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New Windows on the Past: An Analysis of Glass Artifacts from New Philadelphia, Illinois

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ABSTRACT

Archaeological research at New Philadelphia, Illinois, the mid-nineteenth century site of the first town planned in advance and legally registered by an African American, has revealed a remarkable wealth of material remains. While a good deal of research has been carried out on artifacts ranging from ceramics to faunal remains, this study contributes to this multi-year, collaborative project by providing a comprehensive analysis of glass artifacts. This project is a result of my experience as a field school participant at the site. Through a discussion of glass artifact frequency across the site, including its distribution, types of glass recovered, and manufacturing techniques present in the artifacts, I hope to understand when these artifacts were deposited and where they originated from. The resulting study sheds light on the overwhelming presence of late nineteenth and early twentieth century glass artifacts which post-date the McWorter era, opening the potential for future research into this time period and providing further evidence for New Philadelphia's continued existence long after its legal status as a town ended.

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Introduction

This study was inspired by my experience participating in the National Science Foundation's program of Research Experiences for Undergraduates (NSF-REU) through the archaeological field school at the National Historic Landmark of New Philadelphia in the summer of 2010. The site is what remains of the first town planned and legally registered by a free African American. "Free Frank" McWorter founded New Philadelphia in 1836. Located in western Illinois between the Illinois and Mississippi rivers, there is very little above ground evidence of the town's existence left today. However, underneath the plowed fields is a wealth of artifacts that have been used to tell the story of an entrepreneurial, multiracial community founded on the frontier (Image 1). Through my summer experience at New Philadelphia, I came to appreciate both Free Frank's accomplishments as a pioneering black businessman, and the accomplishments of archaeologists, community members, and descendants in sharing his story.



Image 1. Today, New Philadelphia appears to be an empty set of fields, but several years of excavations have revealed that a wealth of artifacts lay beneath them.

The excavations at New Philadelphia have been a collaborative effort carried out by Paul Shackel (University of Maryland), Christopher Fennell (University of Illinois, Urbana-Champaign), Terrance Martin (Illinois State Museum) and Anna Agbe-Davies (University of North Carolina, Chapel Hill), among others. The multi-year project is supported by the New Philadelphia Association, the McWorter family, and other descendants of the town. In the five years of excavation completed thus far, the project has uncovered 40 features and 88,728 artifacts. Of these, 28,990 (32.7%) were historic glass artifacts. Aside from being the largest artifact class, glass is unique because it is found in nearly every context excavated at the site. This is in part due to the fact that glass is one of the most easily produced, versatile, and inexpensive materials. It can be used in containers, windowpanes, jewelry, tableware, and even car parts. As an archaeological resource, glass is useful because it can represent a variety of activities, from construction periods to beverage consumption.

Various minimum vessel counts (see New Philadelphia Archaeology Reports), cross-household comparisons (Shackel 2010), and individual artifact analyses (see New Philadelphia Archaeology reports) have used glass artifacts to shed light on the interpretation of specific contexts, but a comprehensive analysis of glass across the site has not yet been completed. This study seeks to fill that gap by analyzing trends in the distribution of glass across the entire site of New Philadelphia. It seeks to understand not only where glass has been deposited, but when these deposits were made, what types of glass artifacts they consist of, where these artifacts came from, and what they can tell us about change in the site's occupation over time.

This project begins with a more in-depth look at the history and archaeology of New Philadelphia, including some background on the interpretations of the site that have been presented by archaeologists and community members. I then provide a brief background on the history of glass production, focusing on glass vessel production techniques. This is followed by an explanation of my methodology for analyzing the glass assemblage, and several findings from this analysis. Finally, I describe some of the identifiable glass artifacts recovered from the site, attempting to draw conclusions about where glass vessels at the site came from and when they were made. From this information, I return to the issue of the site's interpretation and research focus thus far to make the case that glass offers a means to expand our understanding of New Philadelphia's history beyond that of the McWorter story.

Historical and Archaeological Background of New Philadelphia

Frank McWorter and Histories of New Philadelphia

New Philadelphia entails histories of many peoples, events, and issues, but it has been most heavily associated with the achievements of a man named Frank McWorter (Image 2). Frank was born into slavery in South Carolina in 1777 to a West African woman named Juda and her master, George McWhorter (Walker 1983:7). When he was 18, Frank moved with his master and father, George, to Pulaski County in Kentucky. There, Frank was responsible for taking care of Mr. McWhorter's property while he was away, and was hired out to local businesses to bring extra income to his master (Walker 1983:32). At the same time, though, Frank managed to develop a business in the saltpeter mining industry, an opportunity that allowed him to generate the funds necessary to purchase his own freedom.

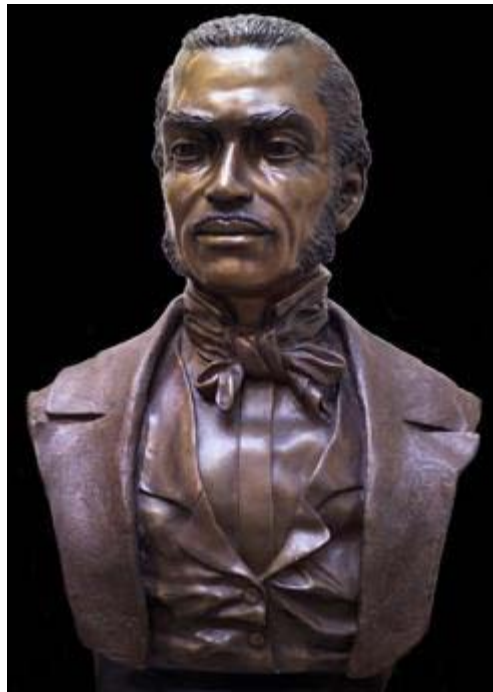


Image 2. A bust of Free Frank McWorter, founder of New Philadelphia (Sculpture by Shirley McWorter Moss; photograph courtesy of Sandra McWorter).

Freedom was Frank's goal from the start. Throughout his lifetime, and even in his will, he sought to free as many of his family members from the suffering of bondage. After George McWhorter's death in 1815, Frank purchased his wife Lucy's freedom (a strategic move considering she was pregnant with his son Squire at the time) for \$800 (Walker 1983:46). A few

was founded (Shackel 2011:9). Illinois law dictated that escaped slaves found passing through the state had to be turned over to their owners immediately. Several “sundown” towns existed which did not allow blacks to be outside past sunset. Furthermore, legally Frank would not have been allowed such rights as testifying in court against a white person. Even for those blacks who found a way out of slavery, Illinois was not a safe place to be. The fact that Frank was able to found a town in such an environment speaks to his bravery and resolve to pursue freedom at all costs.

New Philadelphia managed to survive and flourish as a multiracial town on the frontier even as racism and rough economic times posed challenges to its residents. It is important to recognize that Frank and his family were not the only inhabitants of the town. The town’s population peaked in 1865 with 160 residents, including a blacksmith, carpenter, and physician (Shackel 2011:18). About a quarter of all residents came from Illinois, while the rest had migrated from other parts of the Upland South and Northeast regions of the United States, looking for new land and opportunities. About 60% of residents were white, while the rest were classified as black or mulatto in the federal census ledgers (Shackel 2011:18). The racial background of the population fluctuated throughout its 100-year existence, but whites were always the majority racial group.

Although New Philadelphia is widely known and publicized as a multiracial town where residents worked together to build a successful community, the reality was not quite as rosy as we might wish to believe. Certain community institutions, such as the schools and cemeteries, were segregated according to race (King 2011). Education was very heavily euro-centric and male-dominated (Helton 2011). While some documents do tell us of the friendly interactions, such as business transactions, between blacks and whites in the town, oral histories have added color to these stories. One resident who lived in the town in the 1920s described how “some people from our area were really against the Negroes” (Foster quoted in Shackel 2011:86).

Racism affected the town on many levels, and some would argue that it is ultimately what led to the town’s demise. In 1853, railroad developers looking to connect the markets of nearby Hannibal with central Illinois transport arteries decided to construct a railroad running through Pike County. Instead of taking the logical, most cost effective route through the county to do so, they opted to veer north right around the location of New Philadelphia, effectively bypassing the town by a mile. Given that there were no other foreseeable factors, such as more rich or powerful

land owners who might have lobbied to move the railroad, or topographic features that would have severely impacted the ease of constructing the railroad through New Philadelphia, some believe that this decision was made purely out of racist sentiments (Fennell 2010). While no direct documentation exists to prove that this was the motivation behind the railroad bypassing New Philadelphia, it is a plausible explanation given the circumstances of racial tension at the time.

Whether or not the railroad bypassed New Philadelphia on purpose is debatable, but it is a known fact that the town's population began to decrease starting in the 1870s. By 1880, the town's population was only 93 residents, and by the start of the 20th century six families remained (Shackel 2011:22). It is important to note that this decline was not unique to New Philadelphia, however. Several towns in Pike County also experienced population declines during this time due to the draw of new opportunities in cities and further west.

While the town's population declined into the late 19th and early 20th century, it was still in existence until around the start of the Second World War. Land was slowly reverted to agricultural parcels and sold off to neighboring farmers, but several structures were inhabited by families like the McWorters and the Venicombes (Shackel 2011:27). An integrated schoolhouse that existed across the road from the town from 1874 to 1940 continued to draw students from Pike County to the area. African Americans continued to bury their family members in the black cemetery until 1950 (Shackel 2011:23). Most of all, descendants of the town's inhabitants never forgot the town. Larry Burdick, who lived in the town in the early 20th century, compiled his memories of the town into a monograph called "New Philadelphia: Where I Lived" (1992). The town's descendants continued to seek ways to commemorate its history, eventually reaching out to researchers for the support and funding necessary to complete an in-depth investigation of the town site in hopes of preserving their heritage for generations to come.

Archaeological Research

While descendants and community members never lost interest in investigating the history of New Philadelphia, developing the right connections and acquiring the funds to do so took many years. The impetus for the New Philadelphia Archaeology Project was a grassroots effort that gradually drew stakeholders from many institutions. Vibert White (University of Illinois at Springfield), Paul Shackel (University of Maryland) and Terrance Martin (Illinois State

Museum) were among the first individuals to push for archaeology at New Philadelphia. By holding a conference inviting members of the New Philadelphia Association, the three men were able to garner the support of community members for an archaeological investigation with the ultimate goal of listing New Philadelphia as a National Historic Landmark (Shackel 2011:32).

In order to make a case for extensive funding for the project, archaeologists had to first prove that there were still significant finds to be made at the site. Therefore, in 2002 they arranged for a walkover survey that covered most of the site and documented the concentration and variation of artifacts across the site. Although time constraints forced the project to spill over in 2003, volunteers found over 7000 artifacts on the surface of the land alone, an indication that there was much more to be found beneath the plow zone (Shackel 2011:41).

Leveraging this information in a proposal to the National Science Foundation Research Experiences for Undergraduates grant, Paul Shackel, Terrance Martin, and Christopher Fennell (University of Illinois, Urbana-Champaign) put together a comprehensive schema for a three-year investigation of the site coupled with a field school (Shackel 2011:55). The proposal was approved by the NSF-REU program, and plans were put into action to gather students for the field school.

One of the major goals of the excavations was to bisect as many features as possible. By removing half of the feature, archaeologists believed they could recover enough material to help them make confident interpretations about how the features' contents without completely removing all the materials of archaeological significance at the site. In order to find these features, they employed geophysical surveying techniques such as resistivity and magnetometry. These techniques are capable of denoting the presence of anomalies, or human-made disturbances, within the ground (Hargrave 2010).

During the first field season in 2004, archaeologists bisected a cellar pit associated with the household of Casiah Clark, who was believed to be the mother of Louisa McWorter (the daughter-in-law of Frank McWorter, the town's founder). Since they were able to find a significant array of artifacts, from glass and ceramic to faunal remains, they continued following this method of bisecting features and would eventually bisect several house foundations, wells, trash pits, and a lime slacking pit, among other deposits. These features were found on several blocks within the town, though excavations have focused mostly on the north-central areas of the site.

The NSF-REU grant was renewed in 2008 to include three more years of investigations. The most recent excavations have focused on recovering the remains of the African-American schoolhouse and the home of Louisa McWorter, which is referred to in oral history accounts as the town's "hotel." Although archaeologists only found cursory evidence of the schoolhouse, such as a single fieldstone and some slate, they did uncover the McWorter house foundation and an associated well. They also recovered additional house sites and a trash pit on Block 3 of the site (Shackel 2011:102-109). The trash pit on Block 3 and McWorter home on Block 13 are two areas of high-glass concentration discussed in later parts of this paper.

Research Foci

A significant amount of archaeological and historical research has been carried out on New Philadelphia. Juliet Walker, a McWorter descendant and professor of history at the University of Texas, published a comprehensive biography of Frank McWorter's life titled "Free Frank: A Black Pioneer on the Antebellum Frontier" (1983). Christopher Fennell researched the history of the railroad that was built through Pike County in the late 19th century to make the case that the railroad bypassed New Philadelphia in a form of aversive racism (2009, 2010). Claire Martin has used historical documents such as probate records, census records, and wills, to add depth to our understanding of New Philadelphia residents' lives. She has looked for evidence of relationships between families, even contacting their descendants to gather more information about them, and has used her research to help archaeologists draw conclusions about consumption patterns across families (Martin and Martin 2010).

Much of this research has centered on two major themes: the accomplishments of Frank McWorter, and the question of how New Philadelphia's racially diverse residents interacted throughout the town's history. As Shackel (2011:91) has written, New Philadelphia offers "a significant opportunity in Pike County to develop a plan and discuss racism in the community." He goes on to describe how important it was to investigate both African-American and European-American households in order to understand how the town survived in such a tense racial environment.

In order to answer this question of social dynamics, many studies have focused on comparing the artifact assemblages of households with contrasting social identities. For example, Terrance Martin and Claire Martin conducted an extensive analysis of faunal remains across

households to look for patterns in what types of animals different families consumed. Their hypothesis was that certain families who were known to migrate from either the Northern, Upland South, or Midland regions of the country might consume different types of animals (T. Martin and C. Martin 2010). Their findings in some households, such as that of Kezia Clark from Kentucky, were in line with this hypothesis. The faunal assemblage from Clark's house mostly included pig bones, which is in accordance with the mostly pork-based diet of Upland South migrants. However, some households demonstrated assemblages that did not indicate a clear bias for one type of animal. Still others contained faunal assemblages which were actually the opposite of what might be expected from them given historical knowledge of their inhabitants' origins.

Other comparisons have been carried out based on glass and artifact assemblages. Paul Shackel sought to understand whether African-American and European-American families purchased different sets of tableware. He found that assemblages were fairly identical cross households of all racial backgrounds, perhaps indicating a type of collective identity that united New Philadelphia's residents (2010). This uniformity also seems to suggest that residents had similar access to goods regardless of their racial backgrounds.

Many of these articles were published in a special edition of *Historical Archaeology* that focuses on New Philadelphia. Anna Agbe-Davies (2010) wrote in an introduction to the journal that the archaeology of New Philadelphia thus far has shed light on many key questions about life at New Philadelphia, but that it is also important not to confine the town's history to a few categories, such as a "multiracial," "townsite," or "Frank McWorter." The extensive work done at New Philadelphia would perhaps not have happened had it not been for public interest in these subjects, but the research potential of New Philadelphia extends far beyond these subjects and should not be oversimplified. Her discussion calls for researchers to embrace "the simultaneous mutability and rigidity of social categories" in order to answer the questions of New Philadelphia's diverse stakeholders (Agbe-Davies 2010:3).

Tensions in Interpretation

Although the relationship between descendants, members of the New Philadelphia Association, and researchers has overall been a strong one that has benefitted all parties, there are some unique ways in which differences of opinion have affected the project. Most these

differences of opinion relate to how the site is interpreted by researchers, and how these interpretations are shared with the public. The greatest divide exists between Juliet Walker, a descendant of Frank McWorter and author of his biography, and the archaeological team. Walker first expressed frustration with the project when the original proposal for the NSF-REU grant was submitted. She was unhappy that the archaeology team had not requested her help in writing the proposal, since she considered herself the foremost researcher on the history of New Philadelphia at that point. Though Shackel (2011:58) admits that they regret not engaging Walker earlier on, he had hopes that she would put those hard feelings aside and work with them on making subsequent research successful.

Walker's second concern with the archaeologists had to do with the research questions they were asking. She felt that the history of New Philadelphia should focus on Frank McWorter's achievements alone. Therefore, instead of supporting the archaeological research, Walker embarked on her own projects to commemorate the town, including plans to film a movie about Frank McWorter's life and purchase land near the town site to reconstruct the town as it was when Frank lived there. She told the *Quincy Herald Whig*, a local newspaper, that these efforts would not only bring attention to Frank's story, but that they would generate controversy "on how attempts were made to rewrite the black historical experience" (Husar 2005b in Shackel 2011:112-113). Other descendants of Frank McWorter, including Abdul Alkalimat (Gerald McWorter) have not only chosen to support the archaeology project, but have invested their own time and research capabilities to the project (see Alkalimat's article in *Historical Archaeology* 2010:155-157).

A second tension existed between the New Philadelphia Association and the archaeology team over how best to preserve the site and tell the story of New Philadelphia. The New Philadelphia Association is comprised of people mostly from Pike County and neighboring towns who have an interest in or personal connection the site. The Association was formed in 1996, and has been very supportive of the archaeological investigations since they began. One of their goals, however, was to develop a plan for interpreting the site. They had hopes for reconstructing the town's structures so that the public could visit and learn about the site. Paul Shackel and the rest of the archaeology team have been critical of this plan, given that little is known about how the structures themselves actually looked. Furthermore, because the town has a 100 year long history, choosing to reconstruct the buildings would require the Association to

only honor one time period within this 100 year history, effectively neglecting the fact that other people have lived at the town site at other points (Shackel 2011:33). Shackel (2011:174) writes: “Our goal at New Philadelphia from the beginning was to be as inclusive as possible and to tell all the stories of the town, from the 1830s through the 1930s.”

The town of New Salem, about an hour’s drive away, was reconstructed in the early 20th century to show what the homes and businesses looked like when Abraham Lincoln lived and worked there. Ever since its construction, this interpretive site has been criticized for inaccurately representing and oversimplifying the town’s history. As an alternative, Shackel (2011:174) suggests that future interpretations at New Philadelphia use ghost structures, such as house frames, to show where buildings once stood, along with signs explaining the history of the town. The New Philadelphia Association has slowly warmed up to this idea, but the site’s interpretation has been one of the most hotly contested issues of the project.

A Brief History of Glass Production

While the origins of glass production have never been definitively decided by archaeologists and historians, many believe that the process arose as a result of experimentation with metallurgy (Davis 1949:3). Since some metallurgical procedures result in byproducts of vitreous slag that resembles colored glass, it is likely that early inventors caught on to this technique and tweaked it in order to produce glass vessels and artwork. Most archaeologists agree that three major civilizations -- Egypt, Phoenicia, and Rome -- contributed immensely to the refinement of glassmaking through the creation of tools such as the blowpipe, which would be employed well into the 19th century, to form glass bottles (Davis 1949:5).

Glassmaking in England developed at a slow pace, and glass was primarily used as a glaze until the 17th century. It was then that the introduction of coal fuel presented a cheaper, faster means of running a glass furnace (Davis 1949:15). At this point, Sir Robert Mansell obtained a monopoly on coal, using it to fire his furnaces and create everything from beads to bottles to window glass. During the colonial period in British North America, colonists’ lack of resources and knowledge of the new terrain they inhabited made the construction of glass factories incredibly challenging. For this reason, glass production in the colonies did not take off until the early 19th century. Centers of production were focused around areas with an abundance of resources, namely New York, New Jersey, Pennsylvania and Massachusetts (Davis 1949:28).

In 1820, when demand for glass hit a low, glassmakers were forced to consider location when constructing glass factories more than ever before. As Davis (1949:43) writes, “provision for fuel supply, together with considerations of transport and sand resource, combined to form the localization pattern of the American glass industry.” This pattern is largely what still informs glass production today.

Early hand-made glass bottle production techniques generally took one of two forms: “off-hand blowing” and “mold-blowing” (Davis 1949:48). The off-hand method involved gathering a glob of molten glass on the end of a long stick known as a pontil. A blowpipe was connected to the end of this stick, and the glassblower blew air through the pontil until a bottle-shape was formed (Image 4). Sometimes it took many heating and cooling stages before a bottle could be formed correctly. Once the bottle shape was formed completely, the glassblower would

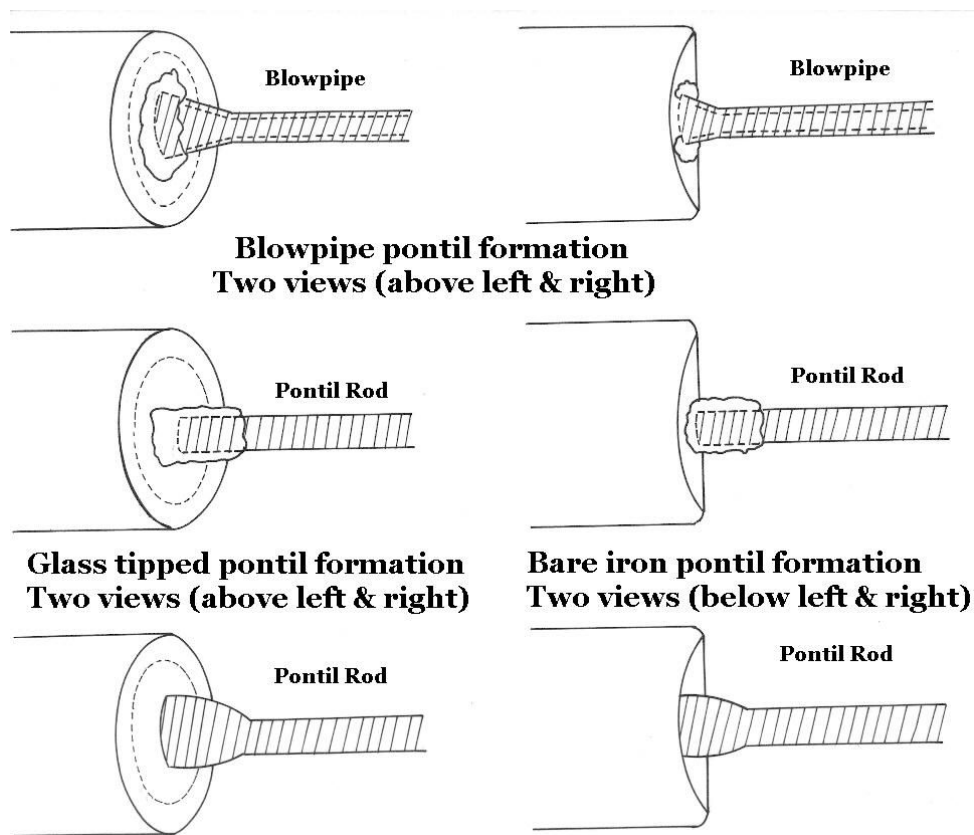


Image 4. A diagram of hand-blown bottle production processes (Lindsey 2011).

remove the pontil from the bottle base, leaving behind a mark known as a pontil scar (Scoville

1948:17). This scar is one of the main signifiers that a glass vessel was created by hand rather than through machine production. Bottles with pontil scars generally date to before the turn of the 20th century (McDougall 1990).

The second method commonly used to make glass bottles in the 19th century was the mold-blown method (Davis 1949:49). This method involved placing a glob of molten glass inside a preformed mold. The glassblower blew air into the mold until the glass took the shape of the mold. Once the shape was formed, the glass vessel was usually removed from the case and placed on a pontil in order to provide finishing details. Once it was finished, the bottle was removed from the pontil, leaving behind a scar much like that produced through the off-hand blown method. This process also produced a mold seam along the sides of the bottle.

Windowpanes were also made very commonly from glass. The popularity of window glass in the United States did not burgeon until the 19th century (Maloney 1968:67). There were two basic means of producing the sheet glass for windows. The first was a method not unlike the off-hand blowing technique used to make glass bottles. The main difference is that instead of being molded into a bottle, glass was spun on the end of a rod until it reached a pancake shape. This flat disk of glass could then be cut to create smaller windowpane. A second and more common method of producing flat glass was to blow glass into a cylinder shape, then cut the cylinder and reheat it until it became flat (Rogers 1937: 140-141). More modern, mechanized practices involve pouring molten glass onto a tray and allowing rollers to gradually flatten it out (Maloney 1968:90).

In the years leading up to the Civil War, the glass industry underwent significant growth. Overall glass revenue more than doubled between 1820 and 1860. Although previous centers of production remained in place, many new factories opened in the Midwest. In fact, by the year 1860, 34% of all glass production was occurring west of the Alleghenies. This was a large shift from 1820, when 36% of glass production was centered on New England (Davis 1949:73). Even through this period of growth, however, manufacturing techniques changed little. Although glassmakers were constantly seeking new, cheaper ways to fuel furnaces and create a greater diversity of molds, the general technique for forming a bottle as described above remained the same (Davis 1949:77).

As production techniques improved and glass became more abundant, prices gradually dropped. Glass vessels became more affordable, especially to consumers in rural regions, and

bottle reuse declined. Beginning in 1890, though, massive changes in machine production led to an even more drastic decline in vessel prices. The invention of the Owens bottle machine presented a revolutionary tool to impact the glass industry (Image 5). It made mouth-blown bottles obsolete, and allowed glass companies to cut back on their labor force and rely almost entirely on machines. It was fairly straightforward invention; it took the mold-blown method of producing bottles and made it entirely machine-run. The machine had several arms, each of which was attached to a mold. This mold rotated around the machine, and was clamped onto a piece of molten glass. Air was pumped through the mold's neck so that the glass could take the mold's form. Once the bottle was formed, the two halves of the mold would unhinge and the bottle would drop down onto a rotating table where it could cool (Davis 1949:209). Several other automatic machines were created to mimic and improve upon the Owens Bottle Machine, but it is still recognized as the pioneering discovery of machine-made bottles.

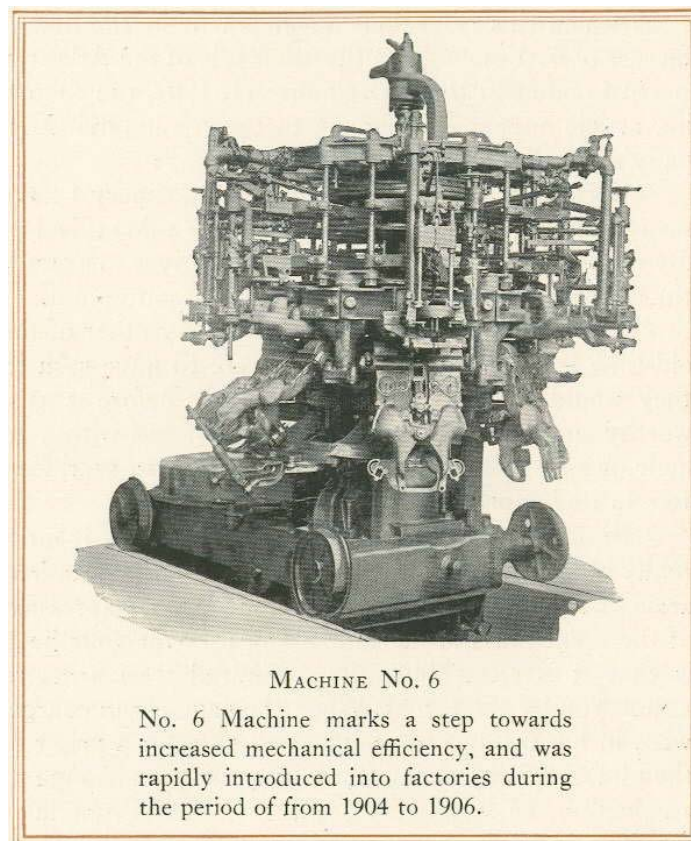


Image 5. The Owens Bottle Machine revolutionized the bottle production process by making the process completely machine-run (Walbridge 1920).

The mechanical revolution of the late 19th to early 20th century changed the face of the American bottling industry. In fact, by the 1920s, America was recognized as having one of the most advanced glass industries in the world, a far cry from the struggles of the colonial era (Davis 1949:224). The sheer abundance of glass vessels also speaks to this advancement; in 1899, a total of 8 million bottles were produced, and by 1917 that number tripled to 24 million (Miller and Sullivan 1981). Tariffs on foreign glass products were lifted as prices dropped and manufacturers grew more confident in the industry's strength. The glass industry has flourished as glass has become one of the most commonly used materials in everyday life. The following discussion explains how glass artifacts from the remains of households were catalogued at New Philadelphia.

Glass Analysis: Research Methodology

New Philadelphia Artifact Database

All of the artifacts collected from New Philadelphia were catalogued in the New Philadelphia Artifact Database according to the classification standards used by the National Park Service. Archaeologists used this system in the hopes that one day the site might be adopted as a national park, thereby allowing for a smooth transfer of data from the archaeology team to the Park Service. Each artifact, once collected, cleaned, and bagged at the site, was transported to the laboratory at the Illinois State Museum. Artifacts recovered from the same level within each unit were sorted according to material type (i.e. glass, metal, ceramic) and then according to decorative techniques (e.g., colorless flat glass, green bottle glass). These groups of similar artifacts were then counted and given an artifact number. They were not weighed. Artifact numbers were then written on every single artifact to ensure that they would not be misplaced.

The cataloguing system contained nine categories: material type, object name, manufacturing technique, decorative technique, decorative design, decorative element, color, object part, and material. There was also a space for comments about each of the artifacts. The difficulty with using this system derived from National Park Service conventions is that there are many categories present in the cataloguing system which describe artifacts that are rarely, if ever, found at New Philadelphia. The multitude of categories made cataloguing artifacts somewhat confusing for field school students and volunteers. For example, there were 22 decorative techniques, 58 decorative designs, 102 decorative elements, 38 colors, 20 object parts,

and over 60 object names that could be used to describe glass. One of the tasks involved in my glass analysis, therefore, was to simplify the categories used to describe artifacts in order to present a clearer picture of differences in the glass distribution across the site.

Another challenge of this system is that some important information which could tell us when glass containers were produced, such as a pontil scars and mold seams, were not always recorded with consistency. There was no category which required those cataloguing artifacts to record this information. If these features were recorded, they were placed in the comments beside each artifact. While some cataloguers did include this kind of information in the comments, it is likely that some pontil scars and mold seams were overlooked, or miscataloged, because the system does not explicitly demand that cataloguers designate such attributes in a specialized data field. Within the manufacturing technique category, the most popular choice to describe glass production technique was “molded technique unknown,” which indicates that those cataloguing the glass were not able to distinguish from fragments of vessels whether the object had been produced by mouth-blown or mold-blown vessels.

Glass Data

As explained above, the database from New Philadelphia contained many categories for glass which presented challenges when I sought to explore overall trends across the site and through time. Therefore, I collapsed a number of categories into ones that were more attune to my research questions. Since container glass and windowpane glass were the two most prevalent indicators of human activity, I chose to study their distribution across the entire site. To do so, I collapsed the manufacturing technique classification listed on the New Philadelphia Artifact Database into six categories: (1) beverage bottles, (2) food containers, (3) pharmaceutical bottles, (4) tableware, (5) unidentified containers and (6) windowpane glass. These categories are described in detail below.

1 – **Beverage Bottle** – encompasses all glass artifacts classified under the “Object Name” category of the artifact database as “Container, Bottle.” This includes alcohol bottles (primarily beer), soda bottles, and all unidentified bottle fragments. An example would be the L&M Soda bottle or Reisch Brewing Company bottles recovered from Feature 28 (discussed below in regard to Identifiable Vessels). Unidentified bottle fragments could be bottle finishes, base or body

pieces that are distinguishable as bottles but are too fragmented to identify as either an alcohol, soda, or other beverage bottle. An example is shown in Image 6 below.



Image 6. A fragmented bottle finish from Block 13, Lot 4 (724.052) that was categorized as an unidentified bottle fragment.

2 – **Food Containers** – composed primarily of jars and condiment containers. Within the New Philadelphia artifact database, these would have been catalogued by “Object Name” as “Container, Jar” or “Container, Bottle, Food.” The most common example of these food containers is the Mason jar, which was recovered from multiple contexts at New Philadelphia. A condiment bottle such as the cathedral pepper sauce bottle (Image 7) recovered from Block 3, Lot 7, is another form of food container.

3- **Pharmaceutical Bottles** – bottles containing medicines and other household remedies or beauty products (e.g., perfume). These bottles were categorized by “Object Name” as “Container, Bottle Medicinal” or “Container, Vial.” The difference between a medicine and perfume bottle can be difficult to discern from a fragment, since these bottles tend to have small necks (Image 8).



Image 7. Cathedral pepper sauce bottle (463.012) from Block 3 Lot 7, classified as a food container (Photo from 2006 New Philadelphia Archaeology Report Chap. 3B).



Image 8. A medicine or perfume bottle neck (721.032) from Block 13 Lot 4 that was classified as a pharmaceutical bottle.

4 – **Tableware** – glass vessels such as tumblers, cups, dishes, and plates which would be used in serving food during mealtimes. An example would be the candy dish recovered from the

Louisa McWorter house foundation on Block 13, Lot 4 (Image 9).



Image 9. Candy dish (mended from artifacts 773.010, 779.025, and 779.026) from Block 13, Lot 4 which serves as an example of glass tableware.

5- **Unidentified Containers** – all vessel fragments that cannot be categorized in one of the other container categories. These are generally curved glass fragments (Image 10) that did not contain enough identifiable features to categorize them as either a bottle or jar fragment.



Image 10. Colorless glass container fragments (736.009) from Block 3, Lot 3 classified as unidentified container fragments.

6 – **Windowpane Glass** – flat glass fragments that were likely part of a windowpane of a house or other structure.

All artifacts that did not fit into these six types were removed from the data set. These include: other types of artifacts incorrectly classified as glass, glass from lighting implements (e.g., lamps), household hardware pieces made of glass, personal items such as jewelry and buttons, glass toys, and all unidentified glass.

After sorting all of the glass artifacts into one of those six types and removing ones that did not fit into those types, the remaining artifacts were sorted by provenience. Furthermore, all artifacts that were missing or had less precise provenience information (including artifacts from excavation balks, shovel test pits, and surface collections) were removed. I also omitted artifacts from two contexts (Ann Street and Block 7) which had a lower number (less than 100) of artifacts associated with them. At the end of this process, 7,926 glass artifact entries remained, encompassing 28,990 glass artifacts.

Glass Artifact Types	Total	Percentage of All Artifacts
Beverage bottle	1155	4.0
Food container	713	2.5
Pharmaceutical bottle	68	0.2
Tableware	233	0.8
Unidentified container	12354	42.6
Windowpane	14467	49.9
Grand Total	28990	100

Table 1. The glass assemblage is dominated by unidentified container glass and windowpane fragments.

Since this is a very large data set that is dominated by windowpane glass and unidentified container glass (Table 1), at certain points throughout the analysis windowpane or unidentified container glass fragments were removed from the analyses in order to get a clearer picture of the distribution of identifiable vessel fragments. An implicit assumption of this alteration is that the identifiable artifacts we are left with are representative of the larger assemblage, including the unidentified container glass.

Measures of Analysis

Much of the analysis presented below is represented using glass artifact frequencies (percentages of the total glass assemblage in the context being described) rather than artifact totals. Using frequencies rather than totals allows one to make comparisons across different contexts with a more accurate sense of the significance of artifact totals. For example, 100 bottle fragments would make up 50% of a context that contains only 200 total glass fragments, while that number of fragments would only make up 5% a context that contains 2,000 glass fragments.

Artifact density is also used, calculated with artifact totals within each stratum, divided by the total volume of the excavation unit. Strata (such as sod, plow zone, or feature fill) are natural or human-made layers that became apparent as the units were excavated in half-foot arbitrary levels. In order to find the volume of a given stratum across a feature, I calculated the volume of all the levels within the feature that corresponded to a given stratum. The levels included in each stratum are listed in Appendix B. This calculation tells us the average number of artifacts per cubic foot found within a given context. It is a valuable measure because it accounts for variations in stratum size and depth, and gives us a sense of how evenly -- or unevenly -- artifacts were deposited within and across a given area.

Dating

One of the goals of this analysis was to offer a sense of when particular contexts were deposited based on the dates of artifacts found in those contexts. This goal was complicated by the fact that the majority of artifacts recovered from the site were very fragmented. In total, I was able to identify the manufacture dates and locations of 87 glass vessels (Appendix E), some of which are described in regard to Vessel Origins and Dates below.

Although the fragmented nature of artifacts limited my ability to date contexts in a definitive sense, some features of glass vessels which can be identified even in fragmented pieces allowed me to provide a date range for when these vessels were produced. For one, color is a somewhat reliable indicator of production dates. In general, completely colorless glass was not made prior to the 1870s, as glass makers had not yet developed the technology to remove impurities, such as iron, from glass that cause it to be colored. From 1900-1915, manganese was used to remove such impurities. However, when glass treated with manganese was exposed to sunlight, it took on a purple tint. This type of glass is known as amethyst-tinted glass. A similar

case is that of straw-tinted glass, which was decolorized with cobalt oxide (a combination of selenium and arsenic) between 1900 and 1920. Therefore, the presence of amethyst, straw, or completely colorless glass is an indication that a context dates to the early 20th century (Giarde 1989, Toulouse 1969a). Other glass colors, such as aquamarine, blue, green, and brown, were commonly produced throughout the 19th and 20th centuries and are not very useful in dating contexts. This is true of both window and container glass, though most window glass was blue or aqua tinted before the technique of producing colorless glass was perfected.

Fragments of glass vessels can also be identified using evidence of production techniques such as pontil scars, embossing, and bottle finishes/closures. The presence of a pontil scar indicates that a bottle was hand-made, and likely dates to mid-to-late 19th century. Embossing, on the other hand, could not exist unless a mold was used to make the bottle, which was likely post-1850s. Certain bottle finishes and closures can also indicate when a bottle was made. Screw-cap closures, such as those used on mason jars, were not used on beverage bottles until about 1920, and cork closures were only used on non-alcoholic beverage bottles prior to 1930 (Lief 1965). Since a number of these characteristics were recorded in the New Philadelphia Artifact Database they can be used as a guide to date contexts with a limited, though significant, degree of accuracy.

Glass Analysis: Findings

Initial analysis of glass artifacts revealed some distinct patterns which coincide with previous interpretations explored in the New Philadelphia Archaeology Reports. For one, artifacts were concentrated on two blocks within the site -- Blocks 3 and 13 (Figure 1). This makes sense given that these two areas were the locations of two rather large, in-depth investigations.

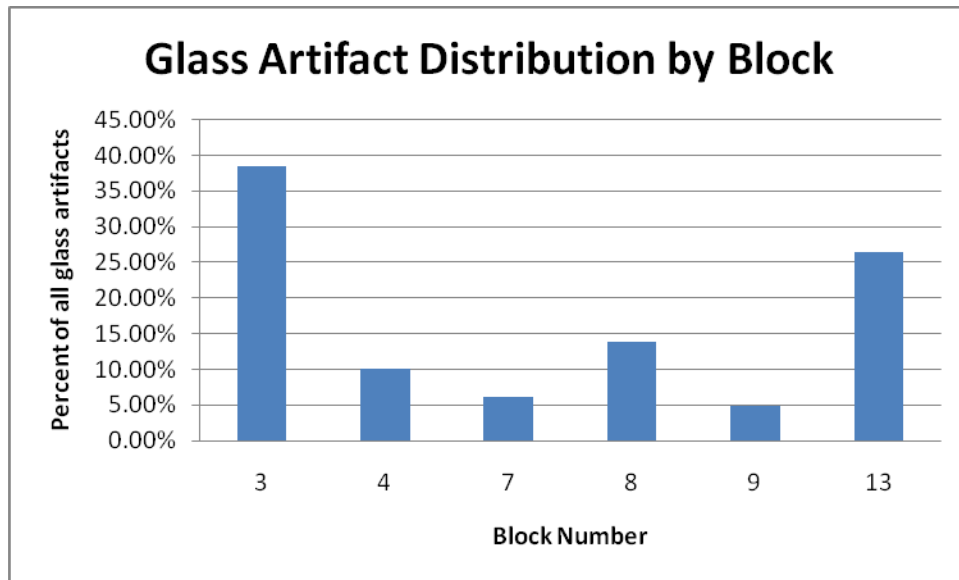


Figure 1. Blocks 3 and 13 together contained more than 60% of the glass artifacts found across the entire site in investigations examined in this study.

Block 3 is located towards the north end of the site along the original main town road known as Broad Street (Image 11). This block was the location of several investigations in 2004, 2006 and 2008. Initial excavations on Lot 3 of the block uncovered a lime slacking pit that was likely used to mix mortar and plaster while constructing a house. Archaeologists decided to continue excavating on this block, guided by resistivity survey maps, to search for the structure that was constructed using this pit. While the intact foundation for such a structure was not discovered, more evidence of its existence were, including a trash pit (Feature 28), post mold (Feature 29), foundation for a chimney stack (Feature 31), builder’s trench (Feature 38) and foundation fill (Feature 39).

Another area of interest in Block 3 was Lot 7, where in 2006 archaeologists uncovered a fieldstone foundation (referred to as Features 16, 17, and 21). This foundation was approximately 15 x 20 feet in size and was likely part of an early 20th century structure.

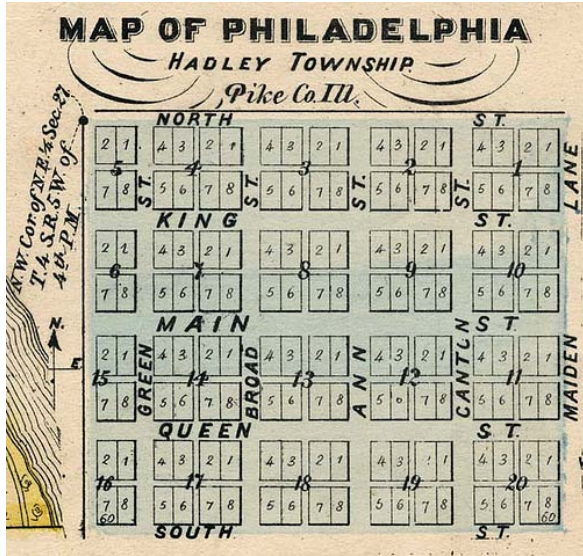


Image 11. An 1872 Atlas map of New Philadelphia (left) demonstrates the layout of the town. A 1998 aerial photo (right) overlain with the town’s plan shows more clearly the location of Blocks 3 and 13, both of which are outlined in red. The length of gravel road running through the town is often referred to as Broad Street today.

Block 13 is located towards the center of the site, but also adjacent to Broad Street. First excavated in 2005, archaeologists discovered the remains of a burned structure covered in soil fill from a pond (Feature 9) on Lot 3 and the corner of a fieldstone foundation (Feature 12) on Lot 4. Excavations in 2010 sought to continue bisecting the foundation on Lot 4, and uncovered Feature 40, a well associated with the house foundation, on Lot 3. Although the foundation was not fully bisected in 2010, archaeologists uncovered a great amount of material from this block and plan to continue investigations there in subsequent field seasons.

Block 3 Analysis

Over 11,000 glass artifacts, or 39% of the entire glass assemblage at New Philadelphia, were uncovered on Block 3. Of these, the vast majority (10,468 artifacts) were windowpane or unidentified container glass. If we remove these two categories to get a sense of what types of identifiable vessels were present, we find that beverage bottles (39%) and food containers (53%) make up the majority of the vessel distribution (see Figure 2).

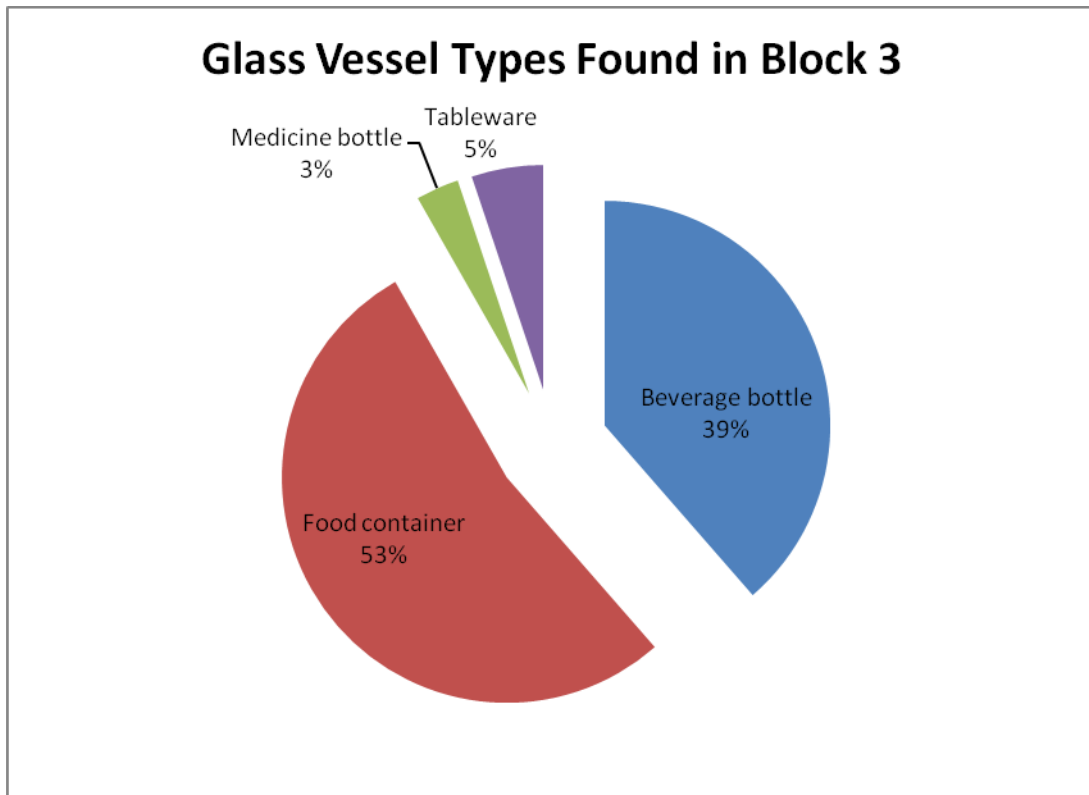


Figure 2. A breakdown of identifiable glass artifacts demonstrates a large amount of beverage bottles and food containers were present in Block 3.

In the distribution of glass vessel fragments across Block 3, the majority of artifacts were found in Lots 4 and 7. Lot 4 encompasses the area where several features, including the lime slacking pit and refuse pit, were recovered. An early 20th century fieldstone foundation was uncovered on Lot 7. As expected, the assemblages in both areas are dominated by windowpane glass and unidentified container glass (Figure 3). A similar amount of food container and beverage bottle glass was located in both locations.

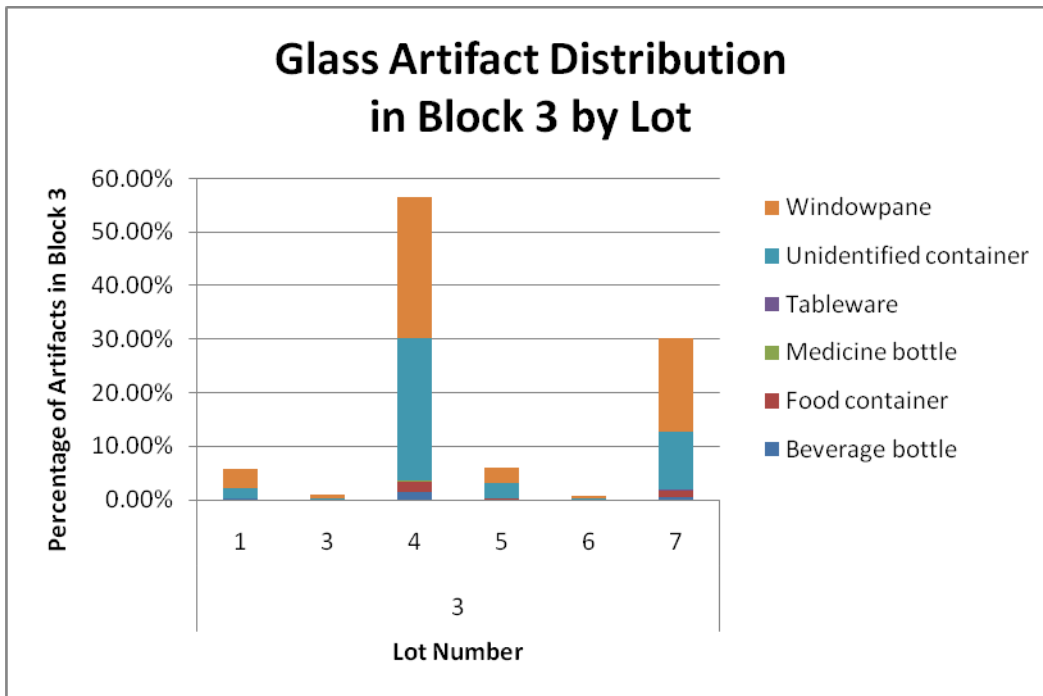


Figure 3. The glass distribution within Block 3 reveals a large amount of artifacts in Lots 4 and 7.

Of the 276 container base fragments recovered from Block 3, only 3 (Appendix C) were described either in the “Manufacturing Technique” or “Comments” fields of the New Philadelphia Archaeology Database as having pontil scars. Pontil scars are marks left behind during the process of making mouth or mold-blown bottles, and therefore help date bottles to the early-to-mid 19th century. The fact that so few of these are present on Block 3 could mean that most of the bottles recovered from this block were machine made, and therefore date to the late 19th or early 20th century (Orser 2002:68). However, as discussed in the Glass Analysis Methodology chapter, the recording of pontil scar presence was not uniform across all glass fragments, meaning that more could have been present but not recorded.

Block 3, Lot 4: Feature 28

A total of 16 excavation units were opened within Block 3, Lot 4. As shown in Figure 4, excavations in 2008 opened up Units 8-16. The vast majority of artifacts from Lot 4 were found in Units 8 and 10. These two units, along with Unit 12, defined the boundaries of Feature 28, a trash pit (Figure 5). Feature 28 began to appear approximately 1.25 feet below the surface level (Level B1), underneath about a foot of loamy soil marking the plow zone. An abundance of

artifacts appeared at this point, including glass, metal, brick, mortar, leather and ceramics (Fennell 2008:7). The greatest frequency of glass was found in the sod layer, the feature fill, and the plaster level (Table 2). The sod layer contained primarily windowpane glass, while the

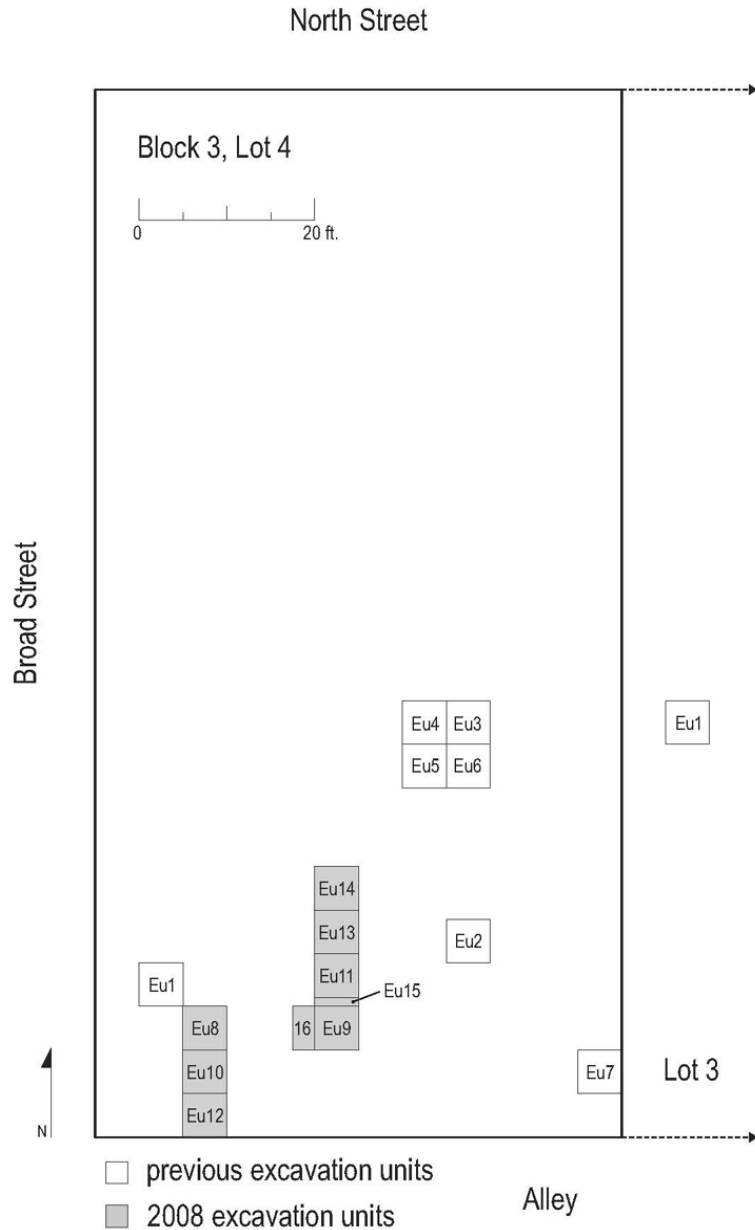


Figure 4. A diagram of excavation units within Block 3, Lot 4. Shaded units were from 2008 excavations, while unshaded ones are from 2004 and 2005 excavations (2008 New Philadelphia Archaeology Report, Chap. 3).

feature fill was full of container glass and the plaster layer returned to windowpane glass (see Appendix D). This is seen most prominently in Unit 10, where windowpane glass dominated

Levels A1 and A2 (n=261), container glass made up almost 50% (n=1120) of Level B3, and windowpane glass reemerged in Level C2 (n=194).

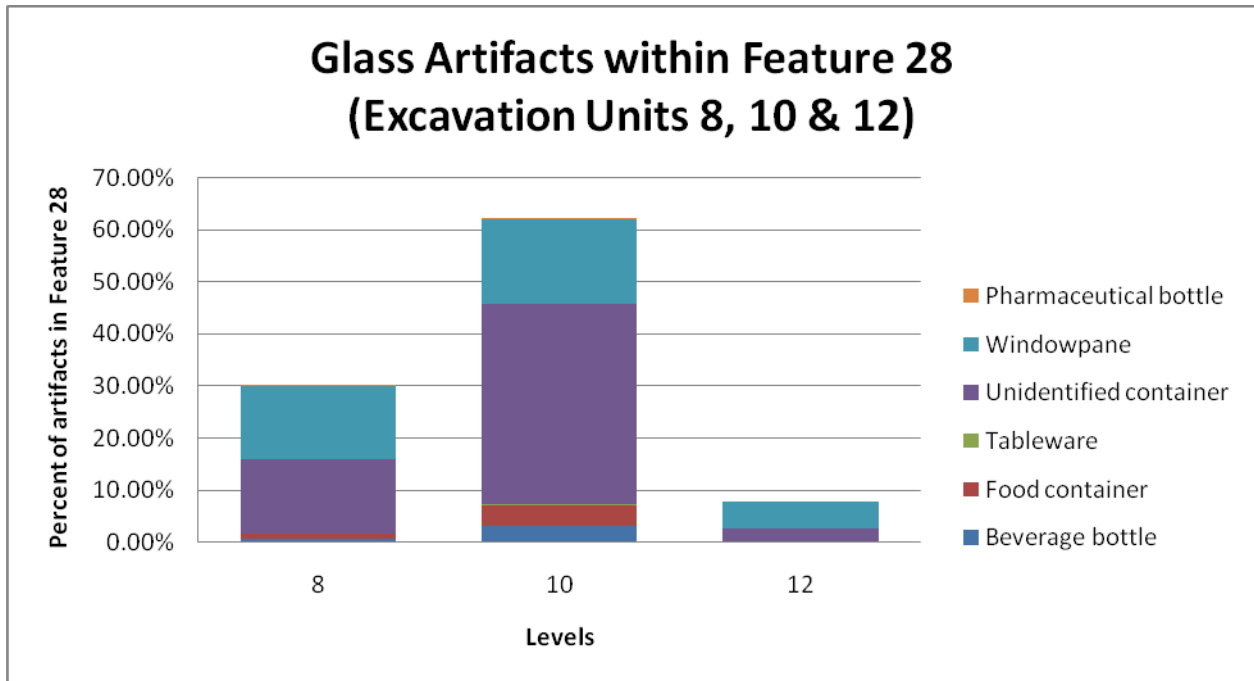


Figure 5. Feature 28 contained nearly 2/3 of all the artifacts recovered from Block 3, Lot 4. Most of these were unidentified container fragments or windowpane in Unit 10.

Stratum	Approximate Depth	Artifact Totals	Layer Volume (ft ³)	Artifact Density (artifacts/ft ³)
Sod	0 - .3 ft	380	15.8	24.1
Plow zone	0 - 1 ft	736	73.8	10
Sub plow zone	1 - 1.5 ft	346	51.0	6.8
Feature fill	1.5 - 3 ft	2220	72.0	30.8
Charcoal	3 - 3.5 ft	21	9.9	2.1
Brick rubble	3 - 3.5 ft	43	33.4	1.3
Plaster level	3.5 - 4 ft	225	8.9	25.8
Sterile soil	4 ft	6	19.7	0.3
GRAND TOTAL		3977	284.5	

Table 2. A summary of artifact densities across the various strata of Feature 28. The feature fill layer had the highest artifact density, as a large amount of trash was deposited in this area in the early 20th century.

In total, 58 beverage bottle fragments with known makers were identified in association with Feature 28. Of these, 49 were embossed with writing or contained maker's marks (if they were bases) that identified them as beer bottles from the Reisch Brewing Company in Springfield, Illinois (see discussion of Vessels with Known Origins and Dates). The image below shows the east wall of the units containing Feature 28, where the intact nature of artifacts is visible (Image 12).



Image 12. The east wall of Feature 28, showing a concentration of artifacts around Levels B2 and B3 (New Philadelphia Archaeology Report, Chap. 3).

One means of analyzing container production dates, besides embossing and maker's marks is to look at glass color. As discussed in the Glass Analysis Methodology section above, color provides a general range of years that a container might have been made. The chart below shows the three most common glass colors found in Feature 28 (Figure 6).

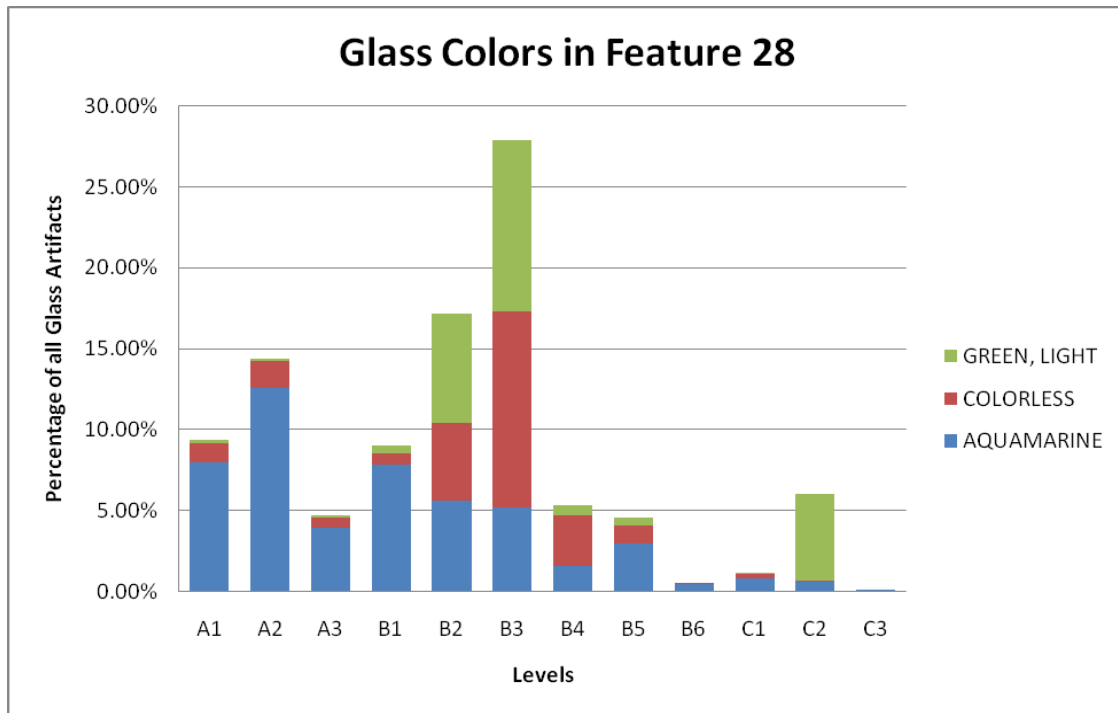


Figure 6. Light green, colorless, and aquamarine were the most commonly found glass colors in Feature 28. Completely colorless glass was not easily produced until the early 20th century.

While colors like aquamarine and green, which resulted from impurities in molten glass, were commonly used in containers throughout the 19th and 20th centuries, completely colorless glass was not easily produced until the early 20th century (Giarde 1989, Toulouse 1969a). Since colorless glass is present throughout Feature 28, and makes up close to 50% of all the glass in Level B3, it is likely that this feature dates to the early 20th century.

As mentioned above, Feature 28 was found to be in association with Features 2, 29, and 31, which all provide evidence that a house was constructed on Block 3 Lot 4 at some point in the early 20th century (Fennell 2008:18-19). According to deed records, the Welbourne and Venicombe families owned this land during that time (Fennell 2008:2). The intact nature of the artifacts in this feature, and their concentration within two levels of the feature, provide further evidence that these features were deposited in one event in the early 20th century.

Block 3, Lot 7: Features 15, 16, 17, and 21

A second major area of interest on Block 3 was a series of features on Lot 7. This area of Block 3 was excavated in 2006 after resistivity surveys revealed an anomaly along the western edge of the lot that spilled over onto the alleyway between Lots 6 and 7. Excavations revealed Feature 15, a stone scatter sitting on top of Features 16, 17, and 21, a fieldstone foundation encompassing a 15 ft by 20 ft area. Nine excavation units were put in place to uncover as much of the foundation as possible (Figure 7), however portions of the the north-south wall of the foundation were not uncovered due to time constraints (Image 13).

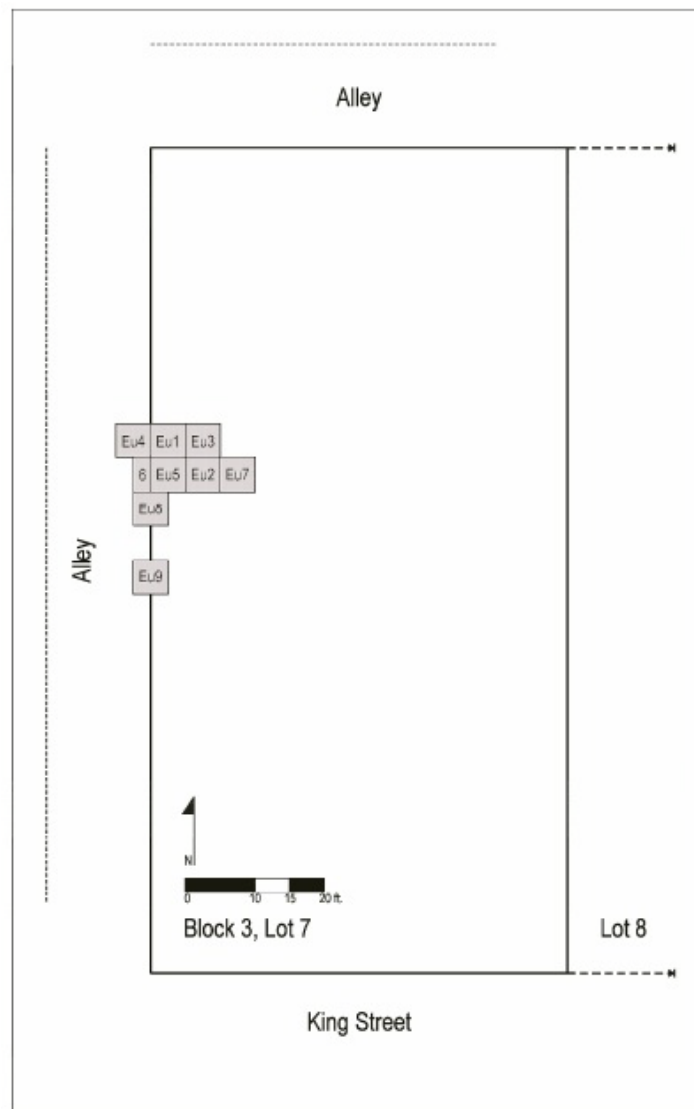


Figure 7. A diagram of Block 3, Lot 7 demonstrates the location of excavation units.



Image 13. Fieldstone foundation encompassing Features 16, 17 and 21 on Block 3, Lot 7.

As Feature 15 and Features 16, 17, and 21 represent two different periods of activity, archaeologists decided to divide the sub plow-zone contexts into two soil deposition periods called Megastratum IIA and Megastratum IIB. Megastratum IIB refers to all the soil and artifacts associated with the laying of the house foundation, which is believed to have been owned by Squire McWorter after the Civil War and stood for approximately 15 years. On top of this foundation was a layer of plaster, followed by a large amount of stone debris, all of which belongs to Megastratum IIA. Archaeologists believe that this deposition period represents the destruction of the home and plowing done by local farmers. It is likely that the Venicombe family, who lived on the lot after Squire McWorter, used this area as a trash pit as well (Shackel 2006:35).

Lot 7 contained 30% (a total of 3329 sherds) of all the glass found on Block 3. The distribution of glass across the units in Lot 7 was fairly even, with Unit 7 containing almost a quarter of the assemblage for the lot (Figure 8). This even distribution coincides with the fact that the features present on this lot compose a house foundation, which would likely demonstrate a

high density of artifacts throughout its entire area. Unit 7 contained the greatest diversity of artifact types, including large amounts of container glass.

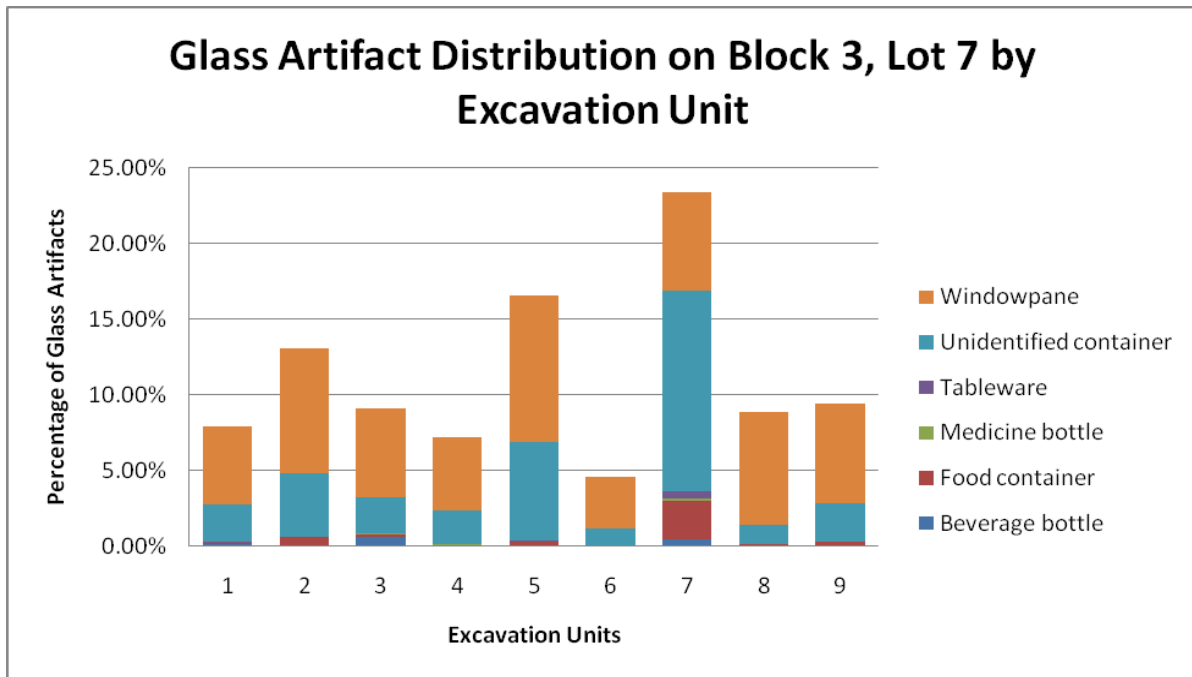


Figure 8: Glass was present in significant amounts throughout all of Lot 7.

However, this fairly even distribution is complicated a bit when we consider how these artifacts are distributed within the contexts described above. In order to analyze the differences in artifact distribution across Megastratum IIA and IIB, I first separated the levels associated with each context into two separate tables. Then, after calculating the number of artifacts found within the levels associated with each stratum by excavation unit, I was able to divide that amount by the unit’s volume to determine the density of artifacts within each megastratum (Table 3).

When we analyze this breakdown of artifact distributions across megastrata, we see that Megastratum IIA, the context associated with the stone scatter and trash pit located on top of the plaster layer, had a much higher density of artifacts. Furthermore, these artifacts were concentrated in Units 1, 3, 5, and 7. In contrast, Megastratum IIB, which was associated with the house foundation beneath the plaster layer, had very few artifacts per cubic foot. The highest densities of artifacts were found in Units 1, 3, 6, and 7.

Of the identifiable glass vessels found in Lot 7, 7 out of 8 were jar container parts, mostly lid liners. They were found through both megastrata of the units, and were produced regularly starting in 1858, making it difficult to use them as dating tools.

Unit	Megastratum IIA Levels	Artifact Totals	Unit Volume (in ft ³)	Artifact Density (artifacts/ft ³)
1	A1, A2	212	12.3	17.2
2	A1, A2	418	26.5	15.8
3	A1, A2	231	13.3	17.4
4	A1, A2, A3	213	21.4	10
5	A1, A2	528	22.1	23.4
6	A1	89	6.5	13.7
7	A1, A2, B1, B2, B3	618	37.6	16.4
8	A1, A2, A3	291	29.8	9.8
9	A1, A2	313	28.7	10.9
GRAND TOTAL		2913		

Unit	Megastratum IIB Levels	Artifact Totals	Unit Volume (in ft ³)	Artifact Density (artifacts/ft ³)
1	A3	52	16	3.3
2	B1, B2, B3	16	32.1	0.5
3	B1	71	15.2	4.7
4	B1, B2, B3	27	17.1	1.6
5	B1	23	11.9	1.9
6	A2, A3	65	12.2	5.3
7	B4, B5, B6	159	38.6	4.2
8	B1	3	12.1	0.3
9	-	-	-	-
GRAND TOTAL		416		

Table 3. A breakdown of artifact densities across Megastratum IIA and IIB in each of the units in Block 3, Lot 7.

Block 13 Analysis

Block 13 contained 26% of the glass artifacts recovered from New Philadelphia, a total of 7644 artifacts. As in Block 3, a good amount of these artifacts are windowpane (n=1940) or unidentified container fragments (n=4765). One important note is that a much greater percentage of glass from Block 13 is container glass (approximately 75% of the assemblage) than in Block 3, where 50% of the glass recovered was container glass. When we remove windowpane and unidentified container glass from this analysis to view the distribution of identifiable vessel types, we find that there are many more beverage bottles present than food container vessels (Figure 9).

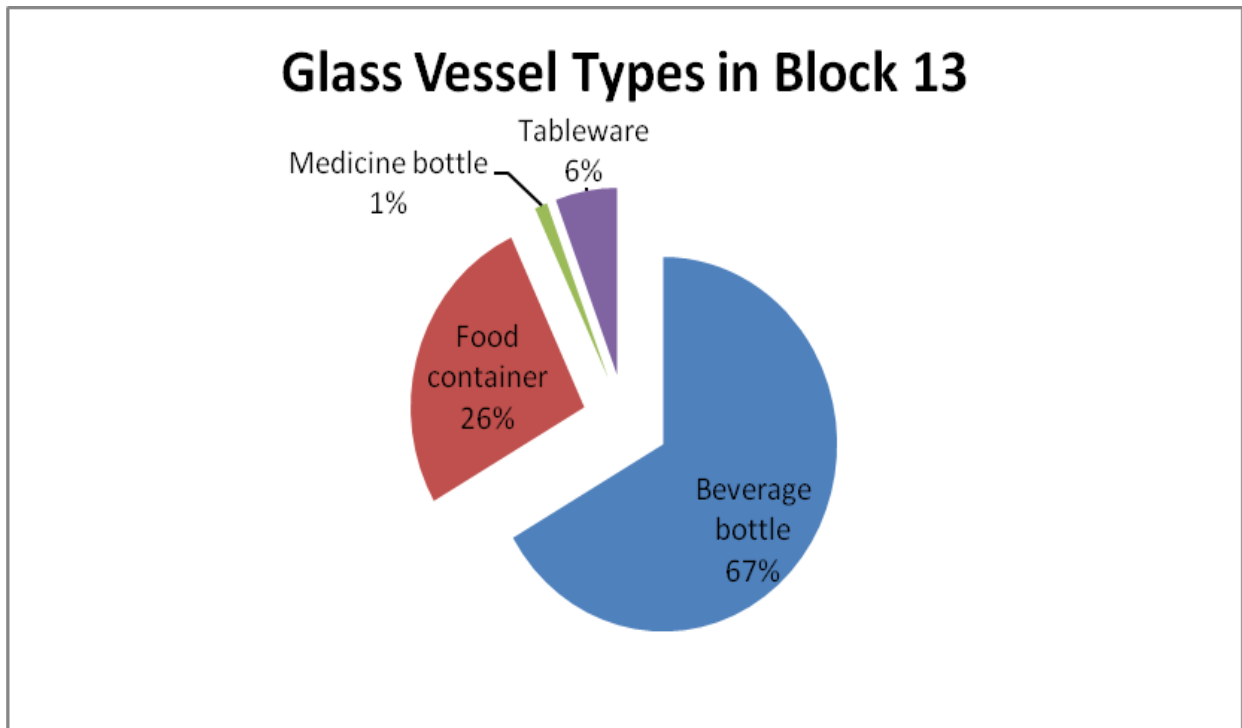


Figure 9. A breakdown of identifiable vessel types in Block 13 reveals a large percentage of beverage bottles, with food containers making up the next largest group of artifacts.

As only two lots on Block 13 have been excavated – Lots 3 and 4 – the distribution of glass is split between these two lots. Approximately 64% of these artifacts were found on Lot 4 while the remaining 36% came from Lot 3 (Figure 10).

Similar to Block 3, only 2 pontil scars were identified out of the 224 container base fragments recovered from Block 13 (Appendix C). As pontil scars are a feature of bottles produced in the early to mid-19th century, this lack of pontil scars suggests that the glass assemblage on Block 13 also dates to the late 19th and early 20th century.

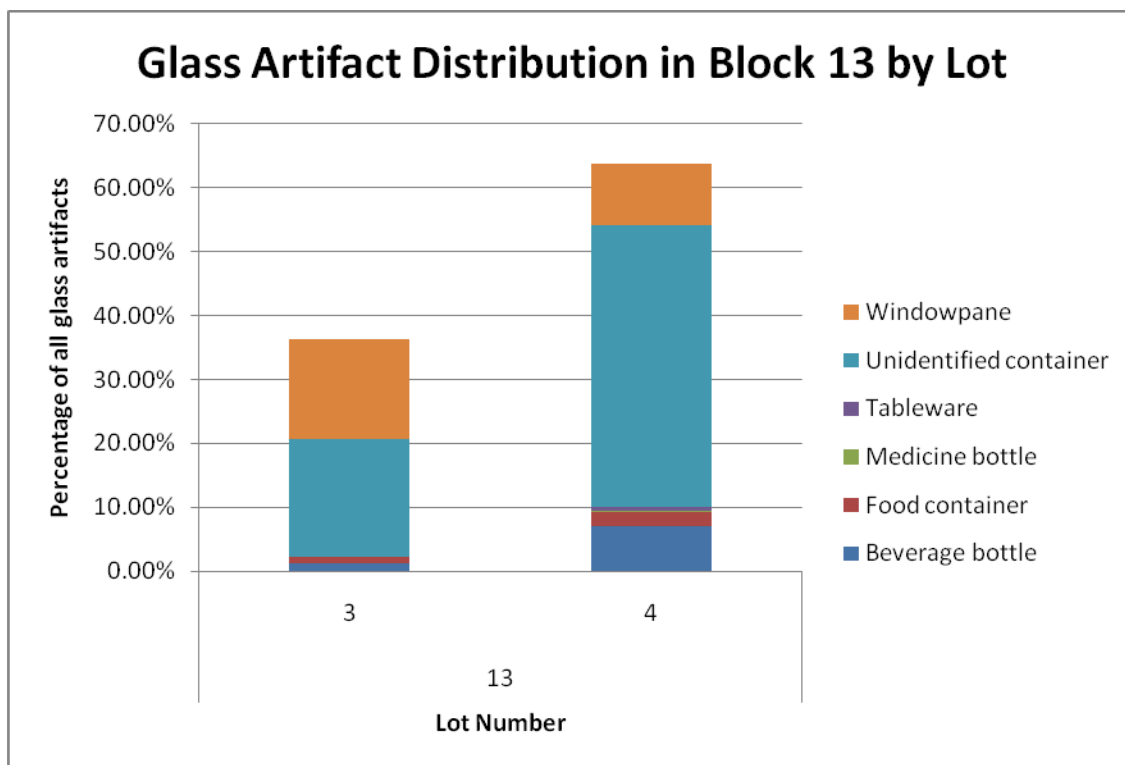


Figure 10. The glass artifact distribution on Block 13 was split between Lots 3 and 4, with a larger percentage of glass found on Lot 4.

Block 13, Lot 4: Feature 12

Lot 4 of Block 13 was first excavated in 2005 after an earlier walkover survey revealed artifacts scattered across the lot. Geophysical surveys noted Anomaly A-12, a roughly rectangular shaped anomaly, in the northwest portion of the lot. Soil cores revealed artifact fragments and soil changes indicative of a disturbance. Excavations revealed that this disturbance was indeed a house foundation. According to census and tax records, this land was first owned by Squire McWorter, the son of the town’s founder, who bequeathed it to his wife Louisa upon his death (2005 New Philadelphia Archaeology Report, Chap. 3G). She owned the household until her death in 1883. Oral histories indicate she may have run a small hotel out of her home, but documentary evidence of this claim is not available. The house was owned by Virgil Burdick following Louisa’s death, and was occupied by renters until it burned down in 1937.

A total of 6 excavation units were opened in Lot 4 in 2005 to find the foundation of Louisa’s home (Figure 11). Archaeologists were able to uncover the southern wall of the

foundation with Units 2, 3, 5 and 6. Units 1 and 4 sought to uncover the northeastern corner of the foundation, but due to time constraints, never came down to reveal them. In 2010, these units were reopened and 5 more were put in place to uncover three of the four foundation corners (Calfas 2010). At the end of these excavations, archaeologists believed they had located most of the foundation as well as the house's cellar (Image 14). However, further excavations in 2011 are planned to completely bisect Feature 12.

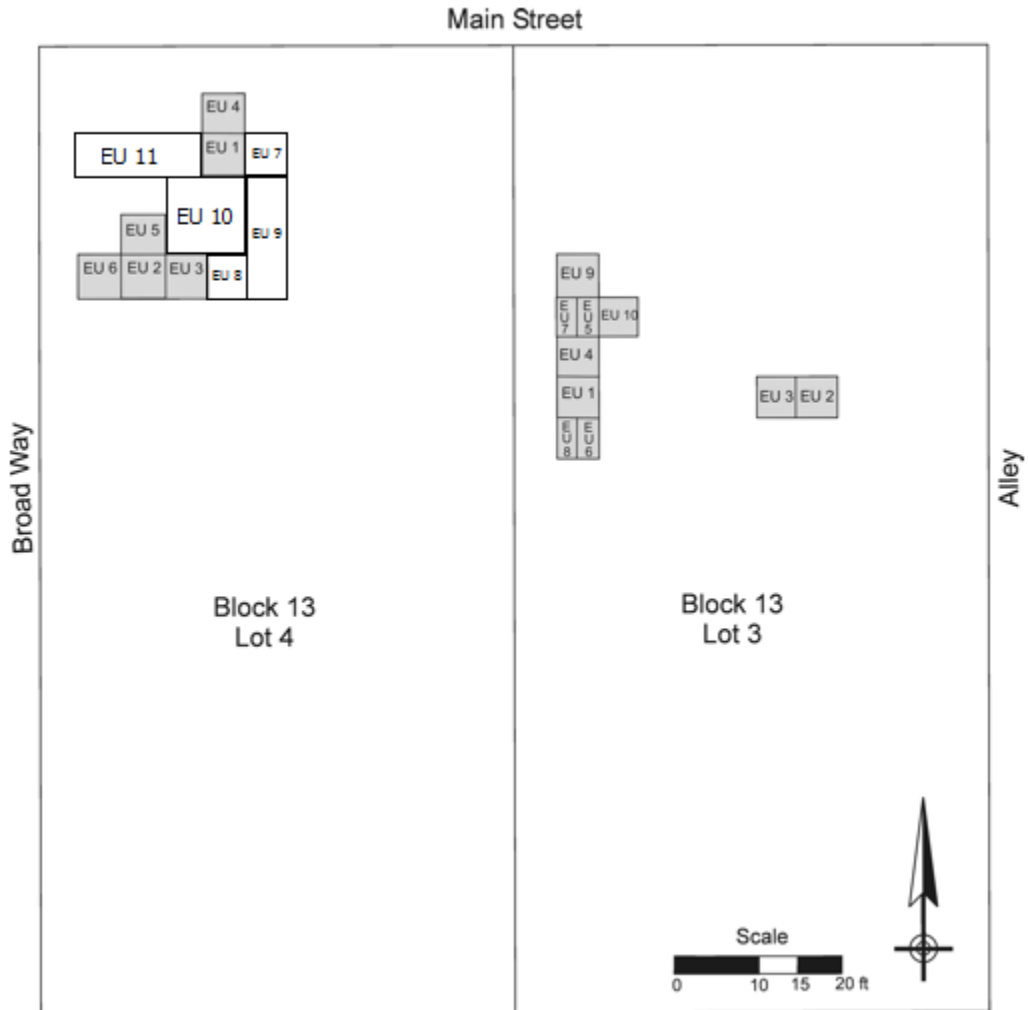


Figure 11. A diagram of Block 13 shows excavation units placed in Lot 4 in search of the house foundation. The unshaded units were added in 2010 to expose more of the house foundation (2005 and 2010 New Philadelphia Archaeology Reports).



Image 14. Feature 12, the house foundation on Block 13, is shown in this image, almost entirely excavated except for the western wall.

Glass is distributed fairly evenly throughout Lot 4 (Figure 12). Units 9 and 10 contained a larger percentage of artifacts because they were larger units (5 x 15 feet and 10 x 10 feet, respectively) and were situated over the inside of the house foundation fill. However, when we analyze the strata within Lot 4 (Table 4), we see that the highest artifact density (12.4 artifacts per cubic foot) is actually within the plow zone. The limited extent of foundation fill excavated in 2005 and 2010 did not contain a large amount of artifacts, and these artifacts evenly represent flat and container class. Level B1 of Unit 8, believed to comprise the cellar fill of the foundation, and therefore the earliest materials, contained only 30 glass fragments, 24 of which were unidentified container glass and 6 of which were windowpane glass (Appendix D).

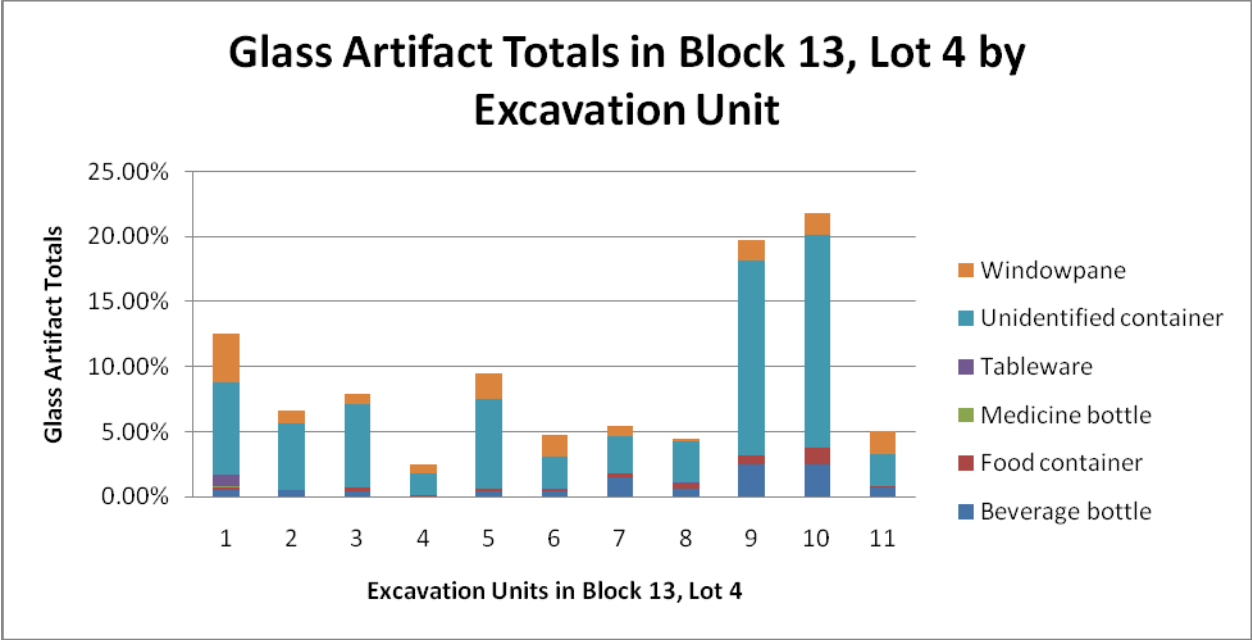


Figure 12. The above graph shows a fairly even distribution of glass artifacts across all units. Units 9 and 10 were larger in area than others, and therefore contain a greater amount of artifacts.

Layers	Approximate Depth	Artifact Totals	Layer Volume (in ft ³)	Artifact Density (artifacts/ft ³)
Sod	0 - .5 ft	1290	186.1	6.9
Plow zone	.5 - 1 ft	2430	196.2	12.4
Sub plow zone	.5 - 1 ft	89	48.5	1.8
Foundation fill	1 - 2 ft	700	267	2.6
Cellar fill	2 - 2.5 ft	30	11.1	2.7
GRAND TOTAL		4539	708.9	

Table 4. The artifact densities of each layer within Block 13 Lot 4 demonstrate that the most artifacts were found within the plow zone, approximately 1 foot below the surface.

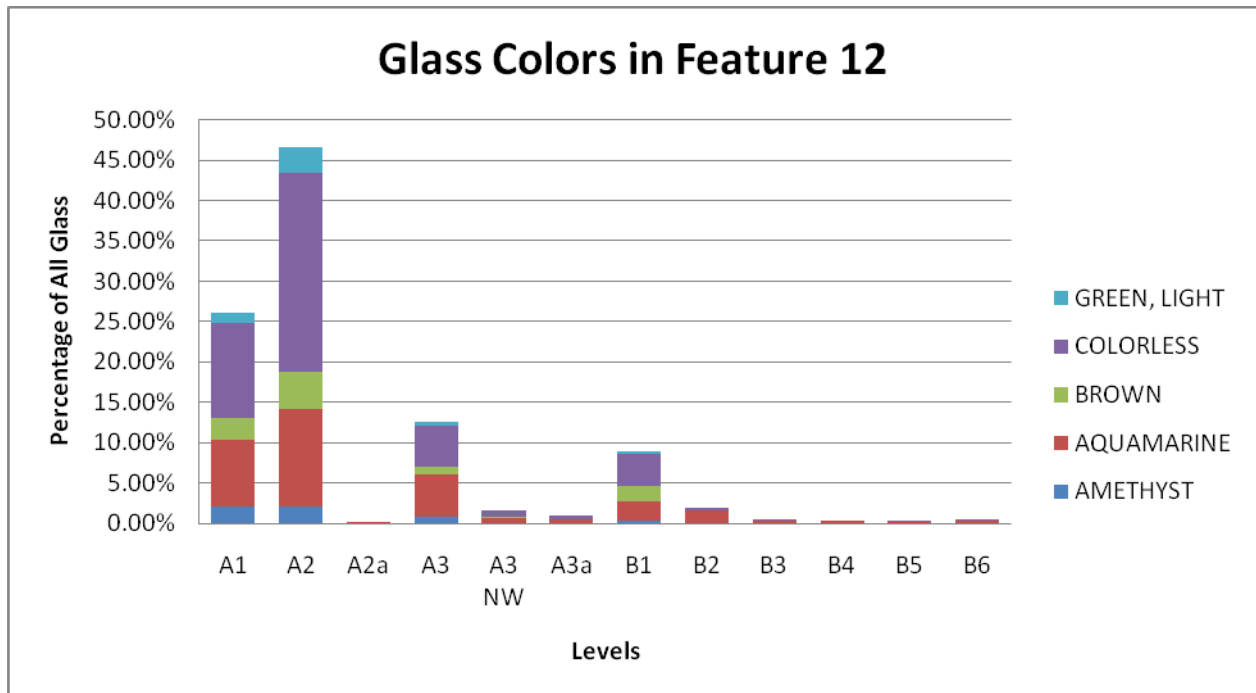
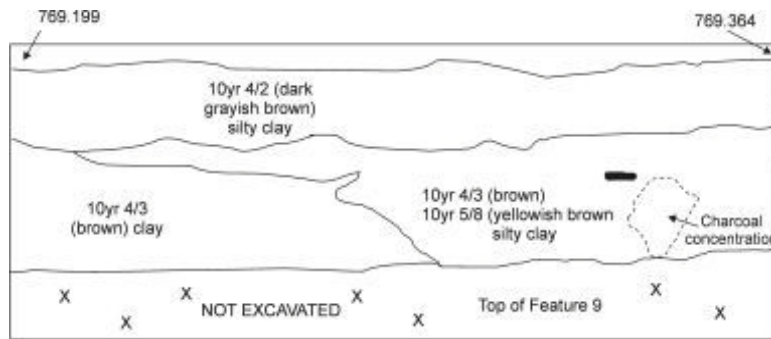


Figure 13. Colorless and amethyst glass dominate Levels A1 through A3 of Feature 12's assemblage.

The glass colors present in Feature 12 represent a mostly 20th century assemblage (Figure 13). Colorless and amethyst-tinted glass fragments were present in all levels of the feature, but most heavily in Levels A1 through A3. It is important to consider, however, that the units located within the foundation (Units 9 and 10) were not excavated past Level A3. Therefore future excavations beneath this layer of rubble may alter the glass color analysis presented here.

Block 13, Lot 3: Feature 9

Lot 3 was first excavated in 2005 when archaeologists located geophysical anomalies A-16 to A-19. They placed Units 2 and 3 over one of these anomalies and uncovered many ceramic and glass artifacts within the first 1.5 feet of digging. After the artifact density began decreasing, they excavated Units 1 and 4-10 on the west edge of the area (Figure 11). They discovered Feature 9, soil fill from a nearby pond, on top of a thick layer of charcoal associated with a burned structure (Figure 14). It is unclear what type of structure this was, but it was likely an outbuilding or barn associated with the house foundation on Lot 4. When the house burned down in 1937, this structure probably burned as well. The Burdick family, who owned the land following the McWorters, then dumped pond fill on the area.



BLOCK 13 LOT 3
 NORTH PROFILE
 EU 1
 TOP OF FEATURE 9

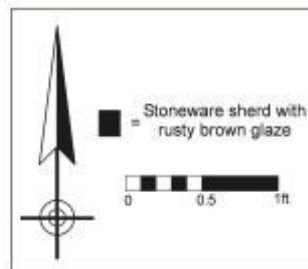


Figure 14. A profile view of the stratigraphy of Unit 1 demonstrates the location of Feature 9, pond fill placed on top of a burned structure.

The glass distribution from this area is most heavily concentrated in Units 2 and 3, an area which archaeologists were unable to define in association with a feature. Units 1 and 4-10 were associated with Feature 9, and contained a relatively small amount of glass (Figure 15). This glass was almost entirely windowpane (n=977) or unidentified container glass (n=876), and very few identifiable fragments were recovered (Appendix D).

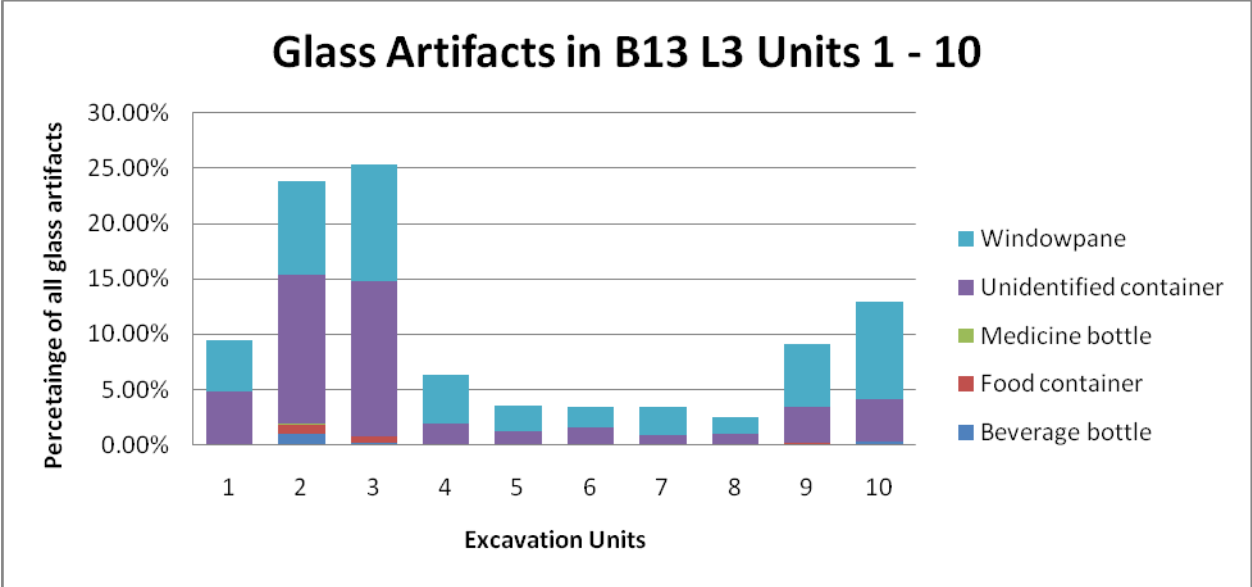


Figure 15. Units 1 through 10 represent excavations to test anomaly 10. Units 2 and 3 contained a large number of the artifacts found on Block 13. The nature of this artifact concentration was never clearly defined, however Units 1 and 4-10 were determined to be part of Feature 9, pond fill on top of a burned structure.

Layer	Approximate Depth	Artifact Totals	Layer Volume (in ft ³)	Artifact Density (artifacts/ft ³)
Sod	0 - .3 ft	606	60.6	10.0
Plow zone	.3 - .5 ft	838	67.5	12.4
Buried plow zone	.5 - 1.5 ft	479	52.2	9.2
GRAND TOTAL		1923	180.3	

Table 5. The layers excavated above Feature 9 in Units 1-10 demonstrated an even distribution of artifacts.

The artifact densities across the various strata of this area are fairly even, with approximately 10 artifacts per cubic foot recovered throughout the excavations (Table 5). The fact that most of this excavation covered areas affected by plowing could explain the evenness of the artifact distribution.

Block 13, Lot 3: Feature 40

In the summer of 2010, excavations on Block 13 shifted to explore a different part of Lot 3 that contained Feature 40. Geophysical tests had revealed an anomaly on Lot 3, Anomaly A-25.

In order to ground truth the anomaly, archaeologists placed one-inch soil cores along every foot of the test grid. After hitting stone and some soil changes, they began placing units into the lot to uncover the anomaly. They opened 8 units and after about one foot of digging, came down upon Feature 40, a well (Image 15). They bisected the well and excavated to a depth of approximately 4 feet. In the process, they had to remove an abundance of stones that had been used to fill in the well. They never reached sterile soil, but did hit the water table which likely indicates they were close to completely bisecting the feature. The well was most likely associated with the house foundation on Block 4 (Calfas 2010).



Image 15. Feature 40, a well associated with the Louisa McWorter house foundation, had been filled in sometime in the early 20th century.

The glass artifact distribution for Feature 40 was highest in Units 11, 12 and 13 (Figure 16).

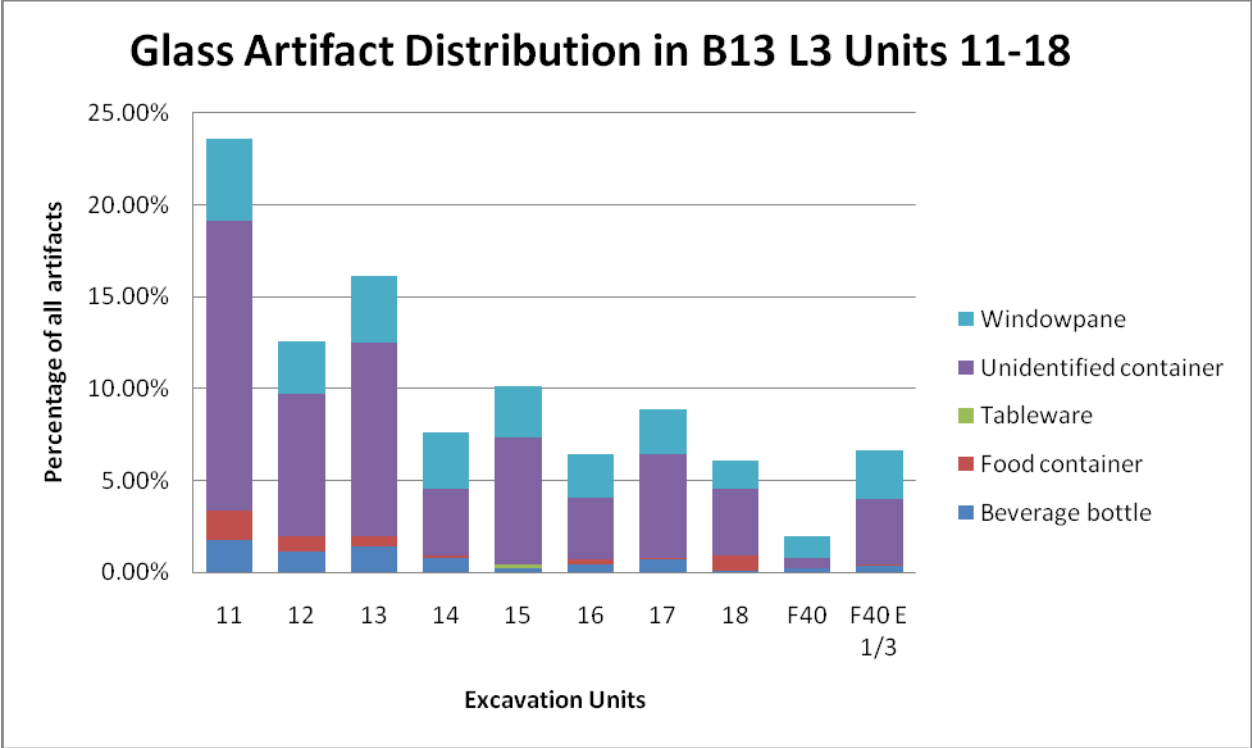


Figure 16. The above graph represents the percentage of all Block 13 Lot 3 glass artifacts found in each of the units excavated to uncover Feature 40, a well.

The density of artifacts by strata reveals an even distribution of artifacts within the units above Feature 40 (Table 6). The density of artifacts found within the bisected feature (Table 7) reveals a continual decrease in artifact concentration. The artifacts recovered from the bisected well were almost entirely unidentified container (n=35) or windowpane glass (n=33).

Stratum	Approximate Depth	Artifact Totals	Layer Volume (in ft ³)	Artifact Density (artifacts/ ft ³)
Sod	0 - .3 ft	278	81.8	3.4
Plow zone	.3 - .5 ft	302	99.4	3.0
Subsoil	.5 - 1 ft	203	97.0	2.0
GRAND TOTAL		783	278.2	

Table 6. The density of artifacts was fairly even across all strata of Units 11-18.

Level	Approximate Depth	Artifact Totals	Level volume (in ft ³)	Artifact density (artifacts/ft ³)
a1	1 – 1.5 ft	31	21.2	1.5
a2	1.5 – 1.8 ft	26	13.6	1.9
b1	1.8 -2.4 ft	12	24.6	0.5
b2	2.4 – 2.8 ft	0	15.8	0
b3	2. 8 – 3.5 ft	5	20.4	0.2

Table 7. Feature 40 appeared beneath Units 13 and 15 of Block 13 Lot 3. It was bisected and excavated to a depth of approximately 3.5 feet.

The glass artifact colors (Figure 17) demonstrate that both colorless and amethyst solarized glass was present throughout all levels of Feature 40. This indicates that the deposits in the well were mostly produced in the early 20th century (see Glass Analysis Methodology discussion).

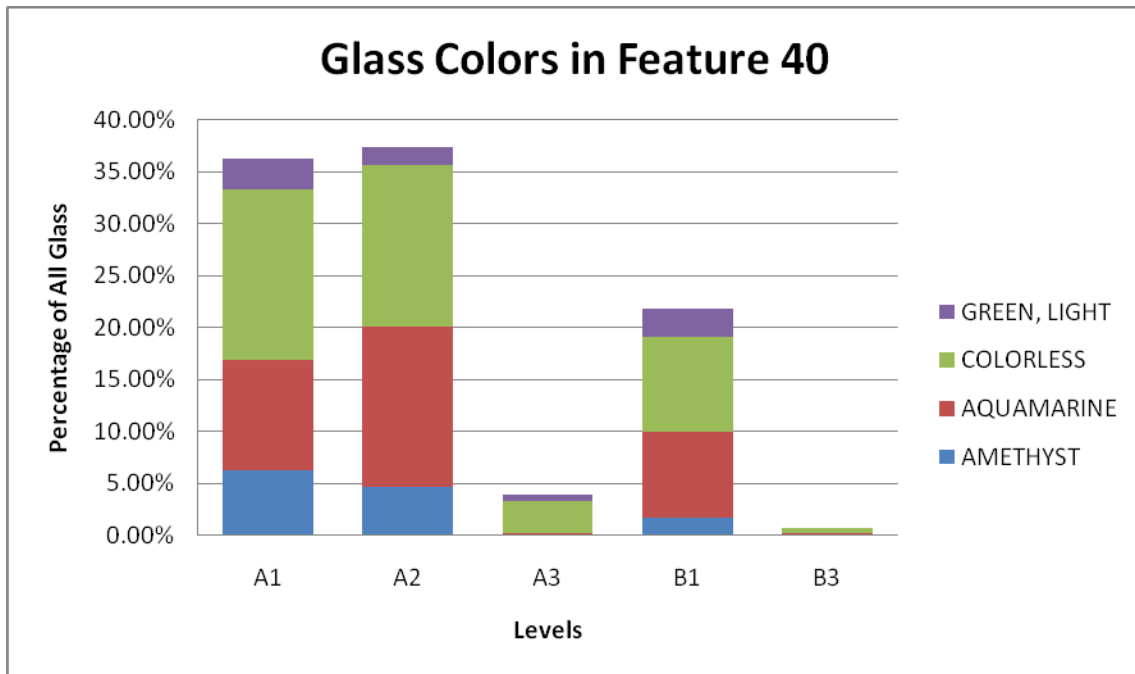


Figure 17. A significant amount of glass fragments from Feature 40 were colorless or amethyst-tinted, a characteristic of early 20th century glass.

It is probable that bottles and other containers were tossed into the well before it was closed up. Since Feature 12, the house foundation on Lot 4, burned down in 1937, it is likely the well was also demolished around this time.

Vessels with Known Origins and Dates

The previous discussion attempted to describe some of the main trends in glass types and distribution across New Philadelphia. This section narrows that discussion to those glass vessels whose maker's marks or embossing allowed them to be traced to specific bottling factories and dated to a specific time period. The fragmented nature of artifacts made this analysis difficult to perform on a large number of vessels, but a total of 87 vessels' origins and dates were recovered (see Appendix E for full listing).

One of the most abundant glass artifacts found at the site were beer bottles from the Reisch Brewing Company in Springfield, Illinois (Image 16). The majority of these were found within Feature 28 on Block 3, Lot 4.



Image 16. An intact Reisch Brewing Company beer bottle (578.377) from Feature 28, Level B3.

The Reisch Brewing Company was started by a German entrepreneur by the name of Franz Sales Reisch who immigrated to the United States in 1832. He moved to Springfield and began brewing beer in 1847. In 1903, the firm was incorporated as the Reisch Brewing Company, and by 1912 it reached its peak with over 100,000 barrels of beer sold. Reisch's sons

did everything in their power to keep the company alive throughout Prohibition and the Great Depression, even switching over to bottling soda and malt syrups to keep business alive. Following World War II, the Anheuser-Busch company in St. Louis only 100 miles away began to create competition with the Reisch Brewing Company, as Anheuser-Busch had the financial means to advertise widely and ship its beer to Springfield. The Reisch Brewing Company held out until 1966, when after 117 years of business, it was finally dissolved. It is therefore likely that the 48 bottles found in levels B1 through B5 of the refuse pit came from Springfield in the late 19th to early 20th century.

A different type of bottle containing alcohol was discovered in Level B3 of excavation unit 10 within Feature 28. This bottle was embossed with the words “Chas Dennehy and Co” and likely came from Chicago, the headquarters of the company with that name (Image 17). It likely contained whiskey. Bottles of this kind were first produced in 1895, so it is likely that this level corresponds to the early 20th century deposit date defined by the other artifacts.



Image 17. A whiskey bottle (578.1266) found in Level B3 of Feature 28.

Also found within Feature 28 were two soda bottles from the L&M Soda Company (Image 18). One of these bottles was found in Level B1 of EU 8 and the other was found in Level B3 of EU 10. While the bottles have the company's origins embossed on their bodies, further research shows that the maker's marks on the bottle bases, "S AB Co," were actually from the American Bottling Company of Streator, Illinois (Lockhart 2010). Therefore, while L & M was likely located in Quincy, the bottles themselves probably came from Streator, an industrial town closer to Chicago in northern Illinois. Little information has been found about L & M Soda, which may indicate that it was a small franchise that was in existence for a short period of time. No information was found that allows us to identify the manufacture dates of these bottles, though it is likely that they date to the early 20th century given the dates of other bottles present in the feature.



Image 18. Soda bottle from L&M Soda Company from Quincy, Illinois. However, the maker's mark indicates it was bottled by the America Bottle Company in Streator, Illinois.

An additional type of bottle found in Feature 28 was represented by fragments from two bottles from the J.R. Watkin's Medicinal Company (Image 19). Joseph Ray Watkins started his medicine company in his home in Plainview, Minnesota in 1868 (J.R. Watkins Company). One

of his initial products, the Dr. Ward's Liniment, was the first product to come with a money-back guarantee. Watkins' business skyrocketed throughout the late 19th century, so that soon he was forced to relocate to the larger city of Winona, where he opened a factory. He later expanded to several other states, though the fact that a similar fragment with the word "WINONA" embossed on it seems to indicate that these bottles came from that factory.



Image 19. Watkins Medicinal Company Bottle found in Level B5 of Feature 28.

Beverage bottles were not the only type of glass containers found in Feature 28. Several Mason jar fragments, as well as Mason jar lid liners, were also recovered (Image 20). On November 30, 1858, John L. Mason patented his design for the Mason jar, a glass container with a rubber seal and zinc cap that could easily be screwed onto the threaded mouth of the vessel to tightly contain food (Milner 2004:30). In 1859, Mason sold his patent to Lewis R. Boyd, who further improved upon the design by creating a milk glass lid liner to prevent the zinc lid from coming in contact with food and contaminating it (Milner 2004:30). Boyd's jars were known as "Boyd Perfect Mason" or "Boyd's [cursive] Perfect Mason" and their glass lid liners read "Boyd's Genuine Porcelain Lined Cap" (Clan Boyd Society International).

Many other forms of canning jars were produced following Mason and Boyd's creations, but the two developers dominated the industry from 1858 until the end of the jars' production (for Mason's original jars, this was around 1920). It was common for other jar producers to use Mason or Boyd's names on their jars, simply to piggyback on their success. For example, in

1886, William Charles Ball patented his design for the Ball Mason Fruit Jar, and was incredibly successful in mass-producing his jars (Milner 2004:31). Ball's fruit jars had glass lid liners that read "Genuine Zinc Cap for Ball Mason Jar," which allows us to distinguish them from Boyd's jars. At least 8 of the mason jar fragments and lid liners found in Feature 28 were made by the Ball Glass Works company of Muncie, Indiana. Based on the historical information presented above, they have a production date of 1858 at the earliest, though mason jars were some of the most frequently reused glass containers because of their sophisticated sealing technology that allowed people to preserve foods easily.



Image 20. A Ball mason jar (left) and milk glass lid liner (right) from Feature 28.

While the above information does not allow us to speak in depth about all of the features mentioned in this report, it does give us a deeper sense of the types of bottles and containers found at the site and where they might have come from. When we look at the locations where most of these bottles were created, we find that they represent a mostly localized pattern of trade (Figure 18).

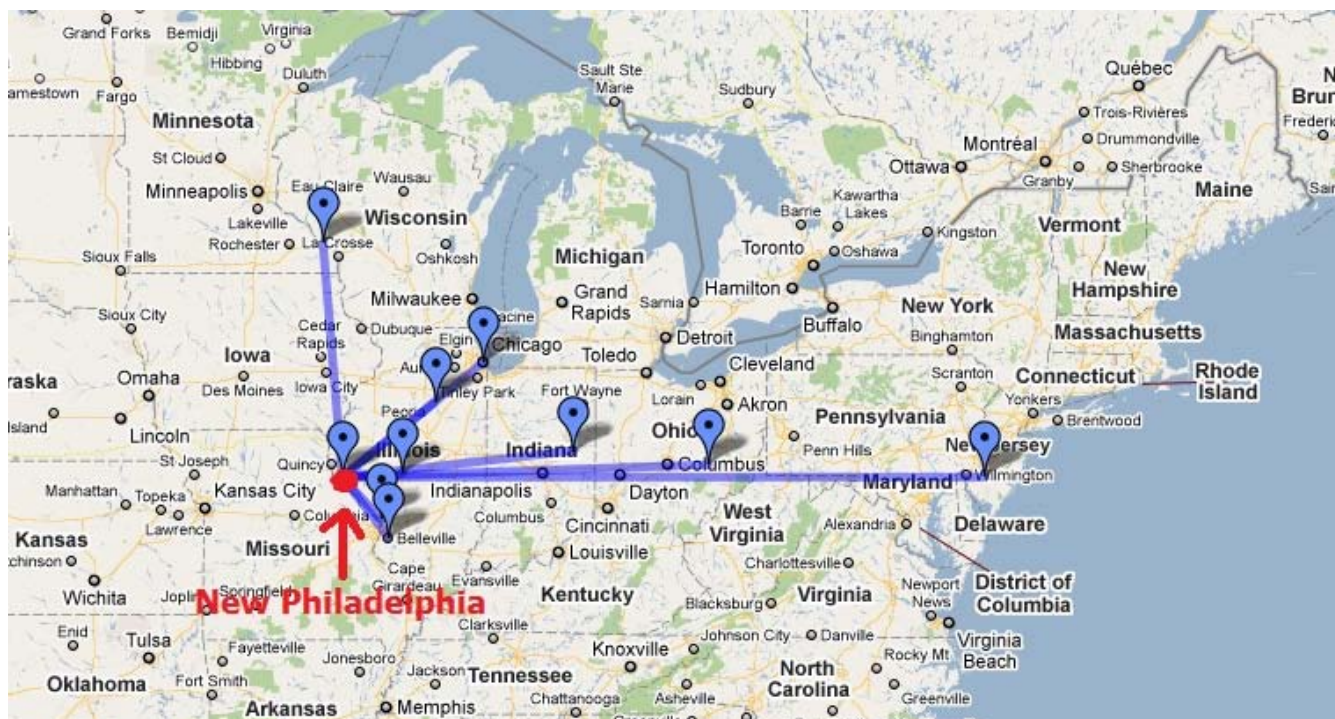


Figure 18: An analysis of glass vessel origins demonstrated a mostly localized network of trade routes to the town. The red dot is the location of New Philadelphia, while the blue markers are factories where glass vessels from the site were produced.

A few vessels did travel from locations as far away as New Jersey or Wisconsin, but bottles such as the Reisch Brewing Company beer bottles and mason jars mostly came from Springfield and other parts of Illinois or Indiana. Furthermore, the majority of these vessels date to the late 19th and early 20th centuries, a trend that we notice in the general glass analysis above.

Conclusion

Glass analysis at New Philadelphia offers us multiple windows into the site. First, it gives us a sense of general trends in artifact distribution, in many cases reinforcing what is already known about a particular block or lot, but in others giving us a means by which to compare assemblages across spaces in ways that have not yet been explored. Glass is one of the most ubiquitous historic artifacts, since it is used commonly in household items like bottles, jars, dishes, and windows. It is also useful because it tends to have signifying features, such as coloring, embossing, and maker's marks which tell us a bit about when the objects were made. Marker's marks are specifically useful, and are explored in depth in this study, because they tell us about a vessel's origin as well.

The glass distributions provided in this study identified four general areas where large amounts of glass were found: Block 3, Lot 4; Block 3, Lot 7; Block 13, Lot 3; and Block 13, Lot 4. Within these areas, there were five features which in combination contained almost half of all the glass recovered from the site through 2010. A breakdown of the percentage of glass found in these features is provided below (Table 7).

Feature Number(s)	Feature Type	Feature Location	Total Glass Artifacts	Percentage of Total Glass Assemblage
28	Venicombe Family Trash Pit	Block 3 Lot 4	3977	13.7%
15, 16, 17, 21	Squire McWorter House Foundation	Block 3 Lot 7	3329	11.5%
9	Pond fill	Block 13 Lot 3	978	3.4%
40	Louisa McWorter Well	Block 13 Lot 3	857	3.0%
12	Louisa McWorter House Foundation	Block 13 Lot 4	4491	15.5%
TOTAL			13,362	47.1%

Table 7. Features containing the most glass artifacts.

As shown above, the areas with the largest glass deposits were domestic areas, such as house foundations and trash pits. This makes sense given that glass was largely a household item used to make bottles, dishes, and other common vessels.

Feature 28, the Venicombe trash pit, contained the most intact artifacts, including several Reisch Brewing Company beer bottles and intact mason jars. Although mason jars were first produced in 1858, they were used well into the 20th century. Since the Reisch bottles were not made until the early 20th century, it would be safe to date the feature to a date range spanning the early 1900s. Furthermore, the presence of a large amount of colorless glass, a type of glass not easily produced until the early 20th century, provides further evidence that the feature dates to that time period.

The McWorter house foundation and trash pit on Block 3, Lot 7, in contrast, contained much more flat window glass. Most of this was found within Megastratum IIA, the trash deposits on top of the plaster level that was covering the house foundation. Very few artifacts were found

within the foundation itself, suggesting that the building which existed there did not stand for a very long time. The identifiable vessels from this area also fall within a date range spanning the early 1900s.

Feature 9, the pond fill placed on top of a burned structure on Block 13, contained significantly fewer artifacts, but the artifacts which were recovered represented both window and container glass. Our understanding of the burned structure beneath the pond fill is limited, but given that it was located on Block 13, it was probably associated with the Louisa McWorter house foundation and well. It could have served as an outhouse or barn.

The other features on Block 13, Feature 12 and Feature 40, are much more clearly defined. Feature 12 is the foundation of Louisa and Squire McWorter's home, one of the largest and likely the only two-story home in the town. Over 4000 glass artifacts were removed from the house, the majority of which was container glass. The presence of colorless and amethyst tinted glass indicates that these deposits fall within a date range spanning the early 20th century. Although the house was only occupied by the McWorters until the late 19th century, it was rented out to various individuals for some time after the McWorters left until it finally burned down in 1937. The well located adjacent to the house foundation contained mostly container glass, likely from bottles that were thrown into the well throughout its existence.

When we compare the types of vessels recovered from the area around these five features, we find that container glass dominates all of them except for the McWorter foundation on Block 3 (Features 16, 17 and 21). For the other four features, container glass makes up more than 50% of their respective assemblages.

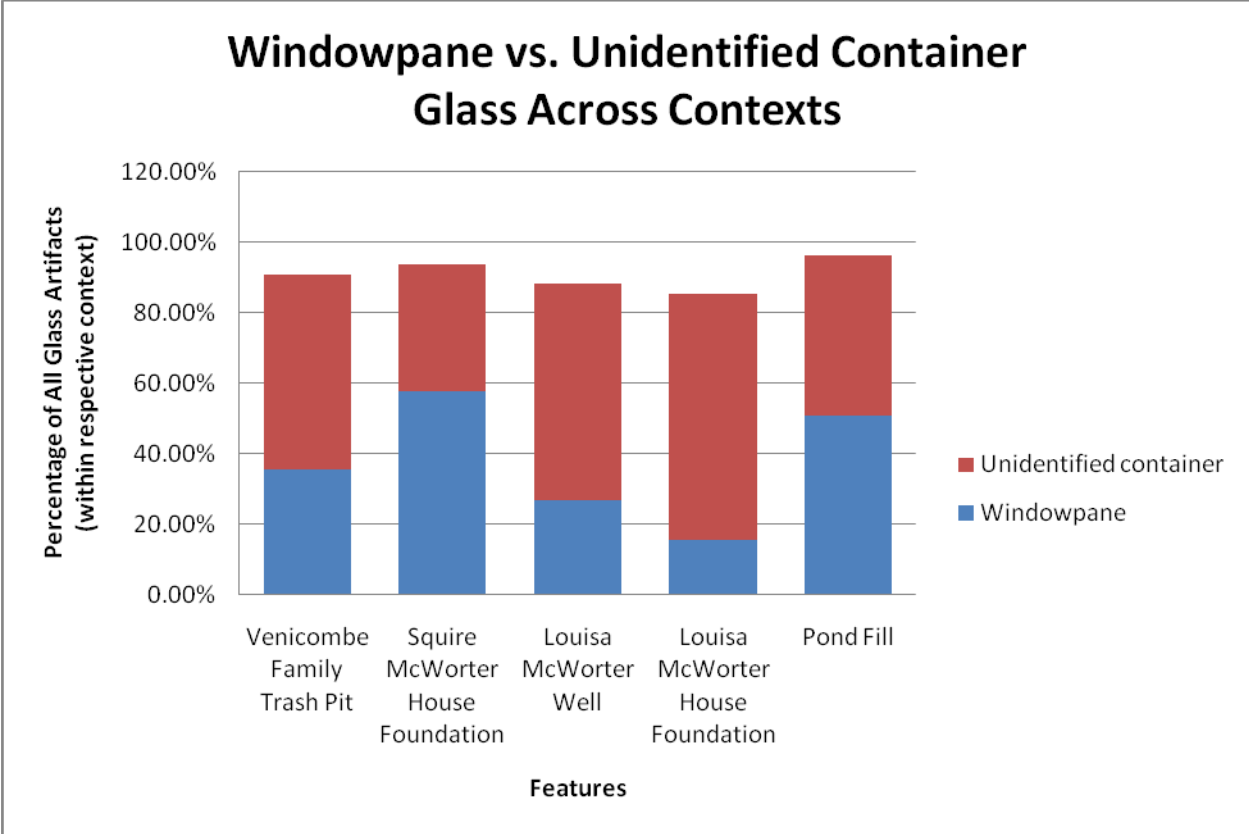


Figure 19. Container glass dominates the assemblages of four out of the five contexts.

If we consider the identifiable container fragments recovered from each of these contexts, we find that beverage bottles and food containers overwhelmingly dominate the assemblages (Figure 20). Pharmaceutical bottles, which are small medicine or perfume bottles, only appear in small quantities, and are completely absent from the McWorter well.

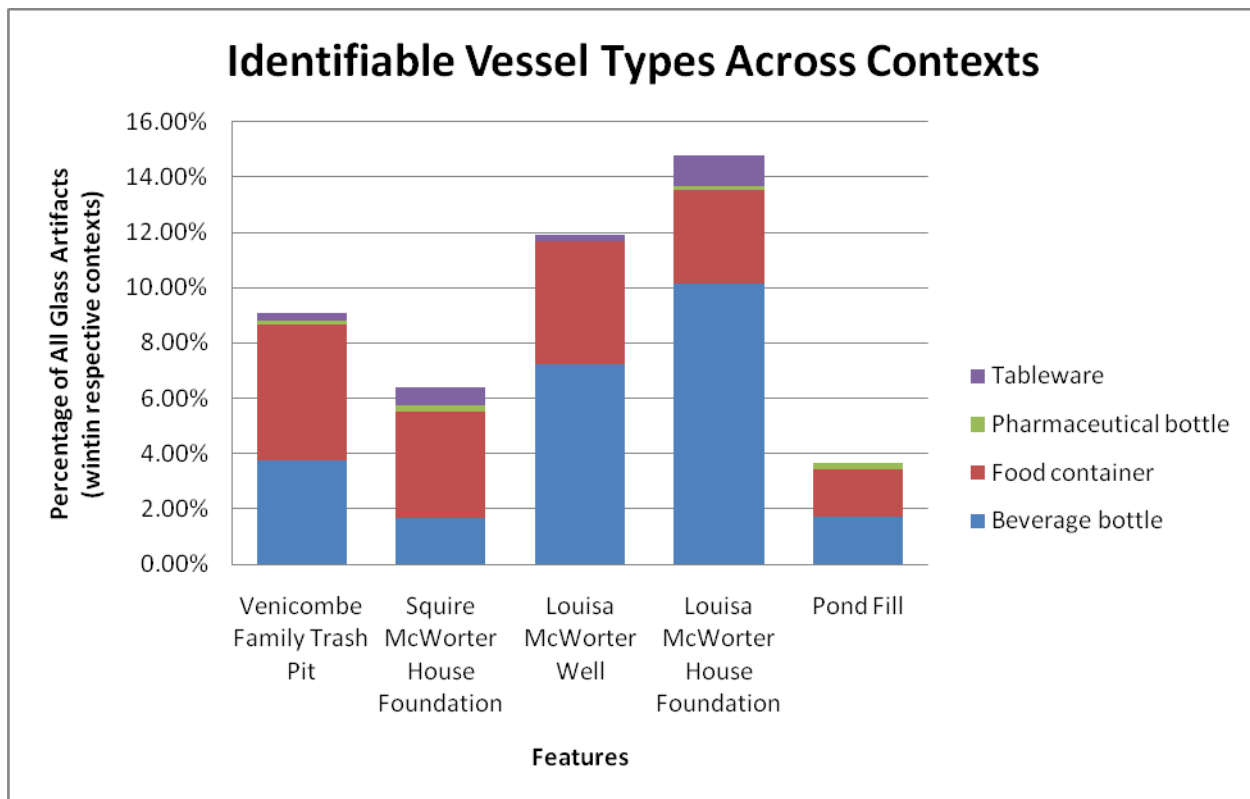


Figure 20. The vessel types found in each of the contexts described in this report are fairly similar, demonstrating that a glass was used similarly across contexts.

One of the main patterns that arise from the glass analysis, and in particular with identifiable glass, is that most of the vessels date to the late 19th or early 20th century. Not only do most of the vessels with known origins date to this time period, but the presence of colorless glass across all contexts and the absence of pontil scars (a feature of early-to-mid 19th century glass bottles) on bases all seem to be clues that the thousands of glass artifacts recovered post-date the peak of the town’s existence. There are several reasons why this might be. The first is that glass production did not become mechanized until the 1880s, when semi-automatic bottle machines were first invented. The Owens Bottle Machine, the first completely automatic bottle maker, was not patented until 1905. As discussed in the History of Glass Production section of this article, this machine revolutionized the way glass was produced, making it cheaper and easier than ever to mass produce bottles. Therefore, the abundance of bottles found at New Philadelphia could represent this boom in bottle production which occurred in the early 20th century. Since it became cheaper to obtain bottles, residents may have been more carefree about discarding them in places like house foundations or wells. While time did not allow for an in-

depth investigation of other artifact classes, I did glance at the ceramic distribution within these features to determine if ceramics were deposited in similar amounts to glass throughout time. Charts representing that this was indeed the case (Appendix F) lead us to question further why ceramics were being deposited at such great amounts in the late 19th and early 20th centuries.

Another factor to consider is the context in which these artifacts were found.

Archaeologists at New Philadelphia have focused much of their research efforts on features like house foundations in order to learn more about residents' daily lives and compare household assemblages across the site (Shackel 2010). While this is a worthwhile effort in many regards, it also leads to certain biases in the types of artifacts retrieved from the site. As we saw from the discussion above, the majority of identifiable vessel fragments recovered from the site came from Feature 28, the trash pit. Furthermore, artifacts that are intact enough to be identified within a house foundation were likely to have been thrown there in a similar manner, as a means of discarding an object. House foundations were oftentimes used as trash pits following the house's construction or demolition, as was the case in Features 15, 16, 17, and 21. They were not likely to have been deposited while the house was actually in use, and therefore may not be remnants of the house's residents at all, but rather the refuse of neighboring residents.

Therefore, while Shackel and other researchers may be excavating house foundations in the hopes of finding out more information about their residents, my discussion indicates that the identifiable glass assemblage represents a distinctly post-McWorter, early 20th century assemblage. These conclusions draw attention to the fact that archaeology carried out thus far at New Philadelphia, while largely directed at understanding the McWorter period, speaks as clearly to the activities of residents who lived there long after the railroad bypassed the town in 1869. Shackel (2011) acknowledges this fact when he writes that the archaeology done on Block 3, Lot 7 "challenges the long-held belief that the town died after the railroad bypassed it in 1869" (144).

If the glass assemblage of New Philadelphia tells the story of the early 20th century history of the town, does the site's narrative up to this point lose weight? This question is rooted in the issue of interpretation, as previously mentioned in the History and Archaeology of New Philadelphia section of this article. It has been a point of contention at New Philadelphia since research first began at the site. The debate of whose story should be told, and how it should be told, underlies the grand narratives that dominate the site. For one, the narrative of Frank

McWorter has dominated the history of New Philadelphia, and with good reason. Frank was a pioneer, a rebel, and an entrepreneur in his own right. He was a husband, a father, and a freedom-fighter on behalf of his family. His story is both unique and provocative, and offers Americans a means to discuss issues of racism, both in the past and in modern-day life. Furthermore, the struggle to bring Frank's history to light is another reflection of the racism that persists today. American history is still dominated by stories of white male heroes, and very few African Americans are part of the grand narrative of the American dream that we so treasure. The simple fact that Pike County today is an overwhelmingly white county, that descendants of the McWorters and other black families all chose to leave the area after the town reverted to agricultural use, tells us something about race relations within the region today.

However, as much as Frank's story has impacted the town and served as the inspiration for much of the research done at the site, there were many more people involved in making the town the successful endeavor it became. Performing this glass analysis has helped me understand how much the town's residents contributed to Frank's dream even after he was gone. As Shackel (2011) has suggested, telling the story of the entire town and of Pike County is extremely important to the many stakeholders involved in making the project possible. To answer the question posed above about whether the McWorter story loses weight, from my perspective, the answer is no. After all, the fact that so much glass remains, and that it could have belonged to those who chose to continue inhabiting the town long after the railroad bypassed it, speaks to the success of Frank's endeavor. Life at New Philadelphia did not simply end once the railroad passed -- if it had, there would not exist such an abundance of glass across the site.

As a participant in the NSF-REU archaeological field school in 2010, I was given the unique opportunity to experience the power of New Philadelphia's story firsthand. For one, the project began as a grassroots effort that drew in a variety of stakeholders. The archaeologists who have worked on this project have made concerted efforts to share the results of their excavations in as many ways as possible, though most prominently via their website (<http://www.histarch.uiuc.edu/NP/>). Indeed, the archaeology reports, historical documents, and images provided by that site fueled this report in innumerable ways. Furthermore, the trust with which I was granted access to the New Philadelphia Archaeology Database speaks to the openness of the site's research team.

With great respect for their work, I also find this time to be fitting for opening up discussion about how to explore new avenues for recording and presenting the archaeology data at New Philadelphia. There were several times, for instance, when the site's overly complex cataloguing system seemed to impede my research. There were other areas, however, when I felt as though more information could have been recorded about artifacts, such as their weights and whether they had specific manufacturing technique features like pontil scars or mold seams. The fragmentary character of many artifacts often limits archaeologists' ability to assign such attributes with confidence. While no system is perfect, and many people are involved in recording such data, these areas are ones where slight refinements of current practices could offer a much clearer window into glass trends across the site.

Future research at New Philadelphia has the potential to refine and reconfigure much of what has been stated in this report. I urge those who continue working at the site to consider artifact analyses on other artifact classes, or perhaps on glass once again, to be viable and necessary avenues of research. I trust that this type of work will not only tell us more about the McWorter story, which has been so crucial to the site's success thus far, but that it will continue to shed light on the histories that go beyond the McWorter history, both spatially and temporally. As Anna Agbe-Davies (2010:4) writes in her introduction to the *Historical Archaeology* journal edition centered on New Philadelphia, I, too, hope that "the assembled data and resulting interpretations from New Philadelphia will push the boundaries of archaeological thinking," much the same as Frank McWorter pushed the boundaries of racism in his lifetime.

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and other data to flesh out my project further. John Schultz was also extremely helpful in taking photos of artifacts for me to complete my analysis.

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Note

* Courtney Ng, Rice University. This article presents an edited version of the author’s 2011 Senior Honors Thesis, Department of Anthropology, Rice University.

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Appendix A: Database of All New Philadelphia Glass Artifacts

Available upon request and online at
<http://www.anthro.illinois.edu/faculty/cfennell/NP/reports.html>.

Appendix B: Unit Levels within Feature Stratum

Feature 28

Stratum	Unit 8	Unit 10	Unit 12
Sod layer	A1	A1	A1
Plow zone	A2, A3	A2, A3	A2
Sub plow zone	B1	B1	B1, B2
Feature fill	B2, B3, B4, B5	B2, B3, B4	-
Charcoal	B6	-	-
Brick rubble	C1	C1	-
Plaster layer	C2	C2	-
Sterile soil	C3	C3	-

Feature 12

Stratum	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9
Sod	A1	A1	A1	A1	A1	A1	A1	A1	A1
Plow zone	A2	A2, A3	A2	A2	A2, A3	A2	A2	A2	A2
Sub plow zone	-	A3a	A2a	-	A3a	A2a	B1	-	B1
Foundation fill	A3, B1, B2	-	-	A3, B1	-	-	B2, B3	-	B2, B3
Cellar fill	-	-	-	-	-	-	-	B1	-
Stratum	Unit 10	Unit 11							
Sod	A1	A1							
Plow zone	A2	A2, A3							
Sub plow zone	-	-							
Foundation fill	A3	B1 - B6							
Cellar fill	-	-							

Feature 9

Stratum	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10
Sod	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1
Plow zone	A2	A2	A2	A2	A2	A2	A2	A2	A2	A2
Buried			A3,							
plow zone	B1, B2	A3, A4	A4	-	-	-	-	-	-	-

Feature 40

Stratum	Unit 11	Unit 12	Unit 13	Unit 14	Unit 15	Unit 16	Unit 17	Unit 18
Sod	A1	A1	A1	A1	A1	A1	A1	A1
Plow zone	A2	A2	A2	A2	A2	A2	A2	A2
Subsoil	A3, B1	A3, B1	B1	B1, B2	B1, B2	B1	B1	B1, B2

Appendix C: Pontil Scars by Block

Block	Bases with Pontil Scars	Total Bases
3	3	276
4	3	36
7	0	67
8	4	62
9	1	17
12	0	2
13	2	224
TOTAL	13	684

Appendix D: Artifact Types by Level

Feature 28

Block	3
Lot	4

Units	Beverage bottle	Food container	Pharmaceutical bottle	Tableware	Unidentified container	Windowpane	Grand Total
8	23	42	4	2	571	555	1197
A1					52	81	133
A2					51	155	206
A3	1				23	80	104
B1	4	1			38	91	134
B2	6	6	4		213	41	270
B4	10	6			96	28	140
B5	2	27			86	58	175
B6		2			8	11	21
C1					4	1	5
C2						5	5
C3						4	4
10	127	153	1	9	1528	648	2466
A1					35	93	128
A2					20	168	188
A3	3	1			28	41	73
B1	16	1			85	80	182
B2	34	1		3	347	39	424
B3	72	113		2	926	7	1120
B4	1	17		4	62	7	91
C1	1				19	18	38
C2		20	1		5	194	220
C3					1	1	2
12					106	208	314
A1					36	83	119
A2					59	106	165
B1					11	19	30
Grand Total	150	195	5	11	2205	1411	3977

Features 15, 16, 17, and 21

Block	3
Lot	7

Units	Beverage bottle	Food container	Pharmaceutical bottle	Tableware	Unidentified container	Window-pane	Grand Total
1	6	2		2	81	173	264
A1	5	1			14	54	74
A2					31	107	138
A3	1	1		2	36	12	52
2		20			140	274	434
A1		2			29	69	100
A2		18			98	202	318
Str B2					12	3	15
Str B3					1		1
3	22	5	1		81	193	302
A1	6	1			12	28	47
A2	13	4	1		32	134	184
B1	3				37	31	71
4	3		1		75	161	240
A1					21	49	70
A2	3				21	92	116
A3			1		15	11	27
B1					18	5	23
B2						4	4
5	2	7		4	216	322	551
A1	2	5		4	83	224	318
A2		2			116	92	210
B1					17	6	23
6	2			1	35	116	154
A1	2			1	19	67	89
A2					16	49	65
7	15	85	6	14	441	216	777
A1	4	6	1		92	40	143
A2	2	3	1		75	60	141
B5	1				13	5	19
Str B1		5			33	93	131
Str B2		2		2	24	11	39
Str B3	4	69	3	9	74	5	164
Str B4	4		1	3	130	1	139
Str B6						1	1
8	2	3			42	247	294
A1	1	1			7	57	66
A2					23	152	175
A3	1	2			11	36	50
Str B1					1	2	3
9	3	6		1	84	219	313
A1	3	6		1	84	219	313
Grand Total	55	128	8	22	1195	1921	3329

Feature 12

Block	13
Lot	4

Units	Beverage bottle	Food container	Pharmaceutical bottle	Tableware	Unidentified container	Window-pane	Grand Total
1	23	9	4	41	319	168	564
A1	5	5	1		75	13	99
A2	8	4			156	30	198
A3	10		3	1	67	48	129
B1				40	17	47	104
B2					4	30	34
2	21	2			229	46	298
A1	19	1			79	12	111
A2	1	1			145	16	163
A3	1				5	13	19
A3a						5	5
3	19	11			288	37	355
A1	1	8			79	20	108
A2	18	3			209	17	247
4	1	3			76	29	109
A1					29	17	46
A2	1	3			43	5	52
A3					4	6	10
B1						1	1
5	19	9	1		310	85	424
A1	7	3	1		69	18	98
A2	3	1			101	35	140
A3	8	5			105	27	145
A3a	1				35	5	41
6	19	3	2	2	113	74	213
A1	10	1			45	12	68
A2	5	1	2		60	56	124
A2a					1	3	4
A3	4	1		2	7	3	17
7	69	9		3	129	32	242
A1	15	4				6	25
A2	29	4			82	5	120
B1	25			3	41	6	75
B2					3	8	11
B3		1			3	7	11
8	29	17		1	142	10	199
A1	27	13			95	5	140
A2	2	4		1	21	1	29
B1					26	4	30
9	112	29		2	674	67	884
A1	18	7		2	58	39	124
A2	93	22			599	14	728

B2					16	11	27
B3	1				1	3	5
10	112	55			735	76	978
A1	35	29			218	10	292
A2	54	10			301	42	407
A3	21	15			159	16	211
A3 NW	2	1			57	8	68
11	31	5			112	77	225
A1	16	3			38	6	63
A2	9	1			36	5	51
A3	1				14	7	22
B1	4	1			17	9	31
B2					4	11	15
B3						4	4
B4					2	14	16
B5					1	8	9
B6	1					13	14
Grand Total	455	152	7	49	3127	701	4491

Feature 9

Block	13
Lot	3

Units	Beverage bottle	Food container	Pharmaceutical bottle	Unidentified container	Windowpane	Grand Total
1		1		1	90	91
A1					22	52
A2		1			29	33
A3					25	75
B2				1	14	23
2	20	16		1	258	459
A1	7	2			62	96
A2	10	12		1	111	200
A3	3	2			62	111
A4					23	52
3	4	10		1	270	486
A1		2			69	112
A2		2			98	156
A3	3	4			35	102
A4	1	2		1	68	116
4	1	1			36	121
A1	1	1			12	45
A2					24	76
5	1	1			21	68
A1	1				7	25
A2		1			14	43
6		2			29	67
A1		1			10	28
A2		1			19	39
7				1	16	66
A1				1	16	66
8					19	48
A1					6	10
A2					13	38
9	2	1			63	176
A1	1	1			30	66
A2	1				33	110
10	5	1			74	249
A1	4	1			38	106
A2	1				36	143
Grand Total	33	33		4	876	1923

Feature 40

Block	13
Lot	3

Units	Beverage bottle	Food container	Tableware	Unidentified container	Windowpane	Grand Total
11	15	14		135	38	202
A1	3	8		99	21	131
A2	10	6		21	9	46
A3	2			7	5	14
B1				8	3	11
12	10	7		66	25	108
A2	3	6		27	11	47
A3	7	1		7	4	19
B1				32	10	42
13	12	5		90	31	138
A1	4	2		32	6	44
A2	8	2		33	11	54
B1		1		25	14	40
14	7	1		31	26	65
A1	2			7	6	15
A2	5			14	11	30
B1		1		10	9	20
15	2		2	59	24	87
A2			2	43	19	64
B1	2			16	5	23
16	4	2		29	20	55
A1	1			22	9	32
B1	3	2		7	11	23
17	6	1		48	21	76
A1	2			19	8	29
A2	3	1		26	10	40
B1	1			3	3	7
18	1	7		31	13	52
A1	1	6		13	7	27
A2		1		15	5	21
B1				3	1	4
F40	2			5	10	17
A2					5	5
B1	2			5	5	12
F40 E 1/3	3	1		30	23	57
A1	1	1		18	11	31
A2				10	11	21
B3	2			2	1	5
Grand Total	62	38	2	524	231	857

Appendix E: Glass Artifacts with Known Origins and Dates

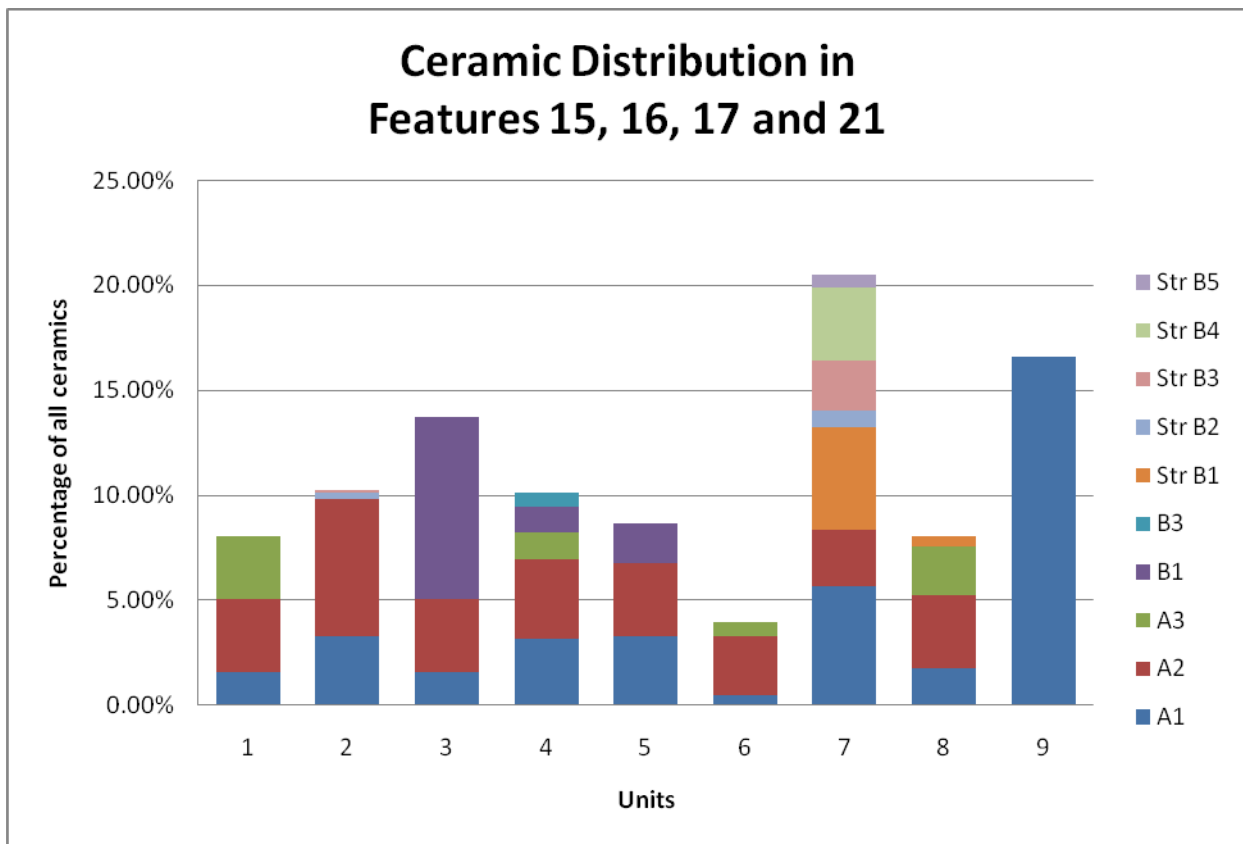
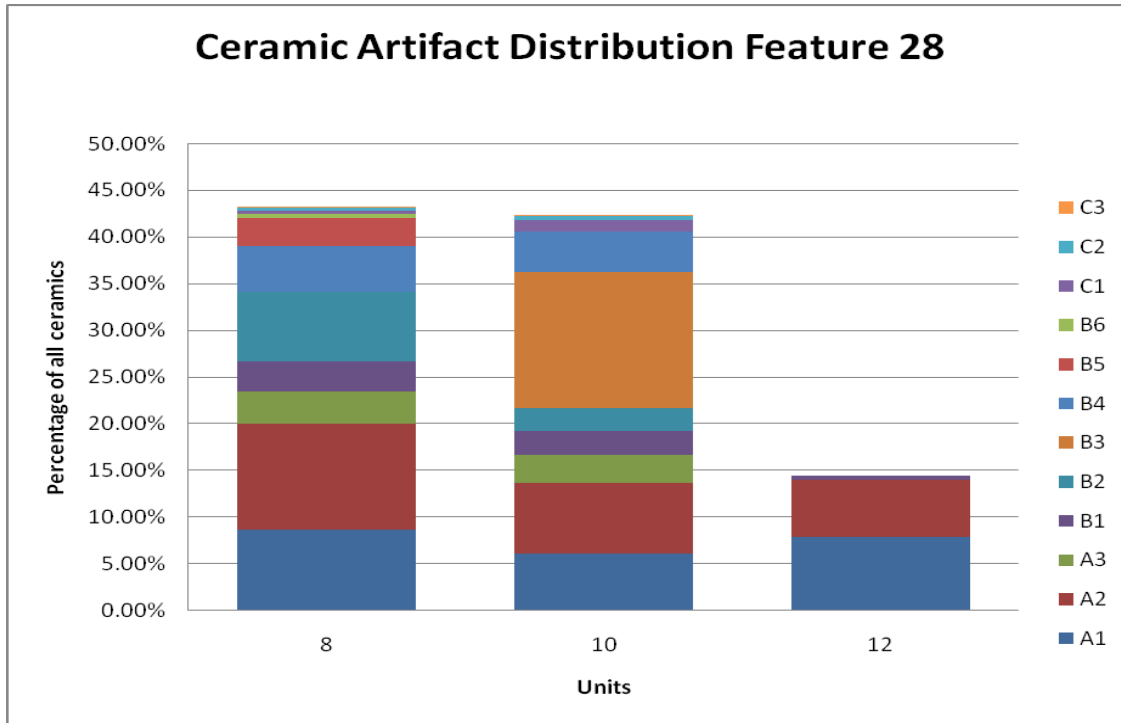
Artifact Number	Context	Vessel Type	Product Manufacturer	Bottler	Origin	Contained	Earliest possible production
459.008	B3 L1 EU2 LvA1	Jar Lid Liner	Boyd's	Illinois Glass Co	Alton, IL	unknown	1858
464.011	B3 L1 EU2 LvB1	Jar Lid Liner	Boyd's	Illinois Glass Co	Alton, IL	unknown	1858
488.011	B3 L1 EU4 LvA2	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
678.005	B3 L4 EU 8 east wall profile	Soda Bottle	L&M Soda, Quincy Ill	American Bottle Co	Streator, IL	soda	unknown
557.027	B3 L4 EU8 LV B1	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
538.037	B3 L4 EU8 LvB1	Soda Bottle	L&M Soda, Quincy Ill	American Bottle Co	Streator, IL	Soda	unknown
557.021	B3 L4 EU8 LV B2	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
557.023	B3 L4 EU8 LV B2	Soda Bottle	L&M Soda, Quincy Ill	American Bottle Co	Streator, IL	Soda	unknown
542.013	B3 L4 EU8 LvB2 F28 AC	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
542.032	B3 L4 EU8 LvB2 F28 AC	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
581.092	B3 L4 EU8 LvB5	Jar Body	Ball Mason	Ball Glass Works	Muncie, IN	unknown	1858
581.099	B3 L4 EU8 LvB5	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
581.105	B3 L4 EU8 LvB5	Medicine Bottle	Watkins Medicinal Company	J.R. Watkins Medicinal Company	Winona, MN	Liniment	1868
594.008	B3 L4 EU8 LVB6	Jar Lid Liner	Boyd's	Illinois Glass Co	Alton, IL	unknown	1858
552.062	B3 L4 EU10 LV B1	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
552.063	B3 L4 EU10 LV B1	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
564.040	B3 L4 EU10 LvB2 F.28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
564.051	B3 L4 EU10 LvB2 F.28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
564.053	B3 L4 EU10 LvB2 F.28	Jar Body and Base	Mason	Port Glass Co	Belleville, IL	unknown	unknown
564.059	B3 L4 EU10 LvB2 F.28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0218	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0253	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0256	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903

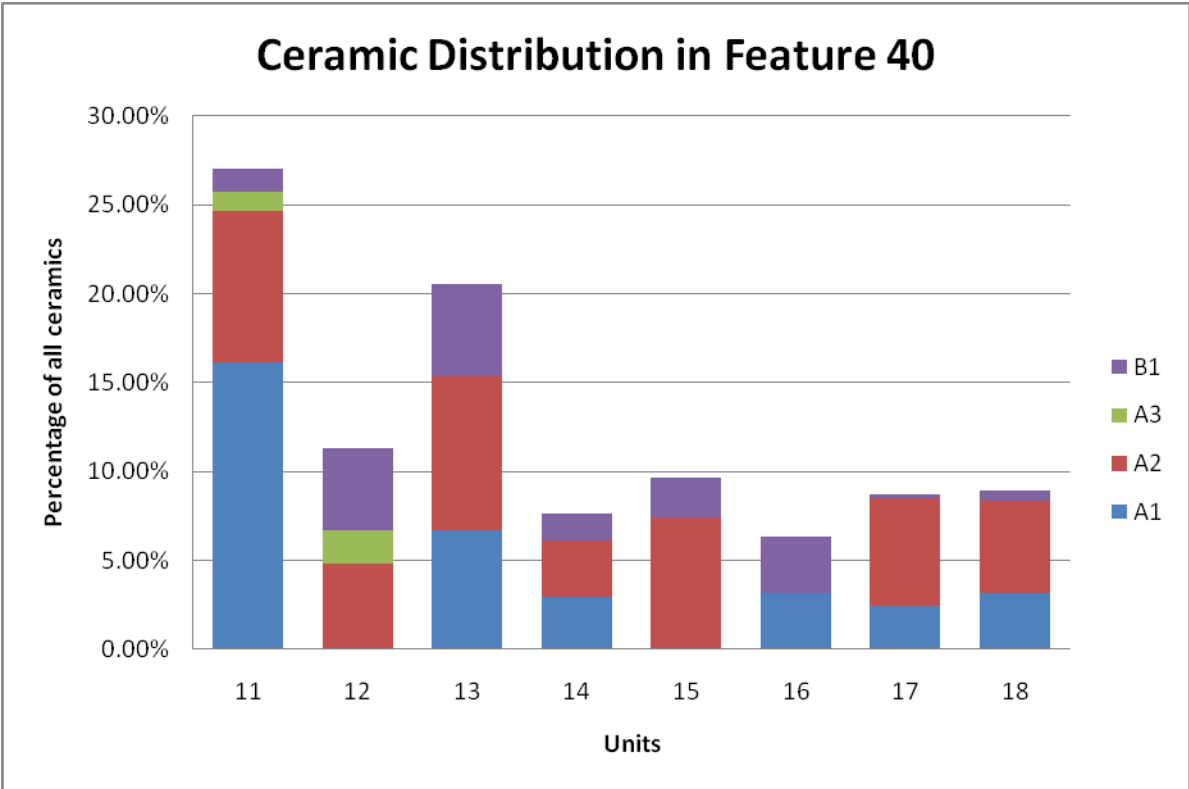
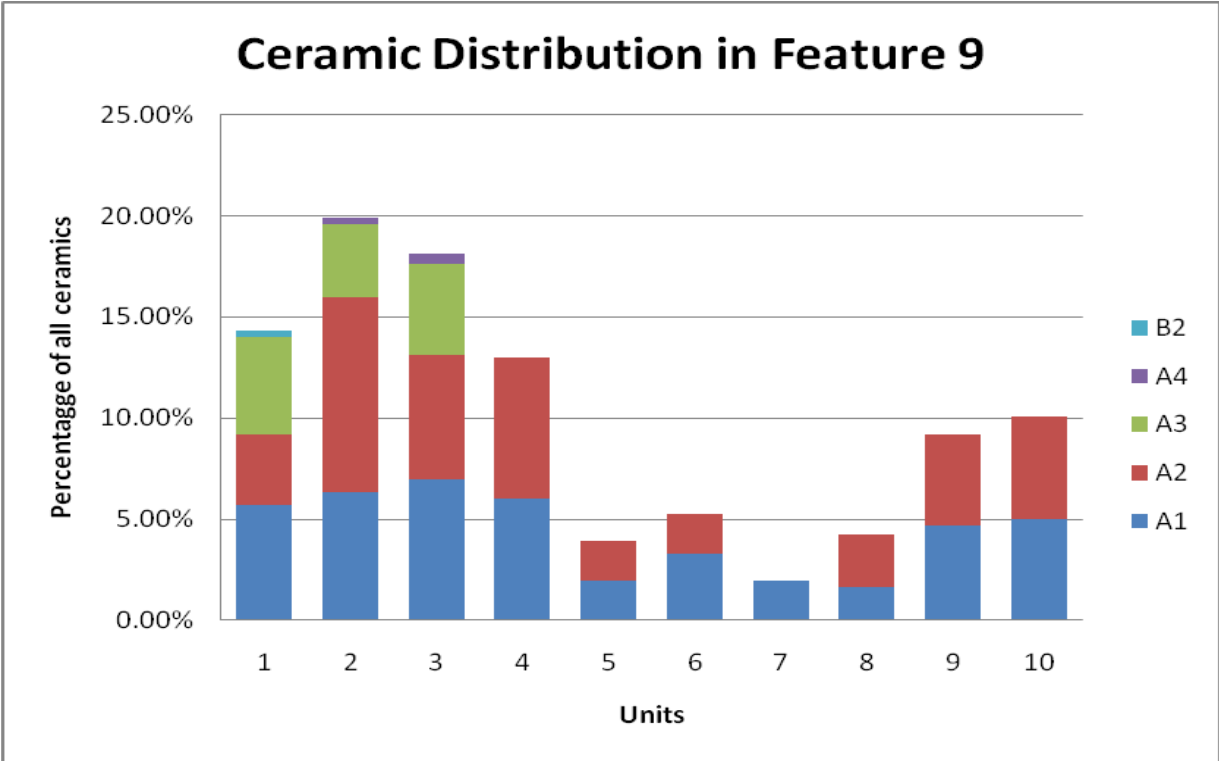
578.0260	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0313	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0375	B3 L4 EU10 LvB3 F28	Jar Finish	Ball Mason	Ball Glass Works	Muncie, IN	unknown	1858
578.0376	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0377	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0385	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0410	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0423	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0479	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0494	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0508	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0515	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0577	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0586	B3 L4 EU10 LvB3 F28	Jar Body	Ball Mason	Ball Glass Works	Muncie, IN	Beer	1903
578.0589	B3 L4 EU10 LvB3 F28	Unidentified Bottle	unknown	Illinois Glass Co	Alton, IL	Medicine?	1873-1929
578.0595	B3 L4 EU10 LvB3 F28	Jar Body	Ball Mason	Ball Glass Works	Muncie, IN	unknown	1858
578.0596	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0597	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0627	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0636	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0637	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0638	B3 L4 EU10 LvB3 F28	Jar Body	Ball Mason	Ball Glass Works	Muncie, IN	unknown	1858
578.0671	B3 L4 EU10 LvB3 F28	Jar Body	Ball Mason	Ball Glass Works	Muncie, IN	unknown	1858
578.0870	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0890	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0916	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.0980	B3 L4 EU10 LvB3 F28	Medicine Bottle	J.R. Watkins Medicinal Company	J.R. Watkins Medicinal Company	Winona, MN	Liniment	1868

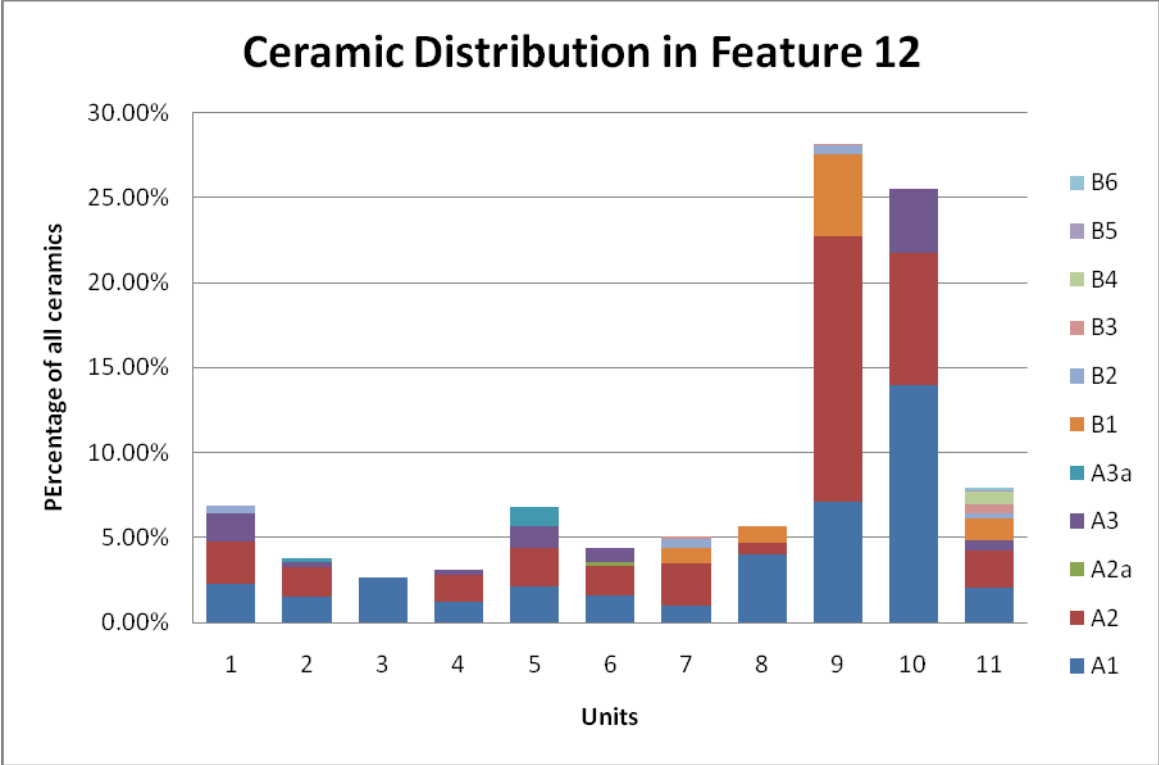
578.0984	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1002	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1008	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1016	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1017	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1023	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1067	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1073	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1076	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1077	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1127	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1140	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1156	B3 L4 EU10 LvB3 F28	Soda Bottle	L&M Soda, Quincy Ill	American Bottle Co	Streator, IL	Soda	unknown
578.1168	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1265	B3 L4 EU10 LvB3 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
578.1266	B3 L4 EU10 LvB3 F28	Whiskey Bottle	Chas Dennehy and Co	Chas Dennehy and Co	Chicago	Old Underroof Whiskey	1895
578.1270	B3 L4 EU10 LvB3 F28	Jar Lid Liner	Boyd's	Illinois Glass Co	Alton, IL	unknown	1858
595.004	B3 L4 EU10 LvB4 F28	Jar Body	Ball Mason	Ball Glass Works	Muncie, IN	unknown	1858
595.006	B3 L4 EU10 LvB4 F28	Jar Body	Ball Mason	Ball Glass Works	Muncie, IN	unknown	1858
595.051	B3L4EU10B4 F28	Jar	Unknown	Unknown	Unknown	Jelly	1906
673.006	B3 L4 EU10 F28	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
557.075	B3 L4 EU8 LV B1	Beer Bottle	Reisch Brewing Co	Reisch Brewing Co	Springfield, IL	Beer	1903
156.042	B3 L5 U6 LvA3	Container, Unidentified	Dr. Ward's	J.R. Watkins Medicinal Company	Winona, MN	liniment	1867
385.011	B3 L7 EU1 LvA1	Jar Lid Liner	Boyd's	Illinois Glass Co	Alton, IL	unknown	1858
497.005	B3 L7 EU2 Strat B3	Jar Base	Ball	Ball Glass Works	Muncie, IN	unknown	1858
397.006	B3 L7 EU5 LvA1	Jar Lid Liner	Boyd's	Illinois Glass Co	Alton, IL	unknown	1858
397.048	B3 L7 EU5	Jar Lid	Ball	Ball Glass Works	Muncie, IN	unknown	1858

	LvA1	Liner					
441.007	B3 L7 Eu 7 Strat A2	Jar Lid Liner	Boyd's	Illinois Glass Co	Alton, IL	unknown	1858
445.011	B3, L7, EU7. Strat.B1	Jar Base	Ball	Illinois Glass Co	Alton, IL	unknown	1910
445.016	B3, L7, EU7. Strat.B1	Jar Lid Liner	Ball	Ball Glass Works	Muncie, IN	unknown	1858
463.051	B3 L7 EU7 Strat B3	Jar Lid Liner	Hero Fruit Jar Company	Hero Fruit Jar Company	PA, OH, IN (multiple locations)	unknown	1870
463.010	B3 L7 EU7, STRAT B3	Prescription Bottle	Unknown	Illinois Glass Co	Alton, IL	unknown	1900
463.012	B3 L7 EU7, STRAT B3	Peppersauce Bottle	Unknown	Kearns-Gorsuch Bottling Co	Zanesville, OH	Peppersauce	1893
593.032	B7 L1 EU5 LvA1	Whiskey Bottle	Kelly's Old Cabin Bitters	Whitney Glass Works	Glassboro, NJ	Whiskey	1861-1874
121.018	B13 L4 U1 Lv A2	Jar Lid Liner	Boyd's	Illinois Glass Co	Alton, IL	unknown	1858
121.02	B13 L4 U1 Lv A2	Jar Lid Liner	Boyd's	Illinois Glass Co	Alton, IL	unknown	1858

Appendix F: Ceramic Distribution within Features







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