

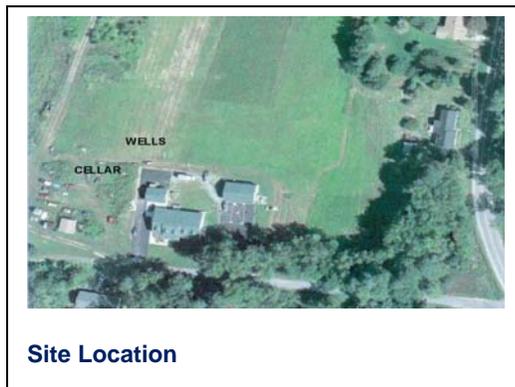
Preliminary Analysis of Clay Tobacco Pipes at Avery's Rest

Abstract

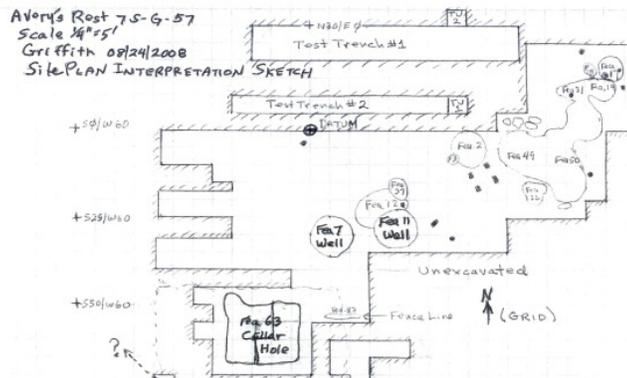
Avery's Rest is a 17th century English homestead settlement site, south of Lewes Delaware , near Rehoboth Bay. Threatened portions of the site were excavated in 2006-2007. Site excavations on an adjacent property continue. Excavations during 2006-2007 included plow zone, near-surface features and two probable 17th century wells. Processing of the artifacts of these excavations has recently completed and this report details analysis of nearly 400 clay tobacco pipe fragments found in these excavations. This analysis will be expanded with the analysis of other artifacts recovered in 2006-2007 and adjacent property features.

Introduction

Avery's Rest (7S-G-57) was identified in the late 1970's by surface survey as a native site and probable 17th century habitation. With permission of the owners, the Archaeology Society of Delaware (ASD) began field work in fall 2006 on an 8 acre parcel at the site that was planned for development. Delay in the development allowed field work to continue through 2008.



Site Location



Site Plan

Surface collection was performed over the entire site. Based on the concentration of artifacts, metal detection and STPs were confined to the southern portion of the parcel. The plow zone stratum was removed in selected areas with backhoe trenches and 5'x5' excavation units. Plow zone removal revealed numerous shallow features, which were excavated and interpreted as daub pits, outbuilding post holes and homestead work areas. Two well features (Feature 7 and Feature 11) were completely excavated into the water table.

All phases of the field work yielded fragments of imported kaolin white clay tobacco pipes, as would be expected in a 17th century mid-Atlantic domestic site. This report focuses on the initial analysis of the surface, plow zone and well artifacts, understanding that future research needs to be done interpreting

these pipe fragments with other artifacts in the 2006-2007 assemblage and with artifacts recovered during ongoing field work on the adjacent property.

Analysis Methodology

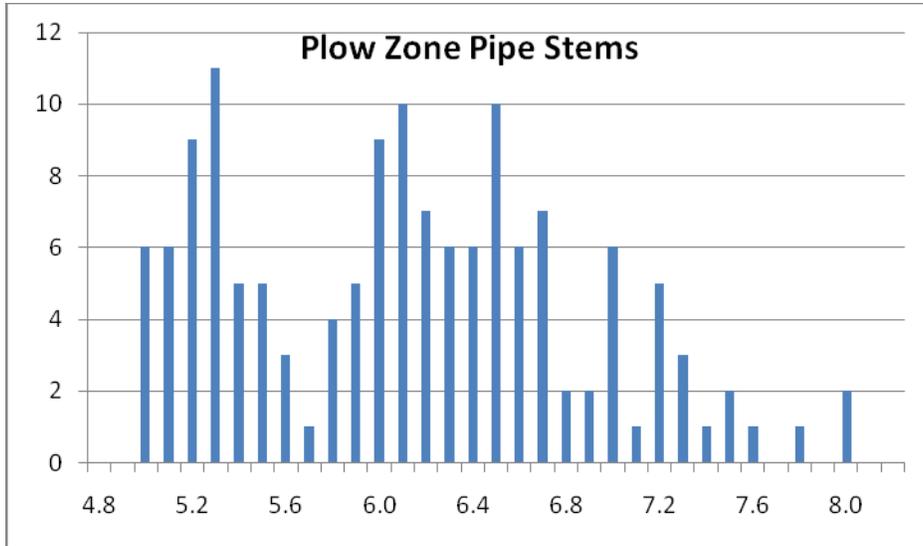
This report's analysis depends primarily on pipe stem bore diameter measurement using the standard Binford formula (Based on the observation that pipe stem bore diameters progressively decreased over time, the formula provides a mean date for a set of pipe fragments given the mean bore diameter of the set). Only 2 identifiable pipe bowls (both from Feature 11 and consistent with 17th century Bristol manufacture (LT type 02)) are in the subject assemblage, neither with a maker's mark. One terracotta stem fragment was recovered, possibly of a hand-molded pipe. Bowl shapes, maker's marks and terracotta artifacts will be addressed in future Avery's Rest reports.

Harrington/Binford analysis relies on gauges (usually drill bits) in increments of 1/64th inch and recording each pipe stem artifact in its increment (usually in a range of 4 to 8 1/64th). Our pipe stem measurements attempted a finer resolution in measurement, using other gauges of useful diameter (such as AWG 12 copper wire = 5.18/64", AWG 10 copper wire = 6.53/64") and a tapered needle (calibrated with a digital caliper to 4.8/64 – 6.3/64). Using multiple gauges, we were confident in recording measurements accurate to 1/10th of 1/64th (or 1/640th) of an inch. Unless otherwise noted, dimensions in this report are given in units and tenths of 1/64th inch (e.g., 5.3 is 5.3/64").

Surface collection and Plow Zone

Although relatively few measureable pipe stem fragments were found in the surface collection, they did exhibit a pattern of smaller bore diameter fragments being found in a concentration in the northeastern quadrant of the site. These fragments (n=7) yielded a Binford date of 1731.8, while those concentrated in the southern portion of the site (n=6) yielded a date of 1692. These are very small sample sizes, but may collaborate the historical record that there were two distinct occupations of the site.

Plow zone excavation produced 141 measureable pipe stem fragments. Their bore diameters are shown in the histogram below:



As can be seen, there is a possible bi-modal distribution pattern in the bore diameters, less than and greater than 5.7. The small diameter set comprises 33% (46 of 141) of the assemblage. If taken separately the two sets have mean diameters of 5.27 and 6.53, yielding Binford dates of 1730.3 and 1681.9, respectively. This evidence reinforces the two distinct occupation periods of the site.

Feature 11

Feature 11 is a water well, excavated to below the water table. Upper levels of the feature show the final infill of the feature, but lower levels (Level 4 and below) exhibit the distinct inner well shaft and fill between the inner shaft and original well excavation, as seen in the annotated photo below:



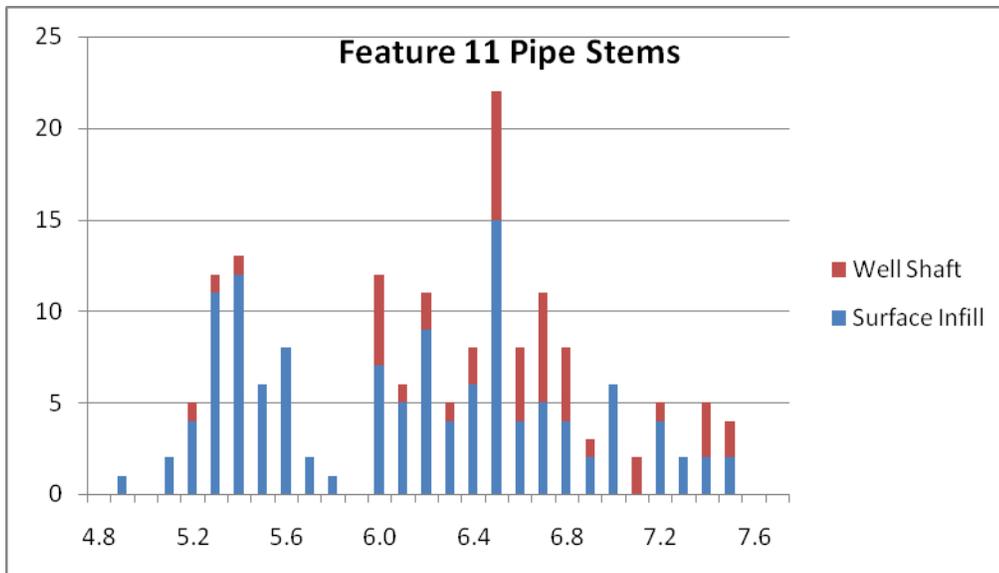
Figure 1 - Feature 11 Profile

Well casing timbers and walls were encountered at the water table, as shown, below. These were extracted and are being conserved in a fresh water bath.



Figure 2 - Feature 11 Well Casing

A total of 181 measureable pipe stem fragments were recovered from Feature 11. These were categorized as being either in the “Surface Infill” (Level 3 or above, within 2 feet of the surface) or in the intact “Well Shaft” (Level 4 and below) as shown above in Figure 1. The distribution of these fragments by bore diameter is shown in the histogram below:



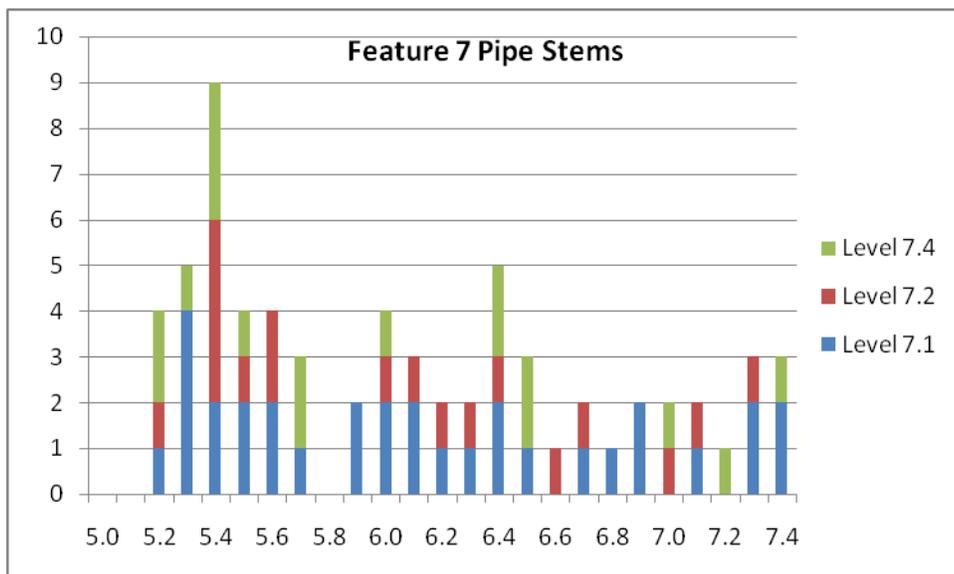
The “Surface Infill” set appears to exhibit a bi-modal distribution pattern similar to that of the plow zone fragments. The “Well Shaft” set is comprised of 94% (46 of 49) large bore fragments. The three anomalous small bore fragments found in the well shaft can be rationalized as being surface infill, as two were recovered in a posthole incursion sub-feature and one was labeled “Top of shaft, d=1.85’-2.35’ “, arguably part of the surface infill.

Re-categorizing these three fragments as surface in-fill, the “Surface Infill” set has bi-modal Binford dates of 1726.0 and 1678.6, with 37% of the set comprised of small diameter fragments. Thus, the “Surface Infill” set is extremely similar to the plow zone set, implying that the final infill of Feature 11 occurred after the deposition of small diameter pipe stem fragments on the surface of the site.

The “Well Shaft” assemblage is completely composed of large diameter fragments, with a Binford date of 1674.7, implying that the well was dug, used and filled before small diameter pipes were present on the site.

Feature 7

Feature 7 was also a water well on the site. The excavation revealed a distinct well shaft at the bottom of the plow zone. The feature was excavated as Level 7.2 inside the well shaft and Level 7.1 between the well shaft and surrounding sterile soil (construction infill). Level 7.4 is a deeper well shaft sub-feature (possibly caused by variations in the water table after abandonment of the well). Levels 7.5 and 7.6 were below the present water table and are included with Level 7.4 in this analysis. A total of 67 measureable pipe stem fragments were recovered from Feature 7.. The distribution of these fragments by bore diameter is shown in the histogram below:



The distribution in Feature 7 appears to exhibit a bi-modal distribution similar to the plow zone and Feature 11 infill assemblages (Small diameter concentration in this assemblage is 43%). However, in contrast with Feature 11, fragments across the whole range of bore diameter are found in each sub-

feature. The mean bore diameters for each sub-feature are 6.15, 6.07 and 6.01 for Levels 7.1, 7.2 and 7.4, respectively. (Statistically identical for these sample sizes.)

An initial interpretation of this analysis is that Feature 7 was dug, backfilled, used and abandoned after the surface of the site had the pipe stem artifact concentrations found in the plow zone excavation. (Implying that Feature 7 is 2nd quarter 18th century (or later) feature).

Conclusions and Further Work

This preliminary analysis tends to confirm that there were 2 temporally distinct occupations of the Avery's Rest site. This conclusion needs to be reinforced with the analysis of other artifacts from the 2006-2007 excavations and the ongoing cellar excavation.

There is compelling evidence that Feature 11 is a 3rd quarter 17th century era well that was abandoned during that period. The sequence of abandonment of the well and the Avery's Rest cellar will be an interesting question for future analysis.

The distribution of pipe stem fragments of all bore diameters through out the Feature 7 stratigraphy is given an initial interpretation above, but obviously needs revisiting as analysis continues. (Unfortunately, revisiting the feature is not an option.)

A caution against pipe stem bore diameter analysis in isolation is rampant in the literature. This analysis must be continued to include the total set clay pipe fragments from the 2006-2007 excavation, other datable artifacts from that excavation, fragments from the current cellar excavation (which include many pipe bowls with maker's marks), careful analysis of the terracotta pipe fragments from the site, and coordination with the investigators of other 17th and 18th century mid-Atlantic sites.

The attempt in this analysis to refine bore diameter measurement is open to constructive criticism. This methodology was pursued when it seems to possibly reveal a bi-modal distribution that would be masked with less granularity in measurement recording. Applicability of the standard Binford formula to data recorded with an additional magnitude of precision is assumed (for now), but not confirmed. (But the formula seems to yield results consistent with the historical record.) Application of Hanson formulas to the data is a task for the future.

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