament (Figure 12). The 1816 map of Fort William shows the corresponding location as an empty space between a storage area to the west and living quarters to the east (Appendix B).

There is evidence of crafting occurring, with three tool artifacts including two awls and one rasp (Figure 7), and 63 metal scraps (Figure 4). Some of the grouping's artifacts reflect domestic activities occurring here. There are 26 copper kettle scraps (Figure 6), 12 faunal remains (10 bones, one phalange, one tooth) (Figure 11), nine bottle glass fragments (Figure 8), and seven ceramic dish sherds (Figure Eat). Some of the artifacts in this group reflect personal possessions with 12 beads, four buttons, a brass ring, and an iron buckle (Figure 3), and one mouth harp (Figure 10). Smoking artifacts include 53 pipe pieces (Figure 18). Other artifacts include hunting related items, with a single trap part and one musketball (Figure 14).

Several unique artifacts are found in this location including a single lead pencil that was potentially used to conduct recordkeeping by a clerk (Figure 17). Two lithic blades are located here, they indicate that Ojibwe people might have worked within the depot or traded these items with the employees (Figure 16). The sole horseshoe at the site is found here (Figure 15), and it may be the only evidence of the horses that were reportedly used in an attempt to carry cargo over the trail (Gilman 1992). Although there are no hearth features here, there are three firesteels and one flint chip (Figure 16).

The artifact data suggest this open space was utilized lightly for multiple activities, including crafting and food consumption, with most of the artifacts potentially representing garbage deposits.

The function of this area is perhaps associated with Feature 38 to the west, Feature 26 to the east, or a yet undiscovered feature further away from the south wall. These artifacts may indicate that a building is located further from the wall towards the center of the depot.

### **Group 2 (Loc. 6-8, F25, F26)**

This group focuses around a spike of artifacts in Location 7, near Feature 25 and Feature 26 (Figure 19). Woolworth described both features as charcoal from an undefined structure's burned wooden floor (Woolworth and Woolworth 1982, Vol. 2). The map of Fort William shows that this area contained living quarters for depot clerks (Appendix B). Structural artifacts that may be related to these features consist of 33 iron nails (Figure 13), 21 window glass fragments (Figure 5), and one door handle part (Figure 12).

Most of the artifacts reflect personal possessions with 206 beads, two silver tinklers, one brass ring, one iron buckle, and one glass button (Figure 3). Firearm artifacts include nine lead shot and two musketballs, one brass gunscrew, one gunflint, and one firearm barrel piece (Figure 14). Pocket tools include three knife parts: one iron, one brass, and one bone; plus one chert lithic blade (Figure 16). Leisure related artifacts are comprised of 60 clay pipe fragments (Figure 18) and one iron mouth harp (Figure 10). Domestic artifacts in this area include 20 kettle scraps, one ceramic mixing bowl sherd (Figure 6), and eight bottle glass fragments (Figure 8). Three tusks and three miscellaneous animal bones (Figure 11) represent animals that may have been consumed here. Their presence might also show evidence of domestic livestock being held at the depot. While some of the artifacts in this grouping show crafting potential with 63 iron scraps and one lead scrap (Figure 4), without tools present (Figure 7), there is little likelihood that production activities occurred here.

The amount and variety of personal possessions as well as the occurrence of two pencils and one writing slate (Figure 17), and the lack of crafting tools, all suggest a wealthy inhabitant. The close by Hearth 27 would have provided year-round heat and cooking capabilities. If the hearth is related to

Feature 25 and Feature 26, together they could form a clerk's or manager's living quarters, which would be in the same location as one at Fort William.

### **Group 3 (Loc. 9-11, F28, H27)**

Along the central area of the south wall between Hearth 27 and Feature 28 is a dense grouping of artifacts (Figure 19). Hearth 27 is described by Woolworth as a stone fireplace, "to provide heat, light, and possibly cooking facilities, for North West Company personnel" (Woolworth and Woolworth 1982, Vol. 2). He described Feature 28 as boulders and shale slabs that may represent a structure, but has no elaboration as to what kind of structure it might be (Woolworth and Woolworth 1982, Vol. 2). The map of Fort William shows a dwelling for wintering clerks in this area (Hamilton et al. 2005:51). Some artifacts reflect structural elements including 75 nails, one screw (Figure 13), 23 window glass fragments (Figure 5), and one iron door handle part (Figure 12).

The greatest number of artifacts consists of personal possessions, comprising 109 beads, five tinklers, and two buttons (Figure 3). Many of the artifacts are smoking related, with 127 clay pipe fragments and two soapstone pipes (Figure 18). Hunting objects consist of one gun mainspring, one musketball, and one trap part (Figure 14). A single lead gaming piece located here may have been used in leisure time (Figure 10). Other artifacts relate to domestic activities with 13 kettle scraps, and two ceramic bowl sherds (Figure 6), eight bottle glass shards (Figure 8), five miscellaneous animal bones, one tooth, and one rib fragment (Figure 11). Very few of the artifacts could be related to crafting or work activities, with seven iron scraps, two clinkers, (Figure 4), a single piece of a saw blade, and an iron forged staple (Figure 7).

The artifacts in this grouping are comprised primarily of personal possessions reflecting a wealthier inhabitant. A moderate amount of eating and drinking artifacts indicates that the hearth was probably used for some cooking. With only one tool, it is unlikely that the area was heavily used for crafting activities. These reflect a dwelling structure for a higher ranking person such as a clerk or manager.

**Group 4 (Loc. 12-14, H3, F29)**

These locations have in common a sharp rise of artifact quantity around Feature 29 and Hearth 3 (Figure 19). Hearth 3 was originally found by Ralph Brown's excavation in 1936 and described as "a fireplace probably associated with a fur trade dwelling" that may have been a work space for year-round occupants (Woolworth and Woolworth 1982, Vol. 2). Feature 29 consists of log remains interpreted as structural foundations (Woolworth and Woolworth 1982, Vol. 2). On the map of Fort William, this area contains a doctor's living quarters and infirmary (Appendix B). The structural related artifacts here include 71 nails (Figure 13), 51 window glass fragments, one piece of chinking (Figure 5), and one lamp part (Figure 12).

Artifacts reflecting personal possessions make up the greatest portion of objects here with 270 beads, two buckles, two bells, one iron button, and one silver tinkler (Figure 3). Some leisure activities are indicated by 59 clay pipe fragments (Figure 18) and one brass mouth harp (Figure 10). A few firearm-related items include three musketballs and one gun hammer-cock (Figure 14). The domestic artifacts consist of 29 copper kettle scraps (Figure 6), 25 bottle glass fragments (Figure 8), two ceramic dish sherds (Figure 9), five miscellaneous animal bones, two mandible pieces, and one tooth (Figure 11).

A large number of tool artifacts suggest crafting activities, with four awls, two files, one flanged iron pin, one iron wedge, and one brass thimble (Figure 7). Probable blacksmithing by-products are also present with eight clinkers and seven iron scraps (Figure 4). Four flint chips also recovered here may have been used as fire-starters at Hearth 3 (Figure 16).

The artifacts consist mostly of personal possessions, suggesting a wealthier inhabitant in this area. The varied and numerous tools suggest the area was also used for crafting. These with the domestic artifacts and Hearth 3, suggest a structure used for habitation that was occupied by craftsmen.



**Group 5 (Loc. 15-20)**

This artifact group is spread over a large area lacking features or hearths (Figure 19). Structural artifacts consist of 30 nails (Figure 13), 11 window glass fragments (Figure 5), and several furnishings including one iron hanging ring and three lamp parts are present (Figure 12). These may indicate that a building is located further from the wall towards the center of the depot. The Fort William map shows a shop in this area (Appendix B).

Most of the artifacts suggest domestic activities, with 21 bottle glass pieces, one ceramic bottle sherd (Figure 8), six copper kettle scraps, one ceramic mixing bowl sherd (Figure 6), and six animal bones (Figure 11). The personal possessions consist of nine beads, one brass buckle, and one glass button (Figure 3), two gun main-springs (Figure 14), and 20 clay pipe fragments (Figure 18). No tools were found here, but some blacksmithing artifacts are present with four iron scraps, one lead scrap, and one clinker (Figure 4). The objects are mostly domestic artifacts. Personal possessions are present but less in number. Crafting artifacts are few and seem like trash. These could be related to further away structural features to the east, west, or further north away from the wall.

**Group 6 (Loc. 21, F30)**

This artifact grouping consists of artifacts adjacent to Feature 30 (Figure 19). Feature 30 is described as "8-14 inch diameter boulders in two parallel rows that may represent a structure site" (Woolworth and Woolworth 1982, Vol. 2). Some of the artifacts may relate to such a structure, with 18 nails (Figure 13), seven window glass pieces, and one piece of chinking (Figure 5). The 1816 Fort William map shows a shop, gunpowder storage, and a tower in this area (Appendix B).

Most of the artifacts reflect personal possession with 47 beads, and one glass button (Figure 3), in addition to 11 clay pipe fragments (Figure 18). There are only a couple of crafting artifacts present with just one clinker (Figure 4) and one iron tool haft (Figure 7). There are also few domestic artifacts, with only one bottle glass fragment (Figure 8) and one ceramic crock sherd (Figure 6). The absence of animal bones may indicate these domestic objects were used for storage rather than

consumption. The lack of artifacts may support the interpretation of a store or warehouse area, since they may have been kept cleaner and inventoried. The feature and artifacts may represent a shop structure similar to the one located near here on the Fort William map and the nearby southeast gateway (S2) would have provided easy access for customers.

### **Group 7 (Loc. 23, S2, F32)**

The southeastern corner of the depot contains artifacts near Structure 2 and Feature 32 (Figure 19). According to Woolworth, Structure 2 consists of parallel footer-trenches that acted as a gateway for personnel (Woolworth and Woolworth 1982, Vol. 2). Feature 32 is described as "buried rotted wood", which he interprets as the foundations of a rectangular structure, and remarks that Feature 32 may be functionally related to Structure 2 (Woolworth and Woolworth 1982, Vol. 2). The 1816 Fort William map shows this area with a gun powder magazine and corner tower (Appendix B).

Woolworth notes that this area was disturbed in 1938 when a wooden tower was constructed here but then later dismantled (Woolworth and Woolworth 1982, Vol. 2), which may explain why there were only three artifacts found here during the 1963 excavation: two iron nails (Figure 13) and one miscellaneous animal bone fragment (Figure 11). The lack of artifacts could also suggest that material intensive and garbage producing activities such as crafting were not conducted in the area. The absence of a hearth also leads to the conclusion that this area was not used for habitation, leaving a store or warehouse structures the most likely to have been built here.

## **The East Wall**

### **Group 8 (Loc. 25, F33)**

An isolated group of artifacts are just north of the southeast gateway near Feature 33 (Figure 19). The feature consists of boulders and timbers of a possible building foundation (Woolworth and Woolworth 1982, Vol. 2). Two iron nails (Figure 13) are the only structural artifacts nearby. The Fort William map shows this area contained a tower and a fur warehouse (Appendix B).

Personal possessions are of the greatest quantity in this area with 33 beads, one iron buckle (Figure 3), five clay pipe fragments (Figure 18), and one iron knife part (Figure 16). Only one crafting artifact is present with one piece of iron scrap (Figure 4). Domestic artifacts consist of one copper kettle scrap (Figure 6), two bottle glass pieces (Figure 8). The absence of animal bones may indicate these domestic objects were used for storage rather than consumption. With no hearth available, a structure here was most likely a warehouse or store.

**Group 9 (Loc. 27-29, F34, F35)**

This group comprises artifacts near Feature 34 and Feature 35, described as boulders, which Woolworth believed were possibly intrusive due to the sandiness of the soil surrounding them (Woolworth and Woolworth 1982, Vol. 2). The map of Fort William shows a lookout tower and storage structures for furs in this area (Appendix B). Some structural related artifacts are found here including seven nails (Figure 13), three window glass shards (Figure 5), and one iron door handle part (Figure 12).

Artifacts reflecting personal possessions include five beads (Figure 3), two musketballs (Figure 14), one iron knife part (Figure 16), and a single clay pipe fragment (Figure 18). One iron file (Figure 7) and one piece of scrap iron (Figure 4) represent crafting artifacts. Domestic artifacts comprise three ceramic jug fragments, two bottle glass shards (Figure 8), one ceramic dish sherd (Figure 9), and one copper kettle hanging ring (Figure 6). The absence of animal bones may indicate these domestic objects were used for storage rather than consumption.

The structural artifacts may provide evidence that the boulder features do belong to a structure. The artifacts lack significant quantities and an available hearth that would indicate the area was used for conducting crafting or domestic activities. Instead, the artifacts and features suggest that this was a warehouse or store.

**Group 10 (Loc. 30-36)**

A long group of artifacts absent any structural features are in this area (Figure 19). Despite this, some structural artifacts are present, with seven nails (Figure 13) and one lock part (Figure 12). This area in the Fort William depot had fur warehouses and a dwelling structure for guides (Appendix B).

The artifacts consist mostly of personal possessions including 16 beads (Figure 3), eight clay pipe fragments (Figure 18), and one iron gun main-spring (Figure 14). Few of the artifacts were crafting related, with just two iron scraps (Figure 4). Domestic artifacts are also represented, comprising three bottle glass fragments (Figure 8), two ceramic dish sherds (Figure 9), three miscellaneous animal bones and one tooth (Figure 11), as well as a single ceramic crock sherd (Figure 6). The domestic artifacts suggest that a hearth was nearby to cook animal meat. These artifacts probably indicate that a dwelling structure is located further west, away from the east wall.

**Group 11 (Loc. 39-40, F36)**

A very small number of artifacts are near Feature 36 (Figure 19). Woolworth described the feature as "shale slabs which probably represent a structure foundation" (Woolworth and Woolworth 1982, Vol. 2). Just one ceramic dish sherd (Figure 9) and one clay pipe fragment (Figure 18) are here. Without a hearth, these two artifacts suggest a storage structure. The objects stored in a warehouse would have been more likely kept track of, which could limit the artifacts left behind.

**Group 12 (Loc. 48-49)**

These artifacts appear isolated along the east wall (Figure 19). A region of the depot with several fully delineated and excavated structures are nearby including Structure 5 (great hall), Structure 14 (main gate), and Structure 16 (kitchen) (Woolworth and Woolworth 1982, Vol. 2). The artifacts here consist of nearly all personal possessions including 93 beads (Figure 3) and six clay pipe fragments (Figure 18). The sole crafting item consists of a single piece of iron scrap (Figure 4). The

artifacts are most likely related to the main structures located nearby. They reflect people utilizing the surrounding structures.

### **Group 13 (Loc. 57-61)**

A loose concentration of isolated artifacts is along the northern end of the wall (Figure 19). No structural features are found here but structural artifacts include three window glass fragments (Figure 5) and a single nail (Figure 13). According to the Fort William map, canoe sheds were located here (Appendix B).

The artifacts consist of crafting items including five iron scraps (Figure 4) and one iron spike (Figure 7). Domestic artifacts comprise three bottle glass shards (Figure 8). Personal possessions include one brass gun side-plate (Figure 14) and one bead (Figure 3). The artifacts suggest that a storage structure may lie further from the wall.

## **The North Wall**

### **Group 14 (Loc. 73-81)**

The north wall of the depot has the fewest number of artifacts, with just one loose group along the western half (Figure 19). There are no structural features along the north wall, despite there being five nails (Figure 13) and one window glass shard in the group (Figure 5). The map of Fort William shows that its north area was separated into two sections with fences; the eastern half contained canoe storage and the western half had a crafting area with store and a cooperage in the northwestern depot corner (Appendix B).

The artifacts consist of mostly personal possessions including six beads (Figure 3) and four clay pipe pieces (Figure 18). Crafting artifacts comprise of only one iron spike (Figure 7). The domestic items consist of two miscellaneous animal bones (Figure 11) and one ceramic bowl sherd (Figure 6).

The emptiness of artifacts and structural features suggests that the area along the north wall was less utilized; yet, it was of enough importance to enclose within the depot. Perhaps this was

simply an effort to control more physical land along Grand Portage Bay, reducing the areas that rival companies could use. Woolworth (1963) and Hamilton et al. (2005) examined the topography of this northern area, and discovered that it has rocky soil and slants southward. The rockiness and slope would have made construction of structures difficult. Dawson (1970:36) described how Fort William had lodging houses for the guides towards the rear of the depot, and that tents were used to house overflow employees. At the Grand Portage depot voyageurs usually camped outside the walls, but there may have been times when the northern area may have been used for tents, particularly when the number of people at the bay swelled during the summer months. The northern area could also have been used to conduct activities that had no other formal space within the depot, such as leisure activities, socializing, and miscellaneous trade related activities. The area could have been used as temporary storage for canoes or gear, or to pen in domesticated animals. This rear open area of the depot was probably used in several different ways, but the artifacts are too few to allow for conclusive interpretations other than some people were in this area conducting crafting and consuming food.

### **The West Wall**

#### **Group 15 (Loc. 85-91, F34, S7)**

This artifact concentration is near Structure 7 and Feature 24 (Figure 19). Structure 7 was investigated and delineated by Ralph Brown in 1937. It is described as a mound of shale slabs that represents a fireplace that Alan Woolworth believed might have been from a workshop or living quarters (Woolworth and Woolworth 1982, Vol. 2). Feature 24 was also originally excavated by Brown in 1937 and is defined by a short line of shale slabs (Woolworth and Woolworth 1982, Vol. 2). The 1816 map of Fort William shows a dwelling for tradesmen in this location (Appendix B).

Few artifacts were found around Structure 7 during Woolworth's 1963 excavation, perhaps because Brown's 1937 excavation had already disturbed the area (Woolworth 1963). Two iron nails (Figure 13) and one window glass fragment (Figure 5) are the only structural related artifacts here. Personal possessions include 79 beads, one brass ring (Figure 3), and two clay pipe fragments

(Figure 18). Just one iron spike (Figure 7) is possibly related to crafting. Only two bottle glass shards (Figure 8) may be related to domestic use.

Despite the delineated structure and hearth features, the low quantity of artifacts in this area makes substantive interpretations difficult. With just a single tool present, it is unlikely the structure was used for crafting. The low quantity of artifacts in addition to personal possessions and domestic artifacts as well as a hearth suggest a structure that served as a living quarters, perhaps for lower status individuals such as guides or voyageurs.

### **Group 16 (Loc. 94-102, F23, S6)**

This grouping consists of artifacts that have in common a long wall feature of boulders adjacent to Structure 6 (Figure 19). Structure 6 is a defined structure site including two rooms and hearths that were excavated by Brown in 1937. Due to the size and dual-hearths, Woolworth believed the building was likely a dwelling for the depot manager (Woolworth and Woolworth 1982, Vol. 2). It is unclear whether Brown's crews collected artifacts here, but this may be why so few artifacts were collected and recorded from Woolworth's 1963 excavation. The corresponding area on the map of Fort William shows a multi-roomed clerk's house here (Appendix B). Structural items in this dataset include 18 nails (Figure 13), two hinge parts, and one lamp part (Figure 12).

Domestic artifacts include six miscellaneous animal bones (Figure 11), five bottle glass fragments (Figure 8), one ceramic dish sherd (Figure 9), and one copper kettle lug (Figure 6). A low amount of personal possessions are nearby, with just four beads, one silver button (Figure 3), and 10 clay pipe fragments (Figure 18). One potential tool is present, being a gunflint (Figure 14), which may have been simply used to light fires as indicated by Mattson's (2012) research at the fur trade site of Horseshoe Bay in Cass County, Minnesota.

These artifacts with the features indicate that someone likely did occupy the building, but the objects are too few in number to aid in the suggestion of a manager's house; although the silver present may indicate a wealthy inhabitant. The row of boulders may have helped formed an interior

fence that surrounded the structure, similar to those seen at Fort William. The items in addition to the features suggest a structure probably used as a dwelling.

### **Group 17 (Loc. 105-107, H8)**

Towards the southern end of the west wall, the artifact quantities gradually increase (Figure 19). Hearth 8 was originally discovered by Brown in 1937 and Woolworth described it as a "stone outlined fireplace which marks a structure site" and might be used for "cooking facilities in a workshop or dwelling structure" (Woolworth and Woolworth 1982, Vol. 2). The map of Fort William displays an open space here (Appendix B). Possible structural related artifacts include 24 nails (Figure 13).

Crafting objects comprise two tools: one file and one rasp (Figure 7); as well as six iron scraps (Figure 4). Domestic artifacts consist of two miscellaneous animal bones (Figure 11), one ceramic crock sherd (Figure 6), and one bottle glass shard (Figure 8). The only personal possessions are five clay pipes (Figure 18). The artifacts suggest that the hearth was used for light crafting and food consumption activities, but the lack of personal possessions implies that the area was uninhabited.

### **Group 18 (Loc. 108-110, H10, F22)**

This concentration of artifacts is grouped near Hearth 10 and Feature 22 (Figure 19). Hearth 10 is a group of squared stone slabs that was discovered by Brown in 1937, but was not excavated. Feature 22 was found by Woolworth in 1963, which he also left unexcavated, and it consists of shale slabs and log remains. Woolworth believed these features probably represented a workshop or dwelling (Woolworth and Woolworth 1982, Vol. 2). The 1816 Fort William map seems significantly different in the corresponding area, which displays an open space around the southwest corner tower (Appendix B). Structural related artifacts include 56 nails (Figure 13) and 20 window glass fragments (Figure 5).



The artifacts do not include tools but contain 21 iron scraps (Figure 4) and one iron forged staple (Figure 7). Personal possessions are comprised of 12 clay pipe fragments (Figure 18), seven beads (Figure 3), one brass buckle, and one iron knife part (Figure 16). The domestic artifacts include 20 miscellaneous animal bones and a tooth (Figure 11), five bottle glass shards (Figure 8), and three kettle scraps (Figure 6). Overall the artifact content describes a likely habitation area, due to hearth availability as well as the predominance of personal possessions and domestic items in addition to the lack of crafting objects.

**Group 19 (Loc. 111-115, S9)**

The southernmost area of the west wall has a great number of artifacts near the delineated Structure 9 with a hearth (Figure 19). The structure is described as being thoroughly excavated by Brown in 1937, and Woolworth believed it to be a dwelling (Woolworth and Woolworth 1982, Vol. 2). Artifacts that are structural related include 96 nails (Figure 13), 31 window glass fragments (Figure 5), two hinges, and one brass spigot (Figure 12). The 1816 Fort William map shows an open area here surrounding the southwest corner tower (Appendix B).

Most of the artifacts reflect personal items including 54 beads, eight buttons, five buckles (Figure 3), 26 clay pipe fragments, one soapstone pipe (Figure 18), one marble, and one stone gaming piece (Figure 10). Firearm related parts include two gun frizzen-springs, one gun trigger, one lead gun-shot, one musketball, and one lithic projectile-point (Figure 14). A single recording item consists of one scored slate (Figure 17). Domestic artifacts are represented by 26 kettle scraps, nine animal bones and one tooth (Figure 11), 10 ceramic dish sherds (Figure 9), seven bottle glass fragments (Figure 8), and two ceramic crock sherds (Figure 6). A small portion of artifacts reflect work activities, with one awl, one file (Figure 7), one firesteel, and one iron scraper (Figure 16). Crafting materials include 23 iron scraps, two lead scraps, and one clinker (Figure 4).

The large proportion of domestic and personal artifacts shows that the structure functioned as a living quarters, most likely from a wealthier person due to the amount and variety of items. The

hearth provided a winter heating source and was used to cook small amounts of food. The artifacts also suggest that the inhabitant of this dwelling was a crafter.

## **Conclusion**

### **Summary of Findings**

The two primary goals of this thesis were achieved. By combining Woolworth's discarded artifacts with the Grand Portage National Monument's cultural objects database, the GIS was able to generate a more accurate depiction of the fur trade era material culture at the site than what had been achieved before. Also, examining the spatial distribution of the more comprehensive artifact dataset in relation to previously recorded features and structures allowed for an updated interpretation of the site activity areas with testable predictions about where additional features and structures may be.

The new artifact distribution maps reaffirm previous views and create new interpretations of the Grand Portage North West Company Depot. The artifacts and structural features along the south wall primarily show evidence for a clerk or manager's living quarters on the eastern end (Loc. 1-11). The center of the south wall was likely another dwelling for a wealthier person who had crafting abilities (Loc. 12-14). The artifacts on the west end of the south wall suggest that a store or warehouse is located further north from the wall (Loc. 15-20) and a store or warehouse may be located next to the southeast gateway (Loc. 21-23, S2).

The east wall contained fewer artifacts and no hearths. The artifacts north of the southeast gateway suggest warehouses (Loc. 25-29), and the open area north of Feature 35 to Feature 36 suggests warehouses located along the wall and further west away from the wall (Loc. 30-36). The artifacts along the northern end of the east wall may represent locations where structures could be found further west away from the depot walls (Loc. 57-61).

The north wall has the fewest artifacts and no structural features. The area was probably used for multiple purposes including housing tents for employees during the busy summer months

(Loc. 73-81). The north area of the west wall contains artifacts that suggest low-wealth living quarters (Loc. 85-102). The south end of the west wall contains artifacts suggesting that the area was used as a habitation for a crafter (Loc. 103-115).

### **Final Thoughts**

Geographic information systems (GIS) are a non-intrusive computer technology that are useful for archaeology because they can be used to display multiple datasets on a single geographic plane, assisting greatly to visually represent characteristics of the site for interpretation. However, the primary limitation of this project was the dataset's GIS integration. Converting a qualitative dataset created for archaeology into a quantitative dataset for GIS involved a process of lumping artifact types together. One way to further use the existing archaeological data at this site would be to examine how Ralph Brown excavated most of the interior of the depot in 1936-37. If possible, his artifact dataset should be distributed using GIS in a similar way as Alan Woolworth's 1963 data were. Another way to use the existing artifact data available at the site would be to spatially distribute the same artifacts, but using a different qualitative visualization, for example displaying the artifact material types rather than the artifact functions. In the future, any other artifact data available at the site should also be added to an all-inclusive GIS.

In addition to answering the research question, this project offers an example of the possibilities for using and integrating older artifact datasets created by archaeology prior to modern computer technology. The spatial distribution and analysis at the Grand Portage North West Company Depot using GIS can be applied to uses of archaeological data at other historic fort-type complexes and in general when using older data and GIS to make new interpretations at any type of archaeological site.

For every new technology we can use to look at old archaeological data, it allows for more information to be gathered about existing sites that were previously excavated but not re-analyzed. This not only encourages reuse of previously collected data, but also accurate data collection methods

to ensure that it can be reused in the future. Reuse is important for the profession of archaeology because vast quantities of existing data are being stored as so-called "grey literature", which could be reused to find new discoveries without requiring excavation.

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**Appendix A**

## GIS Compatible Artifact Dataset

## Appendix A Key

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Category	Description
Loc	Excavation Location
T	Total Artifacts
A	Adornment
B	Blacksmithing
CM	Construction Materials
CO	Cooking
CR	Crafting
DR	Drinking
E	Eating
EN	Entertainment
F	Faunal Remains
FH	Furnishing
H	Hardware
HT	Hunting
HB	Husbandry
PT	Pocket Tools
R	Recordkeeping
SM	Smoking

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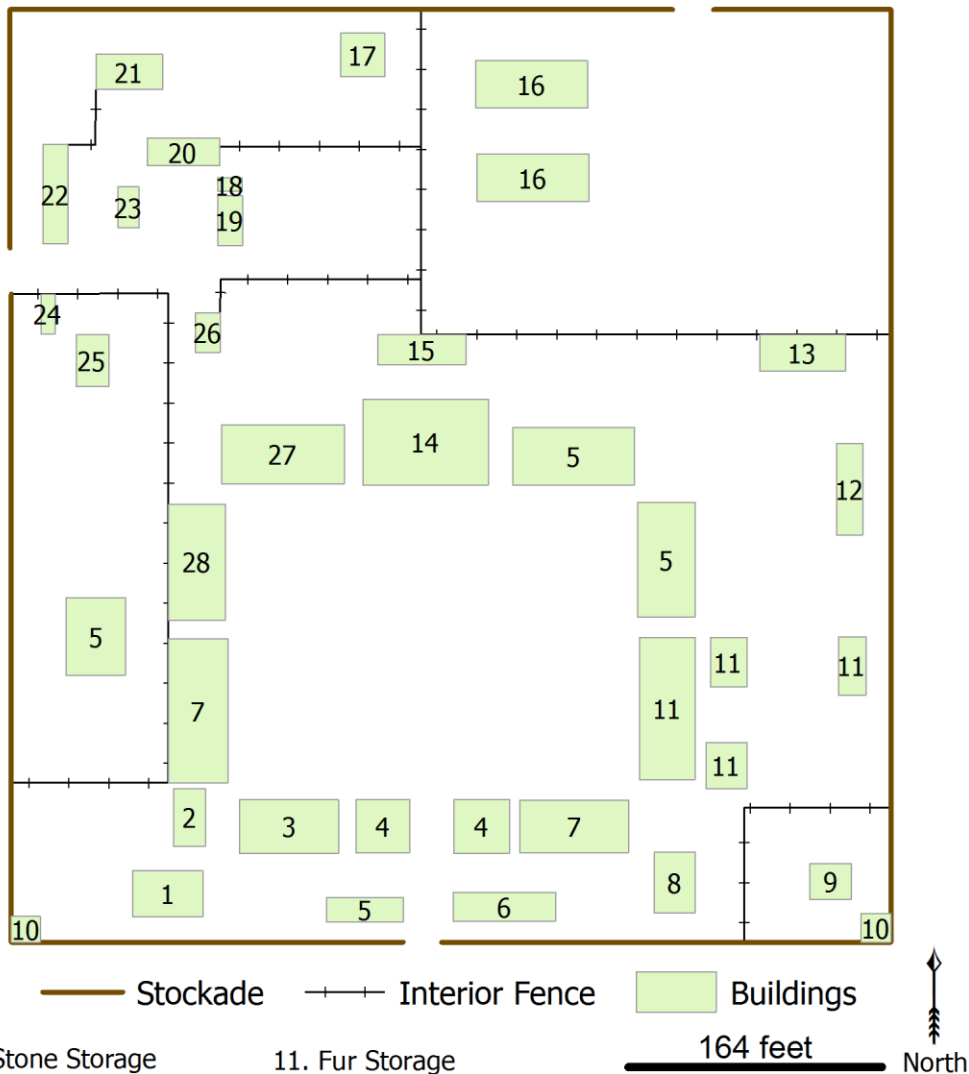




97	3	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0
98	3	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0
99	29	4	0	0	0	0	5	0	0	3	1	6	1	0	0	9
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	13	0	0	0	0	0	0	0	0	2	2	8	0	0	0	1
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	4	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
106	14	0	2	0	1	0	0	0	0	2	0	9	0	0	0	0
107	23	0	2	0	0	0	1	0	0	0	0	15	0	0	0	5
108	65	8	3	2	0	1	1	0	0	11	0	33	0	0	1	5
109	43	0	6	12	2	0	1	0	0	5	0	10	0	0	0	7
110	41	0	12	6	1	0	3	0	0	6	0	13	0	0	0	0
111	90	57	1	0	3	0	0	1	0	1	1	23	1	0	0	2
112	33	0	8	10	1	0	3	1	0	2	0	4	0	0	0	4
113	20	0	0	0	3	2	0	0	1	1	0	7	0	0	1	5
114	60	0	7	21	2	0	4	6	0	0	0	13	0	0	0	7
115	114	10	10	0	19	0	0	2	1	6	2	48	5	0	1	9

### Appendix B

Map of Fort William in 1816



- |                         |                            |                              |
|-------------------------|----------------------------|------------------------------|
| 1. Stone Storage        | 11. Fur Storage            |                              |
| 2. Turret               | 12. Guide Dwelling         |                              |
| 3. Wet Goods Storage    | 13. Hospital               | 21. Cooperage                |
| 4. Corn Storage         | 14. Great Hall             | 22. Tradesman Dwelling       |
| 5. Clerk Dwelling       | 15. Kitchen                | 23. Carpenter                |
| 6. Doctor and Infirmary | 16. Canoe Storage          | 24. Privy                    |
| 7. Provisions Storage   | 17. Shop                   | 25. Jail                     |
| 8. Shop                 | 18. Jailer Dwelling        | 26. Committee House          |
| 9. Gunpowder Storage    | 19. Backsmith and Tinsmith | 27. Company Partner Dwelling |
| 10. Tower               | 20. Armourer               | 28. Dry Goods Storage        |

A.L.Craft 2015, adapted from Dawson 1970:38 and Hamilton, Graham, and Norris 2005:51