*****Review Draft*****

Phase II Archaeological Testing on the Interior of the Wye Greenhouse (18TA314), Talbot County, Maryland, 2009

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Chapter 1

Introduction

A phase II archaeological investigation of the Wye Greenhouse was undertaken at the behest of Mrs. Mary Tilghman, the current owner of the Wye House property (18TA314). The purpose of this investigation is to evaluate the impact of proposed restoration work on the foundation of the Wye Greenhouse to intact archaeological deposits, and to assess the presence and integrity of buried pollen and plant remains relating to the historical operation of the Greenhouse. The Wye House property is located on Bruffs Island Road near Easton, Maryland, in Talbot County, where the Wye River, Lloyd Creek and Shaw Bay intersect (Figure 1). Archaeological excavations took place on the interior southern room of the Greenhouse.

Excavations were completed between July 8, 2009 and July 17, 2009. The excavations were performed by John Blair and Stephanie Duensing. Pollen samples were collected by John Blair and Stephanie Duensing with the help and guidance of Dr. Heather Trigg. This report presents the results of fieldwork that took place over this period, and the subsequent laboratory work and analysis that continued through August, 2009.

This report is an addition to the *Phase II Archaeological Testing on Wye Greenhouse (18TA314), Talbot County, Maryland, 2008* report (Blair, Cochran, and Duensing, 2009), which details the results of testing excavations on the interior and exterior of the Greenhouse structure. This report will be a second volume of the initial Wye Greenhouse report, containing supplemental data to the initial report. The 2009 report by Blair, Cochran, and Duensing was focused on the archaeological excavations that were performed on the exterior perimeter and the northern shed addition. The current report Blair and Duensing will focus on the archaeological excavations that were performed on the interior of the southern portion of the Greenhouse.

This report is organized in the same manner as the original report (Blair, Cochran, and Duensing, 2009). This report contains the results of the Phase II Archaeological Investigation of the Wye House Greenhouse (18TA314). It is divided into the following sections:

Chapter 1: Introduction
Chapter 2: Research Design and Methodology
Chapter 3: Historic Background
Chapter 4: Archaeology
Chapter 5: Management Recommendations

Appendices:
- A. Sample Level & Feature Forms
- B. Catalog Codes

C. Artifact Catalog

Chapter 1 of this report is an introduction to the Wye Greenhouse project. Included within this chapter is a brief contextualization of the project, including dates of fieldwork, laboratory processing and analyses, as well as the identification of key project staff. Also included within this chapter is a detail of the project's location as well as the organizational layout of this report.

Chapter 2 of this report details the project's research design and methodology. Included within this chapter are key research questions that guided fieldwork and laboratory analysis. In addition this chapter details methodologies employed during fieldwork, laboratory processing, and artifact analyses.

Chapter 3 of this report details the historical context and previous archaeological investigations of the Wye Greenhouse. Included within this chapter is a history of the Wye House Plantation, a historical contextualization of 18th century architectural influences and an overview on the construction of heating systems for greenhouses during that time.

Chapter 4 of this report details the archaeological testing conducted in the Wye Greenhouse during the course of this project. Included within this chapter is an account of stratigraphic layers, features, and artifacts encountered within individual test units. Also included within this chapter are interpretations of layers, features and artifacts based on specific temporal contexts. Where applicable, interpretations of the archaeology conducted at the Wye Greenhouse have attempted to move beyond discrete unit boundaries and to form broader interpretive contextualizations.

Chapter 5 of this report details management recommendations concerning any plans for Wye Greenhouse stabilization efforts, as they relate specifically to intact archaeological resources.

Appendices contained within this report include: sample level and feature data sheets, Archaeology in Annapolis catalog codes and a catalog of all archaeological artifacts recovered in the course of this project.

When relevant, information from the original report is presented here verbatim in an attempt to incorporate new data more smoothly and efficiently, reducing the need to continually refer back to the original report. As a result, this addition reads as a stand-alone report and can be understood without previous knowledge of the former report's findings. However, since this report is supplemental to the first Wye Greenhouse report, there is much technical material that will not be included, as it is virtually the exact same information and unnecessary. The parts not included in this addendum are the physiographic setting, topography, soils, vegetation and faunal, or climate.

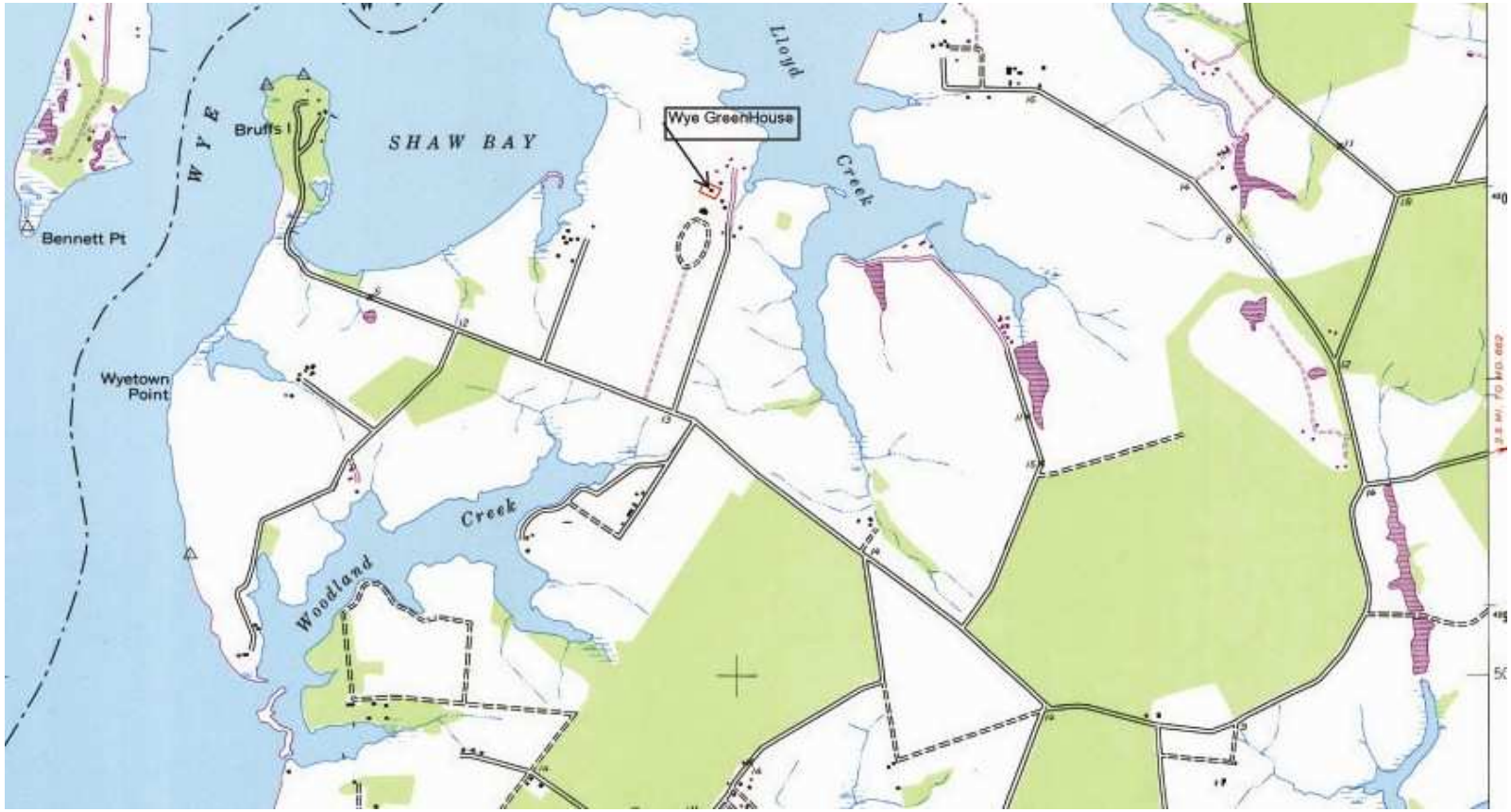

Figure 1 - Annotated Quadrangle Map showing the Project Location

Chapter 2

Research Design and Methodology

Phase II archaeological testing was performed on the interior of the Wye Greenhouse (18TA314), prior to anticipated repair work to the foundation. A total of three archaeological test units were located at strategic points on the interior of the Greenhouse's main block and the wing additions. Research objectives were developed prior to archaeological testing and were informed by consultation with Dr. Heather Trigg, a paleobotanist at the Andrew Fiske Memorial Center for Archaeological Research at the University of Massachusetts, Boston (hereafter, "the Fiske Center").

The research design for archaeological testing of the interior of the Wye Greenhouse was developed to assess the presence and integrity intact archaeological deposits, and also the presence and integrity of paleoethnobotanical remains deposited on the interior of the Greenhouse. The testing strategy was guided by a series of research questions, which were developed to further the understanding of the interior of the Greenhouse. Three objectives were identified prior to excavation. The first objective of the research was to evaluate the archaeological integrity of the interior of the Greenhouse. Does the Greenhouse contain intact archaeological deposits, and if so what historical periods or contexts are represented? The second objective was to assess the quality of macrobotanical remains preserved on the interior of the greenhouse, in order to determine whether more extensive sampling and analysis of soils containing pollen and plant remains is justified. The final objective of this research design was to recover evidence for the range of activities that went on within the Greenhouse, throughout its history of use. Was the Greenhouse only ever used as a place to cultivate plants? Or does it have other utilitarian or social functions connected to it?

First Objective: Assessment of Archaeological Integrity

The Wye Greenhouse is the only standing 18th century greenhouse left in the United States. Therefore the integrity of historical archaeological deposits is a primary concern. Several questions were created from this first objective:

- Are there intact archaeological deposits in the interior rooms of the Greenhouse?

- Are there consistent, intact stratigraphic deposits through the entire project area, or are there distinct depositional histories in different parts of the interior? Are some areas of the Greenhouse more vulnerable to disturbance than others?

Second Objective: Testing for Paleoethnobotanical Remains

Paleoethnobotany is the second objective of Phase II archaeological testing in the Wye Greenhouse. Paleoethnobotany is "the analysis and interpretation of the direct interrelationships between humans and plants for whatever purpose as manifested in the archaeological record. "(Ford 1979:286). The study of paleoethnobotanical remains can help to describe the changing historical relationships between humans and plants. In regards to the Wye Greenhouse it can show what types of plants the Lloyds and others chose to cultivate. The possibility of paleoethnobotanical analysis raises additional corollary questions:

- What types of plants were cultivated in the Greenhouse, and when?
- After the 1784 reconstruction of the Greenhouse, with the additions of the wings and the hypocaust, were different types of plants under cultivation, reflecting changing uses of the Greenhouse?

Third Objective: Understanding the Functions of an 18th-Century Greenhouse

The purpose of a greenhouse is made clear in 18th-century garden planning texts, however there is potential for archaeology to contribute to our historical understanding of how the Wye Greenhouse functioned as part of the larger plantation. The Wye Greenhouse has importance measurable at local, regional, and possibly international scales. For instance:

- For what reasons were specific plant varieties being cultivated in the Wye Greenhouse? How were plants circulated into and out of the Greenhouse, and how was the Greenhouse connected with larger markets for seeds, bulbs, plants, or cuttings?
- How did the Greenhouse function in the overall operation of Wye House plantation during the 18th and 19th centuries?
- Who labored in the Wye Greenhouse, and what was the extent of the Lloyds' control over the day-to-day operation the Greenhouse?
- Is there evidence for broader uses of the Wye Greenhouse beyond the cultivation of plants for the Lloyds' formal garden and landscape? Were any of the plants utilized by enslaved people on the plantation?

Excavations Methods

The archaeological excavations at the Wye Greenhouse were conducted from July 8, 2009 to July 20, 2009. The crew was composed of paid excavators who were on staff at the University of Maryland College Park, Archaeology in Annapolis laboratory. The

paleoethnobotanical portion of the work was contracted out to Dr. Heather Trigg, from the Fiske Center. Supervision of the project was carried out by the Director of Archaeology in Annapolis, Dr. Mark P. Leone. The artifacts were analyzed in the Archaeology in Annapolis lab at the University of Maryland, College Park. Artifact analysis included washing, labeling, cataloging, and the data entry of all artifacts. The pollen samples were analyzed by Dr. Heather Trigg at the Fiske Center. All field and laboratory work was preformed according to guidelines set out by the Archeology Office of the Maryland Historical Trust (MHT) in *Standards and Guidelines for Archaeological Investigations in Maryland* (Shaffer and Cole 1994).

Three test units were placed in the interior of the Greenhouse. Test unit 1 was a 1 x 1 ft square, preliminary test unit. This unit was excavated in order to determine whether there is intact stratigraphy, and to reveal its depth, archaeological integrity, and possible associations with periods of architectural change. The other two test units were both square excavations measuring 3 x 3 ft. One of these test units was placed in the main room on the southern side of the Greenhouse, and the other was placed in the interior room of the western wing. These two test units were strategically placed to sample the density and intactness of pollen and plant remains in different areas of the Greenhouse interior. Test unit 8 was placed in the western wing. Test unit 9 was placed in the southern room, or the main block, and was placed against the northern wall, in an attempt to collect an additional sample of pollen and plant remains deposited in the floor. See Figure 2 for the unit placements in relation to the Greenhouse.

Each test unit was excavated according to natural stratigraphy, removing one soil layer at a time. Soil samples were taken from each stratigraphic level. One gallon of soil was taken from each level, and these samples will be treated by flotation to recover macrobotanical remains for analysis. After each test unit was fully excavated, pollen samples from specific layers were gathered in 4-oz bags, and shipped to Dr. Heather Trigg. The profile of the unit walls were scraped cleaned; pollen samples were gather with a sterile trowel to avoid contamination with contemporary pollen, and placed into whirl-pak bags for shipping.

Laboratory Methods

Artifacts were collected and assigned a provenience during fieldwork, by noting their unit and level or their unit and feature. Once the excavation was complete, all the artifacts were brought back to the Archaeology in Annapolis laboratory at the University of Maryland College Park. Under the direction of Mark P. Leone, all of the artifacts were processed by paid staff archaeologist.

Ceramic, glass, bone and other stable materials were washed in water while metal artifacts and other fragile objects were cleaned with a dry brush. Once the artifacts were cleaned, they were placed on a rack to air dry. When this process was complete, the artifacts were placed into acid free, re-closable, plastic bags. Each bag was again labeled with provenience information and its bag number. The provenience information included the site number (18TA314), the unit number, level or feature identification, date of

excavation, and the initials of the excavator(s). The artifacts were then cataloged using the standardized cataloging codes utilized by Archaeology in Annapolis (see Appendix E in Blair, et al. 2009). An itemized number was also assigned to each artifact during the cataloging process. This number later corresponds with the data entry number and also the labeling number. The catalog system utilizes a six digit master code to identify the item. Other attributes such as form, quantity, and color were also recorded on the catalog sheet.

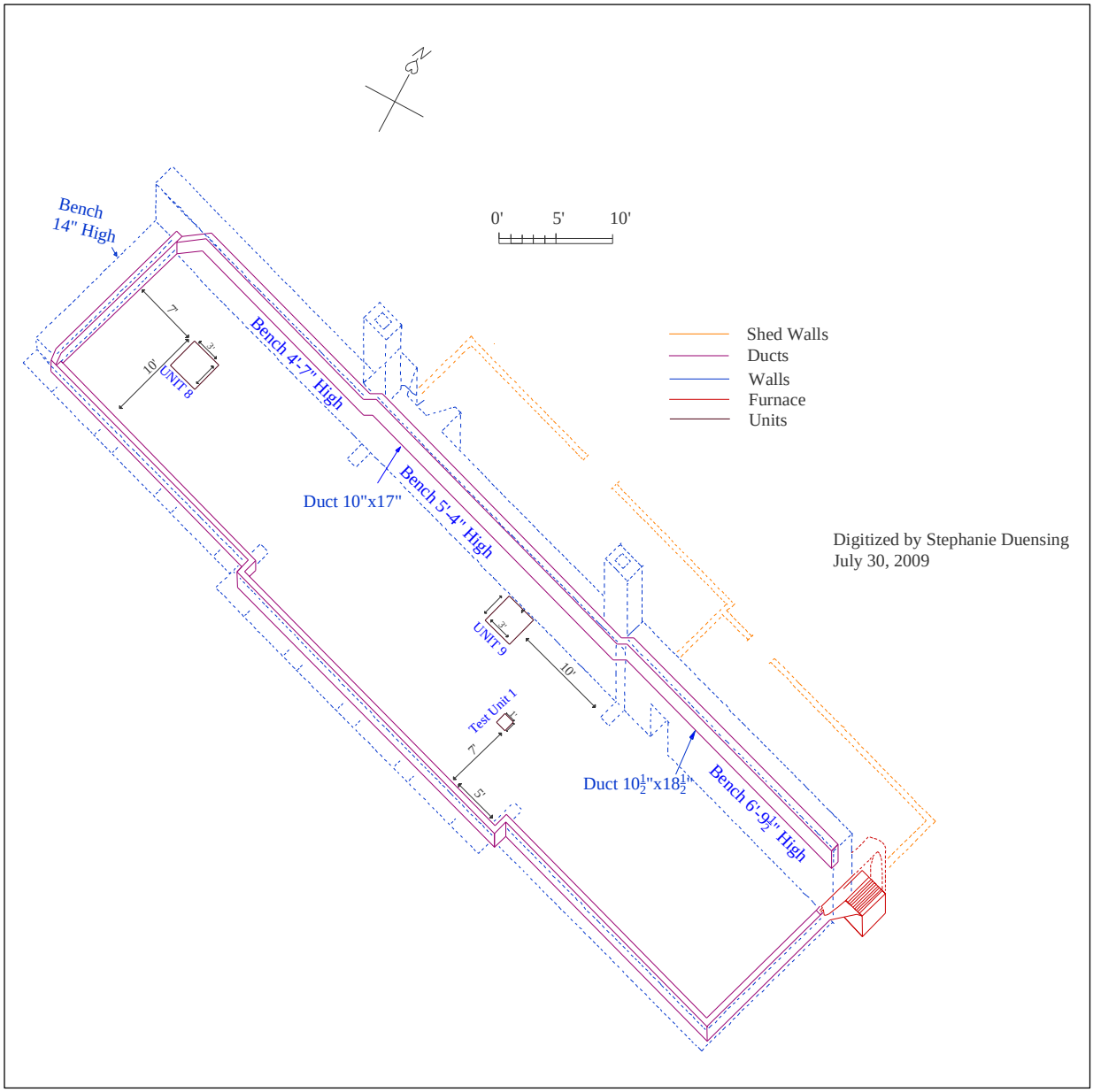

Figure 2 - Location of the test units. This map shows the location of the test units in relation to the rest of the Greenhouse.

Each artifact was individually labeled. The labels include the site number, unit number, level/feature, and its itemized identification number. This number corresponds to its catalog number. The artifacts were also entered into a digital catalog that corresponds with the hand-written catalog. This process is known as data entry. Data was entered into the computer and printed out to be proofed against the original sheets. This is a tedious process but ensures the integrity of the data.

The bulk soil samples that are designated for macrobotanical analysis were treated by flotation at the Archaeology in Annapolis laboratory at the University of Maryland, College Park. The samples were sifted through a 1/4-in mesh screen, then 1/8-in mesh, and finally 1/16-in mesh screen. The soil that was placed in the 1/16' mesh screen was then submerged in water and agitated, so that the macrobotanical remains float and the sledge will sink to the bottom of the tank. The remains that float are skimmed off the top of the water, and set aside to dry. These remains are packaged, labeled, and prepared for shipping to the Fiske Center for analysis

The pollen samples that were taken from the cleaned walls were labeled with the provenience from which they came. These samples were then shipped to Dr. Heather Trigg for complete analysis.

Dr. Heather Trigg was able to give a preliminary for the presence or absence of preserved botanical remains within the Greenhouse floor. According to her findings disclosed to us through email correspondence,

> …The preservation for [the original Greenhouse surface] is quite good, just under 10,000 grains/gram. We usually want at least 1,000 grains/gram and many garden samples I've seen have been in the 400-500 grains/gram range. This is good news…There are some interesting finds - Nuphar - water lily, impatiens (1 grain each), Rose family (could be roses, cherries, plums, wild cherries, raspberry or weedy plants such as cinquefoil), several from the lily family (lilies, daffodils, tulips, onions, and some non-domesticated plants)…

For the email in its entirety, see Appendix D. Specific methodologies and results from analysis of macrobotanical and pollen materials will be presented in a separate section, which will be appended to this report at the time it is available to us.

Chapter 3

Historic Background

This chapter presents a summary of historical background research on Wye House collected by Archaeology in Annapolis staff prior to beginning field work. Historical and archival repositories consulted include the Maryland State Archives in Annapolis, the Maryland Historical Trust Library in Crownsville, and the Historic Annapolis Foundation library in Annapolis. Relevant resources consulted during background research include archaeological and architectural site survey forms for Talbot County, relevant archaeological reports, historic photographs, insurance maps, limited demographic data drawn from historical census records, and secondary historical literature on Wye House and its vicinity. The synthesis of these materials that follows is geared toward understanding the development of Wye House as a whole, paying particular attention to the development of the garden and Greenhouse, as well as the people responsible for their construction and maintenance. For a more expansive presentation of the historic background of Wye House, see Blair et al. (2009).

Prehistoric Background

North American prehistory is typically divided into three main periods of time: the Paleoindian, Archaic, and Woodland Periods. These time periods range in date from before 11,000 BC to the time of contact between Native people and the Europeans in the mid-17th century. The majority of the prehistoric archaeological contexts at Wye House are associated with the Woodland Period, extending from approximately 1000 B.C to the time of contact with the English (Dent 1995).

On the Eastern Shore of Maryland, the Late Woodland Period (900-1650 AD) was characterized by the development of chiefdoms after ca. 1400 AD, the widespread adoption of maize agriculture, and the beginning of a complicated set of negotiated interactions with European settlers. Throughout prehistory, Native American peoples would have exploited the Wye River area for fishing, farming, hunting and gathering. The river was teeming with crabs, fish, oysters, and edible marsh plants. The hardwood forests were rich with nuts, wild edible roots and berries, as well as wild game such as turkey and deer. The oaks and pine could also be used for building material and fuel. The land was farmed using a crop rotation method. Many kinds of crops were grown including maize, barley, beans and squash (Rountree and Davidson 1997). The best soil for raising crops is sassafras loam and this soil type is found at Wye House.

Native Americans continually adapted to the changing environment through the prehistoric periods, but this all changed once contact with Europeans occurred. There was very little contact by Europeans with native populations in the Chesapeake before the 17th century. The first Europeans who saw the Chesapeake Bay were either French or Spanish. In 1527 and 1529 the Chesapeake was marked on the official Spanish *Padrón General* maps as the Bahia de Santa Maria (Potter 1993:161). A number of ships of

French, Spanish, Portuguese, and Italian origin sailed the lower Chesapeake, not usually coming as far north as Maryland, throughout the rest of the 16th century. Their purposes were usually slave hunting, missionary trips, or mapping expeditions (Potter 1993:162). Spain's interests in North America were centered in the Southeast, in *La Florida*, which was a string of successful mission settlements. The northernmost frontier of Spain's effort was a short-lived Jesuit mission within the Chesapeake region in 1570, most likely on the James or York rivers in Virginia (Dent 1995:223, 260).

The first English exploration of the Chesapeake Bay most likely occurred towards the end of 1585. The governor of the first Roanoke colony in North Carolina sent an expedition of men to explore the area north of the Carolina Sound. After this first Roanoke colony failed, an attempt was made to start a new settlement in the Chesapeake during 1587. This group of settlers were inadvertently set down at the location of the previous Roanoke colony, and eventually disappeared with no trace (Potter 1993:162-163). Between 1588 and 1603 at the earliest, there were no know Europeans in the Chesapeake. Not until John Smith's arrival in 1607 was there any new, documented, contact in the region (Potter 1993:164, 179).

John Smith's 1608 exploration of the Eastern Shore provides us with a great deal of information about the lives of Native Americans during the contact period. However, native populations on the Eastern Shore are less well known due to the significant delay in settlement by Europeans in the area. In 1631, William Claiborne started a trading settlement on Kent Island, off the west coast of what is now Maryland's Eastern Shore (Dent 1995:261). The Wicomiss (whom Smith called the Ozinies) were the peoples encountered closest to Wye Island, near the Chester River. Houses were loaf-shaped post-in-ground structures made of local materials and shared by six to twenty people (Rountree and Davidson 1997). Eastern Shore societies were based on kinship, and chiefdoms were matrilineal (Rountree and Davidson 1997). Luxury goods were traded between Eastern Shore groups and with peoples on the Western Shore, for example the Accomaks/Occohannocks on the southernmost tip of the Eastern Shore produced highly sought after shell beads called peak/wampumpeak. Trade was also carried out with the Nanticoke and Choptank tribes in the middle portion of the Eastern Shore. These were all quite small tribes; with the largest being the Nanticoke with a population concentration of around 665 people (Dent 1995:264). Peoples along the Eastern Shore spoke many dialects of Algonquian that were different enough that Smith could not understand the dialects spoken north of the Sassafras River (Rountree and Davidson 1997). It is also recorded that the Ozinies were at war with the Iroquoian-speaking Susquehannocks, who were continually attempting to spread their territory northward (Rountree and Davidson 1997).

Early History of Wye Farm

In the 1630s, Edward Lloyd came to Virginia from a region in eastern Wales called the Wye Valley. He rapidly established himself in the Virginia House of Burgess, but by 1649-50 his confrontational religious tenets motivated him to lead a group of Puritan settlers to the more accommodating environment that existed in Maryland

(Weeks 1984: 54). He acquired landholdings in both Anne Arundel and Talbot County where the bulk of small tobacco farmsteads were springing up. The idea to purchase land and allow someone else to pay to cultivate it proved to be a lucrative enterprise. Having a majority of his property in Talbot County, he decided to settle there himself.

By the time he built the first substantial structure on the Wye property, he was already one of the wealthiest men in Maryland, a fact that his house reflected. All that we know of the original structure is the description of the property owned at the close of the 17th century, at the time of the deaths of Philemon Lloyd, son of Edward Lloyd I, and his wife, Henrietta Maria.

When Edward Lloyd IV inherited the family estate in 1770, there were over 110 years of Lloyd tradition attached to his inheritance. He wanted to personalize his home and set it apart from the previous generations of Lloyds who had resided there and modernize the dated property he and his equally important wife would call home. He had married Elizabeth Tayloe who had been raised at Mount Airy, the opulent Palladian homestead in Virginia. When they moved into the Great House on Wye Farm in 1770-1771, they most likely had a number of alterations in mind to update their home and make it even more impressive and fashionable. This first five to ten year period when Elizabeth and Edward Lloyd IV first established themselves as the new owners of Wye is when we believe the first substantial greenhouse was constructed on the property.

House and Landscape Architecture at Wye House

Architectural styles in America during the 18th century borrowed heavily from architectural styles that had been popular in Europe for centuries. There was a clear focus on Greek and Roman styles that had made their reappearance in Europe during the 16th century (Rowe and Satkowski, 2002: XVII). One highly influential architect of that time was Andrea Palladio (1508-1580). His work throughout the 16th century was held in very high regard and he continues to influence architecture today. It was his work that inspired much of the design of the structures seen at Wye House Farm today and indeed many 18th century structures surviving in America today. By looking at the inspiration for the work we can begin to better understand, not only the structures themselves and how they were used, and also the motivation of those responsible for commissioning the work.

Palladio is best known for his successful execution of a classical Italian villa. It is now believed that one of his villas provided the inspiration for the Greenhouse at Wye commissioned by Edward Lloyd IV between 1780 – 1790 (see Figure 4). Villa Emo (see Figure 3) was built between 1555 – 1565 for the Emo family and remained in the family until 2004 (Rybczynski, 2002:176). It is strikingly similar architecturally in many ways. One of the first things that grab the eye on both of these structures is the use of both the arch and the rectangle to draw the line of sight either out or up. Palladio uses the grand and dramatic portico to affect this in the Villa Emo, while at Wye, the function of the building demanded windows. Therefore, the negative space created with the use of the portico at the Villa Emo is elicited at Wye by the use of overly tall windows set into thinly spaced brick dividers. On the center block, the brick separating the windows

become the columns and the windows appear as the open space. The same idea carries through to the long-winged, open rooms present at the Villa Emo, called *loggia*. These were a trademark element in the architecture of Palladio (Rybczynski, 2002).

Another similarity is the small windows over the top of the taller windows below. This assists in adding height and drama to the building's appearance. This practice is not strictly Palladian, but it was utilized by him frequently. One rule that Palladio mentions early was the practice of stacking like elements "so that solid is above solid and void is above void" (Palladio, 1570: 7).

Yet another element of interest is the common use of what is known in architecture as "the Golden Ratio". In an analysis of the Palladian inspired architecture used by Thomas Jefferson to construct the buildings at the University of Virginia, Rachel Fletcher took drawings of Villa Emo and overlay them with regulating lines. Her analysis shows very clearly that the proportional design of the Villa may have been generated by applying the golden ratio consistently throughout. There is no doubt concerning the hypothesis: "Golden Mean proportions appear in the Villa Emo, whose measured drawings suggest that Palladio employed mathematical proportions through a consistent application of geometric techniques" (Fletcher 2000: 78) (Figure 5).

According to Lionel March's breakdown of Fletcher's work, her analysis plays on the property that when either a square is added to the short side of a golden rectangle, or a square is deducted from a golden rectangle, the new issue is itself a golden rectangle. The golden rectangle itself may be generated from the square by striking a circular arc from the center of a side through an opposite corner. Following this method, the composition of the Villa Emo is generated from an initial square (March, 2001) (see Figure 6).

Palladio's use of the Golden Ratio became a familiar building style for significant structures. The Golden Ratio is a geometric proportion that is aesthetically pleasing. When dealing with a structure this ratio is between the longer side and the shorter side is approximately 1.618. For the purpose of this report, we are focusing on the relationship between the golden ratio and the Greenhouse. It is believed that the Wye Greenhouse was based off of Palladian buildings. Therefore if this is true, then the golden ratio must exist within the Greenhouse. Henry Chandlee Forman's architectural drawing of the Wye House Orangery (HABS) has the exact dimensions of the Greenhouse. To figure out if the golden ratio exists, we first looked at the main block of the Greenhouse. The dimensions of this main portion are 33' x 20'4.75" as seen in figure 7. These two numbers equate to a ratio that is 1.618. This proves that the Golden ratio exists in this portion of the Greenhouse.

This portion of the Greenhouse is part of the original design for the Greenhouse in 1775. Once construction begins on the current main house in approximately 1785 the Greenhouse also underwent a redesign to complement the new house and landscape layout (Weeks, 1984: 62-63). The Greenhouse's function changed at this point too. It no longer was a part of the formal garden. It instead became one of the garden's boundaries, the other boundary being the main house. This time of alteration also resulted in a change

in the Greenhouse's design. The original design of the Greenhouse modeled after Palladio was no longer adhered to in the proportions of the wing additions. Since the Greenhouse had to mirror the main house in certain aspects, it appears that it was impossible to obtain both in the final manifestation of the structure. It was at this point that the construction of the Greenhouse took its current dimensions, which are not to the Golden Ratio. In fact, even the dimensions of the wings are different from each other. The western wing dimension is 26'1" x 18'1" and the eastern wing dimension is 26'3" x18'9.5". This proves there was an ideological shift in the Greenhouse between the original construction and its additions.

All of these similar architectural features indicate there was some strong connecting influence present. Yet there are other reasons that Villa Emo is a likely candidate for a contribution to the inspiration of the Wye Greenhouse. The depiction of the Villa Emo was published in 1570 in his famous book, *I Quattro Libri dell'Architettura* and translated in 1715 by Giacomo Leoni as *Palladio's Four Books of Architecture*. It is actually the most accurate real-life rendering of all the works Palladio published in his lifetime and then constructed. What is more, we know from the inventory taken at the time of the death of Edward Lloyd IV that there was a copy of Giacomo Leoni's translation at Wye (Wolf, 1969: 111-112).

In addition to the architectural similarities and the readily available access Lloyd had to the Palladian villa, there is the symbolically significant aspect of what the Villa Emo represented. The Villa Emo is framed by two colonnaded wings which originally housed agricultural activities, for this was a working villa like a number of the other designs by Palladio. Andrea Palladio emphasizes the usefulness of the lay-out in his treatise. He points out that the grain stores and work areas could be reached under cover, which was particularly important. Also, it was necessary for the Villa Emo's size to correspond to the returns obtained by good management. These returns must in fact have been considerable, for the side-wings of the building are unusually long, a visible symbol of prosperity (Wundram, 1993: 164). Professor of architecture at Texas Tech University, Urs Flueckiger, asserted in a paper submitted to the ACSA Annual Meeting in Salt Lake City, Utah that Villa Emo was the most perfectly executed example of an agricultural building. Lloyd's knowledge that this building was a conception of beauty and success in agriculture would be an incredibly symbolic and poignant statement indeed.

Figure 3 - Villa Emo, Italian villa in the Veneto near the village of Fanzolo de Vedelago. Photo obtained from http://upload.wikimedia.org/wikipedia/commons/2/26/Villa_Emo.jpg

Figure 4 - Wye Greenhouse in Talbot County, Maryland, near the town of Easton. Photo by Stephanie Duensing

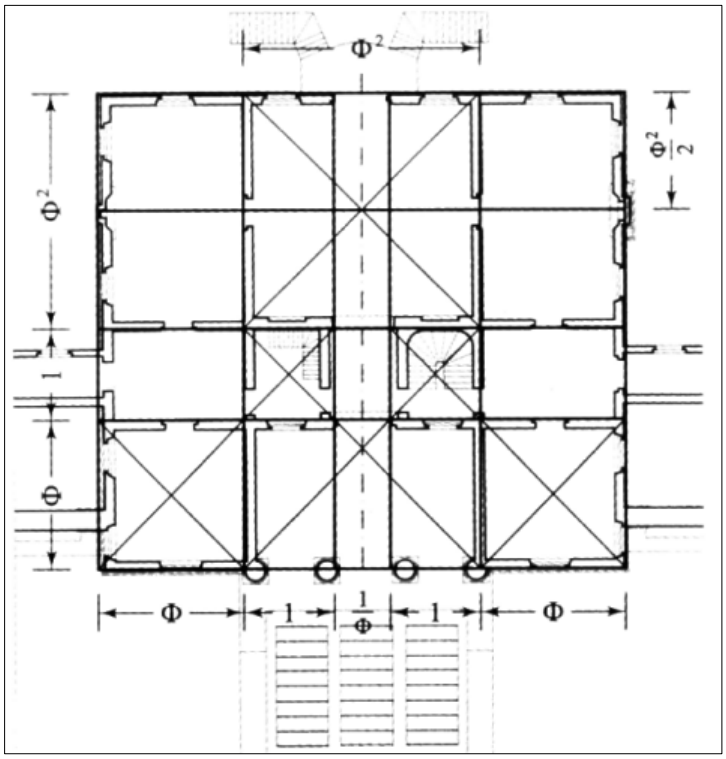

Figure 5 - The Golden Rule at the Villa Emo (March 2001: 92)

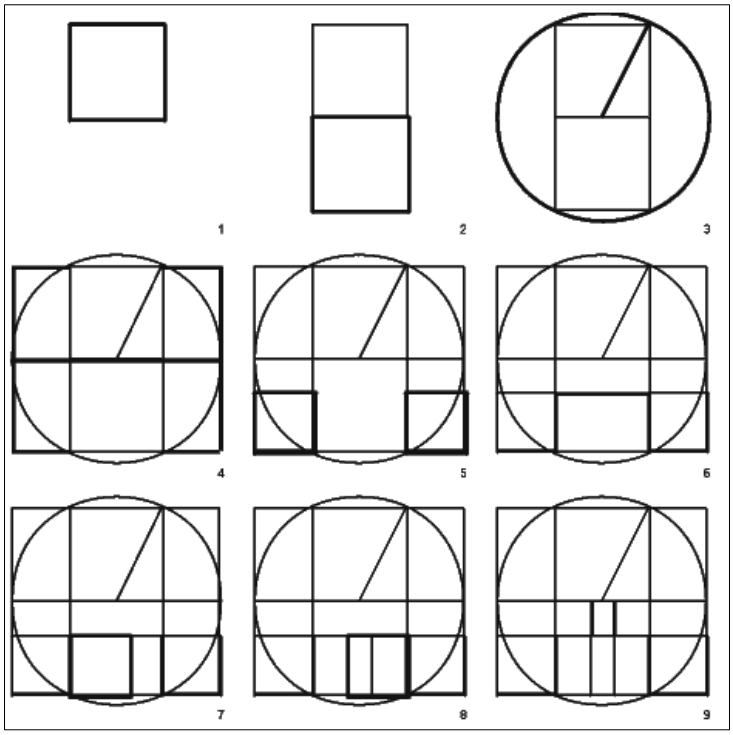

Figure 6 - The composition of the Villa Emo generated from an initial square (March 2001: 93)

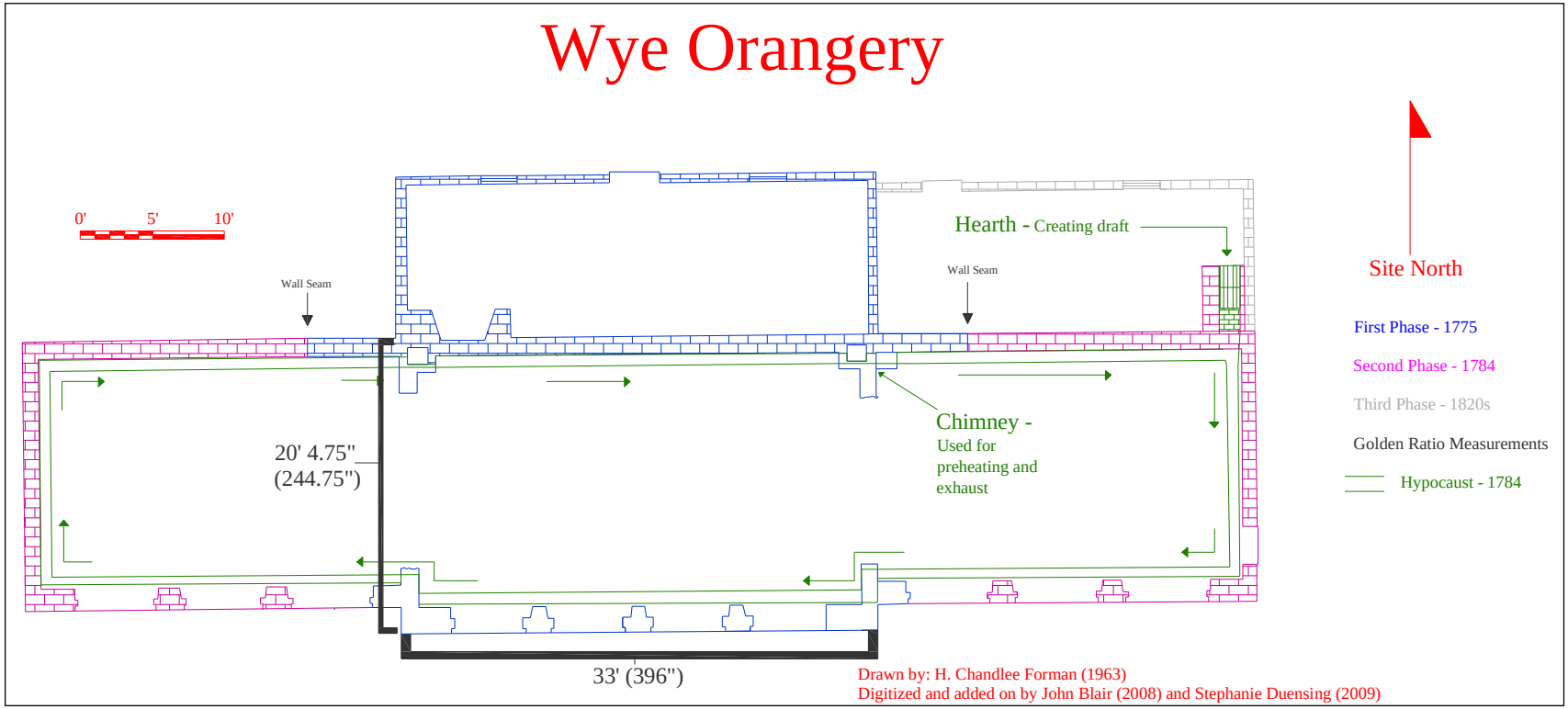

Figure 7 - (Greenhouse) – Main block dimensions – This image shows the dimensions of the main block of the Greenhouse. The dimensions are 33'x20'4.75", which equates to the ratio of approximately 1.618 or the golden ratio.

Our understanding of Edward Lloyd IV, based off of what we have learned through the historical record and family tradition, is a key element in making the final connection between the Villa Emo's and Wye. It is our knowledge of Lloyd as a man of great political, social and agricultural leadership in Maryland's history combined with his habitual use of architecture and literature that makes the most convincing argument here. We know he was a highly educated man who spent an enormous amount of time and money cultivating one of the most extensive libraries in the region during his lifetime. He revered Shakespeare and even commissioned a marble mantel piece for his elaborate city home in Annapolis immortalizing him. In the depiction, Lloyd shows Shakespeare sitting and being handed a gift by Pallas Athene, the Greek goddess of Wisdom (and, ironically, the namesake of Palladio). This mantle is still in the Chase-Lloyd house and able to be viewed today. It is this knowledge of his use of highly metaphorical structural elements throughout his properties that leads us to the conclusion that he would have attributed no less attention and thought to this major point of interest.

The Greenhouse at Wye was intended to impress while also being a metaphor showcasing the family's classical taste, ethics, and political position. It follows that the overarching style that was chosen as a template would be one of the most respected architects of the time. This choice was symbolic of all the values of the family and also solidified their position at the top of the social ladder. With the amount of time, thought and resources required to attempt such a production, it is no surprise that the mere fact that the Greenhouse was built attests to the position of the executor. It is the details of who and what they choose to emulate that tell about the people themselves.

The Wye Greenhouse Hypocaust

The hypocaust, which is substantially if not completely intact, is one of the most significant aspects of the Wye Greenhouse, both in its historical functioning and its current historical and architectural significance. The hypocaust provided heat during the cold winter months, and allowed the Lloyds to cultivate a variety of plants no matter the time of year.

The term "hypocaust" is derived from the Latin word *hypocaustum,* which translates literally to mean "heat from below." A hypocaust is a flue network created to heat the interior of an enclosed area by using heat generated by a furnace and running under the floors and behind the walls. The hypocaust at Wye is based on these same principles used in ancient Rome. It is a flue network that was utilized to heat the interior of the south rooms of the Wye Greenhouse. The hypocaust system was heated by a furnace located in the eastern-most corner of the structure. The chamber which conveyed the heat ran the interior perimeter of the south rooms of the Greenhouse. The hypocaust system would have been needed only during months when the temperatures would have reached below freezing within the structure itself. It was not original to the Greenhouse but was added on at the same time as the wings. We hypothesize these additions to the Greenhouse happened between 1785-1790.

In the fall of 2008, architectural historian Raymond Cannetti visited the Wye Greenhouse and explained his understanding of the heating system and how it worked. Mr. Cannetti hypothesized three major points in relation to the hypocaust and how it functioned. He stated that 1) this structure was designed originally to contain a heating system, even if it was originally absent, 2) that there was an original furnace located in the northwest corner were a small door is currently located, and 3) that there were holes punched out in the duct work so as to have a way though which to warm the flue in order to create a strong enough draft to pull the smoke the entire length of the structure. The archaeology performed on the interior of this structure has shown us that his original hypotheses included in the previous report (Blair et al., 2009) were not entirely accurate.

His first hypothesis was that this structure's original design contained a heating system, even if it was absent initially. He thought that the system would have been located on the north-eastern section where there is now a small doorway, currently with a clearance of approximately 3 feet. However, the archaeology has shown that this area would have originally been 1-2' lower than the current surface level. The reason for raising the surface level was to add the hypocaust. The ducts would have been built and the surface was raised to cover them as opposed to digging them out. There has been no evidence discovered at this time that would indicate there were any preparatory steps taken to facilitate the addition of the hypocaust.

His second assertion was that there was an original furnace located in the area where there is currently a 3' door way into the rear shed addition. However, when considering the discovery of the original surface 1-2' lower than current level and the fact that the hypocaust heating duct can easily be seen lowering the clearance of the doorway by at least 14", we see that the original structure would have had a regular 6-7' doorway. It would have been the side entrance to the Greenhouse at that time and a furnace would not have been there.

It is now known that the original furnace is the one still in place today. Mr. Cannetti was correct in the fact that the system begins slightly below ground surface in order to allow the natural occurrence of heat raising to draw the smoke and heat through the hollowed chamber beneath the floor, up behind the walls, and finally, up the flue and out the chimney. He said this would assist in the creation of a substantial draft needed to pull the heat and smoke through such a long circuit. However, Mr. Cannetti also posited that the heating of the flue would have been accomplished by having holes "punched-out" in different places in the flue network. Hot coals or a small fire would then have been placed throughout the duct to heat the chamber. This would act as a method of heat extension to intensify the displacement of hot air pushing up through the colder air from outside. The intensified heat would produce a stronger draft thereby allowing the heat to radiate further up the circuit. Once the flue was heated and the system flowing, the holes would then be refilled with plaster and result in a closed system. This explanation did not seem cost effective or efficient for the time. While similar methods involving heating a flue to intensify the draft were used in the 18th century, all of these had some form of door mechanism. In the process of researching hypocaust engineering, we discovered a more sound explanation that fits perfectly in line with our recent archaeological discovery

showing the later 1784 date for the hypocaust addition. According to Philp Miller in *The Gardener's Dictionary* published in 1759, there was often a damper located in the rear behind the firebox in greenhouses from this period. As the raising heat would snake up through the wall and out the chimney by way of this draft, the heat would radiate through the floor and walls, thereby controlling the temperature in the building.

- **The chimney and furnace**

The hypocaust system is a horizontal brick flue network that uses a chimney, as an exhaust and preliminary heat, and a furnace, which is where the fuel is provided. The furnace was originally outdoors, but since its original construction, a shed addition has been built around it. Both the chimney and the furnace are connected to the northern portion of the Greenhouse. The furnace is located in the northeast corner of the Greenhouse and the chimney is located 20 feet to the west, or where the main block of the Greenhouse connects with the wing addition. The system is one continuous flow. The heat is provided by the furnace, then travels the entire perimeter and finally flows out of the chimney.

- **The furnace**

The furnace is the beginning of the hypocaust system. It is where the heat for the system was provided. It is likely that the Wye Greenhouse used wood as its main form of fuel. According to a 19th century architect named Taft, this was the preferred fuel source for a furnace the size of the one in the Wye Greenhouse.

> The furnace can be constructed for burning either coal, or wood cut in lengths of from three to five feet. A grate containing three to four square feet will answer for a house containing 600 square feet of glass. If wood is used, the furnace should be eighteen inches wide inside, and of the required length, but no increase of the size of the grate will be necessary. There should be an ash pit of suitable size, and iron doors should be set in the masonry at the end of the furnace, for both the fire-pot and ash pit. The top of the furnace may be supported either by a brick arch or by heavy iron bars. The inner lining of the heater should be of fire brick laid in fire clay, and the same material should be used for the first fifteen feet of the flue. Beyond this point, common stock brick will answer, forming a flue eight by twelve to sixteen inches, or eight to ten-inch glazed tile may be used. (Taft 1894; 136-137)

This description of a proper furnace for a greenhouse is exactly the way the Wye Greenhouse furnace was constructed. Historical architect Henry Chandlee Forman is responsible for the current condition of the furnace. But before he disassembled it to learn how the furnace fully worked, he provided architectural drawings which show what the furnace looked like during its time in operation (see Figure 8). In 1963, a photograph

depicting the furnace's condition was taken by the *Historic American Buildings Survey* (HABS)(see Figure 9).

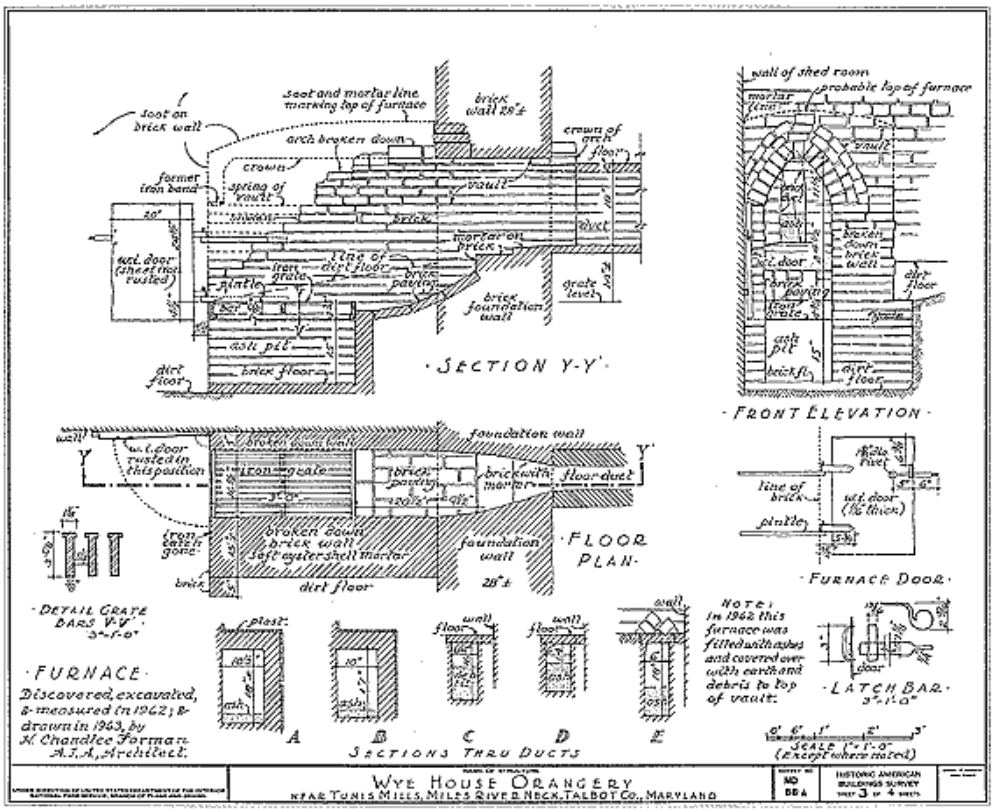

Figure 8 - Hypocaust furnace Architectural drawings by H. C. Forman - This drawing shows exactly what is described by Taft in his instructions for heating greenhouses by method of furnace. It has the vaulted brick top, the iron door, and correctly proportional grates and ash pits.

Figure 9 - Hypocaust furnace – Picture taken of the Wye Greenhouse furnace prior to its complete destruction. Photo circa 1963 for the *Historic American Buildings Survey* (HABS).

- **The chimney**

Two chimneys are incorporated into the Wye Greenhouse. The flue for the western chimney is connected only to the hearth that is located in the northern shed, or the slave quarter. The eastern chimney is connected to the hypocaust system. This eastern chimney serves three main purposes. First, it was the preliminary heat source to heat the flue. Second, it was the exhaust where all the smoke could escape. Third, and most important, it created a draft which allowed all heat to move through the hypocaust system.

The preliminary heating was the first service the chimney provided. “A direct connection with the chimney can be made when the fire is first started, and then, after the chimney has become warm, a damper can be turned which will force the smoke to pass around though the house, giving off its heat as it goes” (Taft 1911: 136). This preliminary heating insures that a draft will be created between the furnace and the chimney. As there is no evidence of a second chimney opening, it is possible that the furnace served the function of both and that the damper was located in a way to allow initial heat to warm the flue to the west first, then when the system was ready, the damper closed the western flue and the heat was directed through the entire circuit.

Secondly, the chimney functioned as an exhaust. The heat and the smoke from the furnace both traveled the entire length of the hypocaust system and eventually escaped by way of the chimney. No other form of ventilation was necessary in this system. Since the system was completely sealed except for the two ends - the furnace and the chimney - there was no other need for ventilation.

Finally, the third job of the chimney is to create a draft which allows the heating system to work properly. A draft is a way to pull the heat and smoke through the entire hypocaust network, which resulted in the successful heating of the entire Greenhouse.

> If the house is not over fifty feet in length, and if a rise of two or more feet can be secured, a fair draft can be obtained by having the chimney at the farther end; but in longer houses, or where the flues must be run on a level, it is best to bring them back, so that they can enter a chimney built over the furnace (Taft 1858 [1911]: 136).

The Wye Greenhouse is approximately eighty feet in length. This is the reason why the hypocaust system must come back to its start point. The chimney needs to be near the furnace, so the entire interior can be heated.

> For a house twelve feet in width, one flue will answer; but if fifteen to twenty feet wide, it is well either to have a return flue on the other side, or to divide the flue and carry up a branch on each side, wither under the walks or beneath the side benches (Taft 1858 [1911]: 137).

At eighteen-feet and eight-inches wide, the Wye Greenhouse is over twelve feet in width. As stated by Taft, it has a return flue on the far side from the furnace and chimney bringing the system back to the starting point and completing the circuit. The flue also traveled under the walks and up the wall where the side benches would have attached.

- **Flue network**

The flue network begins with the furnace (see Figure 10). The furnace is just below ground level so the flue network immediately begins its journey underground as soon as it passes through the furnace door. The flue network then travels along the interior of the eastern wall of the Greenhouse, underground. At the corner where the south and east walls meet, the flue turns 90 degrees to the west and continues its underground passage. This underground portion continues the entire length of the southern wall. At the southwest corner the flue no longer continues its underground passage. At this point a series of above ground ducts were built out from the wall so as to carry the flue network above ground, but still insulated within the walls.

There are a series of these above ground ducts, or step-ups, which were placed on the interior western wall of the Greenhouse and the northern wall. There are four of these ducts in the Wye Greenhouse. The first one is on the western wall. It is at a height of 14" from the ground level. The second is connected to the first at the northwest corner of the interior Greenhouse. This duct increases in height from 14" to 4' 7" and travels the entire length of the western wing portions. The third duct is connected to the previous and again increases in height. The height of this duct is 5'4". This portion runs along the northern wall of the main block portion. The last duct is actually two ducts. It is connected to the previous portion. Again, it increases in height from 5'4" to 6'9" and follows along the eastern wing portion, until it comes to the eastern wall of the Greenhouse. At this point, the flue network snakes back into the second portion of this duct. This portion increases in height once more and the flue network heads back to the west and ends at the portion of the Greenhouse where the eastern wing intersects with the main block. This final portion's end is at the chimney which allows the heat and smoke escape out of the building and away from the plants entirely.

The ducts that were created serve a significant function. The increase in height allows the heat within the hypocaust system to rise. This in turn increases the draft. Since heat naturally wants to rise if it is allowed, the gradual increase in height is more conducive in generating a strong enough pull to get the heat through the entire length of the flue network. With the combination of the chimney pulling the heat and smoke through the flue network and the channels which allow the heat to rise, an effective heating system is created.

It is all of these significant and unique aspects of the Wye Greenhouse, the Lloyd family and the individuals who lived and worked on the property, that warrant further investigation. The information that can be gained from the historic record is substantial; however, there are many gaps. Specific information regarding use, occupation and

development over the centuries is still unknown. These questions are the basis for the work we have done and purpose to do within this report.

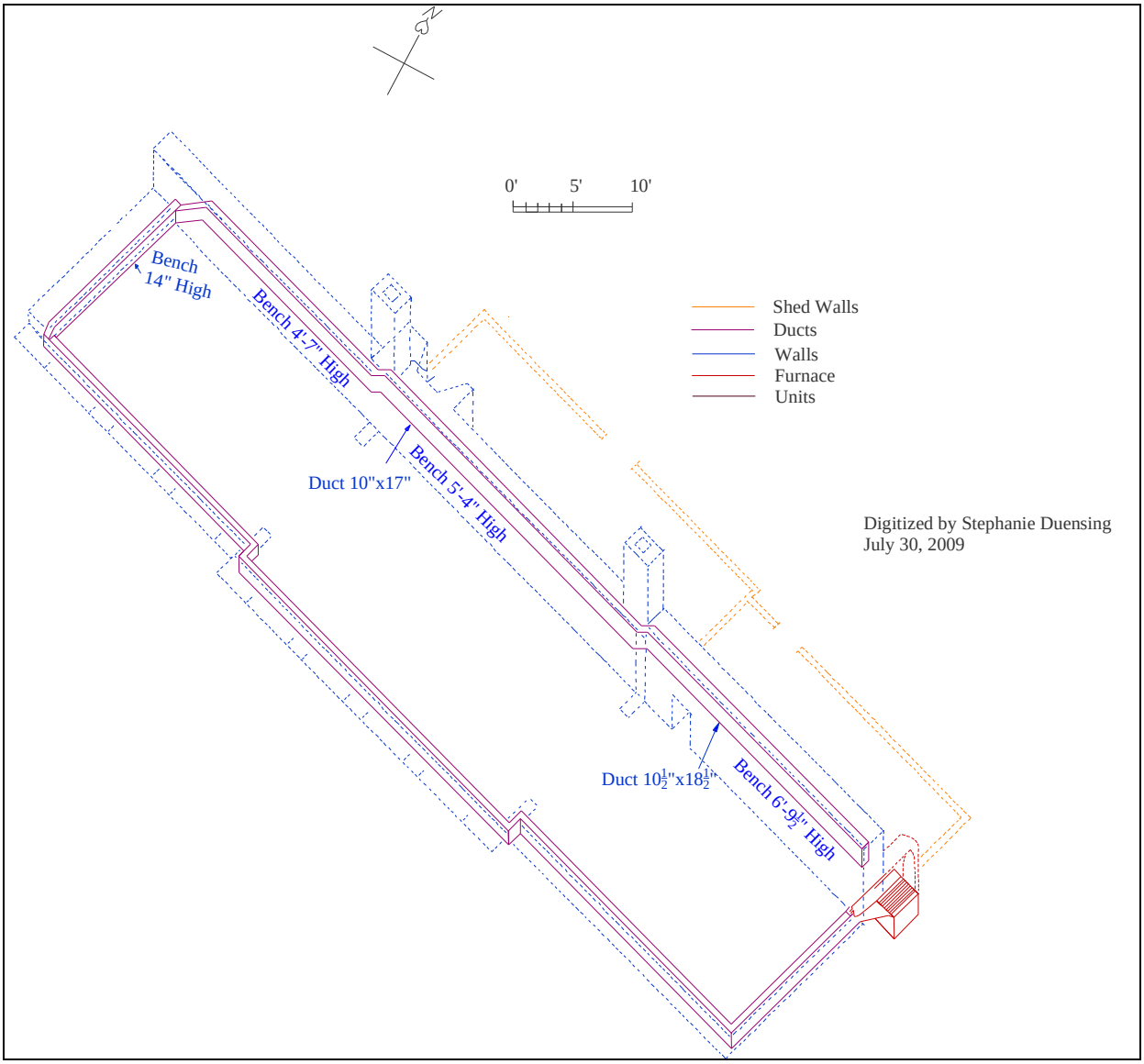

Figure 10 – Hypocaust – This image shows the height of the ducts as described in above section.

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Chapter 4

Archaeology

Archaeological testing was conducted at the Wye Greenhouse (18TA314) from July 2, 2009 to July 20, 2009, as a continuation of Phase II investigations in preparation for potential construction activities to stabilize the Greenhouse's foundation. The purpose of these investigations is to evaluate the potential impact of ground-disturbing construction work to historically significant intact archaeological resources. A total of 3 archaeological test units were located within the Greenhouse's interior room in the course of this phase of testing. This strategy is informed by a series of research questions fully outlined in the Research Design and Methodology chapter of this report. In essence, the archaeological research design devised for this project was based on a two part research strategy. The first and overarching research question concerned the presence and integrity of intact archaeological deposits within the main rooms of the Greenhouse. In our analysis of the material, the historical and architectural rarity of the 18th century Wye Greenhouse, and its historical value as the only existing 18th century greenhouse in the United States, was our priority. This research objective sought to identify intact archaeological and paleoethnobotanical deposits, and to evaluate the research potential of any archaeological resources that may be destroyed as a consequence of prospective construction activities. This research strategy was devised to both minimize the impact of planned architectural preservation activities on archaeological resources, and to evaluate the historical potential of any existing archaeological and botanical resources.

The second part of this two part research strategy focused on refining the knowledge of the Greenhouse and its historical, social, and cultural significance. Research objectives identified in this section of the research strategy focused on four primary questions:

1. What was the initial use and design of the first Wye Greenhouse?

2. Was there a change in use when the building sequence of the current Greenhouse wings and associated shed additions were completed?

3. Are preserved botanical remains present in the slave quarter addition, and if so, how do these compare with archaeologically preserved material from the south room of the Greenhouse?

4. How did the social uses and meanings associated with the Greenhouse change through time?

Previous studies of the Wye Greenhouse by Christopher Weeks (1984) and Henry Chandlee Forman (1963) have focused on its construction techniques and historical context within the discipline of architectural history. While many of these studies are important in the following interpretations, the archaeology of the Wye Greenhouse seeks to be more anthropologically inclusive, both in terms of the history of the building itself, as well as the cultural use of the building through time.

The results and interpretations of the Wye Greenhouse archaeological testing are presented in the following sections.

Archaeological Integrity

Archaeological testing has shown unequivocally that the area within the interior of the Wye Greenhouse has a very high degree of archaeological integrity. It was a concern initially that rodents, 20th century use, and preservation efforts associated with the installation of the gravel drain surrounding the perimeter of the Greenhouse during the 1980s, could have disturbed intact archaeological deposits to some extent. Intact archaeology was found in each of the three units excavated. Stratigraphic layers and features uncovered in each of the test units showed that the archaeological record within the Greenhouse is quite significant and has the distinct potential to lead to much better understanding of the changes of the Greenhouse's use and architectural design, as well as the social uses of the Greenhouse from the 18th through the 20th century.

Two of the three sections of the current Greenhouse were tested in the course of this project: the original center block and the west wing. In addition, samples were taken from the 2008 test unit 3, on the interior of the northern Shed/Slave Quarter. A summary of the location and archaeological integrity of the three test units is as follows.

Test Unit 1

This test unit was placed in such a way as to avoid disturbing intact hypocaust channels and tile pavement, while establishing whether there is intact stratigraphy in the central area of the south room of the Greenhouse. The datum for Test Unit 1 (southwest corner) was located 5 ft west and 7 ft north in reference to the southeast corner of the main block. Test Unit 1 measures 1 x 1 ft. We began excavation by removing the current layer of gravel and soil used as the walking surface today. Immediately under this first 0.1 ft level, we discovered from four to five thin, highly compressed layers contained within the next 0.3 ft of soil. These thin deposits, or microstrata, are common attributes of natural windborne deposits and the slow deposition of material during day-to-day activity and use. These layers together represent the modern phase of use between the turn of the 19th century until the middle of the 20th century (Figure 11).

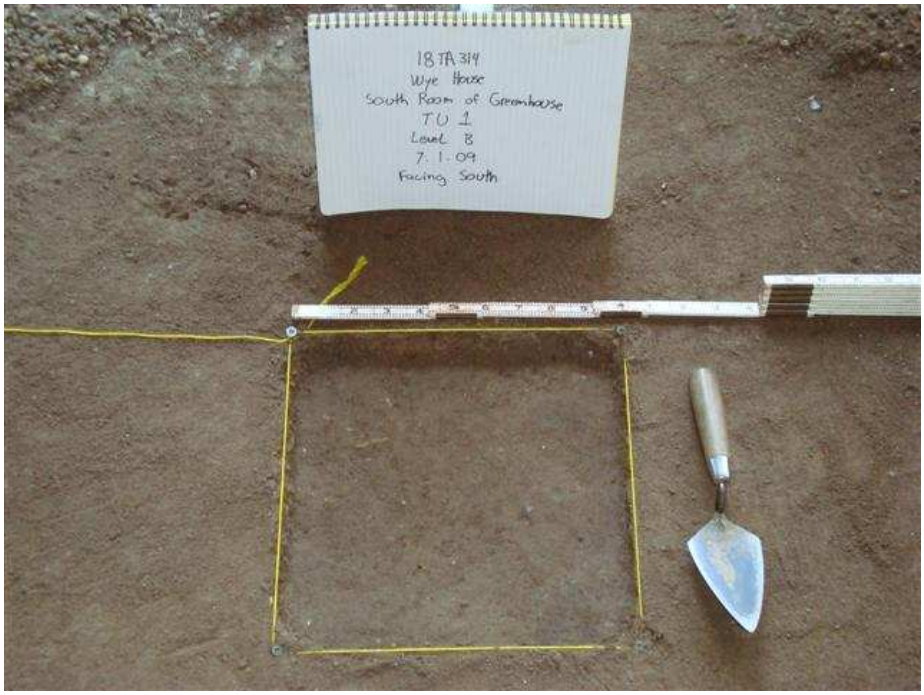


Figure 11 - (Test Unit 1) – Top of Excavation - Opening levels of Test Unit 1. There were four highly compressed levels within the first 0.3 ft of TU 1. Photo by Stephanie Duensing

The third stratum was a 1.25 ft deposit of clay fill (Figure 12). This fill lay over the original surface level of the Greenhouse, which was the fourth stratum. It was evident that this was the original surface due to the color and texture of the soil and the presence of architectural debris. This debris and other architectural refuse was scattered across the level in a manner characteristic of surface scatter. Below this surface was the fifth stratum, sterile of cultural material but contextually consistent in depth and attributes of the prehistoric stratum that has been found across the entire property. The sixth and final stratum was the sterile subsoil, which was sterile of all cultural material in all units.

Figure 12 - (Test Unit 1) –Top of clay fill – The clay fill was placed into the interior of the Greenhouse to raise the grade to match the level of the hypocaust. Photo by Stephanie Duensing

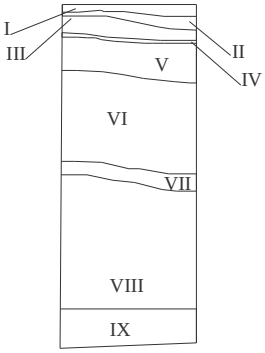
The artifacts that were collected from this unit were few (Table 1). They ultimately were not able to assist with the interpretation due to the nature of the items. Wood and faunal material were the most abundant items recovered totaling 82% of all recovered materials. However, this is 10 out of a total of 11 artifacts. This lack of material indicates that the area is in use but not highly developed at the time of initial use.

This test pit was successful in demonstrating the presence of intact stratigraphy (Figure 13). In addition, with the guidance from Dr. Heather Trigg, University of Massachusetts Boston, we were able to collect soil samples to be processed to see if fossil pollen was also preserved within the intact strata. Preliminary results presented us with a strong preservation of fossil pollen and gave us the information needed to proceed with archaeological excavations.

Table 1 - Unit 1 Artifact Summary

Name	A	Total	Percent
Ceramics			
Terracotta	0	0	**0.00**
Glass			**0.00**
Window (Flat)	1	1	**9.09**
Bottle	0	0	**0.00**
Architectural Material			**0.00**
Bricks	1	1	**9.09**
Nails	0	0	**0.00**
Mortar/Plaster	0	0	**0.00**
Wood	3	3	**27.27**
Faunal Material			**0.00**
Bones	6	6	**54.55**
Shells	1	1	**9.09**
Domestic Artifacts			**0.00**
Metal	0	0	**0.00**
Other	0	0	**0.00**
Total	**11**	**11**	**100.00**

Profile of North Wall



18TA314
Wye Greenhouse
Test Unit 1
7.17.09
JB, SD

Digitized by Stephanie Duensing
July 25, 2009

Level A	I.	10YR 5/4 Yellowish Brown - Silty Sandy Gravel
Level B	II.	10YR 4/3 Brown - Silty Loam
Level C	III.	10 YR 4/3 Brown - Silty Loam 10YR 6/6 Brownish Yellow - Clay
Level D	IV.	10YR 4/3 Brown - Silty Loam
Level E	V.	10YR 5/8 Yellowish Brown - Clay
Level F/F2	VI.	10YR5/8 Yellowish Brown - Clay (80%) 10YR 2/2 Very Dark Brown - Loam (20%)
Level G	VII.	10YR 2/2 Very Dark Brown - Loam w/ brick & mortar inclusions (40%)
Level G2	VIII.	10YR 2/2 Very Dark Brown - Loam
Level I	IX.	2.5Y 5/4 Light Olive Brown - Clay

Level H - This level was a transition between Levels G2 & Level I. The distinction was negligable in the final profile so it was omitted.

Figure 13 - (Test Unit 1) – Profile of the North Wall - Test Unit 1 was excavated to discover the intact stratigraphy of the interior of the Wye Greenhouse.

Unit 8

This test unit was placed so part of Level A was exposed to the moss that was growing on portions of the current floor of the Greenhouse in an attempt to see if the growth pattern was related to a presence/absence of material underground (Figure 14). The northwest corner of Unit 8, which also served as the datum for this unit, was placed 10 ft north of the interior south wall, and 7 ft east of the interior west wall (above the hypocaust). Unit 8 was 3 x3 ft.

Figure 14 - (Unit 8) – Top of excavation – This unit was excavated in this location to figure out the stratigraphy of the western wing. Photo by John Blair

Unit 8 was effectively broken up into a northern half, and a southern half. The southern portion of the unit was almost identical to TU1. It was made up of many of the same layers, including the modern 1785 wing addition, and fill layers. The surface found under the fill was a loam layer similar to the original surface found in TU1. Lastly, the sub soil was found at a slightly higher depth, but with no sign of cultural disturbance. The northern portion of the unit of was almost completely occupied by Feature 19. This feature was deposited after the destruction of a preexisting structural element that consisted of brick and mortar. It was a stratified feature lined with a mortar bottom. It is believed that this fill episode served the same function as the clay fill in unit 8. Level A was the modern walking level and very worn down from years of use. A couple of pieces of flat glass were found, but nothing more. Level B was a mortar and gravel layer that had terra cotta pot sherds, rusted wire nails and flat glass. None of these items were able to provide us with associated dates for the level, but it is known to have been the surface between 1880 and the mid 20th century based on its situation between Level A (20th century – present surface) and Level C (contained a wire nail dating to 1880). It was about 0.15 ft deep.

At this time we began to focus on Feature 19. This feature was distinguished by a high concentration of mortar and brick pieces. After we began excavation we quickly saw that the feature boundary to the north was undercutting the area originally determined to be the northern portion of Level C. We named this Feature 19-A and removed it separately. Feature 19 contained three distinct layers or strata, and each was excavated separately. The uppermost layer, Feature 19-A, was only 0.05-0.1 ft deep on the west and east, but 0.5 ft in the middle, giving it a bowl shape (Figure 15).

Figure 15 - (Unit 8) – Feature 19 – Feature 19 was a stratified brick and mortar fill feature. It was lined on the bottom with a thin layer of mortar and was capped with another layer of mortar. This fill was about two feet deep. The "bowl" shaped depression referred to above can be seen in the northeast portion of the wall. Photo by John Blair

Feature 19-B was found to extend under all of Feature 19-A. Feature 19-B was distinguished by large amounts of brick, mortar, white plaster, and a cream-colored mortar-like material. The same mortar found in Feature 19-B was also found in exterior excavations during the fall of 2008 (Blair, et al. 2009). We removed the debris until we discovered another level change within the feature. This level change was distinguished by a high content of dark brown loam. We called this Feature 19-C and continued to remove it. This new level within Feature 19 containing the loam occurred at almost the exact depth as the buried sterile surface in Test Unit 1, located in the main block of the Greenhouse. It is likely that when the deposit was initially filled, the surface was at that same depth. At the bottom of Feature 19, we hit a thin layer of mortar or plaster that was possibly some sort of lining. It appeared most evident in the profile, as during excavation it seemed to simply be the bottom of the deposit. After the complete removal of Feature 19, we were able to return to the excavation of the rest of the unit. Level C was gravel

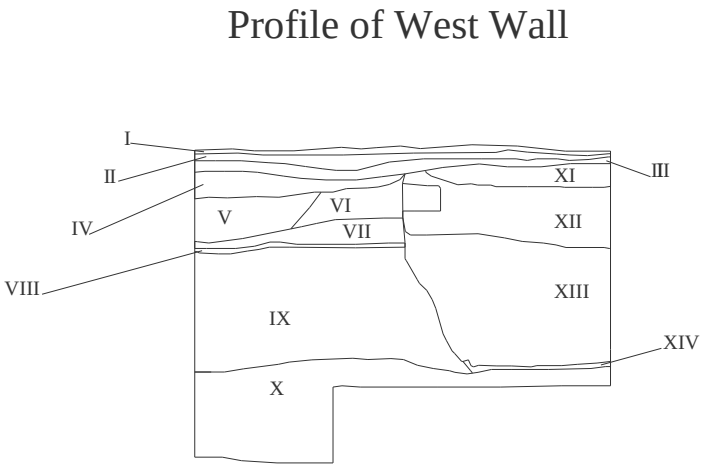
and debris in silty sand. It accurately reflected the other levels found in Unit 9 and TU 1 in the main block (2009). It was approximately 0.1 ft deep and contained flat glass and a wire nail, which have associated dates of 1880 or later.

The remainder of this unit appeared to be irregular in association with the two units dug in the main block of the Greenhouse. The following layers were shallower and appeared to have been disturbed. Levels D – G were all stratified layers cut by Feature 22 and underlain by Feature 23, which will be discussed below. They were alternating levels of clay (Levels D and F) and loam (Levels E and G), approximately 0.1 ft deep in most parts with small to moderate sized brick and mortar fragments pressed into them. The levels were irregular and appeared to be layering of a hand-shoveled deposit with alternating dirt sources – in this case, one dirt source being clay and one being loam. Feature 22 was composed of loam and debris cutting through levels D, E, F, and G. This loam was very similar to the loam in Levels E and G. It is possible that this too was simply an accumulation of fill that the other levels surrounded, considering that Levels D-G appear to have been fill deposits.

Feature 23 was found running under all of these levels and Feature 22, at an average depth of 1.0 ft. It was a thin, level, brick surface (Figure 16). This brick surface was badly deteriorated as a result of moisture. The surface was level and extended the entire length of Unit 8. There was every expectation that the feature would continue and reveal a structural wall or foundation, however, this was not the case. The feature was, in all, only 0.02 ft thick. This was not initially expected, but it appears to have been a tile floor or surface. The tiles, which would have originally been the same general thickness of the current pavers seen in the Greenhouse, appeared to have been dissolved beyond their original size from age and moisture. What we discovered was the compounded remains.

Figure 16 (Unit 8) – Feature 23 - Feature 23 was a thin brick surface. The bricks were so badly deteriorated that none of the brick were articulated. Photo by Stephanie Duensing

Level H appears to be the sterile, buried surface which at one time would have been the top soil. This loam contains no cultural material and is found throughout the site as a culturally-sterile level on top of subsoil. The difference here was that this level was more mottled with the natural subsoil-clay, and was much closer to the current surface than the units just 15 ft to the east. The disturbance in the rest of the unit could be the reason for this discrepancy. It may be redeposited from the excavation of Feature 19 on its northern edge. The last layer was Level I, the sterile clay subsoil. This level is virtually identical to all the other sterile subsoil levels in the exterior and interior units excavated to date. The base of this excavation was at an average depth of 1.8 ft with a director's window cut into the southwest corner to a depth of 2.2 ft with no cultural material found (Figure 17).



Level A	I.	10YR 5/4 Yellowish Brown - Silty Sand
Level B	II.	10YR 4/4 Dark Yellowish Brown - Silty Sand
Level C	III.	10 YR 3/3 Dark Brown - Silty Clay w/ 50% Gravel
Level D	IV.	10YR 3/4 Dark Yellowish Brown - Silty Clay
Level E/	V.	10YR 3/3 Dark Brown - Silty Loam
Feature 22		10YR 6/8 Brownish Yellow - Clay (25%)
Level F	VI.	10YR 6/8 Brownish Yellow - Clay (25%)
		10YR 3/4 Dark Yellowish Brown - Silty Clay
Level G	VII.	10YR 3/2 Very Dark Grayish Brown - Silty Clay w/ 50% Mortar
Feature 23	VIII.	Brick Band (Feature 23)
Level H	IX.	10YR 2/2 Very Dark Brown - Loam (90%)
		10YR 6/8 Brownish Yellow - Clay (10%)
Level I	X.	2.5Y 5/4 Light Olive Brown - Clay
Feature 19-A	XI.	f.19-a - 10YR 4/2 Dark Grayish Brown - Silty Sand w/ 50% Mortar
Feature 19-B	XII.	f.19-b - Brick and Mortar - 100%
Feature 19-C	XIII.	f.19-c - 10YR 3/4 Dark Yellowish Brown - Loam w/ 50% Mortar
	XIV.	Mortar

Mortar lined the base of Feature 19 and was excavated as Feature 19-C

Figure 17 (Unit 8) – Profile of the West Wall - Feature 19 (XI, XII, XIII) is the brick and mortar feature. This feature raised the grade of the interior room of the Greenhouse and was most likely the destruction from a previous structure.

Table 2 - Unit 8 Artifact Summary

Name	A	B	C	D	E	F	G	H	F19B	F19C	F22	F23	Total	Percent
Ceramics														
Terracotta	0	2	5	0	0	0	0	4	2	1	0	0	**14**	**12.50**
Pre-Historic	0	0	0	0	0	0	0	0	1	0	0	0	**1**	**0.89**
Glass														
Window (Flat)	1	7	1	0	0	0	0		0	2	0	0	**11**	**9.82**
Bottle	0	2	0	0	0	0	0		1	1	0	0	**4**	**3.57**
Architectural Material														
Bricks	0	0	1	0	0	0	0	2	0	0	9	1	**13**	**11.61**
Nails	0	10	1	0	0	0	0	2	0	0	0	0	**13**	**11.61**
Mortar/Plaster	0	7	0	0	0	0	0	1	0	0	7	0	**15**	**13.39**
Wood	0	0	7	0	0	0	0		0	4	0	2	**13**	**11.61**
Faunal Material														
Bones	0	1	0	0	0	0	0	0	1	0	0	0	**2**	**1.79**
Shells	0	1	3	0	0	0	0	15	1	4	0	0	**24**	**21.43**
Seeds and Nuts	0	0	2	0	0	0	0	0	0	0	0	0	**2**	**1.79**
Domestic Artifacts														
Metal	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.00**
Other	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.00**
Total	**1**	**30**	**20**	**0**	**0**	**0**	**0**	**24**	**6**	**12**	**16**	**3**	**112**	**100.00**

Unit 9

The datum for Test Unit 9 (southeast corner) was placed 10 ft west and three feet south of the northeast truncated wall in the Greenhouse's main block. It was a 3 x 3 ft unit, abutted against the northern wall running parallel and perpendicular to it (Figure 18). This unit was placed here on the advisement of Dr. Heather Trigg from Fiske Center in an attempt to see if a higher density of pollen or botanical remains survived near the wall than had in the center of the room.

Figure 18 (Unit 9) – Top of Excavation - Unit 9 was placed against the northern wall of the South room for two reasons. One, so a builders' trench for the hypocaust could be excavated. Two, pollen gathers in greater numbers against walls. Photo by John Blair

Level A was the modern walking surface with a high percentage of pea gravel. It contained modern trash and was not sampled. After the removal of this very thin layer, we were able to distinguish what appeared to be a builder's trench along the northern edge against the wall. This was labeled Feature 20 and was removed as the builders' trench for the hypocaust, not the main structural wall. It extended 0.5 ft south and all the way across the unit. Almost immediately we noticed that the soil smelled strongly of petroleum and was slightly darker in color than Level A. After about 0.5 ft we came to a slight soil change which we called Feature 20-B. This second portion of builder's trench begins at the brick footers jutting out approximately 0.1 ft south from the foundation wall. Excavation was halted at this point due to lack of light which was resulting in poor visibility. Once excavation was able to continue, we discovered that the trench stopped before the wall stopped around the same depth that excavation was halted earlier due to poor visibility.

We continued with the excavation of Level B, which was hard-packed clay. This layer was thicker to the north and gradually became much thinner as it extended south. We found what appears to be a very thin band of this level within Level C in TU1, but as it was so thin, it was not assigned its own level information. Level C was hard, brown, gravel-packed soil. It appears to be the same as Level A from TU1 – a modern gravel surface. Level D was a debris layer with clay mottling. This surface would have been the exposed surface once the wings and hypocaust were added on to the Greenhouse between 1785 and 1790.

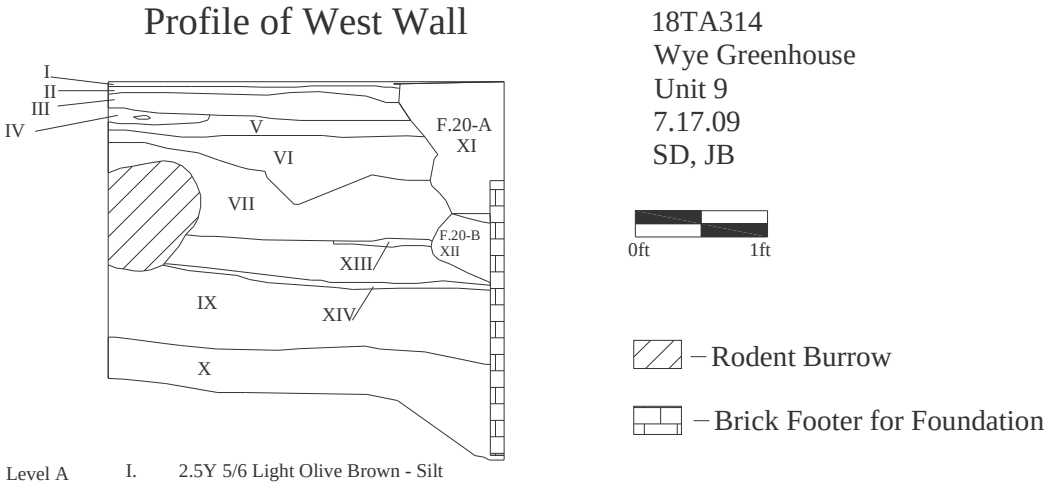
Under the surface level from the redesign of the Greenhouse, we again ran into the fill layer from when they added the buried hypocaust to the structure. This level also showed evidence of rodent disturbance, but the damage was far more extensive. The clay fill layer was frequently disrupted by voids and collapsed burrows (Figure 19). Approximately 40% of the fill layer was burrowing tunnels or voids in the level. As it happens, the rodents seem to have remained confined to the clay fill, as the burrows do not significantly intrude into the upper or lower levels. The rodent tunnels stopped right on top of Level F, the original surface for main block. This layer was a dark loam that contained architectural debris and had yellow clay mottled throughout the layer. This would have been the surface that was used once the construction of the main block of the Greenhouse was complete and the one in which evidence of redesign construction would be present.

Figure 19 (Unit 9) – South Wall Profile – The south wall profile exposes the amount of disturbance cause by groundhogs. This disturbance was only found in the clay fill layer, and only in Unit 9. Photo by John Blair

Level G is thought to have been the construction layer of the main block of the Greenhouse. There was a post hole/mold (Feature 21) found in this layer along with mortar and brick debris. The mottling disappeared and the debris was more concentrated. Presumably, this was either from scaffolding needed in the construction of the main block of the Greenhouse or from interior platforms present in the original greenhouse design. The post mold was about .6' in diameter and appeared that the post had been removed. This is thought because clay and loam had filled in the mold where the decayed post would have been otherwise.

Level H appears to be the sterile, buried A. This loam does not have any cultural material in it and is found throughout the site as a sterile level on top of subsoil. This level is an accurate reflection of what we have found in other units around the property. The last layer was Level I, the sterile subsoil. This level is virtually identical to all the other sterile subsoil levels in the exterior and interior units excavated to date. The base of this excavation was at an average depth of 2.5 ft with no cultural material found. The base of the foundation wall was found 1.2 ft below the base of the last portion of the builder's trench (Feature 21) and imbedded approximately 0.4 ft into sterile subsoil. There was no other builder's trench found and none showed up in the profile (Figure 20).

Unit 9 is representative of the stratigraphy that can be found on the interior rooms of the Wye Greenhouse. Modern day pea gravel sits on the very top. The layers that were associated with the additions to the Greenhouse were found only 0.3 ft below the current surface. After this, 1.25 ft of clay fill was found. This fill layer was on top of the original Greenhouse surface. This fill was placed to raise the grade of the entire Greenhouse. The original surface of the Greenhouse was only 0.1 ft deep. The original surface was built on the 1.5 ft of loam that is unique to Wye House. This loam sits on top of the natural sub soil, which is hard compact clay, with no cultural remains.



Level A	I.	2.5Y 5/6 Light Olive Brown - Silt
Level B	II.	10YR 5/6 Yellowish Brown - Clay
Level C	III.	10YR 5/4 Yellowish Brown - Silty Sandy Gravel
Level D	IV.	10 YR 4/3 Brown - Silty Loam
Level D	V.	10YR 5/3 Brown - Clay Loam
Level D	VI.	10YR 4/3 Brown - Silty Clay
		10YR 6/6 Brownish Yellow - Clay
Level E	VII.	10YR 5/8 Yellowish Brown - Clay
Level F	VIII.	10YR 2/2 Very Dark Brown - Loam (50%)
		10YR 6/8 Brownish Yellow - Clay (50%)
Level G	IX.	10YR 2/2 Very Dark Brown - Loam
Level H	X.	2.5Y 5/4 Light Olive Brown - Clay
Fearture 20-A	XI.	F.20-a - 10 YR 4/2 Brown - Sandy Silt
Feature 20-B	XII.	F.20-b - 10 YR 3/2 Very Dark Grayish Brown - Sandy Silt Loam
	XIII.	Mortar
	XIV.	Mortar

Figure 20 (Unit 9) – Profile of the West Wall – Feature 18 (XI and XII) is the builders' trench to the one of the hypocaust ducts.

Table 3 - Unit 9 Artifact Summary

Name	A	B	C	D	E	F	G	F20A	F20B	Total	Percent
Ceramics											
Terracotta	0	1	0	4	5	0	0	3	0	**13**	**7.14**
Glass											
Window (Flat)	4	8	5	18	11	0	0	5	0	**51**	**28.02**
Bottle	0	0	2	0	0	0	0	0	0	**2**	**1.10**
Architectural Material											
Bricks	0	0	0	0	2	5	2	2	2	**13**	**7.14**
Nails	2	1	3	1	1	0	0	3	0	**11**	**6.04**
Mortar/Plaster	0	0	0	0	0	10	1	7	3	**21**	**11.54**
Wood	0	12	2	0	4	0	0	11	2	**31**	**17.03**
Faunal Material											
Bones	0	1	0	0	0	0	1	0	0	**2**	**1.10**
Shells	0	3	0	0	3	0	0	1	0	**7**	**3.85**
Seeds and Nuts	2	0	0	0	0	0	0	0	0	**2**	**1.10**
Domestic Artifacts											
Metal	0	0	0	0	1	0	0	12	7	**20**	**10.99**
Other	0	0	6	1	1	0	0	1	0	**9**	**4.95**
Total	**8**	**26**	**18**	**24**	**28**	**15**	**4**	**45**	**14**	**182**	**100.00**

Conclusions

Previous archaeological excavations, reported in *Phase II Archaeological Testing on the Wye Greenhouse (18TA314), Talbot County, Maryland, 2008,* (Blair, et al. 2009), greatly increased our understanding of the historical sequence of construction and modification of the Greenhouse, and the different phases of its construction. Archaeological evidence uncovered in the course of the excavations in October and November of 2008 suggested an original date of construction of 1775 for the main block of the Greenhouse. In addition, archaeological evidence suggested an earlier, or first, Greenhouse with a different design from the Greenhouse that is currently standing. Architectural features uncovered corresponding to the first phase of Greenhouse construction were located in Test Unit 3, Test Unit 4, Test Unit 5, Test Unit 6, and Test Unit 7 (see Figure 21 below; also Figure 4.1 in Blair, et al. 2009). Layers and features related to the first phase of Greenhouse construction included scaffolding postholes, construction and occupation surfaces, builder's trenches on the north side of the Greenhouse, and two buried/partially destroyed walls. One wall was located on the north side of the current Greenhouse's west wing, and the other on the south façade of the current Greenhouse's west wing. Taken together these archaeological features appear to challenge the mid-18th century date of construction for the original Greenhouse (for detailed reporting of the 2008 findings, see Chapter 5 from *Phase II Archaeological Testing on the Wye Greenhouse (18TA314), Talbot County, Maryland, 2008*).

One of the questions remaining was when the extant hypocaust system within the Greenhouse was constructed. This aspect of the architectural history was unknown from both the architectural assessments and the exterior archaeological investigations previously performed. In the course our excavations in July 2009, we were able to determine positively that the hypocaust was not included in the original garden structure built in 1775, but was added during an extensive redesign of the structure.

Hypocaust archaeology

While the investigations preformed in the fall of 2008 confirmed references made in the Lloyd family papers hinting that the wings were added in 1784 (Alivizatos, 1999), the knowledge that the hypocaust was installed during that phase of construction is new. This means that the original, main block of the Greenhouse was constructed in 1775, and less than ten years later the wings and heating system were added. The archaeology of the interior rooms of the Wye Greenhouse has mainly demonstrated three things. First, the stratigraphy on the interior of the Greenhouse is intact. Second, the original floor or ground surface within the Greenhouse occurs 1.5 ft below the current surface. Third, when the hypocaust and wings were added, fill was deposited inside the entire Greenhouse to raise the grade by 1.25 ft.

The first discovery found during the excavations of the interior rooms of the Greenhouse is the fact that the stratigraphy is intact. This means that the natural layers of soil have not been disturbed. Having intact stratigraphy also means having intact archaeological deposits. The original floor or ground surface for the interior of the Greenhouse was discovered in test units 1 and 9. This is the second discovery from the project. The original surface was discovered 1.5 ft below the current surface. Scattered artifacts occur on top of this surface, mostly brick fragments, oyster shell, and mortar. These pieces were all very small. No diagnostic artifacts were recovered from this surface that would allow it to be dated precisely. The date that has been assigned to the construction of the main block of the Greenhouse is 1775. This date was assigned to the Greenhouse during the excavation that took place in 2008. There was no new evidence that either contradicts or confirms this date.

This same surface was not found in test unit 8. Since test unit 8 was placed in the western wing of the Greenhouse, it is located in an addition to the Greenhouse that did not exist before 1785. Therefore the absence of this surface supports the interpretation that the Greenhouse was constructed in phases. The 1785 date was also determined during the 2008 excavations, and has not changed as a result of the current excavations.

The final discovery was the fact then when the hypocaust and wings were added to the Greenhouse, the interior floor grade of the entire Greenhouse was raised by 1.25 ft. When the hypocaust was built, it was built on top of the ground. Once it was completed, the entire grade of the Greenhouse was raised to match the elevation of the top of the hypocaust. In test units 1 and 9, placing 1.25 ft of clay fill into the interior of the Greenhouse raised the grade almost to its current level. This clay fill layer was found at the same elevations in both the test units. This layer was placed directly on top the original surface of the Greenhouse, found in test units 1 and 9.

A similar fill episode was found in test unit 8. In the southern half of the test unit the fill layer was a mixture of the same clay intermixed with loam. There were four of these alternating clay and loam layers in the following sequence: loam, clay, loam, and finally clay. In the northern portion of the test unit, this fill was made of rubble, which consisted of brick and mortar.

There are two reasons why it is believed that the fill layers in these units were used to raise the grade to match the hypocaust, as opposed to the reverse. These reasons are first, there is no indication that the hypocaust was built into the ground, and second, the access door entering the Greenhouse from the northeast shed was constructed as a normal seven foot doorway; its current reduced height resulted from the floor being raised at the time the hypocaust was installed.

Early Garden Pavilion

In addition to the redesign of the Greenhouse in 1784, archaeological evidence uncovered in 2008 suggested a possibility for a much different, earlier, or first, garden

Wye Orangery Floor Plan

Archaeology in Annapolis: Fall 2008 & Summer 2009

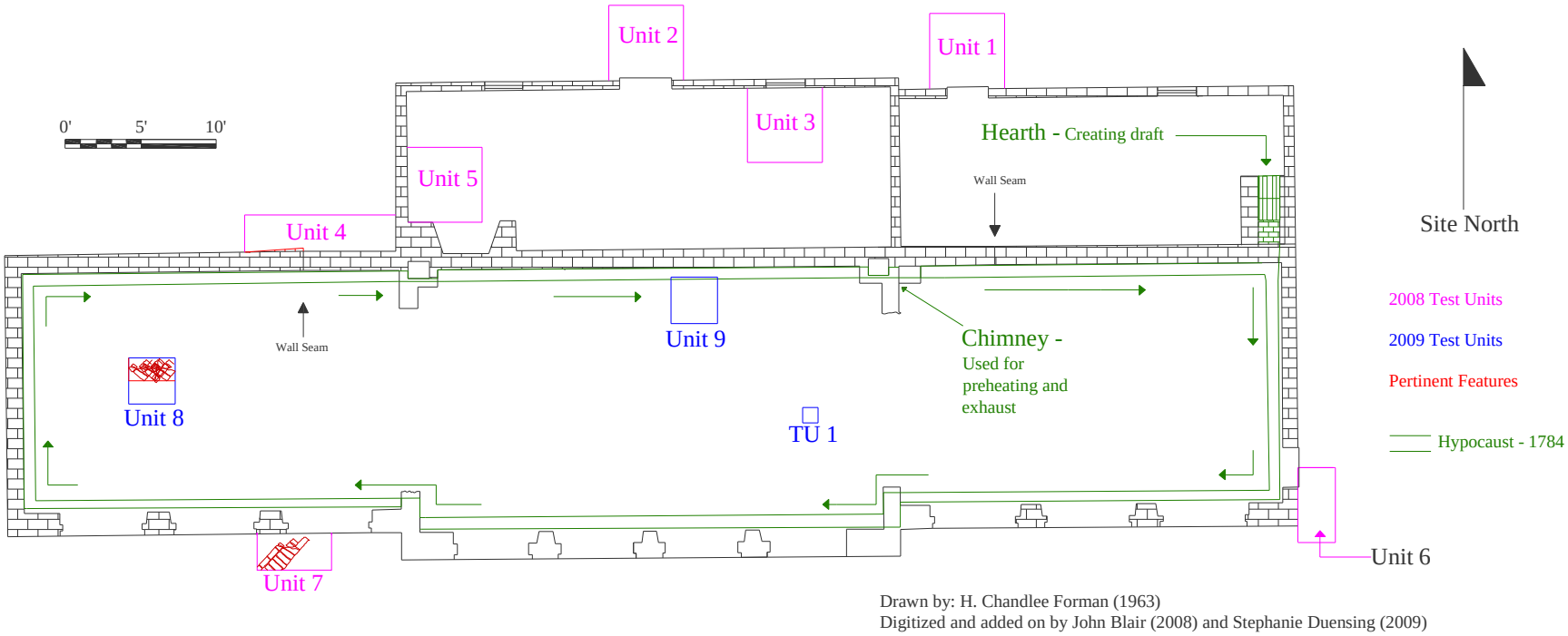


Figure 21 - (Greenhouse) - Test units 2008/2009 Containing Earlier Material

structure where the Greenhouse is currently standing. Architectural features uncovered potentially date this structure to the 1760s, much earlier than even the early construction phase that produced the main block of the current Greenhouse. Material dating this structure to the mid-18th century was located in Test Unit 7 in 2008 [1](see Figure 21). Layers and features related to the earlier structure included construction and occupation surfaces, builder's trenches on the north and south side of the Greenhouse, and two buried/partially destroyed walls. One wall was located on the north side of the current Greenhouse's west wing, and the other on the south façade of the current Greenhouse's west wing. Interpreted together with the other material associated with the first phase of construction on the current Greenhouse c. 1775, these archaeological features appear to be mixed contexts. This means that the materials found within or around these features up until now has been older than the dates assigned to the deposits. The deposits were given these dates due to records of events and associated features thought to correspond to the material. In order to develop a hypothesis challenging written record, it is necessary to have enough archaeological data to support your claim. Until recent excavations we have not had enough data to effectively support an argument for a separate structure. However, possible further evidence for a preexisting structure has been recovered throughout this current investigation.

The two truncated walls discovered in November of 2008 had very low artifact yield associated with them. The wall located on the north side of the current Greenhouse's west wing (Test Unit 4) had no diagnostic material recovered with it at all. The only datable artifact was retrieved from the builder's trench for the wall found on the south façade of the current Greenhouse's west wing (Test Unit 7). This was a sherd of creamware which has TPQ of 1761. However, these new excavations further support evidence for a developing interpretation indicating that there may have been a garden pavilion or some other structural garden décor prior to the construction of the current Greenhouse structure.

As discussed in the 2009 report by Blair, Cochran and Duensing, documentary evidence strongly supports a redesign of the entire Wye Plantation beginning in the middle of the 1780s. The 1783 Maryland Tax assessment lists the Lloyd property holdings as having a Greenhouse, and a brick dwelling, likely the Georgian main house (Weeks 1984). Beginning in 1784, documentary records detail the initiation of a substantial redesign of the plantation. Entries in Edward Lloyd IV's account books from the 1780s detail construction efforts, not only related to the construction of the present Wye House, but also to a number of surrounding service buildings, including an ice house, store houses, a smoke house etc (Alivizatos 1999). In essence, this change in plantation layout and architectural forms represents a post-Revolution shift away from the architectural ideals of the English Georgian movement of the early and middle 18th century, toward the Palladian style of the 'New Republic.' Half cultural, half aesthetic,

[1] Archaeology in Annapolis researchers discovered a piece of creamware ceramic which was labeled and bagged, but had been stored in a different location. Due to this, it was not analyzed in the previous report written by Blair, Cochran and Duensing (*Phase II Archaeological Testing on the Wye Greenhouse (18TA314), Talbot County, Maryland, 2008).* This piece of creamware has an associated date (or TPQ) of 1761, and was removed from the builder's trench in Test Unit 7.

these efforts likely represented a way to ameliorate the trauma of revolution, and as a means of solidifying a form of identity politics (Blair, et al. 2009).

However, the references made in the historical record indicate tearing down the "Green House Shed" which would indicate only one and seems to denote a wood structure (Alivizatos 1999:255). Surely, a substantial brick wing or addition at that time would not be referred to as a shed, even if only for tax reasons. It is our current analysis of the most recent excavations on the interior of the structure (Test Unit 8) that helps us see that there is a real potential for the possibility of an entirely different structure.

In the test unit placed in the western wing addition (Unit 8 from 2009), we found substantial architectural remains underneath the wing addition's surface. The deposit was cut intentionally into the ground, forming a pit. We recovered approximately 200lbs of brick and approximately 75lbs of mortar from this 3 x 1.5 x 1.5 ft deposit, identified as Feature 19. There were no associated artifacts that were recovered with the architectural material so the deposit currently does not have a date.

Taken by itself and with the idea in mind of an association with the first phase of construction on the current Greenhouse c. 1775, this deposit becomes complicated. However, once you allow yourself to examine the information from both the fall 2008 excavations and the July 2009 excavations, a new alternate interpretation begins to develop. We have seen evidence of a preexisting structure in all of the units placed in/around the western wing addition of the current Greenhouse to date: Unit 4 (2008), Unit 7 (2008) and Unit 8 (2009). They each show evidence of being removed during the construction of the Greenhouse standing today and of a structure more substantial than a simple shed attachment flanking the 1775 Greenhouse.

Although we now have enough data to make a case for a preexisting structure, much work and research must still be executed in order to truly understand the anomalies discovered with is preliminary investigation. The primary objectives were successfully attained by establishing the presence of both intact stratigraphy and intact fossil pollen within the stratigraphy. The final report from the botanical sampling is forthcoming and will allow us to have an even greater understanding of the cultural contribution this structure has preserved beneath its floor. It is imperative that these questions continue to be investigated and explored. Without further information we cannot fully address to what extent this area is significant. The material recovered has been of great interest and value, however there is far more data that needs to be collected in order to validate and support these exciting, new, developing theories.

During our excavations we have discovered that there is far more intact below the surface than we had even hoped. At this time, there has not been enough information recovered to be able to make any clear interpretation. The material collected tells us there is a great deal of structural activity taking place in this location prior to the 1784 redesign of the building. Based on the new evidence indicating the presence of multiple structural elements that are incongruent with the structure currently standing or its former version, this activity no longer seems to make sense in association with the earlier phase of the

Greenhouse. We now have enough evidence to support a fourth, mid-18th century structure in this same location with a currently unknown function. Further archaeological investigation is required to retrieve the necessary information to formulate a proficient and intelligent interpretation of this new data.

Chapter 5

Management Recommendations

All three test units that were excavated during the Phase II archaeological testing of the interior rooms of the Wye Greenhouse (18TA314) contained archaeological deposits. The three test units have proven that the archaeology within the interior of the Wye Greenhouse is intact, and extends to a depth approximately 2.5 to 3.0 ft below the current surface. The intact archaeological deposits include the 18th century construction and redesign of the Greenhouse, the 18th and 19th century occupation and usage of the Greenhouse, as well as the modern day use of the Greenhouse.

Archaeological discoveries made during the course of this project are particularly significant in terms of social and utilitarian use of the structure. The soil matrixes have been confirmed to posses a high level of preserved fossil pollen remains. The superior levels of botanical preservation associated with this rare and significant structure make preservation measures particularly critical. The testing on the interior has shown that there is still much information to be gained archaeologically from the area. Potentially significant data relating to the use of the area prior to the current structure's construction and the evolution of use of the current structure has proven to be intact. Based on these determinations, the intact archaeology within the Wye Greenhouse should be interpreted as direct evidence for its continued inclusion on the National Register of Historic Places, under Criterion D (information potential).

Wye Greenhouse – Structure Specific Recommendations

- The paving bricks which were once used as a walkway and are original to the structure are deteriorating and breaking-up. We recommend the most immediate way to minimize further damage to the paving bricks is to minimize their use. By this we mean, not only minimize the amount of foot traffic on these paving bricks, but also to avoid carrying heavy materials such as potted plants on the brick surfaces as much as possible. The best way to preserve these paving bricks is by not using them.

- Similarly, the bricks associated with the hypocaust should not be walked on either. The bricks for the hypocaust are in a similar condition to the paving bricks. We recommend the same for the hypocaust bricks that we did for the paving bricks. The less activity these bricks are subjected to, the better they will be preserved.

- We continue to recommend the placing of gutters and downspouts as a means of mitigating water based structural damage to the Greenhouse. This is a non-invasive measure that is impermanent and easily reversed if so desired. This would alter the appearance of the Greenhouse only

slightly and it would save the foundation of the structure from further water saturation and deterioration.

Wye Greenhouse – Archaeology-Specific Recommendations

Phase II archaeological testing detailed in this report has shown that the archaeological record immediately underlying the Greenhouse's interior dirt walking surface is intact. In addition, these archaeological resources have the distinct potential to add significantly to the body of historical knowledge concerning the Greenhouse's multiple design phases, as well as knowledge concerning its social use throughout the 18th and 19th centuries. Significant archaeological deposits related to the Greenhouse's enslaved African-American inhabitants were located in the interior of the Greenhouse's north shed/slave quarter. This deposit was from an intact living surface containing paleoethnobotanical remains relating to the use of the space and what kinds of plants were being grown within the living space by the slaves. In addition, significant archaeological deposits related to the c. 1790s Lloyd family use of the Greenhouse were also found in the main room of the Greenhouse. Archaeological deposits located in the center block and to the west within the structure have provided evidence of the original c. 1770s Greenhouse design, as well as the 1784 redesign. Intact archaeological resources within the Wye Greenhouse should be read as archaeologically significant and historically valuable.

If the preceding structure specific recommendations are followed, there would be effectively two years to mitigate/sample the Greenhouse's intact archaeology to a greater extent. Strategies outlined below are recommended to gain further historical knowledge of the Greenhouse, and to provide a time frame and knowledge base from which to further diagnose structural damage to the Greenhouse as a result of standing ground water.

Greenhouse – Interior Archaeology

- Any disturbance to the intact archaeological deposits should be avoided. We recommend that the dirt floors of the interior Greenhouse be left as intact as possible. Any alterations to the interior of the Greenhouse should attempt to minimize the impact on archaeological resources.

<u>Greenhouse South Interior</u>

- We recommend placing a maximum of four more test units on the interior of the Greenhouse. The placement of these units would allow for the pursuit of further information regarding the pre-existing structure found having archaeological remnants under the current Greenhouse. This would greatly increase our understanding of the development of the land over time and how the family lived prior to the reorientation of the property.

- These units should be strategically placed in such a way as to minimize the impact on archaeological material unrelated to the pre-existing structure. The collection of paleoethnobotanical remains should continue and analysis of said remains should be mandatory in any future proposals for excavation. Provisions should be made for collection and analysis in proposed budgets and research proposals.

- There are voids under the surface of at least the main portion of the Greenhouse and the eastern wing. These voids were created by burrowing animals such as groundhogs. We recommend avoiding these areas and seeing that they are not heavily trampled. It is also recommended to avoid setting heavy objects on them for extended periods of time. This may cause sink holes potentially injuring someone and causing irrevocable damage to the integrity of the archaeology.

- Ground Penetrating Radar (GPR) can be used to discover important features buried beneath the surface without an impact on the deposits in the ground. We recommend that GPR be preformed to limit the extent of the disturbance to the intact archaeology. This is currently in the process of being scheduled but still has yet to been performed.

- Intact pollen and macro botanical remains have survived in the natural stratified levels. The preservation of these remains is essential to fully understand the use of the interior of the Greenhouse. We recommend that these intact remains are not disturbed unnecessarily. This disturbance would be caused by the alteration of the natural stratigaphy or by introducing chemicals that might contaminate/affect the deposits.

<u>North Shed/Slave Quarter</u>

- The placement of 2 additional units within the interior of the Greenhouse's north shed/slave quarter would add to interpretations developed in this report. We recommend that one unit be located near the slave quarter's hearth and another be located along the south wall. The exact location of these proposed units should be placed in consultation with Raymond Canetti. This consultation process would ensure that all parties gather relevant information concerning the Greenhouse's history and structural integrity.

Greenhouse—Exterior Archaeology

- As a general rule any significant disturbance to intact archaeological deposits should be avoided.

- The placement of 2 additional exterior units to the south and 2 exterior units to the west of the Greenhouse would add to interpretations developed in this report. In addition, the exact location of these proposed units should be placed in consultation with Raymond Canetti. This consultation process would ensure that all parties gather relevant information concerning the Greenhouse's history and structural integrity.

- Future archaeological investigations located to the south façade of the Greenhouse should follow a review of known and relevant Lloyd family historical documents. This strategy would refine research questions and inform the placement of archaeological excavation units.

- Prior to future archaeological investigations located to the south façade of the Greenhouse, a number of non-invasive research techniques may prove useful. Ground Penetrating Radar (GPR) and or a LIDAR survey of the landscape may locate below ground archaeological resources and better inform future research questions.

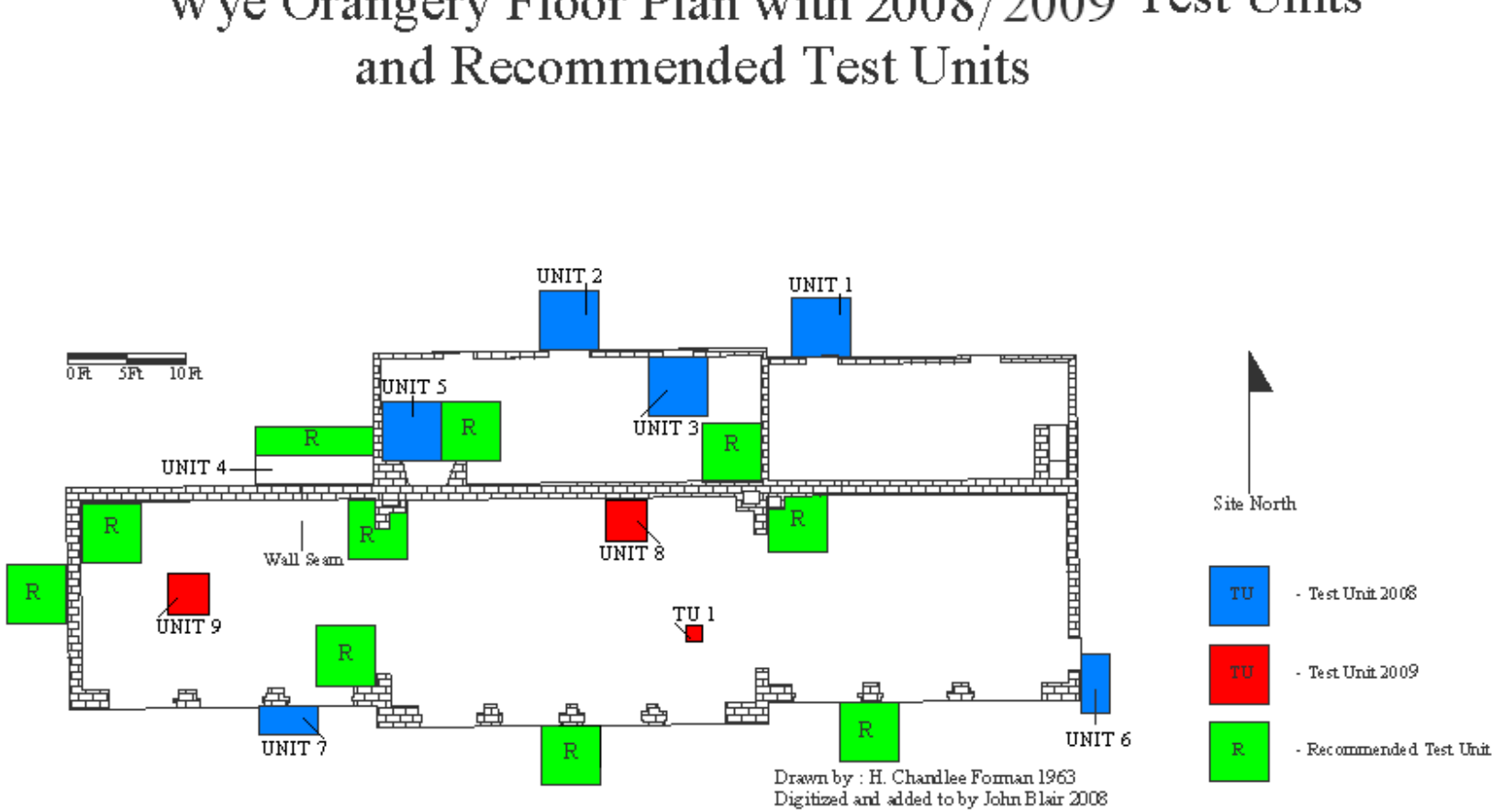


Figure 22- Greenhouse with Recommended Units for Future Work – The above map shows the location of the seven Test Units excavated in 2008, the three Test Units excavated in 2009, and also includes potential locations of test units recommend in the management recommendations.

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Appendices

Appendix A:

SAMPLE LEVEL & FEATURE FORMS

ARCHAEOLOGY IN ANNAPOLIS
LEVEL REPORT

Site:_____ **Date:**_____

Square:_____ **Excavator(s):**_____

Level:_____ _____

Recorder:_____

Opening Elevations:	NE_____	**Closing Elevations:**	NE_____
	NW_____		NW_____
Instrument Height:	C_____	**Instrument Height:**	C_____
	SE_____		SE_____
_____	SW_____	_____	SW_____

Level Definition:

Munsell: **Texture:**

Soil description (inclusions, other comments):

Associated Features and Levels:

Level above:
Level below:

Bag number:
Artifacts:

Interpretation:

Photographs:
B/W Roll/Frames:
Color Roll/Frames:

Terminus post quem:

Soil Samples:

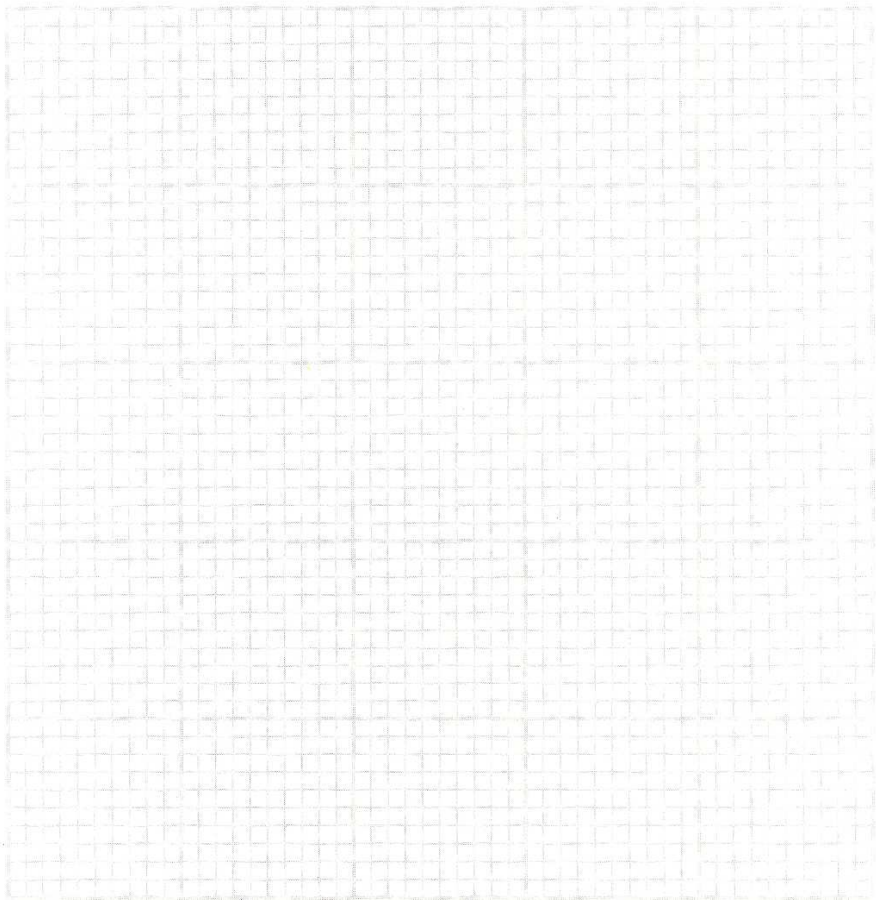
ARCHAEOLOGY IN ANNAPOLIS
LEVEL REPORT
Page 2

Site:_____ **Date:**_____

Square:_____ **Excavator(s):**_____

_____

Subject of drawing:_____



ARCHAEOLOGY IN ANNAPOLIS
FEATURE REPORT

Site:_____
Square:_____
Feature:_____
Level w/in feature:_____
Elevations (top): NE_____
NW_____
Instrument Height: C_____
SE_____
_____ SW_____

Date:_____
Excavator(s):_____
_____
Recorder:_____
Elevations (bottom): NE_____
NW_____
Instrument Height: C_____
SE_____
_____ SW_____

Feature Description:
Munsell:

Soil texture:

Soil description (inclusions, other comments):

Bag number:
Artifacts:

Interpretation:

Photographs: B/W Roll/Frames:
Color Roll/Frames:

Terminus post quem:
Cross section? Drawing #:

Appendix B:

CATALOG CODES

ARCHAEOLOGY IN ANNAPOLIS
ARTIFACT CATALOG COMPUTER CODES

(Where XX appears, substitute codes from attribute list)

CERAMICS

Earthenware 100000

Coarse Earthenware 120000
- Unglazed (describe in comments) 120001
- Aboriginal (describe in comments) 123000
- Iberian Storage Jars (1763)c.1745-1780--ext wash,int clear glaze [p.143] 124000
- Interior Lead Glazed (describe in comments) 120002
- Exterior Lead Glazed (describe in comments) 120003
- Int/Ext Lead Glazed (describe in comments) 120004
- Black Glazed Redware (only true black glaze) 127100
- Staffordshire Manganese Mottled (late 17th, early 18thc) buff body streaked brown glaze, very porous..... 126000
- North Devon Gravel Tempered Ware (1713)c.1650-1775--red to gray body, apple green glaze 121100
- Buckley Ware (1746)c.1720-1775--streaked body, black glaze [pp.132-133,135] 122000
- Coarse Agate (1780)c.1750-1810--marbled body--date excludes doorknobs, [p.132] 129500

Slipwares 129000
- Slip Combed (1733)c.1670-1795 [pp.107,134-135] 129005
- Combed + Dotted (1733)c.1670-1795 [pp.107,134-135] 129400
- Trailed (describe in comments) 129006
- North Devon Sgraffito (1680)c.1650-1710--incised dec [pp.104-105] 129100
- American Brush Trailed (describe in comments) [p.99] ... 127500
- American Brush Trailed w/ copper green dec [p.99] 127508
- Other Coarseware Attributes (describe in comments) 120009

Refined Earthenwares 130000

Tin Glazed Earthenware 112000
- White Glazed (1720)c.1640-1800 (may have blue tint) [p.109] 112011
- Blue Dash Chargers (1670)c.1630-1720--rim dec [pp.108-109] 112012
- Identifiable Design Motif (describe in comments) 112013
- Manganese stippling (green or brown stipple dec) 112016
- Blue on White (other) 112017
- Polychrome Pallette (describe in comments) 112018
- Other (describe in comments) 113200

CERAMICS (CONT.)

Whieldon-Wedgewood wares 131099
Agateware (1758)c.1740-1775--thin, clr glz [p.132]..... 131100
Tortoiseshell (1755)c.1740-1770--brown + white dec [p.123] 131200
Clouded (1755)c.1740-1770--multi-color dec [p.123] 131300
Cauliflower (vegetable motifs) 131400
Other (describe in comments) 131500

Creamware 132000
Undecorated (1791)c.1762-1820--comment if deeper yellow [pp.125-128] 132020
Annular (1798)c.1780-1815--slip dec [p.131] 1321XX
Handpainted (1788)c.1765-1840 ..... 1322XX
Transfer Printed (1790)c.1765-1815 [p.126-128] 1324XX
Shell edged 1325XX
Featheredge 132600

Pearlware 133000
Undecorated (1805)c.1780-1830 [p.128-132] 133020
Annular (1805)c.1790-1820--slip dec [pp.131-132] 1331XX
Handpainted 1332XX
underglaze blue (1800)c.1780-1820 [pp.128-129] 133221
underglaze polychrome (1805)c.1795-1815--peasant pallette [p.129] 133222
Transfer Printed (1818)c.1795-1840 [pp.128-130] 133434
Shell Edged (1805)c.1780-1830 [p.131] 1335XX

Whiteware 134000
Undecorated (1860)c.1820-1900 [pp.130-31] 134020
Annular (slip dec) 1341XX
Handpainted 1342XX
Transfer Printed 1344XX
Shell Edged 1345XX
Fiesta 1346XX

Yellow Ware 135000
Undecorated 135020
Annular (slip dec) 1351XX

Other 19thc. Wares (describe in comments) 138000
Other 18thc. Wares (describe in comments) 138500

CERAMICS (CONT.)

HIGHLY FIRED REFINED WARES (these types of ceramics are under debate as to whether they are earthenware or stoneware) . 250000

Black Basalt (1785)c.1750-1820--dry, black body [pp.121-122] 2361XX
Rosso Antico (1733)c.1690-1775--dry, red body; sprig molded [pp.121-122] 236252
Engine Turned (1769)c.1763-1775--dry, red body; incised lines [p.121] 236251
Jasper (1774 to early 19thc) dry, color tinted; sprig molded 236352
Lead Glazed Refined Redware 2365XX
Jackfield (1760)c.1740-1780--red to purple body, black glz [p.123] 2370XX
Astbury (1738)c.1725-1750--red body, white sprig molding [p.123] 238052
Shaw (1741)c.1732-1750--red body, int wht slip [p.118]. 2390XX
Ironstone (1870) c.1840-1900, [p.131] 136000
Undecorated 136020
Rockingham (19thc) hard, buff body, mottled br glz 137500
Undecorated 137520

STONEWARE

Coarse Stonewares 200000
Gray Bodied 220000
rhenish blue and gray (1668)c.1650-1725--w/manganese dec [pp.280-281] 221047
rhenish blue and gray 221048
rhenish blue and gray (1713)c.1650-1775--incised [pp.280-81] 221050
rhenish blue and gray (1738)c.1700-1775--stamped or geometric designs [pp.284-285] 221048
American blue and gray (mid 18th-19thc) thick cobalt dec [p.101] 211000
w/albany slip (int slip--indicates later ware)[p.101]. 213000
Hohr (1700)c.1690-1710--plain gray, incised or sprig molded [p.284] 220050
Other gray bodied (describe in comments) 220009
Frechen (1625)c.1550-1700--Bellarmine Bottles [pp.55-57] 222000
Brown Bodied **229999**
English Brown (1733)c.1690-1775 [pp.112-14] 230000
Burslem (1738)c.1700-1775--crouch ware [p.114] 232000
Fulham (1733)c.1690--1775--mugs and tankards [pp.112-114] 233000
American Brown (mid 18thc) [p.100] 212000
Other Brown Bodied (describe in comments) 230500

CERAMICS (CONT.)

Refined Stonewares 240000

Nottingham (1755)c.1700-1810--drab body, luster br glz [p.114] 231000
White Saltglazed (1763)c.1720-1805--date excludes plates and molded vessels [pp.115-117] 235000
slip-dipped WSG (1745)c.1715-1775--gray body w/wht slip [pp.114-115] 235100
scratch brown (1725)c.1720-1730--incised, br dec [p.117] 235350
scratch blue (1760)c.1744-1775--incised bl dec [p.117] 235450
debased scratch blue (1780)c.1765-1795--incised, sloppy bl dec [p.118] 235550
handpainted (describe in comments) 2356XX
transfer printed (1760)c.1755-1765 [p.128] 2357XX
molded (1753)c.1740-1765-plates (describe in comments) [p.115] 235056

PORCELAIN

Porcelain (undistinguished) 300000
Chinese general 310000
undecorated 310020
blue on white (1730)c.1660-1800 [p.257] 310021
batavian c.18thc--ext brown glz [p.18]W 310037
imari overglaze enamels (1740)c.1700-1780--red + gold [pp.258-259] 310038
famille verte (1696)c.1662-1730--translucent enamels [pp.15-16]W 310040
famille rose 18thc (1730-)--opaque enamels; intro of wht [pp.16-17]W 310039
encre de chine (1762)c.1730-1795--black ink lines [pp.17-18]W 310042
blanc de chine (1700)c.1650-1750--molded, all wht, no sheen [p.45]W 310044
canton (1815)c.1800-1830-diagnostic rim design [p.262] 310041
other Chinese (describe in comments) 310043
English (1770)c.1745-1795--softer paste, some transfer print [p.137] 3200XX
bone china (c.1794-) very thin, very white paste 321000
Other Porcelain (describe in comments-put semi-pcln here) 340000

HANDPAINTED DECORATIVE ATTRIBUTES

No further analysis 00
Undecorated 20
Blue on White 21
18thc. pallette (peasantware) 22
19thc. pallette (reds, etc...) 23
Stenciled 24
Sponged 25
Luster Glazed 26
Finger-trailed 27
Mocha 28
Banded 29
Overglaze Painting 30
Gold Gilding 31

TRANSFER PRINTED DECORATIVE ATTRIBUTES

No Further Analysis 00
Overglaze Transfer Print 32
Underglaze Black 33
Underglaze Blue 34
Underglaze-other 18thc colors 35
Underglaze-19thc colors 36
Flow Blue 37
Decalcomania 38
Underglaze Green 39
Underglaze Red 40

OTHER DECORATIONS

Incised/applied design 50
Engine-turned 51
Sprig-molded, relief dec 52
Molded rim (identify design) 53
Molded 54
Incised 55
Applied 56

TOBACCO PIPES

Pipes general	500000
Bowls, plain	510000
Bowls, marked	511000
Bowls, molded	512000
Stems, unmeasurable	520000
Stems, plain 4/64	520004
Stems, plain 5/64	520005
Stems, plain 6/64	520006
Stems, plain 7/64	520007
Stems, plain 8/64	520008
Stems, plain 9/64	520009
Stems, marked 4/64	521004
Stems, marked 5/64	521005
Stems, marked 6/64	521006
Stems, marked 7/64	521007
Stems, marked 8/64	521008
Stems, marked 9/64	521009

GLASS

Glass general 600000

Flatglass 609999
  Window 610000
   Bull's eye 610001
  Mirror 660000

Bottle Glass 629999
  Wine/Liquor Bottle (dk olive green) 630000
   wine/liquor neck 630001
   wine/liquor base 630002
   wine/liquor frag 630003

  Round Bottle (whole) 630084
   round neck 630081
   round base 630082
   round frag 630083

  Case Bottle-square (whole) 630074
   case neck 630071
   case base 630072
   case frag 630073

  Medicinal Phial-18thc. 621000-16*
  Medicinal Bottle-19thc. (see Hume, p.73).....620017-21*

  Blown-in-Mold Bottle (whole)..... 631000
   blown-in-mold neck 631100
   blown-in-mold base 631200
   blown-in-mold frag 631300

  Machine Made Bottle (whole)..... 632000
   machine made neck 632100
   machine made base 632200
   machine made frag 632400

Drinking Glass 640000
  Wineglass (whole) 641000
   wineglass frag 641090
   wineglass bowl 641091
   wineglass stem 641050-75*
   wineglass base 641085-89*
       (see Noel Hume, p.190)

Drinking Glass (cont)

Tumbler (whole)	642000
base	642001
rim	642004
body	642005
stenciled or etched	642002
faceted body	642003
other 18thc. attributes	643000
other 19thc. attributes	643200
Serving Glass	650000
Decanter.	651000
top	651005
Urinal Bottle.	652000
Storage Jar	653000
canning/mason jar	653001
Lighting Glass	654000
Cosmetic Jar	655000

ARCHITECTURAL MATERIALS

Nails General	710000
Handwrought	711000
rose head	711001
L-head	711002
headless	711003
Cut	712000
Modern (wire)	713000
Plaster	720000
Shell Tempered	721000
Shell Tempered, painted	721001
Shell Tempered, lath marked	721002
Horse Hair Tempered	721003
Modern	722000
Mortar	730000
Shell Tempered	730001
Modern (concrete goes here)	730002
Stone	
Stone, Natural (bog iron goes here)	750000
architectural or landscape	
worked	752000
paving	752001
step or landscape	752002
other building related	752003
Worked for Flints	752004
Worked, other	752005
Prehistoric Materials	880000
Stone debitage	752006
Stone Tools (specify)	752007
Stone Tool Fragment	752008
Brick	
Brick General	760000
wall brick	760001
well brick (curved)	760002
coping brick	760003
marked	760004
paving brick	760005
fire brick	760006

Tile (ceramic)

Tile General	770000
roofing	770001
paving	770002
flooring	770003
drain (terra cotta)	770004
Sewer Pipe	780000
Fire Place Tile	1150XX

Organic Materials (egg shell goes here) 800000

Bone, Fragments (turtle)	810000
mammal	810001
bird	810002
bird/rodent	810005
rodent	810006
fish	810003
teeth	810004
Shell, Fragments	820000
oyster	820001
clam	820002
blue crab	820003
mussel	820004
other (describe in comments)	820005
Wood, building related	840000
worked, other	840001
natural	840003
form identifiable	840004
unidentifiable	840099
Leather	850000
form identifiable	850001
Textile	860000
form identifiable	860001
Paper	855000
Charcoal	840002
Plant Remains	870000
leaves	870001
seeds and nuts (specify)	870002
pollen samples	870003
Soil Samples	870500
Worked or Shaped Shell	881000
form identifiable	881001

Organic Materials (cont)

Worked or Shaped Bone	881500
form identifiable	881501
Worked or Shaped Horn	882000
form identifiable	882001
Coal/Clinker	870004
Coal	870005
Clinker	870006
Bog Iron (same code as stone, natural)	750000

Metal Materials (Slag) 900000

Iron	910000
form identifiable (other than nails)	910001
Brass	920000
form identifiable	920001
Pewter	930000
form identifiable	930001
Lead	940000
form identifiable	940001
debitage-puddles	940002
printing type	943000
Copper	960000
form identifiable	960001
Silver	970000
form identifiable	970001
Other Metal	950000
form identifiable	950001

Synthetic/Recent Materials 980000
Synthetic/Recent Samples 981000

Mixed Materials	990000
form identifiable	990001

Forms Key

0000-1000 = General Ceramic Attributes

5000-5999 = Glass General/Table Glass

6000-6999 = Storage Vessels

7000-7999 = Cooking

8000-8999 = Misc. Ceramics and Glass

9000 = Misc Artifacts

- 9100-9199 = Architectural/Hardware
- 9200-9299 = Kitchen
- 9300-9399 = Clothing
- 9400-9499 = Personal
- 9500-9599 = Tools
- 9600-9699 = Weapons
- 9700-9799 = Harness
- 9800-9899 = Decorative
- 9900-9999 = (unassigned)

Form codes below may be grouped by material rather than numerically i.e. Flower Pot appears under ceramic.

FORMS

Identifiable Ceramic Fragment Attributes

Spout	0030	Lid	0036
Handle	0031	Cup	0037
Rim	0032	Plate	0038
Hollow Body Frag	0033	Bowl	0039
Flat Body Frag	0034	Figurine	9801
Base	0035	Flowerpot	8500

Identifiable Glass Fragment Attributes

Hollowware	5998	Jar	6300
Flatware	5999	Canning Jar	6951
Bottle	6200	Jar lid liner	6952
Bottle finish	6201	Lamp Globe	8761
Carboy	6970	Lamp Base	8763
Perfume	9416	Lamp Chimney	8762
Patent medicine	6960	Candle sticks	8760

Identifiable Attributes

Window Came	9110	Thimble	9340
Hinges gen or type unknown	9125	Wig Curler	9345
door	9126	Coin	9410
furniture	9127	Comb	9415
other	9129	Jewelry	9420
Locks general	9135	Key	9430
door	9136	Doll/Doll Parts	9441
Keyhole	9146	Marble	9442
Screw	9150	Game Piece	9443
Upholstery Tacks (brass)	9176	Slate Pencil	9445
Wire	9180	Toy	9446
Insulator	9181	Writing Implement	9460
Drain/Sewer Pipe	9102	Toothbrush	9406
Cutlery	9201	Bead	9401
Buckles	9305		
shoes	9306	Spring	9550
other	9308		
Button	9310		
1-piece	9311	Weapon Related	
2-piece	9312	Gunflints	9640
Collar button	9426	Shell Casing	9660
Clothing Fastener	9316	Shot, Ball, Bullet	9661
Pin	9320		
handwrought	9321	Harness Related	
machine made	9322	Horse shoe	9726
Safety	9323		
Scissors	9335		

Add Shoes
Regular tack ?

13

Cataloguing Abbreviations
for use in "Comments" section

COLORS

Amber -- Amb
Aqua -- Aq
Black -- Blk
Blue -- Bl
Brown -- Br
Clear -- Clr
Cobalt -- Cob
Dark -- Dk
Gold -- Gld
Gray -- Gy
Green -- Gn
Light -- Lt
Manganese -- Mang
Olive -- Ol
Orange -- Or
Pink -- Pk
Purple -- Pp
Red -- Rd
Silver -- Slv
Turquoise -- Trq
White -- Wht
Yellow -- Yw

BODY TYPES

Brown Bodied -- Brbod
Buff Bodied -- Bfbod
Dry Bodied -- Drybod
Gray Bodied -- Gybod
Hard Bodied -- Hrdbod
Pink Bodied -- Pkbod
Red Bodied -- Rdbod
Salmon Bodied -- Smnbod
Soft Bodied -- Sftbod
White Bodied -- Whtbod
Yellow Bodied -- Ywbod

ABBREVIATIONS CONTINUED

METALS

Aluminum -- Al
Copper -- Cu
Gold -- Au
Iron -- Fe
Lead -- Pb
Magnesium -- Mg
Silver -- Ag
Tin -- Sn

SPECIFIC PATTERNS/EDGE DECORATIONS

Barley Pattern -- Brlypttrn
Basketweave -- Bsktwve
Bead and Reel -- B&R
Beaded -- Bead
Diamond -- Dimnd
Dot, Diaper, and Basket -- D.D.B
Feather Edged -- Fthredg
Fluted -- Flut
Queen's Shape -- Qshp
Royal Pattern -- Rylpttrn
Scalloped -- Sclpd
Shell Edged -- Shledg
Spearhead -- Sprhd
Wheat Pattern -- Wheat

PLACE CODES

Removed for Conservation -- RFC (02)
Removed for Exhibit -- RFE (03)
Removed for Study -- RFS (04)
Removed for Crossmending -- RFM (06)
Water Screen -- WS

GENERAL DESCRIPTIVE ATTRIBUTES

American -- Amn
Annular -- Anlr
Applied -- Appld
Assorted -- Asst
Banded -- Bnd
Base -- Bse
Body -- Bod
Bottle -- Btl
Bottom -- Bttm
Bowl -- Bwl
Buckle -- Bckl
Burned -- Brnd
Button -- Bttn
Century -- C
Chamber Pot -- Chmbrp
Chinese -- Chn
Clothing -- Clthg
Coarse -- Crs
Combed -- Cmbd
Corroded -- Corrd
Creamware -- Cmwr
Crossmend -- Crsmend
Curved -- Crvd
Cutlery -- Ctlry
Decorated -- Dec
Diameter -- Dia
Drinking -- Drnkg
Dutch -- Dtch
Earthenware -- Erthnwr
Edge -- Edg
Embossed -- Emb
Enamel -- Enml
Engine Turned -- Engtrnd
English -- Engl
Exterior -- Ext
Flat -- Flt
Fork -- Frk
Fragment -- Frag
French -- Fren
Frosted -- Frstd
German -- Germ
Glass -- Gls
Glaze -- Glz
Glaze Chip --Glzchp
Gravel Tempered -- Gvltmpd
Handle -- Hndl
Handpainted -- Hndptd
Hardware -- Hdwr
Incised -- Incsd
Interior -- Int
Ironstone -- Irnstn
Jewelry -- Jwlry
Knife -- Knf
Large -- Lge
Long -- Lng
Lead Glaze -- Pbglz
Maker's Mark -- MM
Mammal -- Mml
Material -- Matl
Modern -- Mdrn
Mold -- Mld
Mottled -- Mttld
Neck -- Nck
Overglaze -- Overglz
Pattern -- Pttrn
Pearlware -- Plwr
Plastic -- Plstc
Plate -- Plt
Platter -- Pltr
Porcelain -- Pcln
Round -- Rnd
Salt -- Slt
Serving -- Srvng
Slip -- Slp
Slipware -- Slpwr
Small -- Sm
Spanish -- Spn
Sponge -- Spng
Spoon -- Spn
Spout -- Spt
Stamped -- Stmpd
Stencilled -- Stncld
Stoneware -- Stnwr
Square -- Sq
Tempered -- Tmprd
Thick -- Thk
Thin -- Thn
Trailed -- Trld
Trandfer Printed -- Trnsfrpr
Undecorated -- Undec
Underglaze -- Undrglz
Unglazed --Unglz
Unidentifiable --Unident
Ware -- Wr
Whole -- Whl
Window -- Wndw
With -- W/
Whiteware -- Whtwr

FORMS

Identifiable Ceramic Fragment Attributes

Spout	0030
Handle	0031
Rim	0032
Hollow Body Frag	0033
Flat Body Frag	0034
Base	0035
Lid	0036
Cup	0037
Plate	0038
Bowl	0039
Figurine	9801
Flowerpot	8500

Identifiable Glass Fragment Attributes

Hollowware	5998
Flatware	5999
Bottle	6200
Bottle finish	6201
Carboy	6970
Perfume	9416
Patent medicine	6960
Jar	6300
Canning Jar	6951
Jar lid liner	6952
Lamp Globe	8761
Lamp Base	8762
Lamp Chimney	8762
Candle sticks	8760

Identifiable Attributes

Window Came	9110
Hinges general or type unknown	9125
door	9126
furniture	9127
other	9129
Locks general	9135
door	9136
Keyhole	9146
Upholstery Tacks (brass)	9176
Wire	9180
Insulator	9181
Drain/Sewer Pipe	9102
Cutlery	9201
Buckles	9305
shoes	9306

other 9308

Buttons 9310
1-piece 9311
2-piece 9312
Collar button 9426

Identifiable Attributes (cont)

Pins 9320
handwrought 9321
machine made 9322
Safety 9323

Scissors 9335
Thimbles 9340
Wig Curlers 9345
Coins 9410
Combs 9415
Jewelry 9420
Keys 9430
Dolls/Doll Parts 9441
Marbles 9442
Game Pieces 9443
Slate Pencils 9445
Writing Implement 9460
Toothbrushes 9406
Bead 9401

Weapon Related
Gunflints 9640

Shell Casing 9660
Shot, Ball, Bullet 9661

Harness Related
Horse shoe 9726

Appendix C:

ARTIFACT CATALOG

Unit	Level	Feature	Bag #	Item #	Mcode	Type	Description	Form	Quantity	Comments
1	G		8	1	810001	Bone Frag	Mammal		1	Rib
1	G		8	2	760000	Brick	Brick General		1	
1	G		8	3	609999	Flat Glass			1	
1	G		8	4	810000	Bone Frag			5	Broken from one piece
1	G		8	5	820001	Shell Frag	Oyster		1	
1	G		8	6	840099	Wood	Unidentifiable		1	
1	G		8	7	840002	Wood	Worked, other		2	
8	A		12	1	609999	Flat Glass			3	
8	B		13	1	810006	Bone Frag	Rodent		1	
8	B		13	2	609999	Flat Glass			7	
8	B		13	3	630083	Round Bottle	Round Frag		1	
8	B		13	4	710000	Nails, General			8	
8	B		13	5	630003	Bottle Glass	Wine/Liquor Frag		1	
8	B		13	6	713000	Nails, General	Modern (wire)		2	
8	B		13	7	120001	Coarse Earthen Ware	Unglazed	8500	2	Terracotta
8	B		13	8	730002	Mortar	Modern		7	
8	B		13	9	820001	Shell Frag	Oyster		1	
8	C		14	1	120001	Coarse Earthen Ware	Unglazed	8500	5	Terracotta
8	C		14	2	840000	Wood			6	
8	C		14	3	870002	Plant Remains	Seeds and Nuts		1	Walnut
8	C		14	4	870002	Plant Remains	Seeds and Nuts		1	
8	C		14	5	840000	Wood			1	
8	C		14	6	710000	Nails, General			1	
8	C		14	7	760000	Brick	Brick General		1	
8	C		14	8	609999	Flat Glass			1	Diseased
8		F19B	15	1	123000	Coarse Earthenware	Aboriginal		1	
8		F19B	15	2	120001	Coarse Earthenware	Unglazed		1	

8		F19B	15	3	120001	Coarse Earthenware	Unglazed	8500	1	Terracotta
8		F19B	15	4	810006	Bone Frag	Rodent		1	
8		F19B	15	5	820001	Shell Frag	Oyster		1	
8		F19B	15	6	630003	Bottle Glass	Wine/Liquor Frag		1	
8		F19C	17	1	120001	Coarse Earthenware	Unglazed	8500	1	Terracotta Black Interior
8		F19C	17	2	820001	Shell Frag	Oyster		4	
8		F19C	17	3	840002	Wood	Worked, other		4	
8		F19C	17	4	609999	Flat Glass			2	
8		F19C	17	5	630003	Bottle Glass	Wine/Liquor Frag		1	Diseased
9	A		18	1	609999	Flat Glass			4	
9	A		18	2	870002	Plant Remains	Seeds and Nuts		2	Walnut
9	A		18	3	710000	Nails, General			1	
9	A		18	4	713000	Nails, General	Modern (wire)		1	
9		20A	19	1	910001	Iron	Form Identifiable		9	Chain links
9		20A	19	2	840000	Wood			10	
9		20A	19	3	120001	Coarse Earthenware	Unglazed	8500	2	Terracotta
9		20A	19	4	120001	Coarse Earthenware	Unglazed		1	Terracotta
9		20A	19	5	840003	Wood	Natural		1	Root Casing
9		20A	19	6	980000	Synthetic/Recent Material			1	Plastic
9		20A	19	7	910000	Iron			3	
9		20A	19	8	820001	Shell Frag	Oyster		1	
9		20A	19	9	712000	Nails, General	Cut		1	
9		20A	19	10	713000	Nails, General	Modern (wire)		2	
9		20A	19	11	760000	Brick	Brick General		2	
9		20A	19	12	730002	Mortar	Modern		7	
9		20A	19	13	609999	Flat Glass			5	
9		20B	20	1	910001	Iron	Form Identifiable		6	Chain links
9		20B	20	2	960000	Copper			1	
9		20B	20	3	840000	Wood			2	

9		20B	20	4	760000	Brick	Brick General		2	
9		20B	20	5	730002	Mortar	Modern		3	
9	B		21	1	840000	Wood			11	
9	B		21	2	820001	Shell Frag	Oyster		3	
9	B		21	3	840003	Wood	Natural		1	Root Casing
9	B		21	4	810001	Bone Frag			1	
9	B		21	5	710000	Nails, General			1	
9	B		21	6	609999	Flat Glass			8	Diseased
9	B		21	7	120001	Coarse Earthenware	Unglazed	8500	1	Terracotta
9	C		22	1	630082	Round Bottle	Round Frag		1	Brown
9	C		22	2	609999	Flat Glass			5	
9	C		22	3	630003	Bottle Glass	Wine/Liquor Frag		1	
9	C		22	4	710000	Nails, General			3	
9	C		22	5	840001	Wood	Worked, other		2	Green Paint
9	C		22	6	980000	Synthetic/Recent Material			5	Plastic
9	C		22	7	770000	Tile	Tile, General		1	
9	D		23	1	609999	Flat Glass			18	
9	D		23	2	120001	Coarse Earthenware	Unglazed	8500	4	Terracotta
9	D		23	3	710000	Nails, General			1	
9	D		23	4	980000	Synthetic/Recent Material			1	Plastic
9	E		24	1	609999	Flat Glass			11	Diseased
9	E		24	2	120001	Coarse Earthenware	Unglazed	8500	5	Terracotta
9	E		24	3	760000	Brick	Brick General		2	
9	E		24	4	752004	Stone	Worked for Flints		1	
9	E		24	5	820001	Shell Frag	Oyster		2	
9	E		24	6	910000	Iron			1	
9	E		24	7	840099	Wood	Unidentifiable		4	
9	E		24	8	820000	Shell Frag			1	
9	E		24	9	710000	Nails, General			1	
9	F		25	1	760000	Brick	Brick General		5	
9	F		25	2	730002	Mortar	Modern		10	

9	G		27	1	810000	Bone Frag			1	
9	G		27	2	730002	Mortar	Modern		1	
9	G		27	3	760000	Brick	Brick General		2	
8		F22	29	1	760000	Brick	Brick General		9	
8		F22	29	2	730002	Mortar	Modern		7	
8		F23	34	1	760000	Brick	Brick General		1	Glazed
8		F23	34	2	840000	Wood			2	W/ Brick and Mortar
8	H		35	1	820001	Shell Frag	Oyster		7	
8	H		35	2	820000	Shell Frag			8	
8	H		35	3	710000	Nails, General			2	
8	H		35	4	730002	Mortar	Modern		1	
8	H		35	5	760000	Brick	Brick General		2	
8	H		35	6	120001	Coarse Earthenware	Unglazed		2	
8	H		35	7	120001	Coarse Earthenware	Unglazed	8500	2	Terracotta

Appendix D:

CORRESPONDENCE WITH DR. HEATHER TRIGG

Heather Trigg <heather.trigg@umb.edu> Tue, Jul 14, 2009 at 5:25 PM
To: Mark Leone <MLEONE@anth.umd.edu>
Cc: Amanda Tang <atang@anth.umd.edu>, Jocelyn Knauf <jknauf@anth.umd.edu>, John Blair <jblair119@gmail.com>, Stephanie Duensing <stephanie.duensing@gmail.com>

Dear Mark et al.,
Sue has processed and begun to look at the pollen from the Greenhouse. While I try to get her just to count pollen without doing ids - just to get the preservation assessment, she's been doing them anyway. She looked at level F (I believe that's the earliest layer of the Greenhouse); she's counted 200 grains - usually we do 300 so she'd not done looking yet. The preservation for this layer is quite good, just under 10,000 grains/gram. We usually want at least 1,000 grains/gram and many garden samples I've seen have been in the 400-500 grains/gram range. This is good news.

Now for the not so good news - the taxa she's found are generally weedy taxa - cheno/am, pine, ragweed, plantago,oak, willow, alder, Asteraceae family to name a few. 1 each of clover and a European-introduced cereal. There are some interesting finds - Nuphar - water lily, impatiens (1 grain each), Rose family (could be roses, cherries, plums, wild cherries, raspberry or weedy plants such as cinquefoil), several from the lily family (lilies, daffodils, tulips, onions, and some non-domesticated plants). No citrus, at least yet.

Sue started examining the slave quarter pollen. The preservation there is not as good as the greenhouse, but still not bad.

As far as any interpretation of this - I think that is premature because of all the difficulties in interpreting single grains of anything - but preservation does look good.

Best wishes to all,
Heather
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