University of Tennessee Archaeological Reports

Archaeological Excavations at Wingo's Quarter (44BE0298) Forest, Virginia Results from the 2000-2012 Seasons

Barbara J. Heath, Eleanor E. Breen, Crystal Ptacek and Andrew Wilkins

with contributions by
Brock, Daniel W.H., Stephen J. Yerka and Gerald F. Schroedl
D. Brad Hatch
Lori A. Lee
Gerald F. Schroedl
Heather Trigg and Samantha Henderson

Report submitted to the
National Foundation for the Humanities
Department of Anthropology
University of Tennessee, Knoxville
December 2015

ACKNOWLEDGMENTS

Laura and Gene Goley, the owners of the farm on which Wingo's is located, have kindly hosted excavations that have taken place for over a decade. I thank them for their generosity and enthusiasm for the work we have done.

Landscape architect Will Rieley of Rieley and Associates plotted the Wingo's site based on an analysis of historic maps and modern landscape features; his predicted location fell to within a few hundred feet of where the site was subsequently discovered archaeologically. Poplar Forest staff members Scott Grammer, Randy Lichtenberger, Michelle McClenney, Evan Miller, Heather Olson, and Kelly Ormond tested the site and catalogued artifacts and field forms in 2000 and 2001. Keith Adams assisted in establishing control points for the site and in placing the remote sensing grid. Jack Gary and Eric Proebsting assisted with test excavations in 2007 -2009 along with participants in the annual Poplar Forest archaeological field school. Lori Lee and Liz Paull helped set up the flotation machine and process flotation and waterscreen samples; Lori and Gail Pond volunteered in 2012. Thomas Jefferson's Poplar Forest has generously loaned screens and wheelbarrows, provided lab space for washing and labeling, provided the use of their flote-tech machine for processing flotation samples, stored samples over the winter of 2009-2010, assisted with backfilling and provided research assistance. I am grateful to Jack Gary, Emile DeKuyser, Vince Fastabend, and Lynn Beebe for all of their help.

Graduate assistants and participants in a "mini-session" (May 9-30, 2007) and field schools (June 2-July 3, 2008 and May 27-June 30, 2009) sponsored by the Department of Anthropology at the University of Tennessee, Knoxville (UTK) have contributed to progress at the site. A field season with student workers and a single for-credit student was also conducted in 2011, and an abbreviated season with student workers was completed in 2012. Graduate students Daniel Brock and Suzanne Johnson supervised work at Wingo's from May 2-July 6, 2007, while Eleanor Breen supervised the 2008 field season from May 29-July 11, assisted by Kim Pyszka, and the 2009 field season from May 26-July 1, 2009. Lauren McMillan supervised fieldwork from July 5-August 5, 2011, assisted by Crystal Ptacek, Esther Rimer and Hubert Gibson. UTK students Brad Hatch and Chelsea Coates spent a day working at the site in 2011 as well. Crystal Ptacek and Hope Smith assisted in the field for 14 days from May 7-29, 2012. Their efforts, and the efforts of UTK students Brandy Armstrong, Robert Freeman, Peter Lamb, Dustin Lawson, Lauren Ruff, James Roncki, and Erin Schmidt are gratefully acknowledged. Volunteers in the field included staff and field school students from the Fairfield Foundation (2008 and 2009), staff and interns from Mount Vernon (2008, 2009) and staff from Monticello (2012). Nancy Crowley, Mark Freeman, Casey Jenkins, Tom Klatka, Whitney Leeson, Terry Stelle, and Russell Wetzsel also volunteered; Mary Loose Deviney, Danielle Labbate, Claudia McDonald, and Chris Parker volunteered as part of an Archeology Society of Virginia certification program in May 2012. Andrew Wilkins collected additional soil chemical samples in May 2012. Archaeology is truly a team effort, and I've been privileged to work with such a great team and good friends.

At UTK, Daniel Brock built the site GIS and Crystal Ptacek updated and expanded it. Brad Hatch, under the direction of Dr. Walter Klippel, identified the faunal remains from 2000-2012, and Andrew Wilkins and Lydia Dorsey performed soil chemical analysis and pH testing respectively. Eleanor Breen supervised artifact processing and research in the lab from 2007 through the spring of 2010, and Brad Hatch oversaw lab-related work from the fall of 2010 through the fall of 2013. Rebecca Marston took many of the artifact photos for the 2007-2008 field seasons. Brandy Armstrong, Dustin Baker, Kelly Barry, Katie Cass, Chelsea Coates, Ashley Danzey, Abby Durrett, Stephanie Fuehr, Nathaniel Garrison, Hubert Gibson, Stephanie Hacker, Nicki Klein, Aaron Miller, Yolanda Moore, Lisa Phelan, and James Roncki processed samples and artifacts, conducted research, and took additional photographs. Their work has contributed greatly to the completion of this report.

Archaeobotanical analyses have been conducted by Samantha Henderson at the University of Massachusetts, Boston, under the supervision of Dr. Heather Trigg. Their work has helped clarify depositional processes within the subfloor pits and illuminated aspects of foodways production and procurement, and plantation labor at the site.

Lynsey Bates located the glass intaglio matching the Wingo's seal at the National Museum of Wales, and Sian Iles of that institution provided images and information pertaining to the object in their collections. I am grateful to them both for helping to expand our understanding of this interesting object.

I thank Keith Adams of Sweetbriar College, who provided lab space during the summer of 2011 and 2012 for preliminary processing of artifacts.

Barbara Heath
December 2015

TABLE OF CONTENTS

Chapter 1: Introduction……..………………………………………………………...…1
Site Location and Setting……………………………………………………………1
Historical Context……………………………………………………………………2
The Enslaved Population at Wingo's, 1774 to 1790……………………………4
Plantation Management at the Wingo's Quarter, 1774-1790……………..…....8
Wingo's after 1790……………………………………………………………..11

Chapter 2: Field and Laboratory Methods……………………………………………..15
Field Methods…………………………………………………………………………15
Laboratory Methods…………………………………………………………….. .16
GIS……………………………………………………………………………………..18
Field Work 2000-2012…………………………………………………………………19
Features……………………………………………………………………………...22
Block B Features……………………………………………………………22
Subfloor Pits…………………………………………………………………24
ER281C-L…………………………………………………………………24
ER281C-L Discussion……………………………………………33
ER285C-L…………………………………………………………………35
ER285C-L Discussion……………………………………………41
Planting Feature.…………………………………………………………..43
Enclosure, Block A………………………………………………………..43

Chapter 3: Spatial Structure……………………………………………….…………46
Artifact Distributions…………………………………………………………..……46
Size…………………………….……………………………………………..47
Ubiquity……………………….………………………………….……………......47
Frequency……………………………………………………………….……………49
Soil Chemistry………………………………………………………………………..52
Discussion……………………………………………………………………….....55

Chapter 4:
Artifacts………………………………………………………………………..………...57
Introduction……………………………………………………………………...57
Metal…………………………………………………………………………57
Artifacts of Needlework, Sewing, and Adornment……………...59
Buttons………………………………………………………..59
Decorated and plain buttons from plow zone…...61
Buttons from features…………………………...65
Shanks…………………………………………….… 66
Discussion……………………………………… 66
Thimbles, Straight Pins and Needles……………………67
Shoe Buckle……………………………………………..70
Lead Shot and Gunflint……………………………….....71
Iron Tools and Implements……………………………...72

Glass……..73
Vessel Glass……..73
Container Glass……75
Wine and case bottles…… 75
Pharmaceutical and patent medicine bottles…….78
Tableware……80
Non-Vessel Glass……..81
Flat Glass……...81
Paste Jewel……81
Seal……...87
Ceramics……89
Minimum Vessel Count……91
Stoneware……..91
Utilitarian stoneware……92
Refined stoneware……95
Coarse Earthenware……...95
Wheel thrown, glazed coarse earthenware………95
Colonoware……96
Refined Earthenware……100
Tin-glazed earthenware……100
Creamware……...100
Pearlware……..101
Whiteware……101
Proveniences……102
Ceramic crossmends……102
pXRF Analysis of Daub and Colonoware Samples…….108
Tobacco Pipes……..113
Minimum Pipe Analysis……..114
Tobacco Pipe Crossmends……...121
pXRF Analysis of Pipes……...121
Comparative Data from the North Hill (Poplar Forest) ..122
Prehistoric Artifacts……123
Historic Use of Lithic Artifacts……127

Chapter 5: Historic Faunal and Macrobotanical Remains……...131
Faunal Remains……...131
Macrobotanical Remains……134

Chapter 6: Interpretations and Conclusions……..137
Environmental Modification and Spatial Organization……137
Foodways……140
Consumerism……..142
Conclusions……144

Bibliography……………………………………………………………………………146

Appendix 1. Subfloor Pit Sampling Protocols from Wingos Quarter,
Bedford County, Virginia *(Barbara Heath and Eleanor Breen)*…………………………………………………………………..………159

Appendix 2. A Report on the Faunal Remains from Wingos Quarter *(D. Brad Hatch)*………………………………………………………...………………..162

Appendix 3. Geophysical Analysis
(Daniel W.H. Brock, Stephen J. Yerka and Gerald F. Schroedl..................…..……..241

Appendix 4. Report on the Paleoethnobotanical Materials from Wingo's Site (44BE0298) (*Heather Trigg and Samantha Henderson)*…………………………….....253

Appendix 5. Final Report on Soil Chemistry Analysis of Wingo's Quarter Site (44BE0298), Bedford County, Virginia. *(Andrew Wilkins)*……………………………345

Appendix 6. pXRF data *(Andrew Wilkins)* ...……………………………………………..402

LIST OF TABLES

Table 1. 1774 list of enslaved people at Wingo's (Jefferson in Betts 1987:7)………..6

Table 2: Jefferson's second list of enslaved people at Wingo's in 1774 (Jefferson in Betts 1987:16)………………………….……………………………..7

Table 3. Sediment descriptions and *tpqs* for subfloor pit 281 contexts...………...32-33

Table 4. Ubiquity of organics and ecological remains in 281 contexts………………34

Table 5: Ubiquity of organics and ecological remains in 285 contexts………………41

Table 6: Architectural artifacts, Features 281 and 285……………………………….42

Table 7. Comparison of Artifact Richness, by Count for Features 281 and 285……..42

Table 8. Features associated with enclosure………………………………………….44

Table 9. Artifact ubiquity from non-feature and feature contexts……………………48

Table 10. Historic artifacts at Wingo's……………………………………………….57

Table 11. Metal artifacts from Wingo's……………………………………...…58-59

Table 12. List of buttons from Wingo's contexts……………………………………..60

Table 13. Lead shot type, completeness, weight and size from Wingo's……………...71

Table 14. Measurements for wedges…………………………………………………...72

Table 15. Glass forms at Wingo's…………………………………………………..…..73

Table 16. Glass Vessels at Wingo's……………………………………………………74

Table 17. Paste jewels recovered from Poplar Forest and other Chesapeake plantations……………………………………………………………………………83-86

Table 18: All identified historic ceramics recovered from Wingo's by count and percentage……………………………………………………………………………….90

Table 19. Ceramic type, form and associated sherds per unique historic vessel………...94

Table 20. Comparison of microscopic and chemical groups……………………………97

Table 21. Ceramic crossmend information……………………………………………..102

Table 22. Tobacco pipe vessel attributes……………………………………………….120

Table 23. Distances between pipe crossmends…………………………………………121

Table 24. Calculation of mean pipe stem date for North Hill quarter………………….122

Table 25. Prehistoric lithics by material type and form………………………………..125

Table 26. Prehistoric tools by material type and functional category………………….126

Table 27. Projectile points found at Wingo's…………………………………………..129

Table 28. Macrobotanicals recovered at the North Hill, The Quarter and Andersons………………………………………………………………………136

FIGURES

Figure 1. Location of Wingo's Quarter…………………………………………………2

Figure 2. Undated, ca. 1781 map of Wingos ……………………………………………4

Figure 3. Detail of N269.3 showing overseer's house ……………………………….…5

Figure 4. Map of Poplar Forest including Wingo's, 1790 ……………………………..9

Figure 5. Map of Poplar Forest ca. 1800 with Wingo's in the upper right. …………..13

Figure 6. Map detail of Wingo's ca. 1800 ……………..……………………….……….14

Figure 7. Site map showing the extent of testing at Wingo's, 2000-2012…………….17

Figure 8. Close interval topographic map of the site, summer 2011…………………..20

Figure 9. Location of auger test pits and metal detector hits, 2000..….………………….21

Figure 10. Location of 5 ft. x 5 ft. quadrats at Wingo's, 2001-2012…………………..23

Figure 11. Conjectural outline of cabin showing subfloor pits……………………….…..25

Figure 12. Top of ER281C and ER285C facing east…………………………………..25

Figure 13. Profile of ER281C-L facing east…………………………………………...26

Figure 14. Top of ER281E……………………………………………………………..26

Figure 15. Top of ER281E……………………………………………………………..27

Figure 16. Top of ER281F showing stone rubble, facing east………………….……….…27

Figure 17. Top of ER281F, with portions of 281G and 281J visible…………………...28

Figure 18. Top of ER281G, with portions of layers J and L visible…………………....29

Figure 19. Top of ER281H showing concentrated charcoal and ash, facing east………30

Figure 20. Top of ER281H intruded by rodent burrows ……………………….……….30

Figure 21. Top of ER281J intruded by rodent burrows (ER281L)………………………31

Figure 22. Top of ER281J showing rodent intrusions removed, facing east…………….31

Figure 23. Top of ER281K, facing east…………………………………………………32

Figure 24. Distribution daub (in grams) by layer, 281C-L versus 285C-L. ……………..34

Figure 25. Top of ER285C, facing north…………………………………………...35

Figure 26. Profile of ER285C-L facing north……………………………………...….35

Figure 27. ER285E and F, N 1/2……………………………………………………………36

Figure 28. ER285E and F, with portion of ER285L to left………………………………37

Figure 29. ER285G, N 1/2. The south half has been excavated to subsoil…....................38

Figure 30. ER285H, N 1/2. The south half has been excavated to subsoil……………....39

Figure 31. Top of ER285H with portions of ER285J and ER285L visible…………......39

Figure 32. ER285J-N1/2. The south half has been excavated to subsoil………………..40

Figure 33. Top of ER285K with portions of ER285L visible…………………………...41

Figure 34: Feature 063C bisected, facing west………………………….………………43

Figure 35. ERs 064C and 064D excavated, facing north………………………………..43

Figure 36. Conjectural fence lines associated with post hole and stake holes………….45

Figures 37. Ubiquity of white ball clay tobacco pipe fragments and stonewares………48

Figure 38. Distribution of copper alloy buttons…………………………………………49

Figures 39 and 40. All architectural artifacts; all non-masonry architectural artifacts……………………………………………………………………………..51

Figures 41 and 42. All masonry and all handwrought nails ……..……………………...52

Figures 43 and 44. Left to right. pulled and straight nail distributions………………….52

Figures 45-46. Distributions of dining-related artifacts and kitchen-related artifacts……………………………………………………………………………..53

Figures 47-48. Distribution of bottle glass; kitchen-related artifacts; dining-related artifacts and small finds…………………………………………………………....54

Figures 49 and 50. Richness scores; Distribution of all historic artifacts at Wingo's except daub………………………………………………………………………...54

Figures 51 to 54. Distributions of P, Ca, K and Mg in plow zone………………………55

Figure 55. Percentage of historic artifacts by class……………………………………57

Figure 56 and 57. Button from ER 0168B…………………………………………… 61

Figures 58 and 59. Button from ER 0285B……………………………………………61

Figures 60 and 61. Button from ER 0183B……………………………………………62

Figures 62 and 63. Button from ER 032B ……………………………………………62

Figure 64. Detail of the back of the button from ER032B……………………………63

Figures 65 and 66. Button from ER 035B……………………………………………..63

Figures 67 and 68. Spun-back cast cu alloy buttons from ER 0154B ………………...63

Figures 69 and 70. Button from ER0162B……………………………………………64

Figures 71 and 72. Button from ER0286B ……………………………………………64

Figures 73 and 74. Button from ER 0300B …………………………………………...64

Figures 75 and 76. Button from ER 0308B ……………………………………………65

Figures 77 and 78. Button from ER 0281B ……………………………………………65

Figures 79 and 80. Button from ER 0281H-E 1/2 ……………………………………..65

Figures 81 and 82. Button from ER 0285E-E 1/2 ……………………………………..66

Figure 83. Alpha shank from ER0281E ………………………………………………66

Figure 84. Alpha shanks from ER 0281J………………………………………………66

Figure 85. Thimble fragment, ER 0170B ……………………………………………..67

Figure 86. ER0285F-N1/2…………………………………………………………...68

Figure 87. ER 0285E…………………………………………………………………68

Figures 88 and 89. Straight pin, ER 0281J – E ½; and straight pin, ER0281G………..69

Figures 90 and 91. Needle (?), ER 0281J – E ½ ; Needle (?) ER 0285C-S ½ ……….70

Figure 92. Oval steel shoe buckle from the North Hill quarter, ER1546B/4-1 with fragment from Wingo's, ER 0139B……………………………………………………70
Figure 93. Fork, ER 062B…………………………………………………...……72

Figure 94. Percentage of leaded, non-leaded, and unidentified glass…………………73

Figure 95. Amber (Vessel 1) and dark green (Vessel 8) case or pickle bottles………..75

Figure 96. Finish, neck and shoulder of Vessel ……………………………………….76

Figure 97. Detail of finish for Vessel 2 (ER0281E and F)……………………………76

Figure 98. Vessel 2...77

Figure 99. Vessel 3 (ER 016B/1)………………………………………………………77

Figure 100. "Darbys Carminativ" ………………………………………………………78

Figure 101. "Opodeldoc."………………………………………………..........................78

Figure 102. "Turlington's Balsam of Life" bottles……………………..........................79

Figure 103.Base of Vessel 4 showing glass-tipped pontil scar (ER0290B)....................79

Figure 104. Colorless glass body fragment with embossed "E" and partial letter to the left (ER0286B)..80

Figure 105. Colorless glass body fragment with surface texture from contact with a mold during manufacture (ER0282B)...80

Figure 106. Leaded tableware rim fragment (ER034B)………………………………...80

Figure 107. Molded, colorless paste jewel with star motif. Monticello, Site 7 (Photo courtesy of www.daacs.org)..81

Figure 108. Molded, leaded glass paste jewel with molded floral motif. Monticello, Site 8, (Photo courtesy of www.daacs.org). ……………………………………….….81

Figure 109. Paste jewel, front, ER 0281F……………………………………………… 82

Figure 110. Paste jewel, back, ER 0281F……………………………………………… 82

Figure 111. Paste jewel recovered at the North Hill (ER1801C/1)……………………...82

Figure 112. Seal side view (0285B)……………………………………………….…..87

Figure 113. Fob seal intaglio (ER0285B)……………………………………………….87

Figure 114. Intaglio from National Museum of Wales………………………………….87

Figures 115-118: British crests depicting ducal coronets (Sharpe 1800)…………….....88

Figure 119. Plate IV (Thomson 1820 showing royal accouterments)……………….....88

Figure 120. Percentage of ceramic vessel forms………………………………………..89

Figure 121. Vessel 1, Westerwald mug or tankard……………………………………...92

Figure 122. Vessel 2, base of Fulham stoneware vessel, ER0143B…………………....92

Figure 123. Fulham jar; Vessel 2 base…………….……………………………………94

Figure 124. Vessel 3, British brown stoneware bottle…………………………………. 95

Figure 125. Vessel 5, Manganese-glazed redware, unidentified form. Two of three sherds…………………………………………………………………………………….. 95

Figure 126. Vessel 6, Lead-glazed coarse earthenware, unidentified form…………….96

Figure 127. Vessel 8, ER0281G exterior……………………………………………….97

Figure 128. Vessel 9, ER284B exterior……………………………………………….. 97

Figure 129. Vessel 9, ER284B interior…………………………………………………98

Figure 130. Vessel 10, ER289B exterior. Not notch on top of sherd…………………..98

Figures 131 and 132. Vessel 9, ER285K-N ½ exterior; interior ……………………….99

Figure 133. Vessel 9, ER285K-N ½ rim profile………………………………………..99

Figure 134. Vessel 12, Rim sherds from ERs050B, 062B and 0154B……………….... 99

Figure 135. Vessel 13, ER 0171B…………………………………………………….. 100

Figure 136. Vessel 17, fragments from ERs 031B, 045B and 0169B………………… 101

Figure 137. Vessel 17, base from ER 0154B…………………………………………. 101

Figure 138. Distribution of stoneware sherds by vessel with crossmends mapped…... 103

Figure 139. Distribution of wheel-thrown coarse earthenware sherds by vessel with mends and crossmends mapped……………………………………………………. 104

Figure 140. Distribution of colonoware sherds by vessel…………………………….. 105

Figure 141. Distribution of Vessel 12 sherds…………………………………………. 106

Figure 142. Distribution of tin-glaze sherds, mends, and crossmends………………... 107

Figure 143. Distribution of creamware sherds and crossmends. ………………………108

Figure 144. Chemical values for daub………………………………………………… 110

Figure 145. Chemical values for colonoware, grouped by similarity of signatures. Group 1……….………………………………………………………………….. 110

Figure 146a. Group 2a, chemical values for colonoware and daub, grouped by similarity of signatures.……………………………………………………………111

Figure 146b. Group 2b, chemical values for colonoware and daub, grouped by similarity of signatures. ….....…………………………………………………….111

Figure 146c. Group 2c, chemical values for colonoware and daub, grouped by similarity of signatures.……………………………………………………………111

Figure 147. Chemical values for colonoware, grouped by similarity of signatures. Group 3………………………………………………………………………………112

Figure 148. Chemical values for colonoware, sherds that did not fit groups 1-3………112

Figure 149. Interior of ER 0302B……………………...…………………………… 113

Figure 150. ER 062B showing chewed end (left)…………………...………………… 113

Figure 151. ER 0114B/1 and ER 0169B showing chewed ends (left)………………….114

Figure 152. Detail of pipe stem showing tooth wear and irregular mouthpiece………. 114

Figure 153. Distribution of white ball clay tobacco pipes…………………………….. 115

Figure 154. Pipe 1…………………………………………………………………... 116

Figure 155. Pipe 2…………………………………………………………………... 117

Figure 156. Pipe 3 exterior (ER0 398B)……………………………………………. 117

Figure 157. Pipe 3 interior (ER0398B)…………………………………………….. 117

Figure 158. Pipe 4 exterior (ER0139B)……………………………………………. 118

Figure 159. Pipe 4 interior (ER0139B)…………………………………………….. 118

Figure 160. (left to right) Pipe 5, Pipe 6, Pipe 8……………………………………. 118

Figure 161. Pipe 7 exterior………………………………………………………..119

Figure 162. Pipe7 interior…………………………………………………………... 119

Figure 163. Pipe 9 exterior. ………………………………………………………119

Figure 164. Pipe 9 interior…………………………………………………………. 119

Figure 165. pXRF results for colonoware tobacco pipes…………………………... 121

Figure 166. Incised pipes from ER1801B3, 1741C3 and 1745A/3.

Poplar Forest, North Hill. …………………………………………………………...122

Figure 167. ER1801B2-3 and 1742B2-1, incised bowls. Poplar Forest, North Hill. ….123

Figure 168. ER1739G3, glazed and incised bowl. Poplar Forest, North Hill. ………...123

Figure 169. Lithic distribution at Wingo's mapped by Z-scores……………………....124

Figure 170. Prehistoric lithics by material type………………………………………...126

Figure 171. Prehistoric tools by material……………………………………………. 127

Figure 172. Sample of lithics found at Wingo's in 2009……………………………. 127

Figure 173. Quartz tool from eastern subfloor pit………………………………….. 128

Figure 174. Nutting stone, top, ER 0281F……………………………………………...129

Figure 175. Detail of nutting stone surface, ER 0281F…………………………………...129

Figure 176. Nutting stone reverse side with whitewash or white paint, ER 0281F…… 130

Figure 177. Grinding stone, ER 0281G……………………………………………….. 130

Figure 178. Pestle recovered from ER 0135B/1………………………………………..130

Figure 179. End of pestle showing evidence of use, ER 0135B/1……………………..130

Figure 180. Subfloor pit faunal frequencies………………………………………... 131

Figure 181. Distribution of non-commensal bone in ER 0285C-L…………………….132

Figure 182. Distribution of all non-commensal bone from ER 0285C-L…………….. 132

Figure 183. Distribution of lead shot in plow zone…………………………………….133

Figure 184. Distribution of t-headed nails at Wingo's……………………………... 138

Figure 185. Interpretive reconstruction of domestic landscape of the Wingo's quarter…………………………………………………………………………………..139

CHAPTER 1: INTRODUCTION

Excavations at Wingo's began as part of a larger study of slavery at Poplar Forest, a late 18th-century piedmont Virginia plantation. Archaeological excavations at Poplar Forest preceded the Wingo's project includes work at the Quarter and North Hill quarters; within and around a standing brick house that served as a late antebellum slave quarter; and within a group of dependencies associated with the early 19th-century mansion built for Thomas Jefferson's retirement. Additional excavations southeast of the mansion in areas known as Sites A and B have subsequently provided additional information about slavery on the property (Kelso et al. 1991; Heath et al. 2004, 2005; Lee 2008; Gary, Proebsting and Lee 2010; Heath and Lee 2010; Heath and Gary 2012; Lee 2012b).

Work at Wingo's began with small-scale testing in 2000 and 2001. From 2007 to 2012, more intensive research was undertaken at the site, with funding from the National Foundation for the Humanities from 2010 to 2012. Research focused on the creation and maintenance of domestic spaces by the enslaved; practices relating to foodways; and the ways in which enslaved people engaged with the informal and formal consumer economies. In order to address the materiality of slavery, the research team adopted a multi-scalar approach that captured information useful for reconstructing macro-features such as yards, more limited features such as subfloor pits, and the micro-scale evidence of burned seeds, wood charcoal, small faunal remains, and artifacts vital for addressing foodways and economic practices. This report presents a detailed summary and interpretations of research findings.

SITE LOCATION AND SETTING

The Wingo's quarter archaeological site, 44BE0298, is located in the modern town of Forest, Virginia. It was part of the Poplar Forest plantation, situated in Bedford County approximately 12 miles west of Lynchburg (Figure 1). The site lies between two springs feeding branches of Wolf Creek, a tributary of Ivy Creek. Ivy Creek joins Blackwater Creek, which empties into the James River just north of Percival's Island.

The climate in Bedford County is temperate. From 1961 to 1990, temperatures in the country ranged from an average high of 44 degrees Fahrenheit in January to an average high of 86 degrees in July. Average annual precipitation was 44.76 inches, with most falling in the months of May (4.57 in.), June (4.25 in.) and July (4.53 in.). The area experiences moderate snowfall in the winter months (U.S. Climate Data).

The eastern two-thirds of Bedford County, in which Wingo's is sited, is part of the piedmont physiographic province, and is characterized by narrow ridges dissected by short drainages. The ridgetop on which the site is located is gently to moderately sloping. Igneous, metamorphic, and sedimentary rock formations all underlie the area. Igneous rocks include granite, grandiorite, diorite, and diabase. Metamorphic rocks include granite gneiss, biotite, and muscovite mica gneiss, as well as schist, quartzite, phyllite, sericite schist, hornblende gneiss, and greenstone. Sandstone and shale comprise the sedimentary deposits (McDaniel et al. 1989:2-3). All Wingo's soils are characterized as Cullen loam (see Appendix 5, Table 1). Formed from weathered hornblende gneiss sediments, this soil type is found on ridge-top fields and woodlands terraces of the piedmont uplands (McDaniel et al. 1989:113-114).

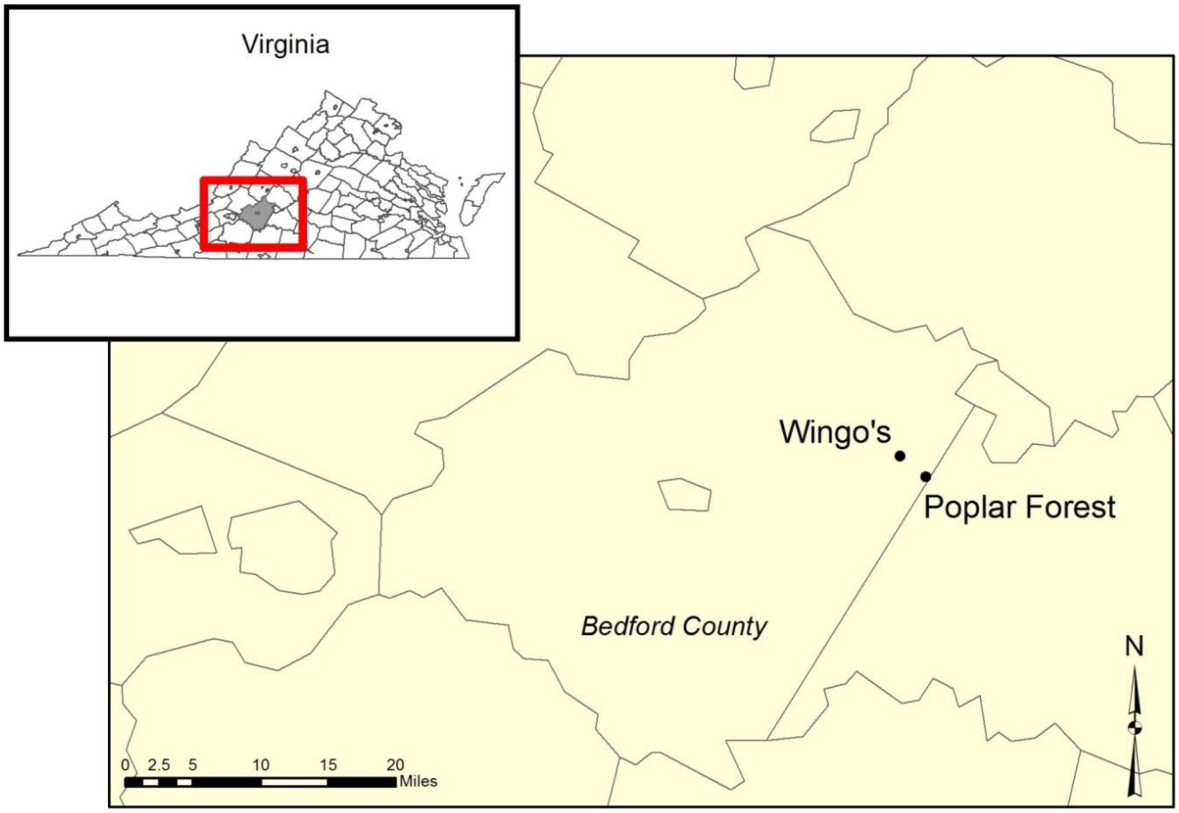


Figure 1. Location of Wingo's Quarter.

Before European settlement, eastern Bedford County was blanketed by mixed southern hardwood forest, consisting of oak, chestnut, and hickory, as well as tulip poplar and beech. Understory plants included blueberry bushes, rhododendrons, redbud, and dogwood. Sycamore, maple, elms, and box elders grew along creek beds and rivers (Bowes and Trigg 2012:157).

HISTORICAL CONTEXT

Poplar Forest, the plantation of which the Wingo's quarter was a part, was patented by William Stith in 1745 as a 4,000-tract in Albemarle County, Virginia. Following his death, the land passed to his daughter, Mrs. Pasteur in 1755, by which time the county had divided. Her inheritance fell within the bounds of Bedford County, which was created from land formerly in of the counties of Lunenberg (1753) and Albemarle (1754). Mrs. Pasteur sold the property to Peter Randolph by 1762. In July 1764, Randolph sold Poplar Forest to John Wayles along with another tract located on the James River known alternately as Judy's Creek, Judith's Creek and Dunlora (Jefferson in Betts 1987:7; Marmon 1991(1):5-8; Chambers 1993:1-4).

John Wayles is the first owner known to have used the land for agricultural production. An English immigrant, he had arrived in the Virginia colony by 1741 (Virginia Magazine of History and Biography 1907:12). He married well and rose to become a wealthy planter, a King's Attorney in Charles City and Chesterfield Counties, a practicing attorney in Charles City, Chesterfield, Cumberland, and Goochland Counties, and the Virginia attorney of the Bristol trading company of Farell & Jones (Charles City County Order Book 1737-1751:157, 265; Chesterfield County Order Book 1, 1749-1754:2, 412; Cumberland County Order Book 1, 1749-1751:326; Goochland County Order Book 6, 1744-1749:197). Wayles lived at The Forest in Charles City County, from which place he administered his roughly 20,000-acre holdings that stretched across the James River Valley in the Virginia piedmont to the foot of the Blue Ridge Mountains (Bear and Stanton 1997:329-330).

The first direct reference to enslaved people at Wayles' Bedford properties appears in 1766, when the Bedford County Court ordered them to assist in local road works.[1] The documentation does not state whether they lived at Poplar Forest or Judith's Creek. Indirect evidence suggests that Guinea Will, an enslaved man owned by Wayles and later inherited by Jefferson, lived on the property by 1766, although his placement there at that time is somewhat speculative.[2] A 1769 court order for laborers to work along Waterlick and Cotton Town Roads suggests that the people engaged in that project resided at Poplar Forest, given its proximity to the work area. Certainly enslaved people lived at Poplar Forest by September of 1770, when they were explicitly exempted from working on a new road leading to iron mines in the vicinity (Bedford County Order Book 3:685).

In February of 1773, a few months prior to his death, Wayles added a codicil to his will specifying that he wanted "new quarters settled… in Bedford," where enslaved laborers would raise tobacco to be sold to pay outstanding debts to Farell & Jones, incurred when he acted as their agent for the sale of a shipment of slaves carried aboard the Prince of Wales (Charles City County Deeds and Wills 1766-1774:461; Boyd 1958(25):660; Minchinton et al. 1984:185; Eltis et al. 1999). Wayles died in May, and by late 1773, his estate was under division, much of his land was up for sale, and the enslaved men, women, and children formerly in his possession were transferred to his heirs. His oldest daughter Martha by his first wife, Martha Eppes Wayles, had married Thomas Jefferson. Through the settlement of the estate, Martha Jefferson and her husband came into possession of 135 enslaved people and land near the James and Appomattox Rivers

---

[1] It is possible that people lived and worked on the plantation prior to this date. Zachariah Morris, who served as overseer at Judith's Creek under Jefferson, was appointed surveyor of the road in October 1765 by the Bedford County Court (Bedford County Order Book 3:240). Wayles may have employed him as overseer shortly after he purchased that property. No evidence has yet been found of people living at Poplar Forest prior to Wayles' ownership of the property.

[2] Will appears on the Wayles tithable lists for Amelia County, where the Guinea plantation was located, in 1763, 1764 and 1765, and then disappears for the subsequently preserved years of 1766-1769. It is likely that he was living at Poplar Forest by 1766.

stretching from modern day Powhatan to Bedford Counties. Among these holdings were Poplar Forest and Judith's Creek (Jefferson in Betts 1987:7-9; Bear and Stanton 1997:329-330).

The Enslaved Population at Wingo's, 1774-1790

For much of his life, Jefferson recorded lists in his Farm Book of people whom he enslaved. The lists often include their birth and death dates, the quarter on which they lived, and information about provisions. Many lists are arranged by family groupings and likely by household (Jefferson in Betts 1987; Heath 2012:112).

Apparently Wayles established the new quarter specified in the codicil to his will before he died. Designated as "Wingo's," the quarter was originally a 1,000-acre tract in the northwest corner of the larger Poplar Forest plantation (Figures 2-6). John Wingo, formerly of Amelia County, served as overseer for the quarter from 1773 to 1776. Indirect evidence suggests that he may have served as the chief overseer for all of Jefferson's Bedford County holdings while he was employed by Jefferson (Marmon 1991(1):28).

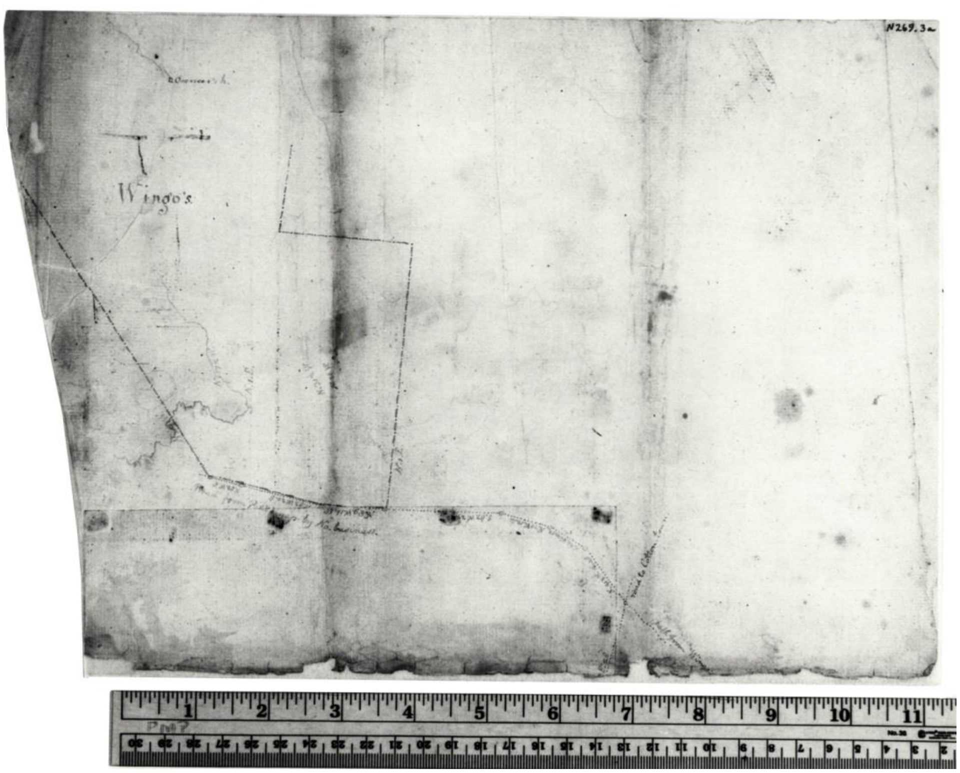


Figure 2. Undated, ca. 1781 map of Wingo's showing the "overseer's house" in upper left (above the word Wingo's) (ViU, N269-3).

In January 1774, within eight months of his father-in-law's death, Jefferson made his first Farm Book entry, recording the names of the enslaved men, women and children whom he had inherited and the plantation quarters where they lived. Five people from the Wayles' estate lived at Wingo's: four "laborers in the ground" (John, Davy, Doll, and Charles), and Mary who as followed "some other occupation" (Table 1). Mary was the daughter of Betty Hemmings, as likely was Doll; Davy was a member of the Hern family (Marmon 1991(3):39; Stanton 2000:58). John, Davy, Mary and Doll were all 21 years of age or younger, an age distribution in keeping with the practice of sending younger people of both genders to settle new quarters in the piedmont (Morgan and Nicholls 1989:222-223). Charles was presumably older, as Jefferson did not record his age, a practice typical for people whom he had inherited and whose ages he did not know.

In a second census for 1774, Jefferson listed ten adults over the age of 16 and 5 children living at Wingo's (Table 2). He had transferred all of the new arrivals, except Lucy, from Wayles' Indian Camp property in Cumberland County (Jefferson in Betts 1987:7, 16, Marmon 1991(1):28).

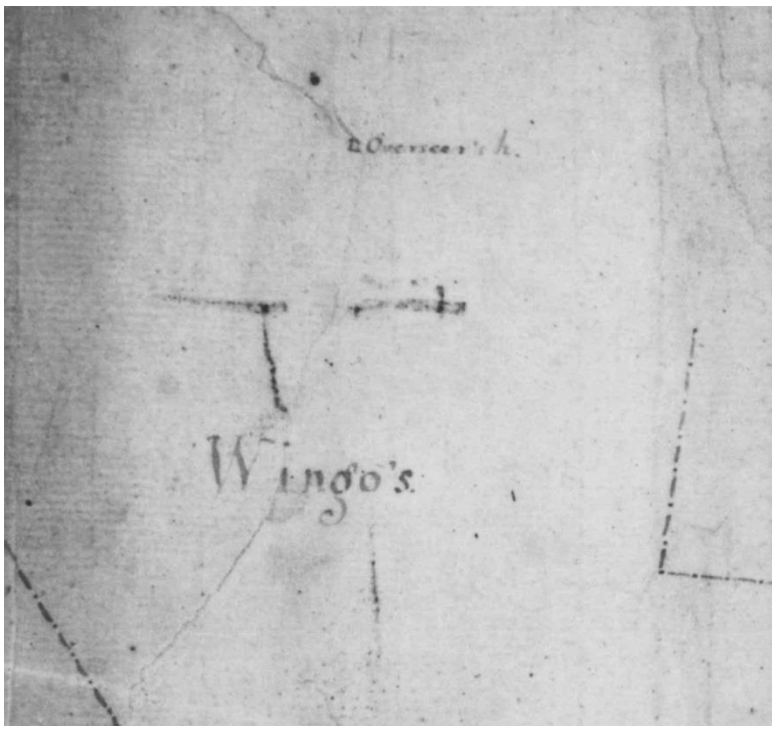


Figure 3. Detail of N269.3 showing overseer's house (ViU).

To understand the history of this group it is important to review the connection between the Wingo's community and Martha Eppes Wayles. In 1734, Martha inherited a woman named Jenny and four girls—Sarah, Judy, Aggy and Dinah—from the estate of her father Francis Eppes IV, as well as co-ownership with her sister Ann, of Argulus, Will,[3] and Parthena (Henrico County Deeds and Wills 2(1), 1725-1737:459). Eppes' will further stipulated that the ownership of any future children of Parthena was to be divided between the two sisters when they came of age or married.

From her brother Francis Eppes V, who died in 1737, Martha Eppes inherited girls Kate and Betty, most likely Betty Hemmings (Henrico County Wills and Deeds 1725-1737:612-613). By the time of her marriage to John Wayles in 1746, Martha also owned Ben, described as a boy and likely the son of one of the enslaved women (Henrico County Wills and Deeds 2(2), 1744-1748:132). Sarah, Dinah, Judy, Kate, and Parthena were living on the Wayles' Indian Camp lands,[4] also inherited by Martha at the time of

[3] Ann Eppes eventually gained ownership of Argulus and Will. She married Benjamin Harris and owned the other half of the Indian Camp plantation, which had been divided under the terms of her father's will (Cumberland County Will Book 1, 1749-1769:204-205).
[4] Indian Camp was originally in Henrico County. In 1728 Henrico split and the land fell in Goochland County; by 1749 it was Cumberland County, and in 1777 it became Powhatan County.

A Roll of the slaves of John Wayles which were allotted to T.J. in right of his wife on a division of the estate Jan. 14. 1774	
	Wingo's
John	1753
Davy	1755
Mary	1753
Doll	1757
Charles	[age not listed]

Table 1: 1774 list of enslaved people at Wingo's (Jefferson in Betts 1987:7).

her father's death, by the 1740s. They appear on a 1748 tithable list, and all except Parthena and Kate were living with their families at Indian Camp at the time of Wayles' death. Parthena had probably died by that time, and Kate might have been living at Wayles' Angola plantation in Amelia County. Betty Hemmings and Aggy were living at Wayles' Guinea plantation in Cumberland and Amelia Counties by 1773, and Jenny was at The Forest.[5] Ben does not appear on the census lists (Jefferson in Betts 1987:12-13).

At Indian Camp, Sarah married Lundy, who Wayles had purchased in 1753, likely from a newly-arrived slave ship. He was adjudged to be 13 years old when he appeared before the Cumberland County Court in September of that year (Cumberland County Court Order Book 1752-1758:139). Four of their children, Peg, Phoebe, Betty, and Lucy, were named for other enslaved women who had been owned by Francis Eppes IV at the time of his death. Eppes also owned the time of an indentured servant named Frank, and it is possible that Sarah's son Frank was named for him, or for Francis Eppes IV or V (Henrico County Deeds and Wills 2(1), 1725-1737:459). Abby, the daughter of Judy and Will, also lived at Indian Camp prior to 1774, while Lucy lived at the Forest (Jefferson in Betts 1987:13).

The people listed in Table 2 were likely resident on the property by early spring of 1774.[6] Additional information about the enslaved residents at Poplar Forest is included in a Bedford County tithable list taken in 1782 and a slave census recorded in Jefferson's Farm Book dated 1783 (VAN 1981; Jefferson in Betts 1987:24). Neither list, however, distinguishes between the quarters at Wingo's and a separate quarter in an area known as

[5] Jenny was moved to Monticello in 1774 where she died in 1781. Martha Jefferson may have grown up with her (Jefferson in Betts 1987:15).

[6] Jefferson recorded the death of Peg, probably Londy and Sarah's daughter, at Poplar Forest in March of that year, and the birth of the Abby's child Judy, who does not appear on the list, at Wingo's in August (Jefferson in Betts 1987:21).

the "old plantation"[7] (Heath 2012:110), so the exact makeup of the Wingo's population at these times is unclear.

In February of 1790, Jefferson signed an indenture with his daughter Martha and her fiancé, Thomas Mann Randolph, granting them 1,000 acres of the Wingo's tract, which had expanded to 1,450 acres, along with five families resident there, and one living at the old plantation (Boyd 1961:189-190). Among the 20 people listed at Wingo's were Jack and Patty (Patt Kennon), their two adult sons Tom and Jeffery, their 16-year-old daughter Betty and their 10-year-old daughter Judy, all formerly of Elk Hill in Goochland County.[8] Tom and Jeffery had by this time established households of their own on the property. Tom had married Lucy, the daughter of Lundy and Sarah. They had a daughter Polly, aged six, and a son Davy, aged two. Jeffery had married Joan, the niece of waterman

1774 Location of Slaves for 1774	
Wingo's	
John	1753
Davy	1755
Doll	1757
Charles	[age not listed]
Londy	[age not listed]
Sarah	died July 1781
Sarah	1764
Peg	[age not listed]
Phoebe	[age not listed]
Frank	Jan. 1764
Betty	Aug. 1767
Lucy	July 1769
Abby	[age not listed]
Jesse	Nov. 1772
Lucy	1747

Table 2: Jefferson's second list of enslaved people at Wingo's in 1774 (Jefferson in Betts 1987:16).

[7] The name implies that this quarter was settled prior to Wingo's, maybe as early as 1764.
[8] Jack and Patty and their two sons are listed as the property of Bathurst Skelton and were living in Goochland on the Elk Hill/Elk Island property that was divided between Skelton and Elizabeth Lomax Skelton, the widow of his brother Reuben. She married John Wayles in 1760. Wayles had dower rights to 1/3 of the island until his wife died in 1761, then he rented it. Bathurst Skelton married Martha Wayles in 1768, and her father worked Elk Island in partnership with his son-in-law (Stanton, n.d.). Skelton died in 1771. Jack and Patty appear on his estate inventory (Charles City County Wills and Deeds 1766-1774:524). Their family was at Poplar Forest in 1783 (Jefferson in Betts 1987:24).

Jame Hubbard, who, along with his family, had moved to Poplar Forest from Elk Hill sometime between 1783 and 1786.[9] The couple had two daughters, Scilla, aged four, and Nancy, aged two. Jupiter, Phyllis, and their children Phyllis, Sandy, John and Sam, ranging in age from 15 to 22, formed the fourth family.[10] Lundy[11] and Betty also lived at Wingo's. Sarah and her husband Billy, and their children Peg, Lewis, Abby, Patty and Harry, lived at the old plantation, and completed the marriage indenture (Jefferson1794:26; Boyd 1961:190).[12]

Plantation Management at the Wingo's Quarter, 1774-1790

A few details relating to the operation and productivity of Poplar Forest generally, and Wingo's quarter in particular, can be teased from the terse entries in Jefferson's memorandum books. Jefferson visited Poplar Forest briefly in September 1773, stopping in Amherst County to visit his friend Hugh Rose along the way. He paid Rose for "carrying hhd. tobo. For Mr. Wayles's estate 5/9," some of which might have been raised at Poplar Forest. [13] A few days later, Jefferson "paid Smith at Poplar Forest" (Bear and

---

[9] Joan was the daughter of Elk Hill slaves Nan and Frank. Following their deaths (Frank in 1775 and Nan and Gamey between 1776 and 1783), she and her brothers Armistead and Natia (Nace) were adopted by her uncle, Jame Hubbard, whom Jefferson had moved to Monticello in 1774 (Jefferson in Betts 1987:15, 25, 34). The tithable list for Wayles' Goochland properties of Elk Hill and Elk Island, dated 1767, also lists a Jack Hubbard (Goochland County Tithables 1, 1735-1769:171), possibly Jame's brother. Jame met Cate at Monticello. The daughter of Old Sall, she came to Thomas Jefferson from his parent's estate. She had two daughters, Hannah (b. 1770) and Rachael (b. 1773) prior to her marriage to Hubbard. The couple had two daughters, Maria (b. 1776) and Eve (b. 1779) while living in Albemarle. Jefferson recorded their son Jame on his Register of Births as being born in Albemarle in 1783, and son Phil as born in Bedford in 1786 (Jefferson in Betts 1987:31). The birth of Joan and Jeffery's eldest daughter, Scilla, in 1786, supports the arrival of the Hubbard family at Poplar Forest by 1785 or early 1786 (Untitled, undated list of slave names and ages, MHi, Reel #14).

[10] In 1774 when Jefferson made his first and second lists, they were living at Dunlora (Judith's Creek) (Jefferson in Betts 1987:11, 17). They had probably been moved there from either Elk Hill or Indian Camp.

[11] The identity of this Lundy is unclear, although presumably he is kin to the elder Lundy who married Sarah and lived at Indian Camp and Wingo's. The elder Lundy was imported into Virginia in 1753. In an undated, untitled listing of slaves given to Martha Jefferson, Jefferson records the younger Lundy's age as 26, indicating that he was born in 1764. No previous lists include a younger Lundy. Frank is listed as the elder Lundy's son on two occasions (Bowling Clarke to Thomas Jefferson Randolph, 1792, ViU; Betts 1987:13). The 1774 censuses for Indian Camp and Wingo's note that he and his sister Sarah were born in 1764, perhaps as twins. It is possible that the younger Lundy was not part of the Jefferson's share of the Wayles estate; however, there is no record of Jefferson purchasing him.

[12] The identity of Billy, Sarah's husband, is also problematic. While Jefferson lists him as "abt. 29" in the undated list at MHi that records Martha's marriage settlement, no men of this name with a birth date of about 1761 appear in any other of Jefferson's lists of enslaved males at Poplar Forest or elsewhere.

[13] Wayles' also owned 280 acres of land in Amherst County, across the James River from Judith's Creek, and the payment might have been for that property (Bear and Stanton 1997: 330, 344). It is unclear why Rose took on this responsibility rather than one of Wayles' overseers. Zachariah Morris is thought to have been Wayles' Judith Creek overseer. He owned property in Amelia County near Wayles's holdings there and his brother Isaac Morris served Wayles as overseer, appearing on tithable lists for Wayles' Guinea lands in Raleigh Paris, Amelia County in 1763, 1765 and 1766 (Amelia County Tithables, 1763, 1765, 1766).

Stanton 1997:345). Historian Lee Marmon has interpreted this entry as meaning that Jefferson paid Joshua Brock, a free blacksmith working on the property; however an enslaved man, whom Jefferson listed as “Billy boy,” was also working as a smith at Poplar Forest at that time, probably for Brock (Jefferson in Betts 1987:7). The blacksmith shop continued in operation under Brock’s direction at least as late as 1777, and is noted on a circa 1781 map (Bear and Stanton 1997:443; N269.3)

In October of 1774, in his capacity as an administrator of Wayles’ estate, Jefferson recorded charges to that estate for transporting 20 hogsheads of tobacco from Bedford from the previous year (Bear and Stanton 1997:379), some of which may have been grown at Wingo’s. An additional four hogsheads from 1773 remained to be transported. In November, he noted that 35 hogsheads of tobacco of the 1774 crop were to be applied to the credit of Wayles’s estate. He also paid for the hire of “seven negroes…of Mr. Eppes in Bedford last year” (in 1773), noting that he would deduct the cost for feeding their children, which was not part of the original agreement (Bear and Stanton 1997:379). Mr. Eppes was Jefferson’s brother-in-law and another of Wayles’ heirs and administrators, and it is possible that the seven enslaved adults, and their children, were sent to Wingo’s as part of the workforce put in place to make that quarter operational.

Jefferson credited Wingo with setting up hogsheads, presumably to pack the 1774 tobacco crop for shipment, and charged him for 9 bushels of corn (Bear and Stanton 1997:380,382). The following April, Jefferson reported that Wingo produced 58 barrels, 2 bushels of corn, of which he was entitled to a little over 11 bushels for his own use. Jefferson also provided him with additional corn (1 barrel and 4 bushels), and an allotment of pork, which Jefferson noted that he would stop (Bear and Stanton 1997:393). At the same time, he tallied the tobacco production from the previous years, indicating that all five hogsheads of inspected leaf produced at Wingo’s, and two from Poplar Forest, were to be sent to Wayles’ creditors, Farell & Jones. An additional seven barrels of tobacco, as yet uninspected, was to be sent to another of Wayles’ creditors, Robert Cary and Company, with some of these barrels possibly originating at Wingo’s as well (Bear and Stanton 1997:395).

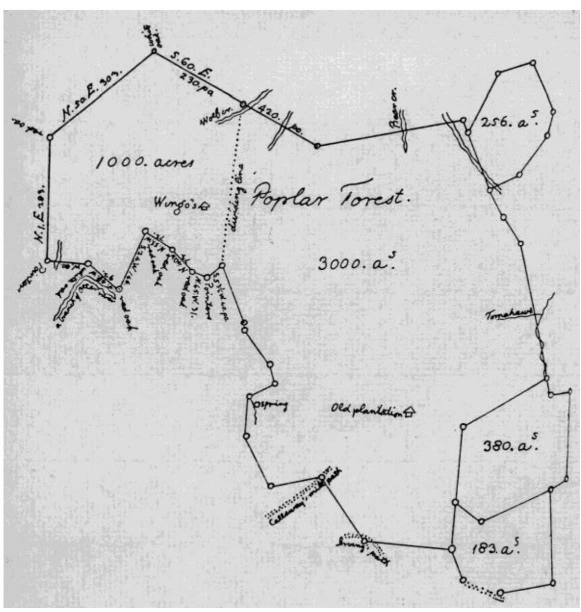


Figure 4. Map of Poplar Forest including Wingo’s, 1790 (Boyd 1961:190, ViU).

Jefferson made a payment to Wingo in February of 1776 and settled his account on April 3, 1777 (Bear and Stanton 1997:414; 442-443). From that point forward there is no specific record of an overseer at the quarter. The management of Wingo’s may have been incorporated into the wider management of Poplar Forest, or Jefferson may have appointed an enslaved headman to oversee operations there.[14] A circa 1781 map of the property (Figures 2 and 3) shows a building labeled "Overseer's h.," while two later maps (Figures 4-6) depict a house labeled as "Wingo's" long after he had departed the property.

Jefferson visited Poplar Forest from June 14 to July 23, 1781, after approaching British troops threatened to capture him at Monticello. He was accompanied by his family, his manservant Robert Hemmings, and friend William Short. Family history reports that the Jeffersons stayed at an overseer's house on the property. While he was in residence, he engaged in financial transactions with a number of his enslaved people, purchasing chickens from Judy, Dinah, Pat (Pat Kennon), and Betty, and owing money to Lucy, Lundy, Phyllis, Judy, Bess, and Will for unspecified services (Bear and Stanton 1997:511-512). These individuals represent six of eight households he recorded in the 1783 Poplar Forest census (Jefferson in Betts 1987:24).

At the time of his visit, two events affected Poplar Forest residents profoundly. Sarah, Lundy's wife, died in July. She was probably buried at Wingo's near Peg's grave, who had died in 1774 (Jefferson in Betts 1987:21). This graveyard has not yet been found. Later that month Pat Kennon's husband Jack from Wingo's, and Will from the old plantation, appeared in Bedford County court, accused of "having feloniously Broke open the Mill House and Still House" of local resident John Thompson, Jr.[15] Peter, the third defendant, belonged to Thompson's father, who owned a tract adjoining Poplar Forest's southeast boundary. It is likely that the men planned the break-in during after-hours visits between plantations. While each man spoke in his own defense, four jurors found them guilty. Jack and Will were carried to the public whipping post in New London and received 25 and 39 lashes respectively. Peter, perhaps because he had dared rob a member of the family to whom he belonged, first had his ears nailed to the pillory and his right ear cut off, before receiving his 39 lashes. Jefferson left Poplar Forest on July 23, apparently seeing no reason to delay his departure to attend the trial held five days later (BCOB6:324-324; Betts 1987:16, 24; Bear and Stanton 1997:512).

There is scant documentary evidence for the remaining nine years that Wingo's formed part of Jefferson's holdings. In addition to growing the corn and tobacco referenced in the memorandum books, enslaved people cleared land, built and maintained the quarter infrastructure of dwellings, support buildings, roads and fences—referenced by Jefferson as appurtenances—and managed livestock including work horses, cattle, hogs, and sheep (Boyd 1961:190-191). While the exact numbers, ages and sexes of the animals at Wingo's is not known, a list for the old plantation at Poplar Forest, compiled in 1791 by overseer Bowling Clarke provides some insights. Cattle consisted of "31 Cows, 3 Bulls, 14 stears, 13 heffers, 11 yearlings, 19 calves, 6 work stears" for a total of 97 animals; "19

[14] Thomas Bennet was an overseer at Poplar Forest by 1781, a position he held until at least 1783 (Bear and Stanton 1997:512, 520). John Key (1782-1784) and Nicholas Lewis (1782-1791) oversaw Jefferson's plantation operations for the time that he was away from Virginia (Marmon 1991(1):31).

[15] Thompson owned a mill for grinding wheat and corn with an associated still on nearby Buffalo Creek along the line separating Bedford and Campbell counties (Thompson 1945:6, 27).

work horses, 3 breading Mares, 1-3 year old Mare, colt 1-2 years old, Horse Do. [ditto] 1 year old, Do [ditto] 2 this springs Do. [ditto]" for a total of 27 horses; and "114 Hogs 26 pigs" (Bowling Clarke to Thomas Jefferson Randolph, 1792, ViU). Cows and cattle provided milk and dairy products, meat, hides and labor; horses pulled plows and other loads and provided transportation, and hogs furnished meat. While no sheep are included in Clarke's list, they were present in at least small numbers at Wingo's, and provided wool and meat. Not recorded as part of the plantation holdings, but present in the archaeological record, were chickens that were likely raised by enslaved women.

Wingo's after 1790

Jefferson later conveyed additional land to Martha's dowry for a total transfer of 1,450 acres. The excavated quarter site located on this parcel was not occupied after the transfer of the property from Jefferson to the Randolphs in 1790. Randolph might have removed people to labor on other landholdings, or they might have remained at sites that have not yet been discovered on the former Wingo's tract. Aside from cartographic depictions of a house labeled "Wingo's" on maps dating from 1790 and the first decade of the 19th century, and a few short references that are somewhat ambiguous, the documentary record is largely silent about the subsequent use of the property (Figures 4-6).

The Randolphs conveyed a third of the Wingo's property to their daughter Ann Cary Randolph and her husband Charles Lewis Bankhead in 1808 when the couple married (Articles of Agreement, Thomas Mann Randolph and Martha Jefferson Randolph to Ann Cary Bankhead and Charles Lewis Bankhead, September 17, 1808, ViU; Plat of Bankhead Property, 1811, ViU). Thomas Jefferson wrote to his daughter later that year expressing his hope that they would settle at Poplar Forest (Betts and Bear 1986). There is some evidence that the Bankheads worked the land. Elizabeth Trist, in writing about Bedford in 1810 to Catharine Wistar Bache (December 28, 1810, PPAmP), noted that Charles Bankhead's father had given him "a good many Negroes who are just gone up." Two years later, Thomas Jefferson gave instructions to his Poplar Forest overseer that "Mr. Bankhead's tobacco [was] to be sent down also" (Thomas Jefferson to Jeremiah Goodman, December 13, 1812), presumably as the last crop raised at Wingo's prior to the sale of the property to William Radford and Joel Yancey in 1811.

In February 1810, Thomas Mann Randolph, facing financial pressures, sold the remaining two-thirds (840 acres) in the western portion of the Wingo's tract to Ann Moseley (Bedford County Deed Book 13, 1809-1813:487). Later that year he determined to sell a number of slaves to Mississippi. Jefferson urged Randolph to instead sell the land that he had given to Ann, and offered to give the couple 500 acres of land in Bedford and provide them money to build a house there (Elizabeth Trist to Catharine Wistar Bache, December 28, 1810, PPAmP). Instead, they purchased property adjacent to Monticello (Elizabeth Trist to Catharine Wistar Bache, May 7, 1811, PPAmP). They subsequently sold over 700 acres, including the Wingo's land, to William Radford and Joel Yancey in 1811 (Charles Bankhead to Thomas Jefferson, June 29, 1811, ViU; Indenture, December 7, 1811, ViU). Jefferson sold Radford and Yancey additional land to the west of the Wingo's tract at the same time, bringing the total land transfer to just under 1000 acres (Thomas Jefferson to William Radford, November 30, 1822, MHi; William Radford to Thomas Jefferson, December 26, 1822, MHi; Thomas Jefferson to William Radford, circa 1823; MHi; Thomas Jefferson to William Radford, February 27, 1823, MHi). The deed was improperly recorded, and was re-conveyed in 1823.

Yancey, Jefferson’s overseer, built a house on the property, which burned in the early 20th century. In 1826, he and Radford divided the land, with Yancey’s portion equaling 500 acres. Following Radford’s death in 1834, the land passed through several owners until it was purchased by Richard Carlton Walker Radford, a son of William Radford, in 1859. The land was subsequently divided between his heirs but remained in the Radford family. In 1974 will, Octavius Loxley C. Radford, Jr. gave life estates to his brothers Duval and Morton Radford, and his sister Marie Louise Radford. Following their deaths, the portion of the property known as Rothsay, which includes the Wingo’s tract, was divided between Loxley’s nieces Laura Radford Goley and Anne Radford Barrett. Laura and Gene Goley live at Rothsay today and own the land on which the Wingo’s archaeological site is located (Pond 2001).

Figure 5. Map of Poplar Forest ca. 1800 with Wingo's in the upper right. (N266a, ViU)

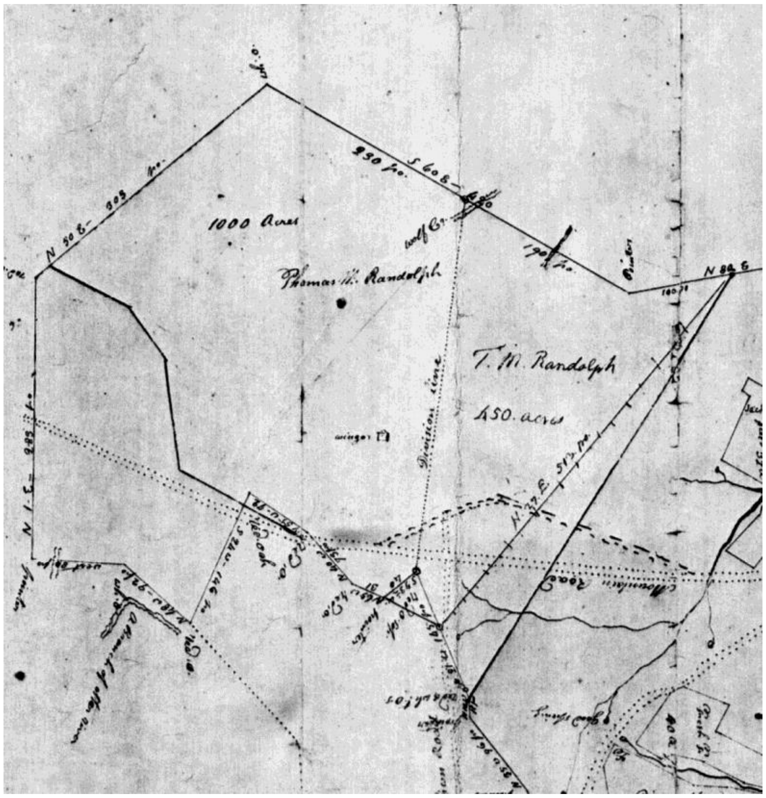


Figure 6. Map detail of Wingo's ca. 1800 (N266a, ViU).

CHAPTER 2: FIELD AND LABORATORY METHODS

FIELD METHODS

The Wingo's archaeological site sits on the western edge of a modern farm and is presently in pasturage grazed by beef cattle. From 2000 to 2012, testing was carried out along the southwestern portion of the 12-acre field where historic maps indicated the 18th-century settlement was located. To date, 1.7 acres (approximately 10%) of the field has been tested.

Two control points were established at the site for use in establishing a more formal grid. Control Point 1 is located immediately east of where a large wood-and-metal horse jump in the southwest quadrant of the field stood. The jump was removed during the winter of 2011-2012. Control Point 1 was assigned the arbitrary grid coordinates 5,000N, 5,000W and the arbitrary elevation of 500 ft. above sea level. Control Point 2 is located at the corner of a property line and has coordinates 5,000N, 4,793.248W and an elevation of 496.618 ft. relative to Control Point 1. Most excavation has taken place in the area falling between these two points, but quadrats also extend to the east, north, and south (Figure 7). Only limited testing was conducted west of Control Point 2 prior to this portion of the property being sold. The current landowner did not give permission to do further work.

In 2000 and 2001, preliminary testing was undertaken. From 2007 to 2011, excavations consisted of a combination of 2 ft. and 5 ft. square excavation quadrats; in 2012, only 5 ft. square quadrats were excavated. Test pits placed at 25 ft. intervals on staggered lines were supplemented by 12.5 ft. interval test pits in areas of high artifact concentration, and by blocks of contiguous 5 ft. quadrats. In 2011, 18 shovel test pits were also excavated in the vicinity of a small cluster of metal detector hits in the field south of the site near auger unit WG2/5.

Coordinates were assigned to the northwest corner of each quadrat. All quadrats were excavated by shovel, and the interface between stratigraphic layers was troweled to look for features and, if present, define their edges. All non-feature sediments were screened through standard 0.625mm (1/4 in.) mesh, and chemical samples, approximately 0.25 L in volume, were collected from plow zone and subsoil contexts in 5 ft. x 5 ft. excavation quadrats. Sediment from both layers and features were described using standard Munsell color designations and U.S. Department of Agriculture terminology.

Each quadrat received a numeric designation, with each natural stratum being designated by an uppercase letter. For example, ER 0281A refers to topsoil in a 5 ft. x 5 ft. quadrat. Layers and features, if present, were lettered sequentially within a quadrat, so that plow zone in quadrat ER 0281 was designated as 0281B, while the top layer of the subfloor pit, sealed by plow zone, was designated ER 0281C. Layers within the feature followed (ER 0281D-0281L). The letters O, I, U, and V were not used to avoid confusion with each other (U and V) or with numbers (O and 0, I and 1). As appropriate, 2 ft. x 2 ft. quadrats dug for exploratory testing were expanded into 5 ft. x 5 ft. quadrats. In these cases, the same number was reassigned to the larger quadrat, with a "/1" added to distinguish it from the smaller test.

Site stratigraphy consisted of two layers: relatively thin (0.1-0.25 ft.) topsoil ranging from dark brown (7.5YR3/3 and 7.5YR3/4) to brown (7.5YR4/4) to dark reddish-brown (5YR3/4) clay loam, and a dark red (2.5YR3/6) to red (25YR4/6) to reddish-brown (5YR 3/4 and 5YR4/4) to yellowish-red (5YR4/6) clay loam plow zone. Plow zone sediments ranged in depth from 0.4 ft. to 0.7f t, and averaged 0.5 ft. thick. They contained some charcoal, naturally-occurring quartz, and fragments of greenstone introduced from the underlying parent material, as well as a scatter of dense, glossy black material that appears to concentrate in the area of highest artifact density. Samples of this stone or mineral have been collected but have not been identified to date. The plow zone sealed features and subsoil.

With the exception of plow scars (which were not uniformly mapped and only sampled), features were treated with a standardized procedure. Each feature was photographed and mapped to scale prior to excavation, and large features (the post holes, the subfloor pits) were bisected, profiled, photographed, completely removed by trowel, remapped and photographed again. Sediment from approximately two-thirds of each layer in subfloor pit 281 and one half of each layer in subfloor pit 285 was floated using a Flote-Tech Model A machine (a minimum of a 10 L sample per context) or water screened through 0.625mm and 0.159mm mesh in 2.5 L increments (Appendix 1).The remaining sediment from each subfloor pit was screened through standard 0.625mm mesh. Standard-sized sediment samples were also saved for chemical analyses.

In 2001 and 2007, quadrats were photographed with color slides; all subsequent photographs were shot with a high-resolution digital camera. Limited digital video footage of the site was also shot in 2009 and 2011. Coordinate and elevation data were captured on a TDS Nomad data collector; for purposes of redundancy, they are also recorded on paper field forms. Other context information entered on the forms includes: excavation register (ER) quadrat number, layer designation, excavators' initials and date, sediment descriptions, stratigraphic position, method of excavation used, artifact counts and descriptions, interpretations, notes, samples collected, and photographs and maps created. A bag log for all artifacts was kept that recorded their process from field recovery through cataloguing. A separate log was kept for sediment samples as they were processed via flotation or water screening.

LABORATORY METHODS

Artifacts were identified and counted in the field, then brought to the lab to be washed, labeled, and sorted for final identification. Artifacts are stored by provenience in archival-quality plastic sealable bags. All artifacts, field forms and related data from excavations from 2000 to 2012 have been entered into Re:discovery, a relational database used for cataloguing. Standard fields in Re:discovery capture information about each artifact's material, form, manufacturing technique, decoration, post-manufacture modification, completeness, weight (in grams), measurement (in millimeters using the Digital Archaeological Archive of Comparative Slavery's measurement protocol for most fragments), date range of manufacture, and recovery method. The default method is screening through 0.625mm mesh; there are fields that record whether further processing

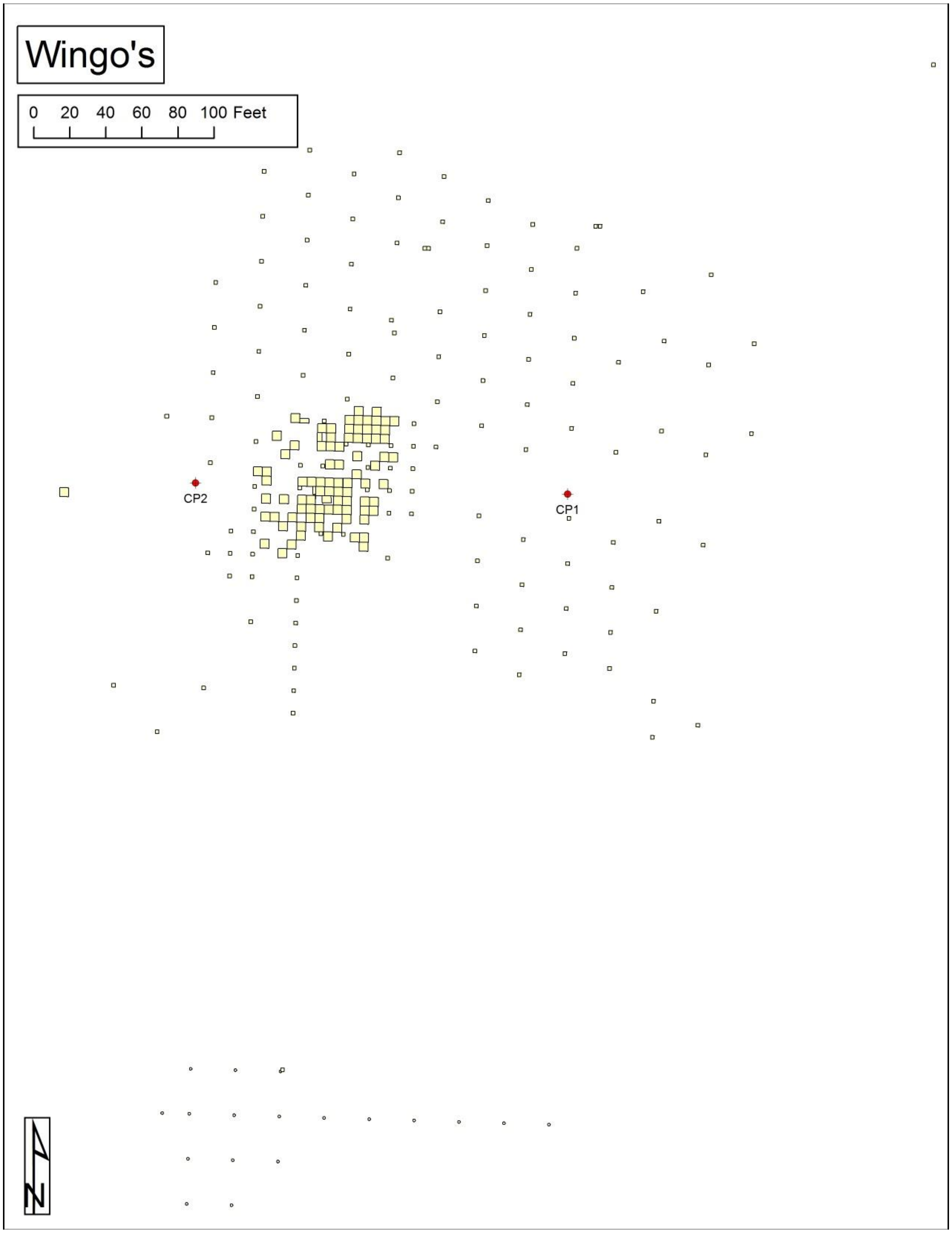


Figure 7. Site map showing the extent of testing at Wingo's, 2000-2012. Small squares represent 2 ft. x 2 ft. test quadrats at 25 ft. or 12.5 ft. centers; larger quadrats are 5 ft. x 5 ft. in size. Area west of CP2 was sold and was not available for further testing (Map courtesy of Crystal Ptacek).

was done through water screening or flotation (www.daacs.org). Diagnostic artifacts (such as ceramics, vessel glass, tobacco pipe fragments, beads, buttons) were recatalogued into the Digital Archaeological Archive of Comparative Slavery's database by DAACS staff at Monticello using DAACS protocols, and other artifact data from the site was translated into DAACS from the original catalogue. In addition, context data and GIS data were translated into DAACS and are available for use at www.daacs.org.

Water screened and floated artifacts were sorted by material type in the Faulkner Archaeology Laboratory at the University of Tennessee, Knoxville (UTK). Faunal bone from excavations and fine-screen contexts was separated and identified using the comparative collection in the Department of Anthropology at UTK (Appendix 2). Sediment samples have been analyzed for chemical composition using pXRF and subfloor pit samples have been analyzed for pH in the Department of Anthropology. Additional samples were sent to the University of Delaware's Department of Plant and Soil Sciences for standard agricultural soils analyses.

Diagnostic artifacts and selected nails were photographed with a high-resolution digital camera. Artifacts, botanical, and faunal remains, and remaining sediment samples are curated at the archaeology laboratory at Thomas Jefferson's Poplar Forest.

Dates based on recovered artifacts have been assigned to all contexts (where possible) and minimum vessel counts have been completed for ceramics and glass, with minimum object counts completed for tobacco pipes.

GIS

A GIS was developed for the project in 2007, and spatial data collected from 2000 to 2012 was entered. ESRI's ArcGIS 10 was used to arrange the data and create site maps. This process involved incorporating archaeological data (including auger test holes, 2 ft. x 2 ft. and 5 ft. x 5 ft. quadrats, geophysical data, site features, the results of a metal detector survey, and total station points) with spatially referenced topographic maps and Digital Orthophoto Quarter-Quadrangles (DOQQs), along with GPS coordinates. Archaeological features (two subfloor pits, several stake holes, and a post hole) were vectorized. Historic maps were also rectified with modern maps. All of the maps produced were exported into jpeg format.

An elevation map was generated using total station point data from 2000-2011, allowing for a more fine-grained evaluation of the site's topography than what a larger-scale topographic map might provide (Figure 8). This was completed in ArcMap using the Triangulated Irregular Network (TIN). The elevation of the northwest corner of each 5 ft. x 5 ft. quadrat was used to create the elevation surface. Contour lines were also produced to enhance the maps.

The maps created of the distribution of plow zone artifacts formed an important part of this project. Artifact distribution maps allow for the analysis of yard space along with the space inside of and immediately around the quarter itself. These maps were generated using splines, a spatial analysis tool. Splines apply an interpolation method that estimates values using a mathematical function which minimizes overall surface curvature, resulting in a smooth surface that passes exactly through the input points. Points were placed at the center of each 5 ft. x 5 ft. excavation quadrat. These points contained the artifact type and quantity information from which the splines were generated. Topsoil and plow zone counts were used for this analysis; the 2 ft. x 2 ft. test quadrats and artifacts from features were not taken into consideration. A mask, or boundary, was used in order to establish limits for the spline to run including unexcavated areas in order to see what the computer program would project. Distribution maps were created for almost every artifact type, including both historic and prehistoric objects. After the distribution maps were made and exported, comparisons could be drawn based on the concentrations of artifacts over various parts of the site.

FIELD WORK 2000-2012

In October 2000, Poplar Forest staff undertook a preliminary survey along an east-west trending ridge (approximately 840 ft. above sea level) and a south-facing slope adjacent to two springs feeding branches of Wolf Branch. Using a total station, archaeologists established five north-south transects spaced 50 ft. apart. Each transect consisted of 12 test pits spaced at 50 ft. intervals for a total of 60 tests (Figure 9). Because of extremely dry conditions, the original plan for digging standard shovel test pits was abandoned, and approximately 1ft.-diameter holes were instead dug using a gas-powered auger. Each hole was excavated to subsoil, with sediments displaced by the auger trowel-sorted to recover artifacts.

Beginning in the southwest corner of the grid, each transect was labeled consecutively west to east WG1 through WG5, with each auger hole in each transect numbered from 1 to 12 from south to north. Three wrought nails, a wrought or cut nail, and an iron buckle were found in WG1/12. Two wrought and two cut nails were recovered in WG2/5, 350ft. south and 50ft. east of WG1/12.[16] The remaining artifacts recovered during initial testing consisted of modern bottle glass, hardware associated with farming equipment, and wire from modern wire fencing.

Staff conducted a metal detector sweep of the transects, moving both north-south and east-west along the established lines and covering a three-foot area centered on the transect lines. Positive hits were flagged and mapped, and a sample was excavated to ensure the accuracy of the hits.

Following auger testing, Poplar Forest staff excavated two judgmentally-placed 5 ft. x 5 ft. quadrats in the survey area in November of 2000. WG1 was placed approximately 19

[16] This area was later tested with 18 shovel test pits at 25 ft. centers in 2011. Four possible daub fragments were recovered in ER0372; no additional artifacts were found.

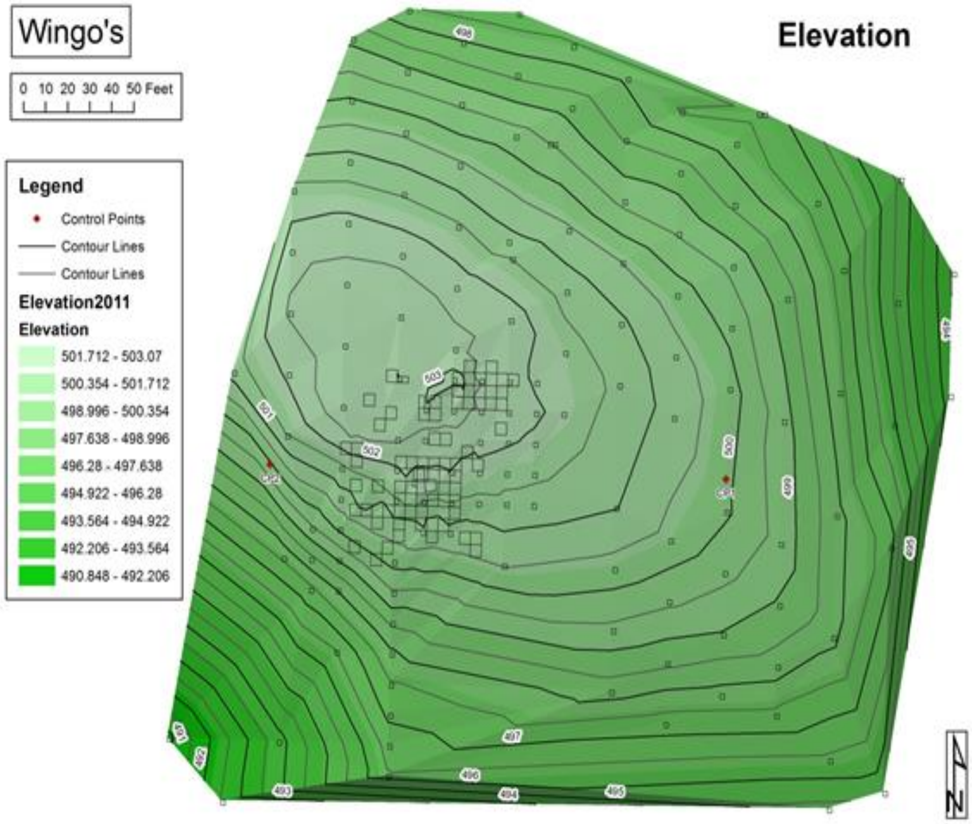


Figure 8. Close interval topographic map of the site, summer 2011 (Map courtesy of Crystal Ptacek).

ft. west and down slope of Control Point 2 within a depression bounded by field stones and a privet bush. Below a shallow plow zone, no features were present and no artifacts were recovered. WG02 was placed immediately northwest of WG3/12. One fragment of dark green, mouth-blown bottle glass, an iron buckle, one unidentified animal bone, seventeen hand-wrought nails, a wire nail, a cut nail, and a fragment of creamware were recovered from plow zone.

In September of 2001, another 5 ft. x 5 ft. quadrat was excavated (WG03). Located immediately southeast of WG02, the quadrat contained both prehistoric and historic artifacts. These included 4 fragments of mouth-blown green bottle glass, a colorless glass tableware fragment, 22 hand wrought nails, a wrought iron tack, a white clay tobacco pipe bowl fragment, 6 fragments of animal bone, a piece of unidentified refined earthenware, a fragment of creamware, a quartz flake, a quartz projectile point, and a chert flake. The quantity and date ranges of the historic artifacts in these two units suggested their association with the Wingo's quarter. No further excavations were conducted at Wingo's from 2001 to the spring of 2007.

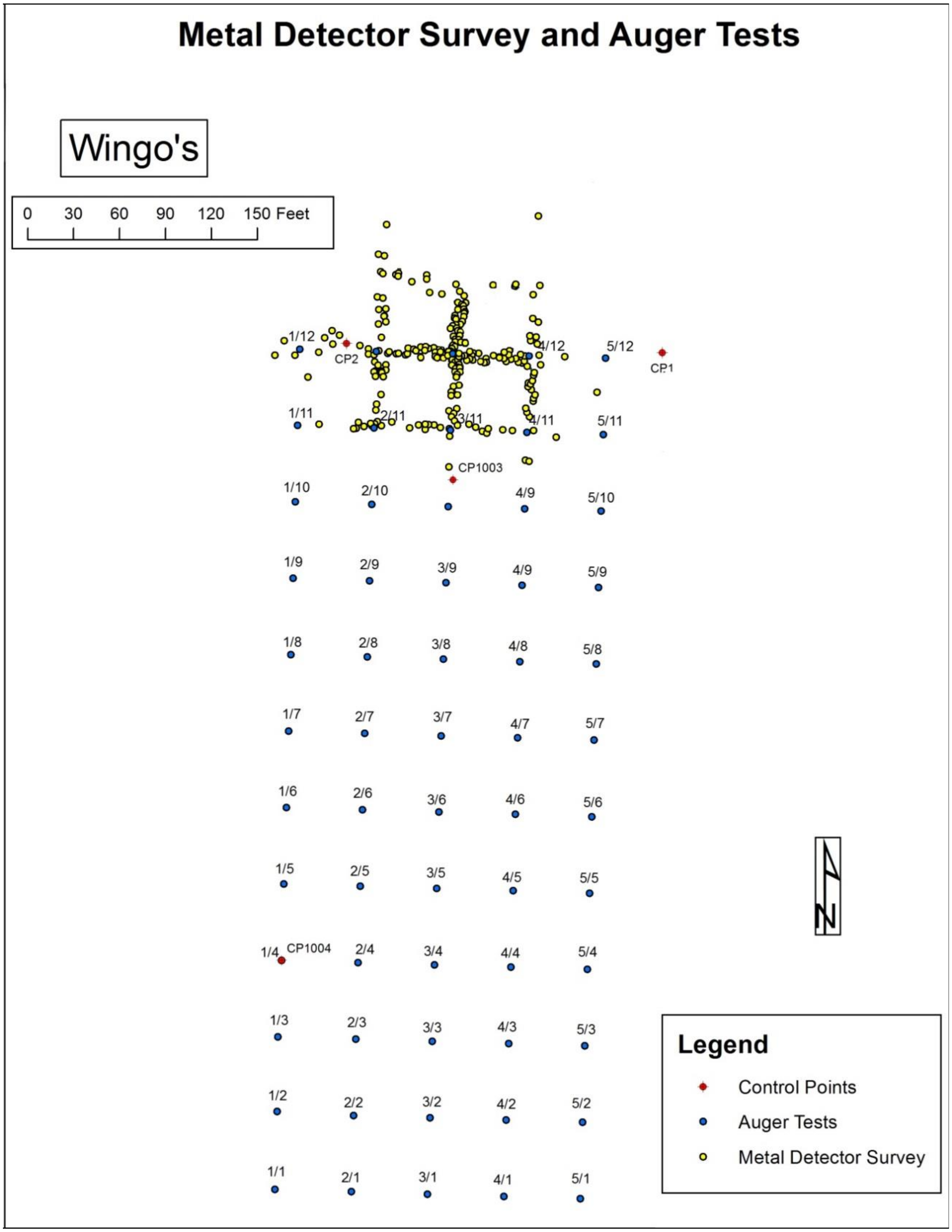


Figure 9. Location of auger test pits and metal detector hits, 2000 (Map courtesy of Crystal Ptacek).

In 2007, Dr. Barbara Heath returned to the site with a team from the University of Tennessee, Knoxville to conduct remote sensing. Dr. Gerald Schroedl directed the geophysical survey with the assistance of graduate students Stephen Yerka and Daniel Brock. Over the course of a weekend in March, the team laid in a grid consisting of twenty 20 m. square blocks covering an area 100 m east-west x 80 m north-south, and walked zigzag transects spaced at 0.5 m intervals using a Geo-Scan FM36 flux-gate gradiometer. Data were processed in Geoplot. The resulting map shows a mosaic of large and small anomalies that reflects magnetism in the underlying greenstone bedrock and cultural features associated with the historic site (Appendix 3). Further manipulation of the data to take into account areas of artifact concentrations located in subsequent excavations lead to recommendations for additional testing which was undertaken in the summer of 2011. No other cultural features were found as a result of the further refinement of the dataset (Appendix 3:4-7).

Excavations re-commenced at the site in the spring of 2007 and continued in the summers of 2008, 2009, 2011 and 2012. In all, 143 2 ft. x 2 ft. quadrats; 86 5 ft. x 5 ft. quadrats; 1 2.5 ft. x 2.5 ft. quadrat; 1 2.5 ft. x 4 ft. quadrat; 2 2.5 ft. x 5 ft. quadrats, and 18 shovel test pits (18 in. in diameter) have been excavated. A block (Block A) measuring 35 ft. east-west by 25 ft. north-south in its maximum dimensions was excavated in 2008 in an attempt to find features that related to a post hole found the previous season (see Features, 064C, below). Subsequent excavations occurred around the block to the east and west. A second, smaller block (Block B), measuring 30 ft. east-west by 15 ft. north-south, was excavated in 2009 to expose two subfloor pits and the area immediately surrounding them (see Features 281C-L and 285C-L, below). Quadrats excavated in 2011 and 2012 filled in gaps adjacent to and between the blocks (Figure 10).

Features

Excavators uncovered three related feature groups: a pair of subfloor pits, one post hole, and series of small circular and rectangular features that represent stake holes and small driven posts used for fencing.

Block B Features

Prior to 2009, no direct evidence of a house had been discovered at the site, although the presence of post and stake holes and the scatter of domestic artifacts and nails indicated that one or more structures were located nearby. Comparative spatial analysis of architectural artifacts found at the North Hill and Quarter sites at Poplar Forest and the Wingo's assemblage was undertaken during the winter of 2008. Distribution maps from the two former sites indicated that while nails tend to be more broadly distributed, daub concentrated in plow zone adjacent to or immediately above subfloor pit features contained within slave cabins, or within the fill of those features. The association between daub and subfloor pits is in part due to its fragility as an artifact type; unless highly fired, daub is unlikely to survive in plowed contexts where a combination of mechanical breakage and weathering cause its deterioration. Even burned daub is often fragile and generally friable. The presence of a slightly higher concentration of daub in

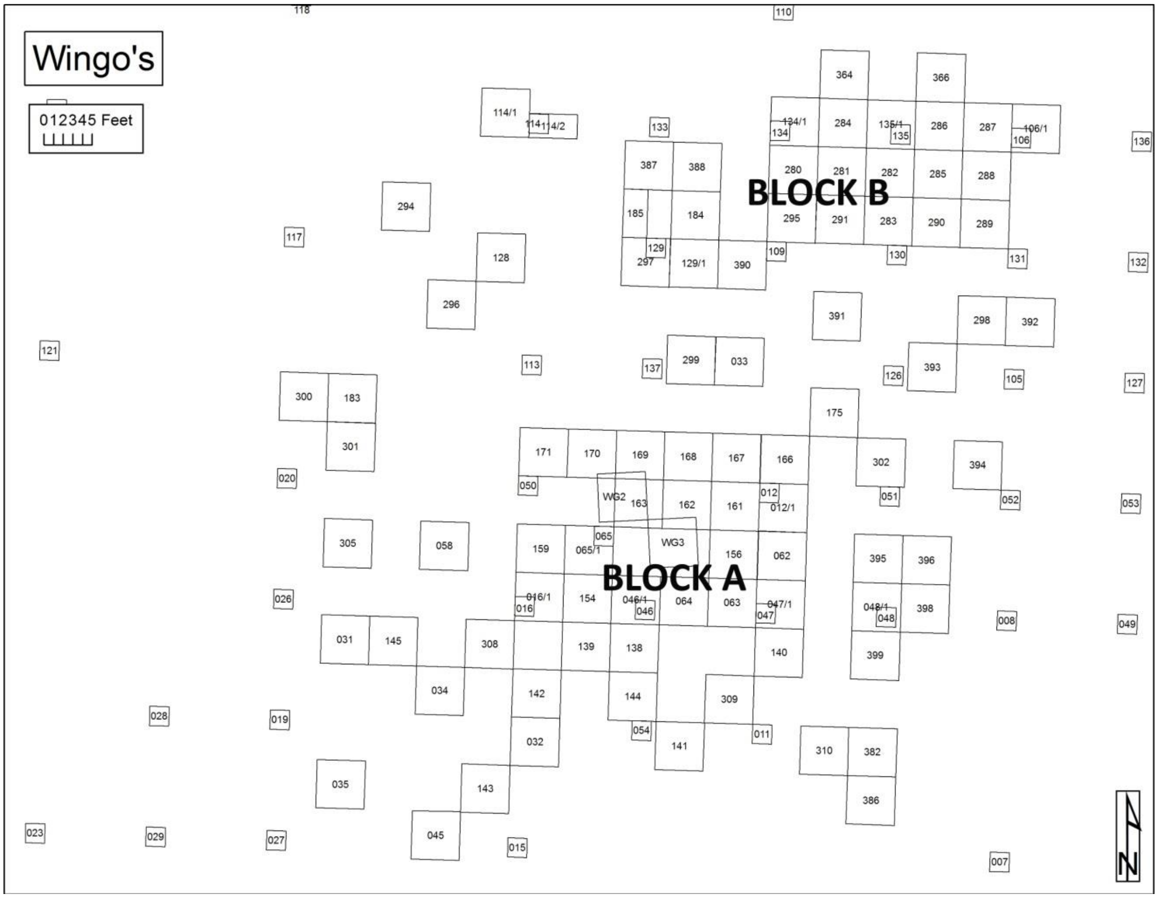


Figure 10: Location of 5 ft. x 5 ft. quadrats (and some test quadrats) at Wingo's, 2001-2012 with Block A and Block B designated (Map courtesy of Crystal Ptacek).

ERs 0184 and 0185 suggested the possible location of a structure in this area of the site (see Dunnell and Simek 1995 for a discussion of artifact preservation in plow zone). Consequently, the decision was made to undertake additional excavations east of the two quadrats during the 2009 field season. Quadrats were also placed adjacent to Block A, an area of relatively high artifact density, to increase the overall sample of artifacts (Figure 10).

By the end of the 2009 field season, 15 5 x 5 ft. quadrats had been excavated in a block in the northeast portion of the site (Block B). They included ERs 0106/1, 034/1, 0135/1, and 0280-0291. Clay loam varying in color from 5YR3/4 to 5YR4/4 to 5YR4/6 (dark reddish brown to reddish brown to yellowish red) characterized topsoil and plow zone. Plow zone also contained greenstone, charcoal, and daub—varying in frequency between quadrats—and extended to an average depth of 0.6 feet in the eastern portion of the block and 0.7 ft. in the western and central portions.

The quadrats in Block B contained a variety of historic and prehistoric artifacts. Eighteenth-century finds included white ball clay and local red earthenware tobacco pipe fragments, creamware, tin-glazed earthenware, Fulham and Rhenish stoneware, lead-glazed coarse earthenware and colonoware, green wine bottle and colorless vessel glass, a glass and copper alloy fob seal, three metal alloy buttons, a horseshoe, two iron tools, 202 wrought nails and nail fragments, 1737.9 g. of daub, a small fragment of plaster and a small fragment that may be mortar. Bone, charcoal, carbonized peach pits, and eggshell were also recovered in plow zone. Prehistoric artifacts included a quartz biface and projectile point fragment, a quartzite projectile point, a projectile point of unidentified stone, a ground stone pestle, one quartzite tool that may have been used as a scraper, two scrapers of unidentified stone, and a broken chert tool. One chalcedony flake, 26 chert flakes, 50 quartz flakes, 54 quartzite flakes, 2 siltstone flakes, and 22 flakes of unidentified stone were also recovered, as well as two quartz cores. Other debitage included 4 chalcedony, 2 chert, 188 quartz (some of which may be broken by plowing) and 5 quartzite fragments.

Sealed beneath plow zone in ER 0281—as well as in the southern portion of ER 0284, the eastern edge of ER 0280, the northwest corner of 0282, and the southeast corner of 0135—was a large feature whose upper fill was characterized by red brown clay loam, charcoal, and a few large stones (Figures 11 and 12). Since the majority of the feature fell within ER 0281, it was given that unit designation and excavated to subsoil. To the east, excavators uncovered an oval-shaped feature in the western edge of ER 0282, the southeast corner of ER 0286, and extending across approximately one-half of quadrat 0285. This was designated 0285C, the top layer of a multi-layered pit. It was also excavated to subsoil. The stratigraphy and artifacts associated with both features are described below.

Subfloor Pits

ER281C-L

The two features, separated by 4 ft., were historically contained within a structure aligned east-west that measured at minimum 10.5 x 18 ft., and enclosed a minimum of 189 square ft. of living space (Figure 11). The western pit (ER281) was roughly circular in plan, measuring 6 x 6.5 ft. and intruding subsoil to a depth of 1.7 ft. (Figures 11, 12 and 13). Excavators placed a line at the estimated center of the feature, sectioning it into an eastern and western portion. The western portion was removed first, the profile mapped and photographed, and then the eastern portion was excavated. At that point, it was discovered that much of the eastern portion of the top of the feature was quite shallow and that rather than bisecting the feature, it had been divided into two sections of approximately 2/3rds (to the west) and 1/3 (to the east). The western section was excavated and mapped in plan (by layer) and in profile. Next, the eastern section was excavated, mapped by layer, and the entire feature photographed and remapped upon completion of excavation.

In the western section, the feature contained eight discrete layers of fill (0281C-0281K), and a series of rodent burrows (0281L) (Figure 13). In the eastern section, no evidence of layer D was detected. Layers were labeled to correspond to the western strata, with the suffix -E 1/2 (meaning east half) added to distinguish them spatially. Thus, 0281C- E 1/2, 0281E-E 1/2, 0281F-E 1/2, 0281G-E 1/2, 0281H-E 1/2, 0281J-E 1/2, 0281K-E 1/2 are the strata making up the eastern portion of the

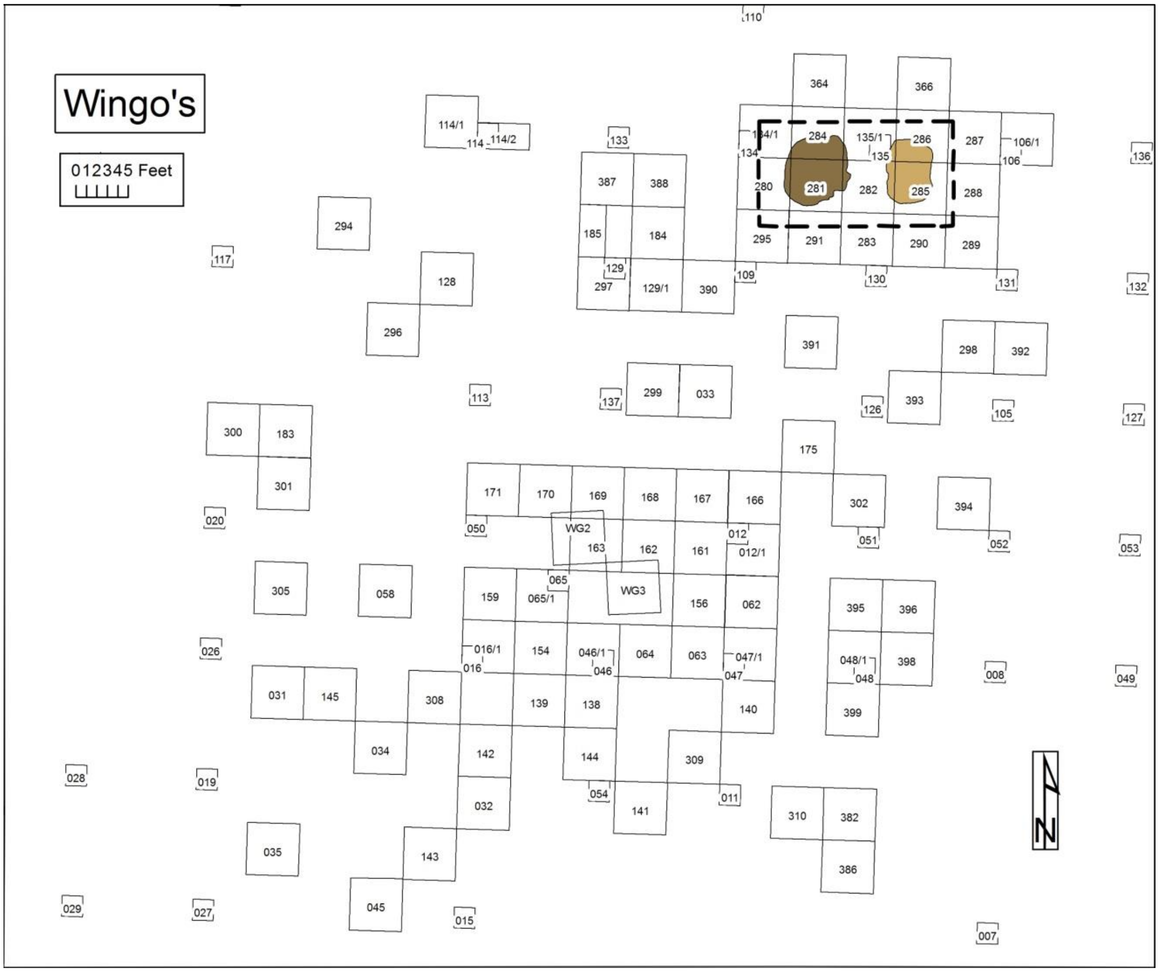


Figure 11. Conjectural outline of cabin showing subfloor pits (courtesy of Crystal Ptacek).

Figure 12. Top of ER 0281C (foreground) and ER 0285C (background) facing east.

excavation, and 0281L-E 1/2 represents additional rodent burrowing activity. Feature strata sediment colors and descriptions are summarized in Appendix 1, Table A1-1. Flotation sample sizes are summarized in Appendix 6, Table 1.The artifact, floral and faunal summary data presented below combined counts recovered through dry screening with standard mesh, water-screening through two mesh sizes, and flotation. While artifact counts are accurate, archaeobotanical numbers are based on remains that were visible to the naked eye during general cataloguing. For complete counts of the carbonized seeds, pits, and charcoal, see Trigg and Henderson's report (Appendix 4).

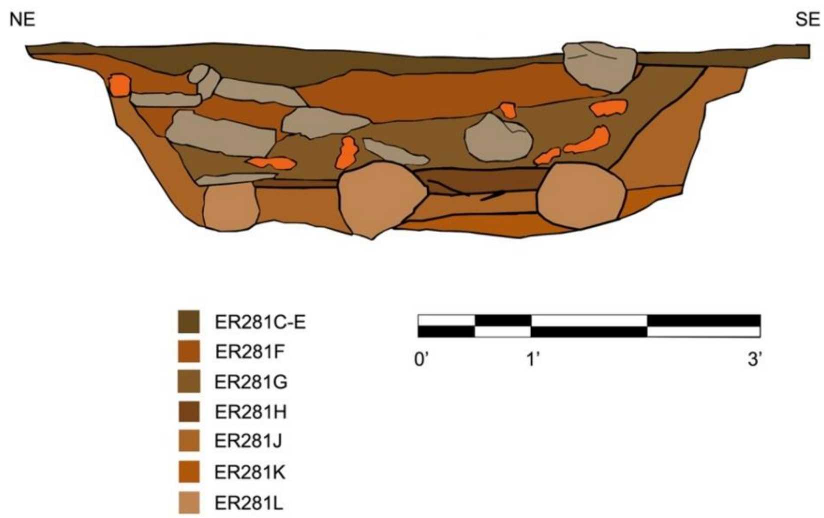


Figure 13. Profile of ER 0281C-L facing east.

ER 0281C and 0281C-E 1/2 was very thin, measuring 0.07 ft. to the west and 0.09 ft. to the east (see Table 3 for sediment descriptions for this and subsequent fill layers). The layer included 1890.1 g. of daub; 37 bone fragments; 5 fragments of green bottle glass; 9 complete nails and 2 fragments; a brad; an iron needle; approximately 26 g. of charcoal; eggshell; a quartzite flake; 7 quartz flakes; and 2 fragments of chalcedony. The daub and nails concentrated in the eastern section (1,846.6 g. of daub in the east vs. 43.5 g. in the west; 9 nails in the east vs. none in the west). No date could be assigned to the layer given a lack of diagnostic artifacts.

Figure 14. Top of ER 0281E; orange flagging marks the location of wrought nails found in layer D, facing north.

ER 0281C sealed ER 0281D. Charcoal was a frequent inclusion while lesser quantities of burned daub, greenstone, and several large rocks were also encountered in the soil matrix. The layer averaged 0.3 ft. in thickness. The fill was contained wholly within the western portion of the feature; no evidence of it was found during excavations of the eastern section. Artifacts, faunal, and floral remains included 92 g. of daub; a fragment of green bottle glass; a fragment of unidentified green glass; a tiny piece of refined, white-bodied earthenware (possibly a tobacco pipe fragment); 32 nearly complete or complete nails and 7 fragaments; a lead shot; 9.8 g. of bone; approximately 72 g. of charcoal; eggshell; carbonized seed and pit fragments; fragments of a mud dauber's nest; 2 quartzite and chert flakes; 5 quartz flakes; 9 fragments of possible quartz debitage; and 4 fragments of quartzite debitage. No date was assigned to this layer.

ER 0281D and ER 0281C-E 1/2 sealed ER 0281E and 0281E-E 1/2 respectively. Layer E consisted of dark red-brown silty clay loam that was 0.3 ft. thick in the western section and less than 0.1 ft. in the east. The south side of the fill contained concentrated daub and charcoal. Eight wrought nails were uncovered at the interface between layers D and E, spaced approximately 0.7 and 0.8 ft. apart and following the curve of the pit 0.1 ft. or less from the outer edge (Figures 14 and 15). While other nails were found in both layers, the regular spacing of the eight relative to the edge of the feature and around its circumference suggests that they may represent the remains of a wood lining to the feature. However, no further evidence of such a lining was found as excavations continued, and its presence remains conjectural.

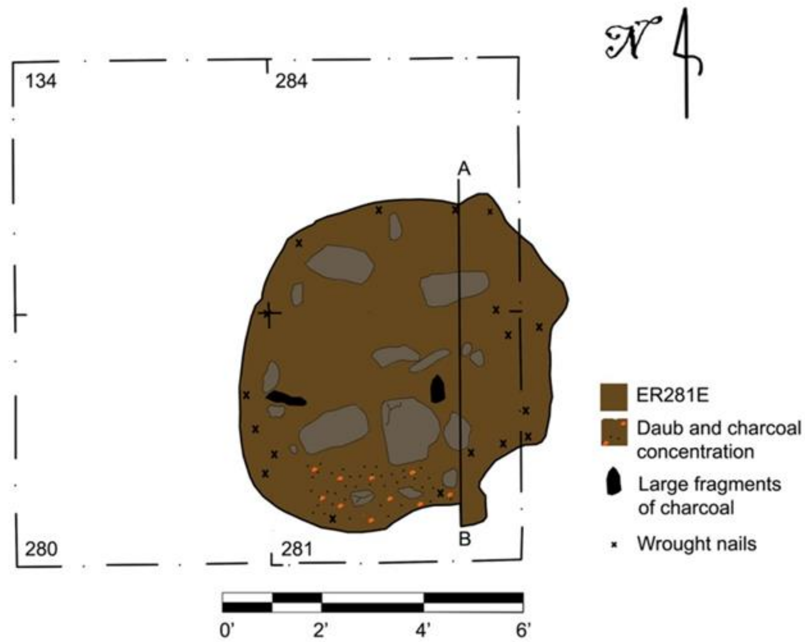


Figure 15. Top of ER 0281E.

Figure 16. Top of ER 0281F showing stone rubble, facing east.

Overall, 33 complete or nearly complete nails and 4 nail fragments; 470.7 g. of daub, fairly evenly distributed between the eastern and western portions; 6 pieces of dark green wine bottle glass; 1 Fulham stoneware sherd; an iron staple; an iron tack; an unidentified iron tool piece with tang; one lead shot; 13.3 g. of bone; 231.8 g. of charcoal; eggshell; and 12 peach pit fragments were recovered. Four flakes (1quartz, 2 quartzite, 1 unidentified stone) and 2 fragments of chalcedony debitage were also found in this layer, as well as a flat, oval piece of micaceous schist with a hole in it.

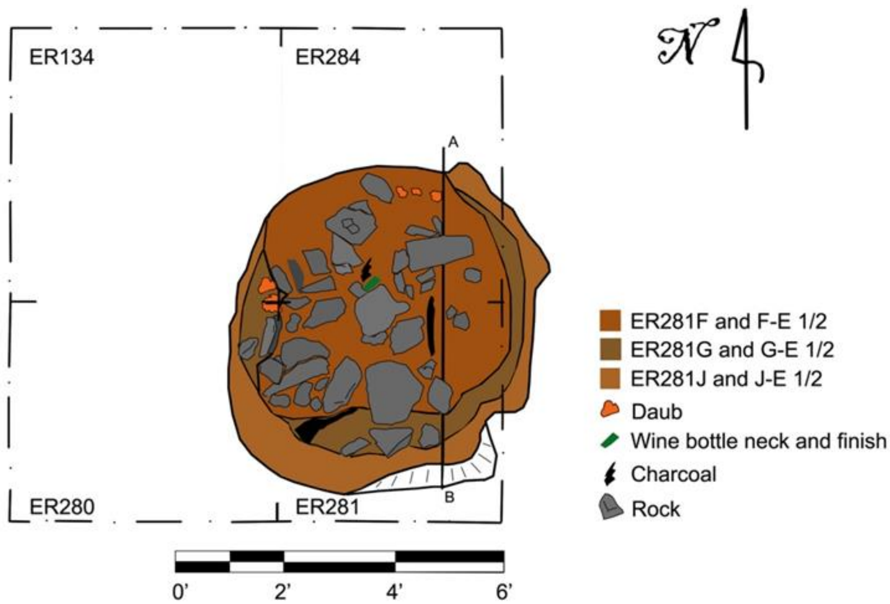


Figure 17. Top of ER281F, with portions of 0281G and 0281J visible.

Beneath ER 0281E and E-E 1/2, the tops of three layers appeared: ER 0281F and F-E 1/2, ER 0281G and G-E 1/2, and ER 0281J and J-E 1/2 (Figures 16 and 17). ER 0281F and 0281F-E 1/2 were characterized by yellowish-red silty loam that sloped inward from the northeast and southeast. A thick deposit of quartz and other local flat field stones filled the layer. Many of the stones had gaps between them, and it is likely that small artifacts percolated through this layer over time. Twenty-five percent of the stones measured between 1 ft. and 1.3 ft. in length, with an average length of 0.65 ft. (8 in.). One of the stones appears to be a prehistoric nutting stone that apparently had been recycled for historic use, perhaps as a building stone (Figures 174-176). In addition to the stone, 7254.5 g. of daub was recovered from this layer, with the majority concentrated in the western portion of the layer (6,403 g. in the western versus 851.6 g. in the eastern section). Additionally, 23 fragments of dark green wine bottle glass; a piece of dark cream-colored creamware; a colorless glass paste jewel (Figures 109 and 110); 19 complete nails; 10 nail fragments; and an iron tumbler from a stock lock were recovered. Twenty grams of bone; 510 g. of charcoal, eggshell; carbonized peach pits and other seeds and pits; fish scales; and two tiny fragments of marine shell were also present. Prehistoric lithics included 2 chalcedony flakes and 2 pieces of debitage; 7 quartz flakes; 3 unidentified stone flakes; and a fragment of quartzite. A terminus post quem date (*tpq)* of 1762, with a range of 1762-1780, was assigned to this layer based on the presence of creamware (Miller 2000:12).

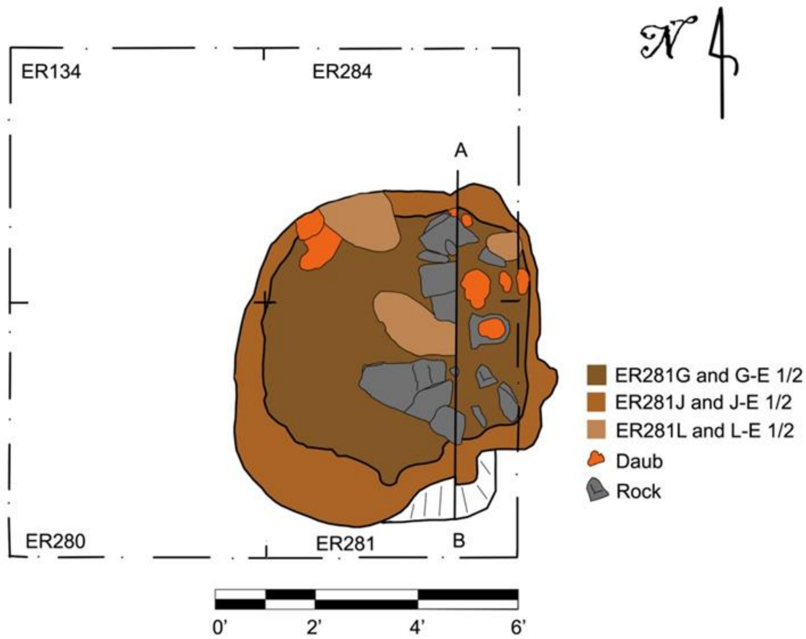


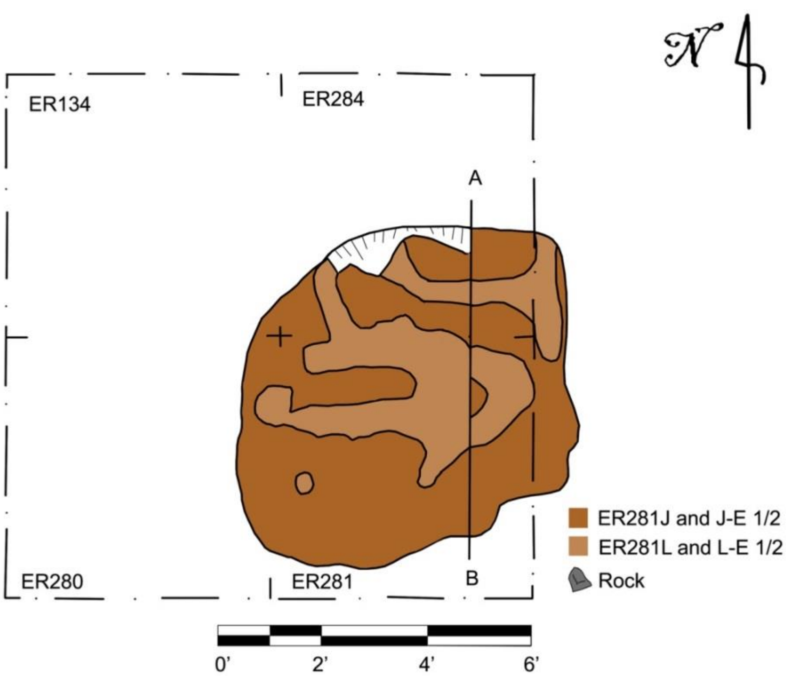
Figure 18. Top of ER 0281G, with portions of layers J and L visible.

ER 0281F and 0281F-E 1/2 sealed ER 0281G and 0281G-E 1/2, a deposit of mottled dark brown silty clay, dark red clay, and dusky red silty clay loam, likely representing decomposed clay daub. The layer was 0.22 to 0.53 ft. thick, sloping from south to north and thickest in the center of the feature. Fired daub, with preservation ranging from excellent to extremely fragile, was abundant in this layer, and 44,727.19 g. (98.6 lbs.) were recovered. Many of the daub fragments have visible impressions of wood grain from boards and/or lath. Impressions from plant material, possibly added as a binder, are also visible in many fragments. In addition to daub, the layer contained 47 complete nails and 18 nail fragments. Of these, 33 were burned to the extent that most of the oxidation process was stopped, and many of the nails are perfectly preserved. Three small fragments of glass—one green wine bottle fragment and two colorless non-leaded fragments—were found in water screened and floated samples. A straight pin and a lead shot comprised the remainder of the non-organic historic artifacts. Organics included 48.8 g. of weighable bone; eggshell; 109.7 g. of charcoal; 13 carbonized peach pit fragments and additional carbonized seed or pit fragments. Lithics included a chert flake; a quartz flake; four quartzite flakes; three flakes from an unidentified stone and a quartz preform. A large, flat, roughly textured stone in the fill had a large depression on one face, within which was a smaller depression (Figure 177, described in more detail in the prehistoric section of the artifact summary below). This stone appears to have been used for grinding at one time. No *tpq* was assigned to this layer.

ER 0281G and G-E 1/2 were intruded by rodent burrows that cut through all subsequent cultural layers. The burrows were excavated separately and bagged as 0281L and 0281L-E 1/2 (see below). ER 0281G and G E-1/2 sealed ER 0281H and H-E 1/2, a layer that was quite thin (less than 0.1 ft.) to the north, and thickened towards the center of the feature before being cut by a rodent burrow (Figures 19 and 20). It was characterized by concentrations of charcoal and wood ash mixed into a mottled red-brown to brown silty loam and clay with lesser quantities of yellow-brown and pale brown silt or ash. Two hundred and sixty-three grams of charcoal were collected from excavation, water screening and flotation, and 4,329.9 g. (9.5 lbs) of daub.

Figure 19. Top of ER 0281H showing concentrated charcoal and ash, facing east.

Forty-three nails and fragments were recovered: 27 complete nails, of which 17 were burned, and 16 nail fragments, of which 5 were burned. Six fragments of a mud-dauber's nest may have originally been attached to the eaves of the building that once stood above the feature. A small fragment of colorless, non-leaded glass; a lead shot; and a white metal alloy button complete the non-organic historic artifact count. The metal button sets the *tpq* for this deposit at circa 1770. Organics included 10.5 g of measurable bone; eggshell; a fish scale; 24 carbonized peach fragments; and 5 unidentified carbonized seed or pit fragments. A quartz flake and three quartzite flakes were also recovered, alongside a small piece of either burned daub or totally reduced pottery. One side appears to have been smoothed, while the opposite side has a textured surface.



The layer sealed ER 0281J and J-E 1/2 along the edges and partial center of the pit. This portion of the pit was extensively disturbed by burrowing activities however. In the field profile drawing, H was depicted as sealing a small portion of K (effectively cutting through J); however, field plan drawings for H and J show H sealing all of J. This is the most likely scenario (Figure 20).

Figure 20. Top of ER 0281H intruded by rodent burrows (ER 0281L), portion of ER 0281J visible.

ER 0281J and 0281J-E1/2 consisted of dark red-brown silty clay loam with mottles of dark red silty clay (Figures 13, 20 and 21; Table 3). Layer J followed the slope of the pit walls and covered most or all of the floor of the pit. A much smaller amount of daub (271 g.) and charcoal (110 g.), as well as a lack of concentrated ash, made this layer visibly different from the layer above. Ten nearly complete nails and two nail fragments were recovered, along with a small piece of flat, colorless glass which may be window glass. If so, it is one of the few pieces found at the site, and the only fragment from any layer of either subfloor pit. Two curved colorless, non-lead glass fragments and a piece of dark green wine bottle glass were also found in this layer. Clothing and sewing-relate objects include two metal alloy button shanks, an iron needle, and a copper alloy straight pin. An unidentified, broken copper alloy object was found in a water screen sample, measuring 9mm and threaded on each end, with a central raised knob. One lead shot was also present. Organics included 173.8 g. of bone, eggshell, seven fish scales, and 4 carbonized peach pit fragments. Lithic debitage consisted of one chalcedony flake; two chert flakes; five quartz flakes, and a flake of unidentified stone, as well as two chalcedony; one chert; eight quartz; and one quartzite fragments. A siltstone preform was also recovered.

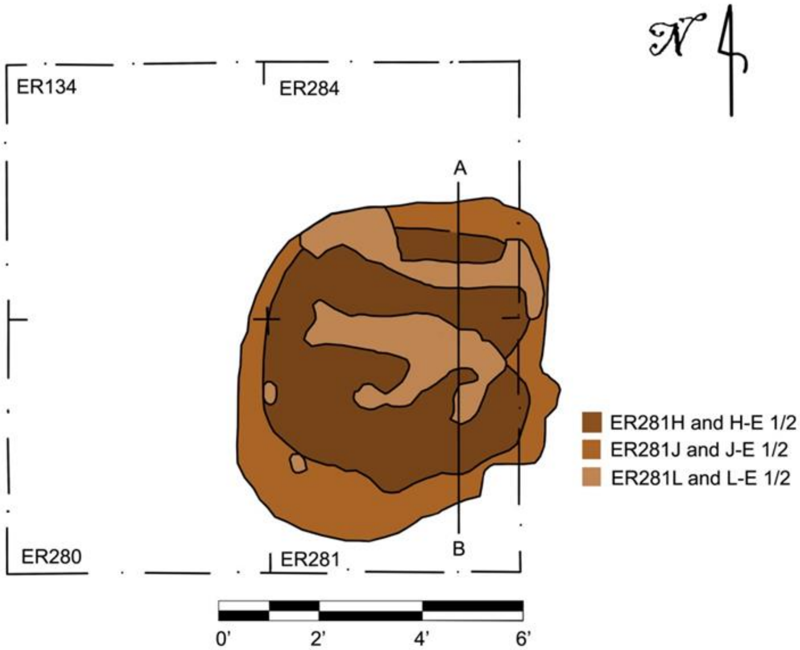


Figure 21. Top of ER 0281J intruded by rodent burrows (ER 0281L).

Figure 22. Top of ER 0281J showing rodent intrusions removed, facing east.

ER 0281J and J-E 1/2 sealed subsoil along the outer edges of the feature, and a roughly circular deposit in the center of the feature, 0281K and 0281K-E 1/2, which comprised the deepest cultural fill episode (Figure 23). The layer consisted of mottled red-brown silty clay loam and dark red silty clay, with pockets of silt and ash. It sloped inward, and measured 0.1 ft. along the edges to just under 0.4 ft. in the southern, central portion of the pit. A single fragment of daub; two nail fragments; one green wine bottle glass sherd; one lead shot; and one dark creamware body sherd were recovered from this layer. Organics included 5.1 g. of bone; 18.8 g. of charcoal; and eggshell. The creamware set the *tpq* for this layer, and, by virtue of the law of superposition, for the feature as a whole, at 1762.

Figure 23. Top of ER 0281K, facing east.

The fill of the rodent burrows (0281L and L-E 1/2) was loose, red-brown to yellow-red silty clay loam. Nine hundred-and-eighty-one grams of daub were recovered, most likely having fallen into the void from layers ER 0281G or 0281H, where it was concentrated. Six complete nails and one nail fragment were also found, along with 35.6 g. of faunal bone; 25.6 g. of charcoal; eggshell; a carbonized peach pit; and a fragment of mud dauber's nest.

Context	Munsell Value	Description	TPQ
0281C & C-E 1/2	5YR4/4	Red-brown clay loam with occasional charcoal and greenstone	n/a
0281D	5YR3/3	90% dark red-brown silty clay loam, mottled with 10% red clay (2.5YR4/6) with frequent carbonized wood, occasional burned daub greenstone and large rocks	n/a
0281E & E-E 1/2	5YR3/4	60% dark red-brown silty clay loam mottled with 40% dark red clay (2.5YR3/6) with frequent charcoal fragments, occasional daub and large stones	Ca. 1770 (alpha shank for one-piece cu alloy button)
0281F & F-E 1/2	5YR4/6	100% yellowish-red silty loam with very frequent large stones and charcoal	1762 (dark cream-colored creamware)
0281G & G-E 1/2	7.5YR3/4	mixture of 50% dark brown silty clay with 25% dark red clay (2.5YR3/6) and 25% dusky red silty clay loam (2.5YR3/2) with very frequent daub chunks, charcoal and occasional large rocks	n/a
0281H & H-E 1/2	5YR3/2	60% dark red-brown silty loam mottled with 20% red-brown (5R4/4) silty clay, 15% yellow-brown (10YR5/4) silt and 5% very pale brown (10YR8/2) silt with frequent charcoal fragments.	Ca. 1770 (white metal alloy stamped one-piece button with alpha shank)
0281J & J-E 1/2	5YR3/4	70% dark red-brown silty clay loam mottled with	Ca. 1770 (alpha shank

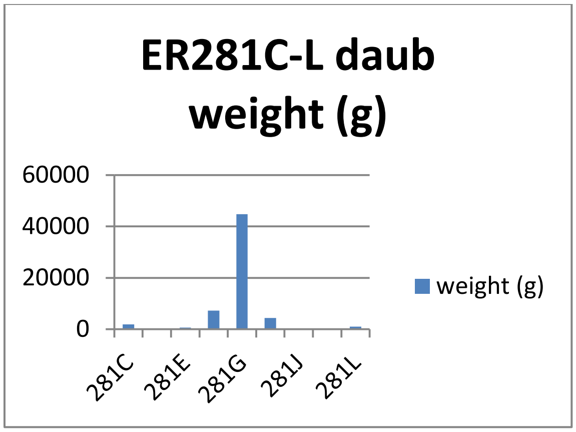
Context	Munsell Value	Description	TPQ
		15% dark red (2.5YR3/6) silty clay and 15% dark red-brown (5YR3/2) silty clay loam with occasional charcoal, greenstone, and pebbles	for one-piece cu alloy button)
0281K& K-E 1/2	5YR4/4	60% red-brown silty clay loam mottled with 15% dark red (2.5YR3/6) silty clay and 15% dark yellowish-brown (10YR4/4)	1762 (dark cream-colored creamware)
0281L & L-E 1/2	5YR3/4	80% dark red brown silty clay loam mottled with 20% yellow red silty clay loam (5YR4/6) with frequent daub and charcoal bits	n/a

Table 3. Sediment descriptions and *tpqs* for subfloor pit 281 contexts.

ER 0281C-L Discussion

While the summary of stratigraphy has moved from top to bottom, the discussion of formation processes within the pit will move from earliest to latest, or bottom to top. Residents of the site cut a roughly circular pit through existing sediments and through soft greenstone bedrock. While the modern depth of the feature was 1.7 ft., the original depth of the pit is unknown due to subsequent plowing and erosion that undoubtedly truncated the upper fill layer or layers.

Layer 0281K represents primary deposition of faunal bone, eggshell, charcoal, ash, and an occasional small artifact that fell or was swept into the pit from above. The thinness of the deposit, coupled with the small number of artifacts, suggests a fairly short duration of accumulation sometime after 1762. Subsequently, the structure overlying the pit was destroyed. The pit remained open to the elements for a brief period of time, with soils washing and slumping in on the sides, and artifacts dumped into the void, accumulating in a thin layer on the bottom (layer J). Some building materials and a small number of domestic artifacts comprise the accumulated cultural materials for this period. While significant quantities of burned wood and nails were found in upper layers, the small amount of charcoal and the presence of a single burned nail in layer J suggest that the structure did not initially burn. The density of charcoal, burned daub, and burned nails in the upper fill layers indicates that building remains, particularly a mud-and-wood chimney, were subsequently burned as part of the removal of the structure from the site (Figure 24). Layers C-H represent concentrated episodes of building destruction and pit filling, with the greatest amount of architectural material found in layers F, G, and H. Artifacts in Layer H consisted primarily of burned wood and nails, while G contained a significant quantity of nails (mostly burned) and daub. These likely represent the remains of a chimney that collapsed or was pushed into the pit when the structure was razed. Layer F included a significant quantity of building stone, possibly the remnants of a dry-laid stone hearth or chimney base, as well as quantities of charred wood, identified as oak, that may represent building materials (Trigg and Henderson, Appendix 4). Layers 281C-E had relatively little daub, but all contained some large, flat stones similar to those found in Layer F. In addition, many complete nails were recovered from D, while E was characterized by concentrations of charcoal and daub along its southern edge. The presence of mud daubers' nest fragments in layers D, F, G, and H, frequently found around the doors of barns or under the eaves and porches of houses, supports the architectural nature of this fill (Brockmann 2004: 504: Mellin 2008).



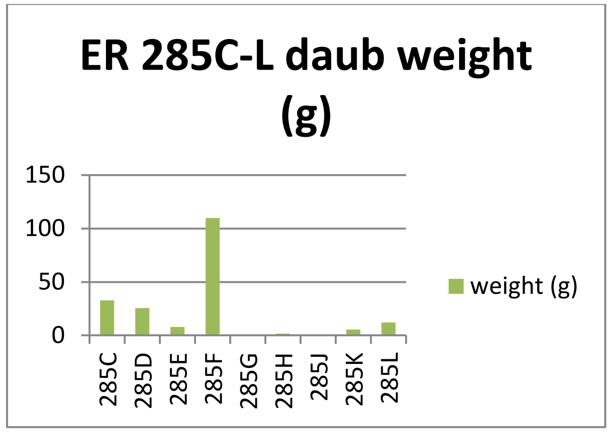


Figure 24. Distribution daub (in grams) by layer, 0281C-L (left) versus 0285C-L (right).

Few domestic artifacts were recovered from the pit, attesting to the brevity of the occupation, the heavily architectural nature of the fill, and the poverty experienced by site residents. In all, a minimum of one green wine bottle, two creamware vessels, one Fulham stoneware vessel, a possible white clay pipe, a metal alloy button, three metal alloy button shanks, an unidentified metal alloy threaded object, a colorless paste jewel, two iron needles, two copper alloy straight pins, an unidentified iron tool, two unidentified iron objects, and six pieces of lead shot were recovered, along with non-leaded colorless glass that is too fragmentary to vesselize. The frequency and ubiquity of prehistoric debitage within pit strata suggests that sediment from the ridge top, where evidence of long-term use during the prehistoric period has been located through testing, was used as fill. Midden deposits rich in bone, eggshell, carbonized seeds, and fish scales, may have been located near the structure, as these remains were ubiquitous in the pit fill as well (Table 4).

Layer	Bone	Eggshell	Fish Scales	Peach Pits	Mud Dauber
281C	yes	yes	no	no	no
281D	yes	yes	no	yes	yes
281E	yes	yes	no	yes	no
281F	yes	yes	yes	yes	yes
281G	yes	yes	no	yes	yes
281H	yes	yes	yes	yes	yes
281J	yes	yes	yes	yes	no
281K	yes	yes	no	no	no

Table 4. Ubiquity of organics and ecological remains in 281 contexts.

ER285C-L

Figure 25. Top of ER285C, facing north.

The eastern pit (ER 0285) was oval in plan, measuring 6 ft. x 4.4 ft. and intruding subsoil to a depth of 1.5 ft. (Figures 25 and 26). Excavators placed a line at the estimated center of the feature, sectioning it into northern and southern portions. The southern half was excavated first, with interior strata mapped as appropriate. The profile was drawn and photographed. Next, the northern half was excavated, mapped by layer, and the entire feature photographed and remapped upon completion of excavation.

In the southern section, the feature contained eight discrete layers of cultural fill (0285C-0285K), and a deposit likely associated with animal burrowing along the southern and western edges (0285L). The same letters were used for corresponding deposits in the northern half, with the suffix -N ½ (meaning north half) added to distinguish them spatially.

In the southern section, the feature contained eight discrete layers of cultural fill (0285C-0285K and a deposit likely associated with animal burrowing along the southern and western edges (0285L). The same letters were used for corresponding deposits in the northern half, with the suffix -N 1/2 (meaning north half) added to distinguish them spatially. Thus, 0285C- N 1/2, 0285 D-N 1/2, 0285E-N 1/2, 0285F-N 1/2, 0285G-N 1/2, 0285H-N 1/2, 0285J-N 1/2, and 0285K-N 1/2 are the strata making up the northern half of the excavation, and 0285L-N 1/2 represents additional burrowing. Strata and feature soil colors and descriptions are summarized in Appendix 1, Table

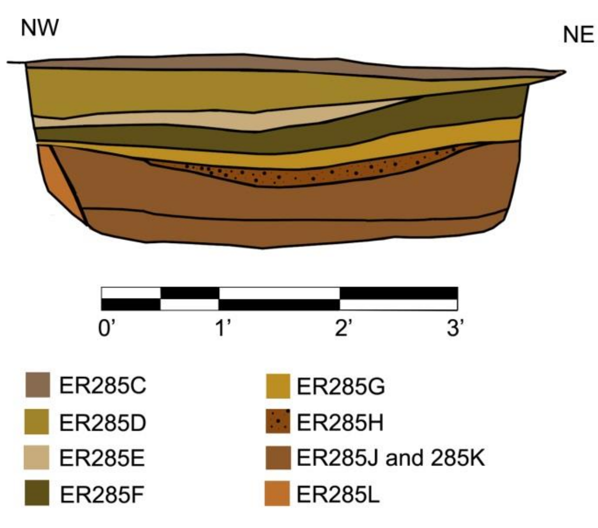


Figure 26. Profile of ER 0285C-L facing north.

A1-2. Flotation sample sizes are summarized in Appendix 6, Table 2.

Figure 27. ER 0285E and F, N 1/2. The south half has been excavated to subsoil, facing north.

ER 0285C and 0285C-N 1/2 consisted of a thin deposit (0.13 to 0.17 ft.) of dark red brown clay loam mottled with red clay, abundant charcoal and a scatter of greenstone. The layer contained two fragments of colonoware (one measuring less than 6mm and recovered in fine mesh water screening); 16 complete wrought nails and 6 wrought nail fragments; an iron needle; an iron object that appears to be part of a broken tool; and 32.6 g. of daub. Faunal and floral materials included 93 bones (27.4 g.); 93.4 g. of charcoal; 0.8 g. of eggshell; 6 fragments of carbonized peach pits; and 2 carbonized, unidentified seed or pit fragments. Prehistoric artifacts included a Kirk corner-notched chert projectile point; 1 chalcedony, 1 flint, 3 quartz, and 2 quartzite flakes; and 6 flakes of unidentified stone. Additional debitage of chalcedony (1 fragment), quartz (20 fragments), and quartzite (2 fragments); and unidentified stone (8 fragments) was also recovered. A lack of diagnostic historic artifacts precluded the assignment of a *tpq* for the layer.

ER 0285C and C-N 1/2 sealed ER 0285D and D-N 1/2, which was comprised of dark red-brown clay loam and brown ash, with charcoal and some greenstone. This deposit was very thin (less than 0.1 ft.) in the northern half of the pit and thickened to 0.1 ft. in the southwest corner and 0.3 ft. in the southeast. A small animal burrow was identified intruding into the southwest corner of the pit just below plow zone, and cut layers C, D and E; it subsequently was uncovered running along the western edge of the pit below lenses G and G-N 1/2. Sediment associated with the burrow or burrows was removed as 0285L and 0285L-N 1/2 (see below).

The layer contained a very small fragment of unleaded, colorless glass; 7 complete or nearly complete wrought nails; 6 wrought nail fragments; a twisted piece of wrought iron stock; a wrought iron wedge; and 25.8 g. of daub. Twenty-eight bones and bone fragments (6.2 g.) were present. One carbonized peach pit as well as other carbonized seeds or pits; 0.6 g. of eggshell; and 45.2 g. of charcoal were also recovered. A single quartzite flake and a piece of quartz shatter constitute the prehistoric component of this layer. No *tpq* could be assigned.

ER 0285D and D-N 1/2 sealed E and E-N 1/2, and the eastern portion of F and F-N ½ (Figures 27 and 28). ER 0285E consisted of a deposit of brown ash with mottles of red clay and two areas of dense ash concentration. Layer E thinly covered much of the southern half of the pit, narrowing to about one third of the northern section. It sloped steeply from southeast to northwest, ranging in thickness from less than 0.05 ft. in the south to 0.1 ft. in the center to 0.3 ft. in the northern end of the feature. Layer F, a deposit of dark brown loamy clay with pockets of ash, was sealed by layer D along the eastern portion and by layer E to the west. The deposit also sloped from east to west and from south to north. It was thicker at the south and center of the deposit: 0.3 ft. in the south and 0.3-0.5 ft. in the center and 0.1 ft. to the north. ER 0285F and F-N 1/2 sealed ER 0285G and G-N 1/2 (Figure 29).

Layer E contained a variety of artifacts, with nearly all of them recovered from the thicker portion of the deposit in the north half of the feature. Ceramics included a sherd of white salt-glazed stoneware; a large fragment and a very small fragment of colonoware; a tiny piece of clay that may be a colonoware spall or may be daub; and a tiny fragment of soft-bodied, refined earthenware that may be the eroded remnants of a tin-glazed earthenware fragment (missing its glaze). A burned white ball clay tobacco pipe bowl fragment was also recovered. Two fragments of dark green bottle glass; a white metal button; a metal alloy straight pin; an iron or steel needle; and a wrought iron band, forged into a circular shape and later flattened, comprise the remainder of the non-architectural historic artifacts.

Architectural objects include 8 g. of daub, six complete wrought iron nails and eight wrought nail fragments, and tiny fragments of mortar, each weighing less than 0.1 g. A fragment of burned mud-dauber's nest; 54.8 g. of charcoal; 0.5 g. of eggshell; a carbonized peach pit; additional carbonized seeds or pits; and 159 bones and bone fragments (13.3 g.) were recovered from the layer. Nine fragments of mica, ranging in size from 5-12mm were also found mixed in the fill. Prehistoric lithics included two chert flakes; two quartz flakes; and eight fragments of quartz. Five of these fragments may be broken flakes, and one appears to be the tip of a projectile point. The layer was assigned a *tpq* of 1720 based on the white salt glazed stoneware. A revised *tpq*

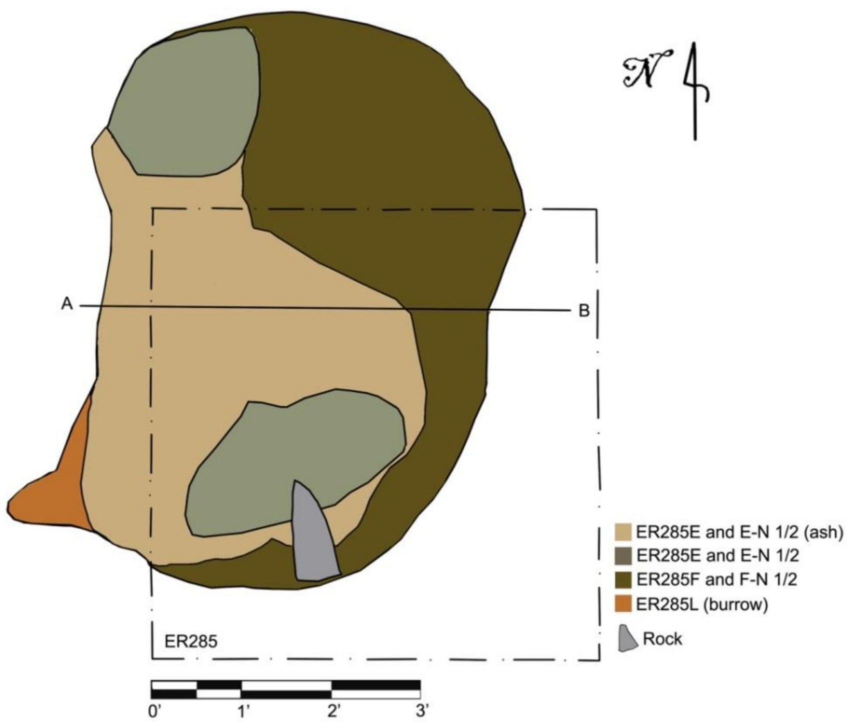


Figure 28. ER 0285E and F, with portion of ER 0285L to left.

of 1760 may be assigned in the future following conservation of the white metal button, which appears to have a broken shank cast in boss, but needs to be cleaned for an accurate identification (Hinks 1988:53).

In comparison to layer E, Layer F included noticeably fewer artifacts. A single copper alloy straight pin; an iron tool that may be a screw driver; a piece of lead shot; 5 wrought iron nails and 4 wrought nail fragments; and 109.7 g. of daub comprise the entire historic assemblage. Thirty-five bones and bone fragments (1.3 g.); a single fish scale; 1 g. of eggshell; 51.2 g. of charcoal; and 4 unidentified pits or seeds were recovered. Prehistoric lithics included a quartz flake and two fragments that may be broken flakes; an unidentified stone flake; and a broken quartz crystal. No *tpq* was assigned.

ER 0285G consisted of alternating lenses of yellowish red clay loam and reddish brown clay loam with greenstone (Figures 26 and 29). Ash was mixed throughout both lenses. ER 0285G-N 1/2 was uniformly dark reddish-brown clay loam with less ash and some greenstone. With the exception of two wrought nails, a small amount of eggshell and an unidentified stone fragment that may be a broken flake, all of the artifacts in this layer were recovered from the south half of the feature.

Figure 29. ER 0285G, N 1/2. The south half has been excavated to subsoil, facing north.

Lenses G and G-N 1/2 were less than 0.1 ft. thick along the southern end of the feature, thickened to 0.3 ft. in the center and 0.5 ft. along the northern edge of the pit. Artifacts recovered in the southern half of the deposit included a small piece of colonoware; a fragment of green wine bottle glass; one complete wrought nail; a flattened, circular piece of lead; less than one g. of daub; and five tiny fragments of mortar. Forty-three animal bone fragments (2.3 g.); 2 small pieces of a mud dauber's nest, 29 g. of charcoal, 0.4 g. of eggshell, and a carbonized seed or pit comprise the faunal, botanical, and environmental remains. Prehistoric lithics included two quartz flakes and five possible flake fragments, one quartzite flake and one fragment, two flakes of unidentified stone, and two pieces of quartz that may be debitage from stone working. No reliable *tpq* could be assigned to ER 0285G or G-N 1/2 due to the lack of diagnostic artifacts.

Figure 30. ER 0285H, N 1/2. The south half has been excavated to subsoil, facing north.

ER 0285G and G-N 1/2 sealed lenses H and H-N 1/2, layer J and portions of 0285L and L-N 1/2. Lenses H and H-N 1/2 consisted of concentrated charcoal and ash mixed in a dark reddish-brown loam and a yellowish-red clay matrix (Figures 26, 30 and 31). The deposit sloped from southeast to northwest, being less than 0.1 ft. thick in the south and thickening to nearly 0.3 ft. in the northwest corner of the feature. Two fragments of curved, colorless glass; one unidentified small, thin fragment of iron (possibly a broken needle tip); three complete wrought nails and one nail fragment; and 1.6 g. of daub comprise the historic artifacts. Organics included 30 fragments (0.7 g.) of animal bone; 0.7 g. of charcoal; eggshell; and two peach pit fragments. No lithics were recovered from this deposit, which may represent hearth sweepings. No *tpq* could be assigned to this context given the lack of diagnostic artifacts.

Layer ER 0285J and 0285J-N 1/2 was sealed beneath lenses G and H and intruded by ER 0285L and L-N ½ (Figures 26, 31 and 32). The layer was composed of dark reddish-brown clay loam with some charcoal, ash and fragments of greenstone. A small area of harder, silty soil was encountered in the southwest corner of the feature, and removed with this layer. No soil change was observed after 0.5 ft. of fill was removed, so the layer was stopped and a new arbitrary layer, ER 0285K and 0285K-N 1/2 was started (Figure 33).

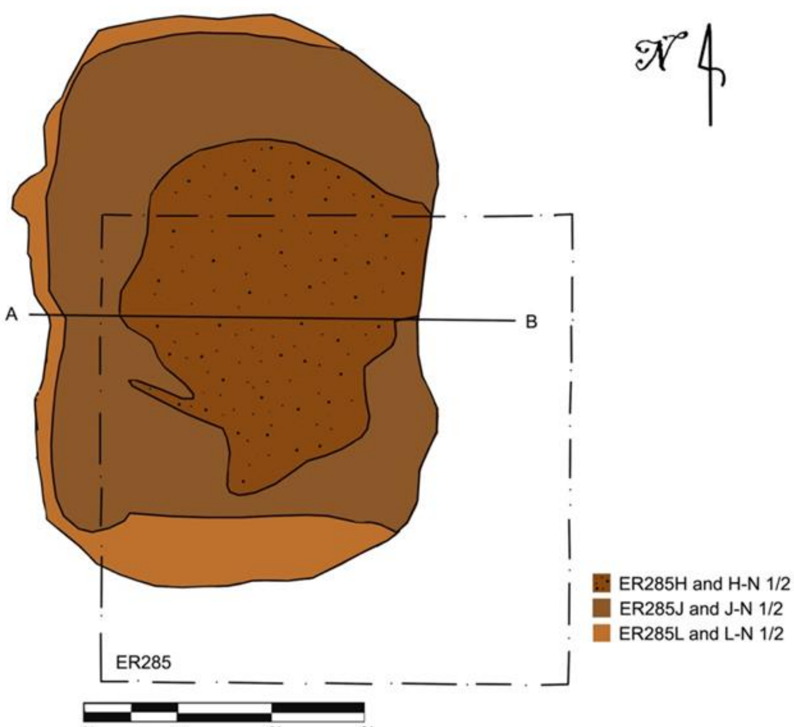


Figure 31. Top of ER285H with portions of ER285J and ER285L visible.

Figure 32. ER0285J-N1/2. The south half has been excavated to subsoil, facing north.

Together, J and K were 0.4 ft. to 0.7 ft. thick and formed a fairly even layer across the bottom of the pit. They were disturbed along the northern and southern walls by ER 0285L and L-N ½. Layer K and K-N1/2 sealed subsoil.

The upper portion of the deposit (0285J and J-N 1/2) contained small fragments of dark green wine bottle glass and curved, colorless glass; a complete wrought nail and a nail fragment; and a fragment of an iron or steel needle. Eight fragments of mica, ranging in size between approximately 5 and 20mm, were also recovered, as well as 46 animal bones (11.3 g.); 1.4 g. of eggshell; 1 fish scale; and 56.5 g. of charcoal. Prehistoric lithics included the body (missing point and base) of a quartz projectile point with serrated edges, 6 quartz flakes; and 10 fragments of quartz debitage, 4 of which are possibly fragments of broken flakes. No *tpq* could be assigned given the lack of diagnostic artifacts.

Found within the lower deposit (0285K and K-N 1/2) were a fragment of wheel-thrown, coarse earthenware with an interior and exterior lead glaze; a colonoware rim sherd and a body sherd; two complete wrought nails; 5.5 g. of daub; one lead shot; and one piece of sprue. Organics included 12.8 g. of charcoal; 65 bones (25.9 g.); and an abundance of eggshell, particularly concentrated in the east-central portion of the feature, just north of the section line. In all, 20.8 g. of eggshell was recovered from this layer. Two chert, two quartz, and six quartzite flakes were recovered along with a small fragment of greenstone with a hole punched through it; five fragments of quartz debitage (two of which may be broken flakes); and a fragment of sandstone debitage. A few small pieces of mica were also recovered in this layer.

ER 0285L and L-N 1/2 consisted of loose dark red clay with greenstone (most likely redeposited subsoil) excavated by one or more small mammals living in the pit (Figure 33). The burrowing activity was largely confined to a deep hole in the southwest corner of the feature and tunnels extending along the west wall to the north wall, and across the south wall. No evidence of this disturbance was found to the east. With the exception of a single bone, all of the artifacts in the fill of the burrow complex were less than 10mm in size, and most were 5mm or smaller. Artifacts included a single fragment of refined, white-bodied ceramic, most likely creamware (less than 5mm in size); 12.1 g. of daub; and a piece of quartzite debitage. Thirteen faunal bone fragments (together weighing less than 1 g.); eggshell; and less than 1 g. of charcoal were also recovered. The *tpq* for this disturbed fill is 1762, based on the likely presence of creamware.

285C-L Discussion

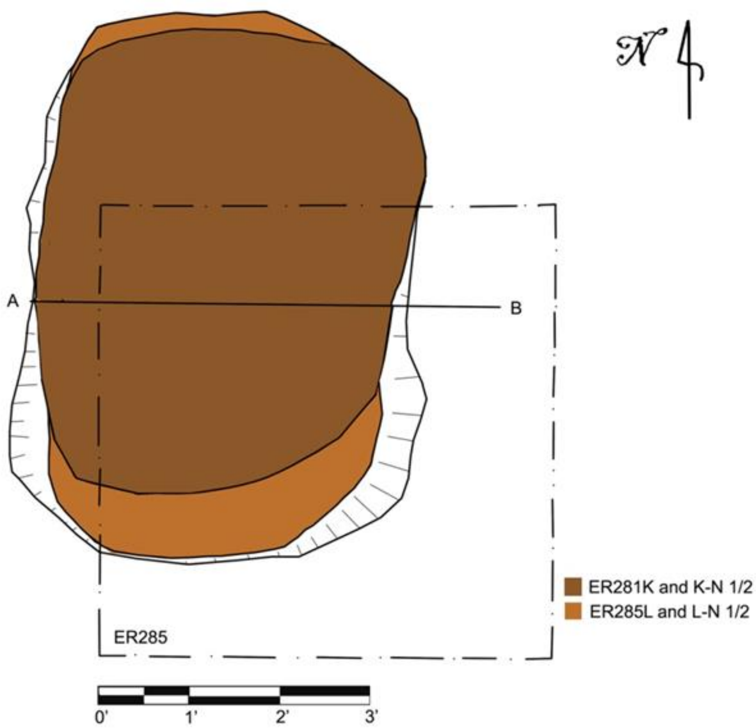


Figure 33. Top of ER285K with portions of ER285L visible.

Feature 285 consisted of a few thick layers of fill and many thin lenses of charcoal, ash, and silt. Faunal bone, eggshell, fish scales and botanical remains were ubiquitous in most layers (Table 5). Compared to its western neighbor, this pit contained a significantly lower density of architectural material. More than 99% of the daub recovered from the features was found in ER281 and 81% of the complete nails (Table 6).

Layer	Bone	Eggshell	Fish Scales	Peach Pits	Mud Dauber
285C	Yes	Yes	No	Yes	No
285D	Yes	Yes	No	Yes	No
285E	Yes	Yes	No	Yes	Yes
285F	Yes	Yes	Yes	Yes	No
285G	Yes	Yes	Yes	Yes	Yes
285H	Yes	Yes	No	Yes	No
285J	Yes	Yes	Yes	No	No
285K	Yes	Yes	No	No	No

Table 5. Ubiquity of organics and ecological remains in 285 contexts.

Additionally, the fill of ER285 contained no large stones. The uneven distribution of architectural artifacts between the two features indicates that household members filled most of the eastern pit (ER 0285) during the occupation of the dwelling, while the western pit (ER281) remained open until the building was torn down, and was used as a receptacle for building debris.

Feature	Complete Nails (number)	Percent of Total	Daub (weight in grams)	Percent of Total
281C-L	183	81%	59,981.8	99.8
285C-L	43	19%	107.2	0.2

Table 6. Architectural artifacts, Features 281 and 285.

Layers and lenses of fill within feature 285 contained few historic artifacts overall. The pit has a *tpq* of 1762 based on the presence of creamware in the fill. A white metal button found in 0285E-N ½ also likely post-dates 1760. A comparison of richness—the diversity of artifact types between features—indicates that feature 285 was slightly richer, with 18 distinct types as opposed to 16 recovered from 281. Both features shared nine artifact types: metal alloy buttons, straight pins, iron needles, colonoware, creamware, green and clear vessel glass, nails, and lead shot (Table 7).

Object	ER281C-L	ER285C-L
Brad, iron	1	0
Button, metal alloy	4*	1
Ceramic, colonoware	1	8
Ceramic, creamware	2	1 or 2
Ceramic, Fulham stoneware	1	0
Ceramic, lead-glazed coarse earthenware	0	1
Ceramic, white salt-glazed stoneware	0	1
Collar, iron	0	1
Glass, colorless vessel	3	3
Glass, dark green bottle	40	4
Glass, paste jewel	1	0
Nail, iron	247	68
Needle, iron or steel	2	4
Screwdriver, iron	0	1
Shot, lead	6	2
Sprue, lead	0	2
Staple, iron	1	0
Straight pin, copper alloy	4	2
Stock lock, iron, tumbler	1	0
Tack, iron	1	0
Tobacco Pipe, ball clay	0	1
Tool, iron, unidentified	0	1
Unidentified, copper alloy	1	0
Unidentified, iron, twisted	0	1
Wedge, iron	0	1

Table 7: Comparison of Artifact Richness by Count for Features 281 and 285.
Count represents fragments. *Represents whole button and 3 button shanks.

Planting Feature

An irregularly-shaped feature measuring at least 5 ft. wide and 5 ft. long cut into subsoil in ERs 0385 and 0386. Its east-west boundaries were not established, but the majority of its north-south extent fell within ER 0386. Filled with red clay with yellowish-red clay mottle, the feature contained a single fragment of colonoware and four fragments of quartz debitage. The fill was intruded by and contained a number of burned tree roots, some vertical and some angled. Due to time constraints, the feature was not completely excavated. It has been tentatively identified as a planting feature associated with the intentional placement of a shrub or small tree due to the presence of artifacts in the fill and its alignment with a fence line that formed the southern boundary of a pair of enclosures (see below).

Enclosure, Block A

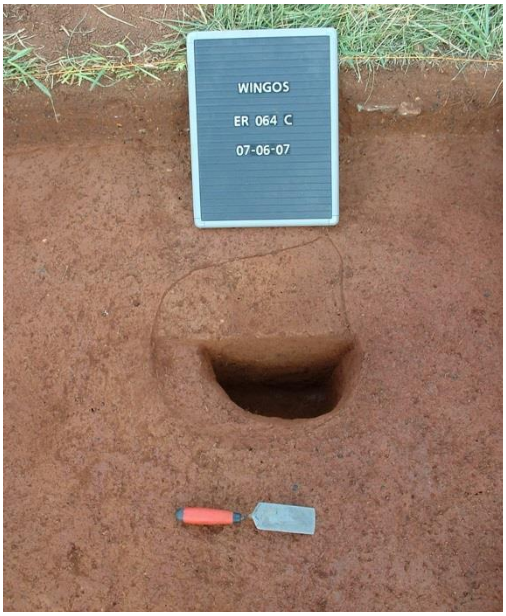


Figure 34. Feature 063C bisected, facing west.

Excavations within and adjacent to Block A also revealed a post hole and evidence of a fenced enclosure divided into two roughly equal-sized areas. The post hole, ER064C, consisted of a very shallow (0.2-0.3 ft) outer fill (the post hole) containing a deeper deposit (the post mold). Unfortunately, both the hole and mold were assigned the same excavation context, although they were recognized as separate deposits in the field. The post hole had been severely truncated by plowing. It was filled with dark yellowish-brown clay loam (10YR4/6) and measured 1.3 ft. north-south by 1.2 ft. east-west in plan. The post mold, measuring 1.1 ft. in diameter, consisted of reddish-brown clay loam (5YR4/4) with scattered charcoal. Charred wood and a single faunal bone were recovered from the fill. The mold intruded subsoil by 1.85 ft., and had straight sides and a flat base (Figures 34 and 35).

Figure 35. ERs 064C and 064D excavated, facing north.

Approximately 1ft. northeast of ER063C was a second, smaller circular feature (ER064D) (Figure 35). Measuring 0.7 ft. in diameter, it consisted of a single fill of yellowish red clay loam (5YR4/6) with flecks of charcoal. The feature had relatively straight sides and a flat bottom, but only intruded subsoil by 0.2 ft. and contained no artifacts. No additional post holes were located at the site. However, ERs064C and 064D align with at least 15 small circular to rectangular features that appear to mark the edges of an informal enclosure in the yard south of the cabin. These features ranged in size from 0.2 ft. to 0.5 ft. in diameter, with most averaging 0.3 ft., and most were filled with brown loam, with some containing charcoal. The circular features represent the remains of stakes which rotted in-situ, while those that are more rectangular in shape may have been driven posts (Table 8).

Together, they form four intersecting lines that may be the traces of wattle fences (Figure 36, Table 8). The western line, trending southwest to northeast, includes small stake holes ER 0159C and D, 0170D, and 0390C/D. Feature 0295C falls along this line and is included in Table 8, but distribution maps of artifacts suggest that it is not part of this fence line. Line 2, the center line, follows the same orientation, extending from ER 0138 through ER 064C and 064D, 166C and E, and west of ER 0175C. Line 3, running parallel, includes 0310C and 0398C and D. Line 4 lies perpendicular to the first three lines and forms the southern boundary. It includes ER 1059C and D, 0154C, 046C/1 and 0309C. ER390C/D delineates the northwest corner of the northern boundary. The remainder of this line was not uncovered (Figure 36).

ER	Diameter	Soil description
046C/1*	0.5 ft. x 0.35 ft.	Brown loam with charcoal
0154C*	0.35 ft.	Brown loam
0159C*	0.5 ft. x 0.3 ft.	Brown loam
0159D*	05 ft. x 0.3 ft.	Brown loam
0161D*	0.26 ft.	Brown loam
0166C	0.3 ft.	Dark brown-red loam
0166E*	0.25 ft.	Dark brown loam
0170D*	0.3 ft.	Brown loam
0175C*	0.23 ft.	Brown loam
0295C	0.4 ft.	Yellowish-red clay loam with charcoal
0309C	0.3 ft. x0.6 ft.	Dark brown loam
0310C	0.3 ft.	Dark reddish-brown clay loam with charcoal
0390C/D+	0.5 ft. x 0.4 ft.	Dark reddish-brown clay loam and dark red clay loam
0398C	0.3 ft.	Brown clay loam with charcoal
0398D	0.2 ft.	Dark reddish-brown silty loam

Table 8: Features Associated with the Enclosures.
*Feature not excavated; + Feature partially excavated

The stake holes were not uniformly spaced, but appear to fall with some attempt at regularity. Along the southwest portion of Line 4, they fall 4.4 ft. to 4.6 feet apart, while the spacing along Line 2 ranges from 6.9 to 8 ft. For the purposes of illustration, these lines are rendered as straight; however on the ground they were likely much less precisely aligned as the placement of ERs 170D and ER175C indicate.

If the four lines are combined the features outline a rough square, measuring approximately 36 ft. to a side. The western half of the enclosure extends approximately 17 ft. x 36 ft. (612 square ft.), while the eastern is slightly larger, measuring approximately 19 ft. x 36 ft. (684 square ft.). Artifact and soil chemical distributions in this portion of the site support the interpretation that these features formed a divided enclosure and further indicate that the feature in ER 0295 was not part of the fenced area.

Figure 36: Conjectural fence lines associated with post hole and stake holes.

CHAPTER 3: SPATIAL STRUCTURE

ARTIFACT DISTRIBUTIONS

In addition to the features that defined the cabin and fence lines, the analysis of artifact and soil chemical distributions in plow zone provides further evidence of the ways in which space was organized at the site. Archaeologists create distribution maps to examine differences in artifact size, quantity, and diversity (richness), and concentrations of anthropogenically-altered soils, which can be used to delineate activity areas and indicate how site residents defined, managed and worked domestic landscapes.

Prior to the 1970s, archaeologists routinely removed plowed soils at sites without sampling them. A number of influential studies arguing for the analytical utility of plow zone data were undertaken in the last quarter of the 20th century, documenting the processes that form plow zones and their effects on individual movement and size of artifacts and on site structure. Although tilling subjects them to horizontal and vertical movement, artifacts recovered in modern plow zones preserve spatial associations with past activities at the site (Lewarch and O'Brien 1981:27; Dunnell and Simek 1995). Researchers have demonstrated experimentally that displacement of individual artifacts averages from 6 to 13 ft., with the greatest movement in the direction that the plow travels through space (Riordan 1988:3). Larger artifacts move greater distances than smaller ones, although over time, with repeated plowing, artifacts are broken until their size reaches equilibrium and movement is minimized (Riordan 1988:4; Dunnell and Simek 1995:308-309). Archaeologists have further confirmed that spatial patterning of artifacts persists despite movement, resulting in data that are "just slightly out of focus" as compared to non-plowed sites (Riordan 1988:4). Artifact distribution data from plowed contexts has proven useful for understanding the organization of landscapes and for assessing how they change over time (King and Miller 1987; Pogue 1988). On sites associated with the enslaved and impoverished, where residents had few material possessions, features often contain scant material remains, and the data derived from plowed contexts is crucial for understanding not only the use of space, but the materiality of life at the site. Much of the daily routine of domestic life was undertaken out-of-doors, often in discrete areas of the site set aside for cooking, gardening, livestock raising, washing or other domestic chores (Heath and Bennett 2000; Heath 2010). Evidence for these activities is often preserved by individual artifacts and within patterns of artifacts recovered from plow zone (Bon-Harper and Devlin 2012).

Archaeologists have defined terms relating to artifact spatial structure at sites and the factors leading to its creation. Here we define middens as areas where artifacts were intentionally, and repetitively deposited; Bon-Harper and Devlin refer to them as dumps (Bon-Harper and Devlin 2012:1). De facto refuse refers to artifacts that were left behind when a site was abandoned, either in middens, production areas, or areas of loss. Production areas are places where site residents deposited primary refuse because of loss, in-situ breakage, or in-situ discard, while disposal areas (dumps or middens) were formed by secondary refuse—waste that was removed from its original area of production and intentionally discarded (Schiffer:1972:161-162). These discard areas are characterized by greater size, larger numbers, and more diversity within artifact assemblages. Disposal areas can also contain objects that have been placed there ritually, however, therein blurring the lines between deposit types. Ogundiran (2014:82-84) has noted that sacrifices associated with purification rites can be found in refuse mounds created by the Yoruba, who believe that malevolent forces who regularly gather in places of discard must be appeased by these offerings. He argues that the careful examination of midden contexts with an eye towards ritual placement is necessary. However, artifact movement caused by tilling compromises the ability to confidently distinguish between intentional placement of associated objects for ritual purposes and waste.

Secondary refuse deposits typically fall outside of the normal flow of traffic and are adjacent to or removed from spaces that are habitually used and maintained for a variety of household chores. Intentionality can be seen in areas that are well managed, and therefore largely free of trash, as well as in places where objects are actively discarded. Distribution maps that examine differences in artifact size, quantity, and diversity can therefore help distinguish between types of refuse, the activities that created them, and indicate how site residents organized and used their landscape.

Size

Archaeological studies of site maintenance indicate that when dropped, small objects tend to remain in place, while people purposely remove larger objects and place them in secondary deposits (O'Connell 1987; Wandsnider 1996:341-342). Archaeologists studying African American sites have used artifact size, in addition to overall frequencies, to discover which areas of a landscape were kept clean by site residents, and which were used for trash disposal. For Wingo's, artifact sizes were recorded during cataloguing using a size-grade system developed for the Digital Archaeological Archive of Comparative Slavery. Sizes for all non-architectural artifacts (for example ceramics, vessel glass, tobacco pipes, buttons, iron pot fragments and tools) were averaged. Z scores were calculated for each 5 ft. x 5 ft. quadrat and the scores were plotted on a map. With the exception of four quadrats—two above or adjacent to the western subfloor pit, one southwest of the cabin, and one just southeast of the enclosure—the average artifact size per quadrat was one inch or smaller. The small size of the artifacts, and the remarkable uniformity of the plow zone assemblage, suggests that post-depositional plowing has likely obscured size-based evidence of cultural activity at the site.

Ubiquity

Paleoethnobotanists use the concept of ubiquity to examine how widely dispersed or narrowly confined specific botanical remains are on a site, and therefore the number of contexts of use and deposition with which they are associated. Ubiquity examines presence/absence per sample rather than relying on overall counts. Within the Wingo's assemblage, all ceramic types, vessel glass, green glass, ball clay tobacco pipes and wrought nails were selected for examination. Because the sample sizes of many of these artifact types were small, a consideration of ubiquity suggests patterning that frequency distributions can mask. The number of occurrences of each type per combined topsoil and plow zone layers for each individual excavation quadrat was calculated, and this number was divided by the total number of plow zone quadrats[17] (N= 118) and the number of feature contexts (N= 19; 9 layers in each of the subfloor pits, and one in the planting-

[17] Including 2 ft. x 2 ft., 2 ½ ft. x 5 ft., and 5 ft. x 5 ft. quadrats.

related feature (382E) (Table 9) to compare occurrences between types and between contexts.

Wrought nails were recovered from 94% of non-feature contexts and all but two feature contexts, making them the most ubiquitous (as well as the most numerous) artifacts at the site. Green wine bottle glass was the second most ubiquitous, found in 53% of quadrats and 37% of feature contexts. Colonoware, white salt-glazed stoneware and buttons were over-represented in feature contexts, while creamware, British utilitarian stoneware, green bottle glass and ball clay tobacco pipes were underrepresented. Black-glazed redware, tin-glazed earthenware and Westerwald were missing completely from the fill of the features. Ball clay tobacco pipes were

Type		**Present in % of plow zone units/ (total count)**	**Present in % of feature contexts/ (total count)**
Ceramics:	Black-glazed redware	2.5 (3)	0 (0)
	British utilitarian stoneware*	11 (13)	5 (1)
	Colonoware	17 (20)	26(5)
	Creamware	32 (38)	16 (3)
	Delft	8 (9)	0 (0)
	Redware/European coarse earthenware	3 (4)	5 (1)
	Westerwald	8 (9)	0 (0)
	White salt glazed stoneware	1 (1)	5 (1)
	White (ball clay) tobacco pipe	19 (22)	5 (1)
Glass:	Colorless unidentified glass tableware	11 (13)	5 (1)
	Green wine bottle glass	53 (63)	37 (7)
Metal:	Button	8.4 (10)	21 (4)
	Wrought nail	94 (111)	89(17)

Table 9. Artifact ubiquity from non-feature and feature contexts.
* Includes British brown stoneware and Fulham.

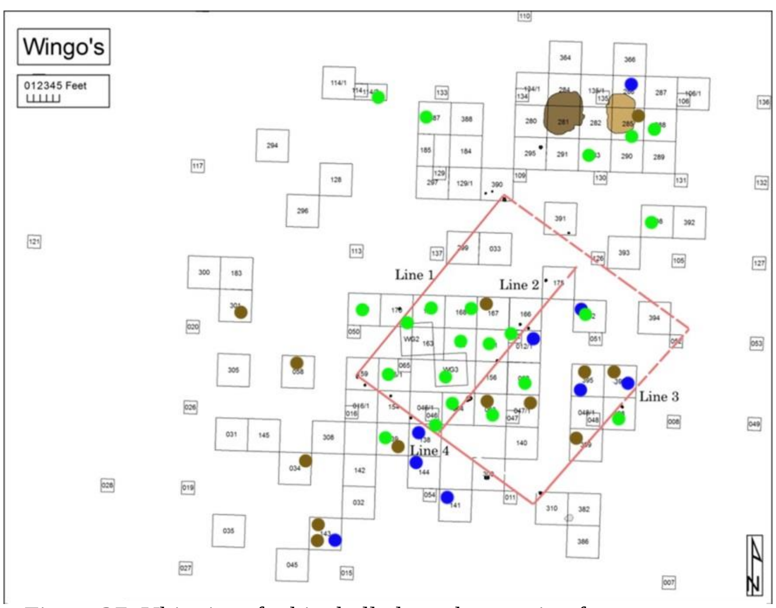


Figure 37. Ubiquity of white ball clay tobacco pipe fragments (green dots) and stonewares (brown=British, blue=Westerwald)

ubiquitous in the western half of the enclosure, where they appeared in 10 of 19 quadrats that fall completely or partially within it. Westerwald and British utilitarian stoneware, had greater ubiquity in the eastern enclosure, with the former type appearing in up to 4 quadrats and the latter types appearing in 5 of 19. Alternately, British utilitarian stoneware was only present in 1 of 20 quadrats to the west and Westerwald in up to 2 (Figure 37). Stonewares were also distributed south and west of the enclosure.

Buttons were present within the western enclosure, south and west of it, and around the cabin, but none were found east of Line 2 (Figure 38).

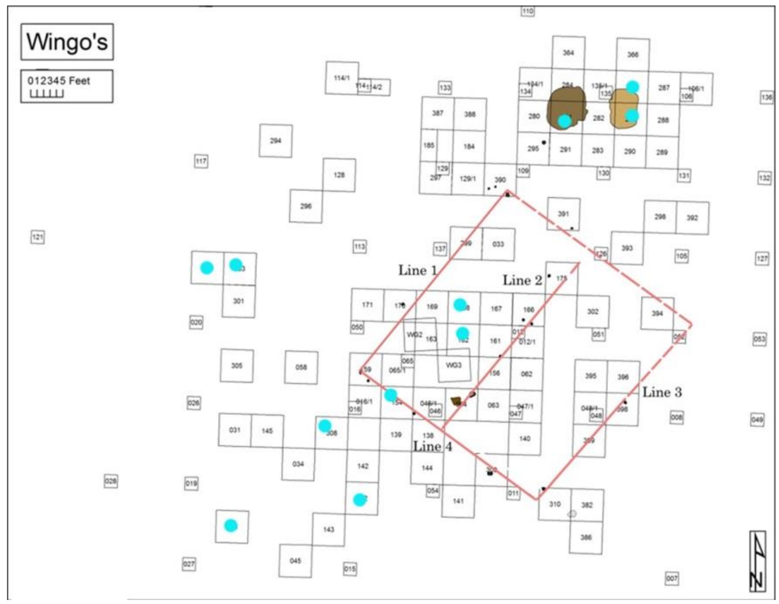


Figure 38. Distribution of copper alloy buttons.

Frequency
A more standard method of spatial analysis draws on frequency distributions of artifacts across the site. Artifacts were placed in groups to facilitate graphic representations. These groups include:

<u>Architectural artifacts:</u>

- *Architectural, masonry:* brick/daub, daub, mortar, plaster (values grouped in increments of ½ of a standard deviation, based on weight). This category is almost entirely made up of daub.
- *Architectural, no masonry*: nails, wire, wrought staples, brads, and window glass (values grouped in increments of ½ standard deviation, based on count). This category is dominated by nails.
- *Architectural (all)*: nails, wire, wrought staples, brads, window glass, brick/daub, daub, plaster, and mortar (values grouped in increments of ½ standard deviation, based on count)
- *Nails:* includes clinched, pulled, straight, & all nails (values represent counts)
- Separate maps for clinched, pulled and straight nails (values represent counts)

<u>Foodways-related artifacts:</u>

- *Bottles:* ceramic and glass forms identified as “bottle” or “case bottle” (values represent counts)
- *Dining*: ceramic form listed as tableware, teaware, or more specifically as mug, plate, bowl, table glass, and a fork (values represent counts)
- *Kitchen:* Ceramic forms listed as utilitarian, or more specifically as pans, coarse earthenwares, and iron pot fragments (values represent counts)
- *Colonoware* (values represent counts)

<u>Other aggregate data:</u>

- *Historic Total (no daub):* includes all historic artifacts except daub (values grouped in increments of ½ standard deviation, based on count)
- *Small finds:* pipes, tools (wedge, gimlet, horseshoe, tacks), arms (bullet, gunflint, shot, lead sprue) , & clothing (buttons, buckles, thimble) (values represent counts)

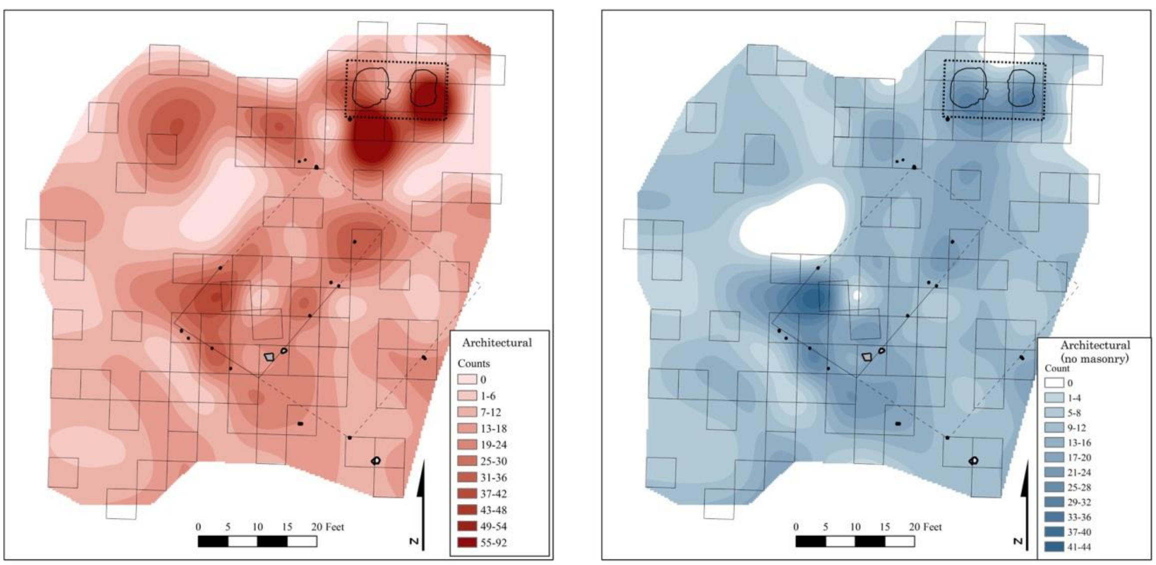
Plow zone counts or weights for the groups outlined above were assigned to a point in the center of each quadrat for which data were available. Most maps were generated based on raw artifact counts; however for the maps that displayed large counts or weights, such as those showing all historic artifacts or all daub, the data were mapped using a modified Z score at increments of one half of the standard deviation from the mean of each group. ArcGIS digital mapping software was used to interpolate distribution maps (splines) of the counts or Z scores for each group of data in order to compare the spatial distribution of relatively high, average, and low readings across the site. A mask was created for each map to establish site boundaries.

Four maps present the distribution of artifacts relating to architecture materials, daub, and aggregated nails (Figures 39-42). A large concentration of architectural artifacts is located over the two subfloor pits. A peak of daub centers between Features 281 and 285, with a second peak located just south of Feature 281 extending to the northern edge of the enclosure. This line can also be seen in the distribution of nails, although it extends beyond the limits of the daub into the west enclosure. Much of the architectural material can be interpreted as de facto refuse; the remains of a daub-lined, wooden chimney that collapsed or was pushed down after the abandonment of the cabin. The presence of both pulled and straight nails (Figures 43 and 44) indicates that while some of the chimney was dismantled, a portion may have decayed in-situ with the original nails remaining in the wood. Some of the nails may also have been associated with roofing, or the finishing of doors and window shutters. A peak of nails in the southwest corner of the west enclosure, equal in intensity to the concentration over the subfloor pits, suggests the presence of a small, impermanent structure inside the fence. Away from the cabin, small quantities of daub are scattered across the site in an east-west line beginning north of the southern edge of the enclosures.

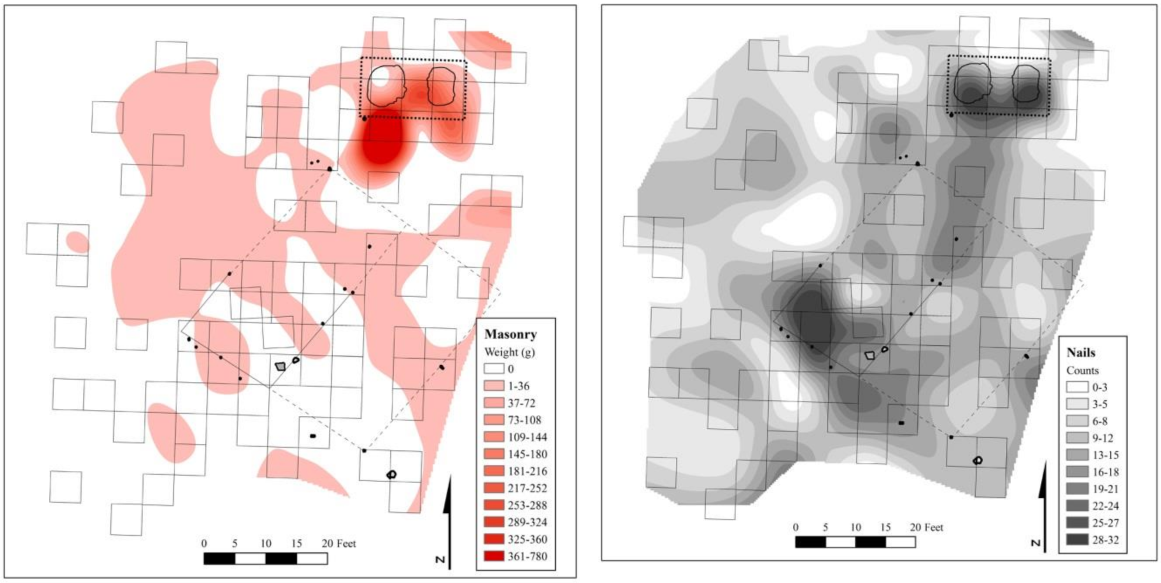
With the exception of artifacts relating to dining, non-architectural artifact distributions show at least one peak above or adjacent to Feature 281, no doubt due to the truncation of artifact-rich upper layers of fill by the plow (Figures 45-47). A peak of dining-related artifacts appears just off of the southeast corner of the cabin, but this was not a discard area for objects associated with food preparation or storage. Instead, these kitchen-related artifacts concentrate within the eastern half of the enclosure and are scattered in two lines south of the fence. This southern line is more clearly defined by dining-related artifacts and also is the end of a concentration of bone that peaks along the southern end and just south of Line 2.

Away from the cabin, bottle distributions dominated by green wine bottle glass strongly define the dividing line between the two halves of the enclosure, with weaker concentrations along the eastern and western fence lines. Two more tightly clustered areas of deposition appear southwest of the cabin. Areas of overlapping concentrations include the south and east of the enclosure (and encroaching into the southern third of it), the space just outside of the northwest of the enclosure, and in an east-west trending line along the far southern extent of the site.

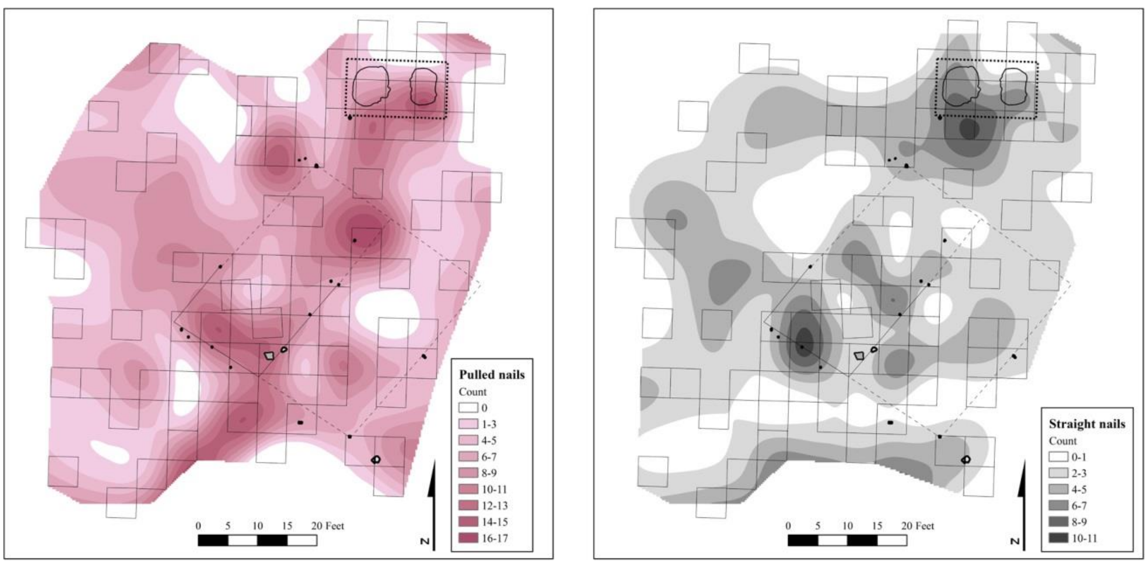
A map that depicts richness rather than frequency can be used to highlight where artifacts were intentionally discarded, since trash-disposal areas tend to aggregate a variety of objects and are thus characterized by higher richness values than non-disposal areas. To illustrate variation in richness across the site, a count of artifact types per quadrat was computed. The resulting values were plotted using Z scores. Figure 49 shows the highest richness values above the subfloor pits, features which were filled with primary, secondary, and de facto refuse. When compared with the map of all historic artifacts from the site (excluding daub) (Figure 50), there are some important similarities. Artifacts are both frequent and diverse within the southern half of the western side of the enclosure, south and west of it and southwest of the cabin. Site residents created middens in each of these areas. Midden formation along fence lines has also been observed at a later quarter at Poplar Forest (Heath and Bennett 2000:49-50), and the placement of middens



Figures 39 and 40. Left to right: Distribution maps of all architectural artifacts and all non-masonry architectural artifacts.



Figures 41 and 42. Left to right: All masonry (daub) and all handwrought nails.



Figures 43 and 44. Left to right: pulled and straight nail distributions.

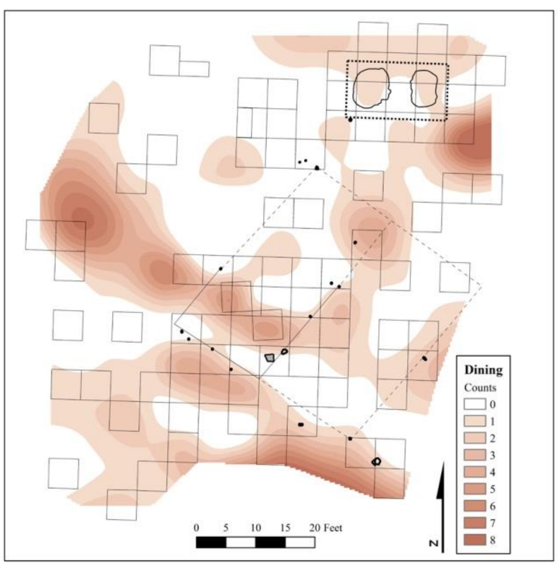
immediately adjacent to dwellings was common in the 17th and 18th centuries (Keeler 1978; King and Miller 1987; Pogue 1988). However, the linear midden west of the enclosure appears to be defining the southern edge of a clean space that was not formally marked by fencing or structures. The richness and frequency maps also indicate that while there is a peak of richness scores in the eastern half of the enclosure, overall artifact deposition was low in this area. The differences in the data suggest that while refuse accumulated in a defined area, most of this space was intended to be relatively clean.

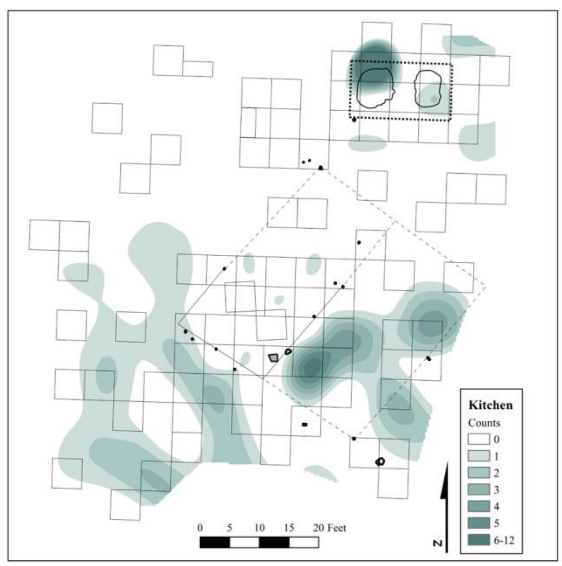
SOIL CHEMISTRY

Results from analyses of soil chemistry provide complementary lines of evidence for understanding the use of space at the site. A detailed discussion of methods and analysis of the data is presented in Appendix 5; what follows is a brief summary.

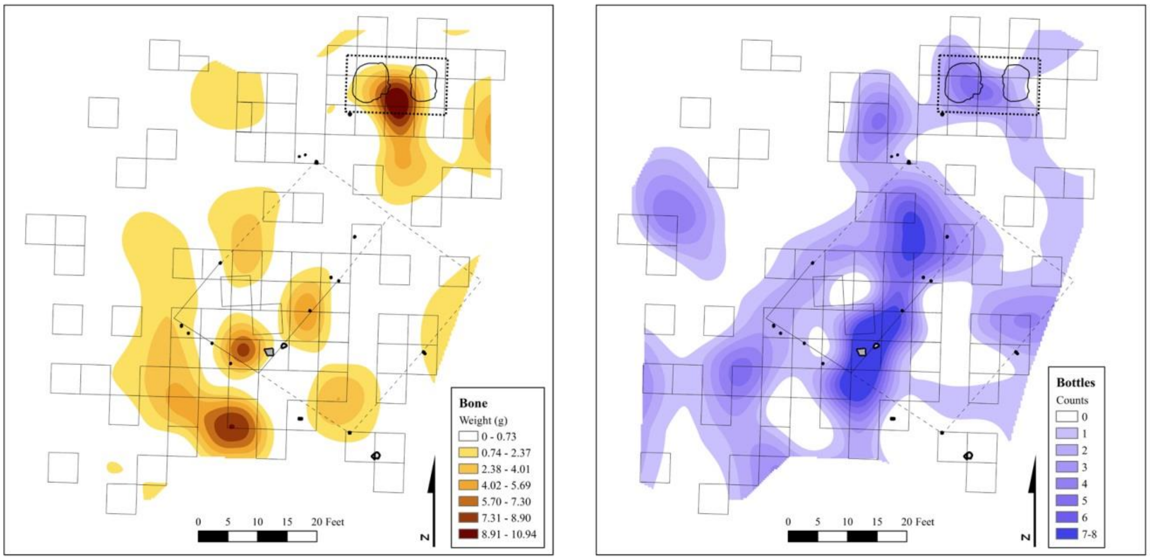
Samples were collected from most 5 ft. x 5 ft. quadrats and systematically from non-excavated areas of the site and were analyzed for phosphorus (P), calcium (Ca), potassium (K) and magnesium (Mg) using portable x-ray fluorescence as well as more standard partial-digestion protocols. Phosphorus results from the decay of organic material, including animal and plant tissue and waste; calcium is deposited in the soil by decayed oyster shell, bone, lime, and shell and lime mortar; potassium is found in plant tissues and has been linked to ash; and magnesium has been associated with areas of intensive burning, but there is not general agreement about its interpretation in archaeological contexts.

Individual chemicals show non-random clustering and display spatial variation. Phosphorus levels were moderate to high above the two subfloor pits; in the northern and southern ends of the western portion of the enclosure; in the southwest corner of the eastern side of the enclosure; and south of the enclosure near ER 032 (Figure 51, see also Appendix 5). Calcium levels peaked in the plow zone above Feature 0285 (Figure 52). They were moderately high in much of the western enclosure, and a peak that began in the southwestern third of the east enclosure extended west for approximately 35 ft. and south of Line 2 approximately 20 ft. A small concentration of calcium also was projected for the area between ERs 0183 and 0296 near the western edge of the site (Appendix 5).

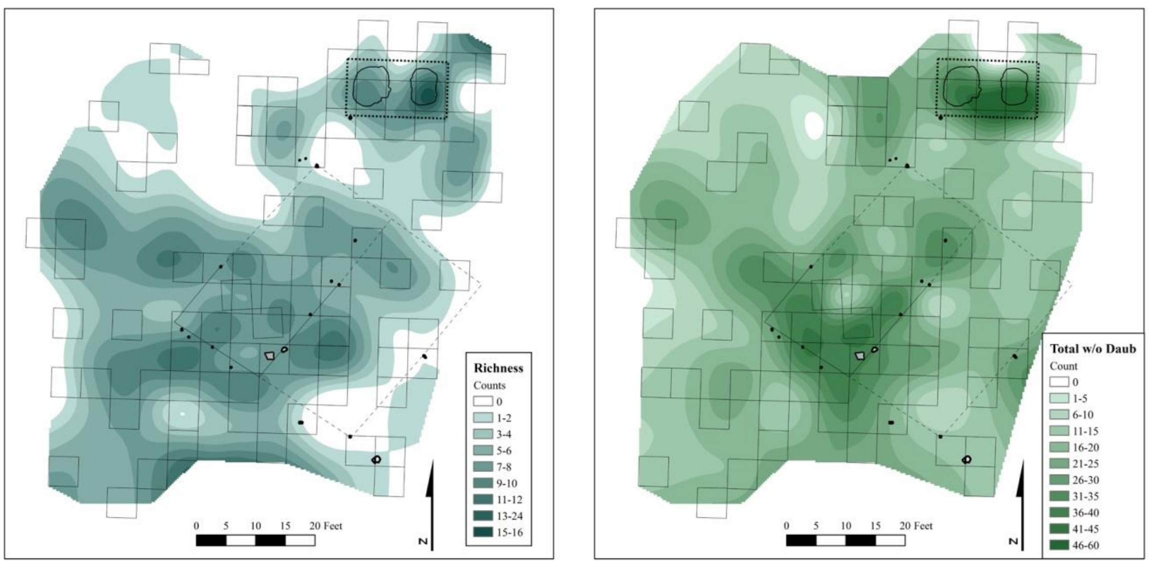




Figures 45 and 46.(left to right): Distributions of dining-related artifacts and kitchen-related artifacts.



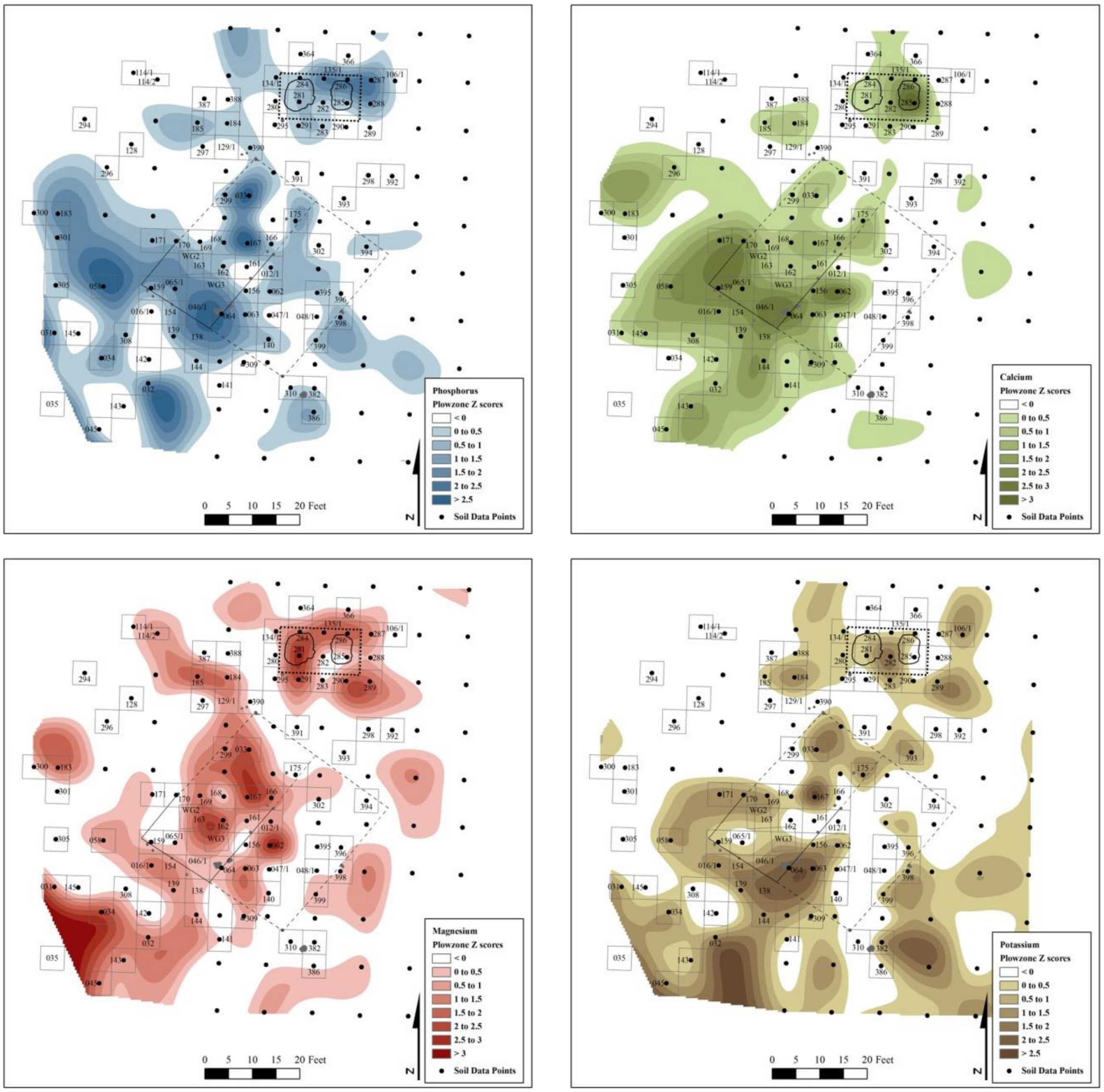
Figures 47 and 48. (left to right) and 48 (right): Distribution of bone and bottle glass.



Figures 49 and 50. (left to right): Richness scores; Distribution of all historic artifacts at Wingo’s except daub.

Potassium values peaked in the north end of the western side of the enclosure; along the east line of the eastern side and in its southwest corner; south of the enclosure; and in the area to the west that was marked by high calcium values (Figure 53, Appendix 5). Values derived from pXRF also were high between the two subfloor pits, east of the cabin, and in a U-shaped distribution around the southwestern portion of the enclosure (Appendix 5). While the interpretive strength of magnesium is debated, distributions of that chemical at Wingo’s are spatially similar to potassium, and the two elements may be reflecting the location of ash and charcoal associated with hearth cleaning, outdoor fire areas, and post-occupation destruction of the chimney (Figure 54).

More generally, the aggregate data follow at least a portion of the richness arc, and support the existence of dumping areas due west of the house; near the southeast corner of the enclosure; and in the far southern portion of the site. Elevated phosphorus and calcium levels in the southwestern portion of the enclosure correspond with bone and nail peaks. Similar peaks to the north are suggestive of some level of activity that left relatively few artifacts behind. The arc defined by artifacts southwest of the cabin also appears to have chemical correlates.



Figures 51 to 54 (clockwise from upper left). Distributions of P, Ca, K and Mg in plow zone.

DISCUSSION

While documentary evidence indicates that the Wingo's quarter farm existed for no more than 40 years, and probably closer to 20, the cabin site itself appears to have been occupied for less than a decade, based on the date ranges assigned to tightly dateable artifacts such as ceramics and buttons, the low artifact numbers, and the generally low diversity of artifacts present. The site is archaeologically ephemeral, consisting of few features and a fairly small and homogeneous artifact assemblage characterized by high levels of fragmentation. Despite these limitations, features, artifact frequencies, and soil chemical distributions combine to form a picture of the domestic landscape.

The cabin occupied the edge of the ridge top, with most daily activity taking place in open and enclosed spaces south of it. Residents maintained areas immediately south and east of the structure as clean zones with relatively few artifacts dropped or discarded during the period that the site was occupied. An area extending south of ER 0297 along Line 1, and running west of ERs 0299 and 0170 through ER 0128 to ERs 0294 and 0114 was also kept clean, with an arc-shaped midden defining its southern edge. Artifact and chemical deposition associated with each side of the enclosure suggest differences in use. Peaks of kitchen-related artifacts and smaller peaks of bone, bottles, and artifacts are associated with concentrations of calcium and magnesium; together they suggest that the eastern side was used for outdoor food preparation, or the disposal of food-related trash. Soil chemical evidence also indicates the widespread distribution of phosphorus, probably as organic waste, and calcium (probably as bone waste) in the western enclosure, with the greatest concentrations following the general artifact deposition along its southern third. Phosphorus, calcium, potassium and magnesium peaks also concentrate from ER 0033 to 0167 and 0168. A relative paucity of artifacts in this area, as opposed to the concentrations further south, suggests that soils in this part of the enclosure might have been amended with organic waste, small bones and ash, but not subjected to high levels of artifact disposal. This pattern is in keeping with activities associated with gardening. A peak in wrought nails near the enclosure’s southwest corner suggests the possible location of a small structure; perhaps indicating that the enclosure contained a henhouse or small animal pen. Together, this evidence suggests a garden in the northwestern third of the enclosure, a small structure and yard for poultry or small livestock in the southwestern third, and a midden along the southern fence line extending out to the west.

CHAPTER 4: ARTIFACTS

INTRODUCTION

A total of 2,271 historic artifacts, excluding brick, daub, mortar, plaster, limestone, faunal bone, organics (charcoal, insect shells, pits, seeds, wood) and unidentified objects were excavated at Wingo's. The total daub weight equaled 62,174 grams (137 lbs), with an additional 6.75 grams of material catalogued as brick and brick/daub that was probably daub as well. Less than 3 grams of mortar, less than 1 gram of plaster, 74.3 grams of limestone were also recovered. While the limestone may have been used historically to manufacture mortar, it is more likely that it was spread on the field by later farmers to neutralize soil acidity. The small amounts of mortar and plaster may also have been used to amend soils. Information on organics and faunal bone and organics can be found in Appendices 2 and 4.

The vast majority of artifacts were comprised of metal, followed by glass, ceramics and stone (Figure 55, Table 10).

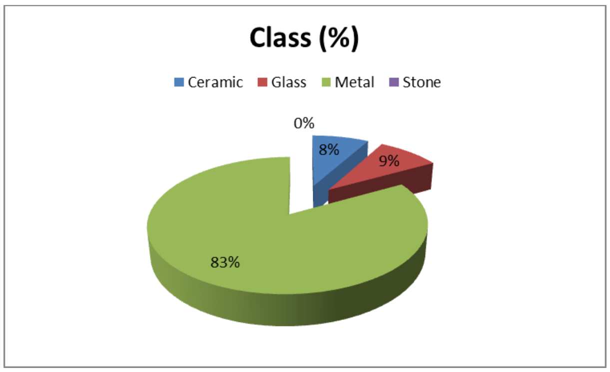


Figure 55. Percentage of historic artifacts by class.

Class	Count	Percentage
Ceramic	218	8%
Glass	238	9%
Metal	1814	83%
Stone	1	<1%
TOTAL	2271	100

Table 10. Historic artifacts at Wingo's.

Metal

Iron comprised 97% of the metal assemblage; 2% was copper alloy, 1% was lead, and less than 1% was unidentified. Seventy-nine percent of the metal artifacts were handwrought iron nails followed by 6% unidentified iron (mostly nail fragments); 6% iron wire (at least some associated with a modern horse jump and nearby wire fencing); 1% iron tacks; 1% copper alloy buttons; 1% lead shot; and less than 1% of a variety of other objects of copper alloy, lead, and iron (Table 11). Handwrought nails made up 99% of the nail assemblage and 64% of the total historic artifacts at the site. Two fragments of wrought iron bar stock and six pieces of nailrod were also found at the site, as well as four small pieces of slag. A blacksmith shop is known to have operated at Poplar Forest in the late 18th-century, and these fragments of smithing waste may have been acquired from the shop by residents and carried back to the site.

Material	Form	Count	Percentage
Alloy	Buttons and shanks	17	1%
	Straight pin	6	<1%
	Thimble	1	<1%
	Unidentified	2	<1%
Iron	Awl, Marking	1	<1%
	Bar stock	2	<1%
	Brad	3	<1%
	Buckle	3	<1%
	Clip	1	<1%
	Collar	1	<1%
	Fork	1	<1%
	Gimlet/Bit	2	<1%
	Horseshoe	2	<1%
	Nail, early cut	2	<1%
	Nail, fully cut	13	<1%
	Nail, handwrought	1424	79%
	Nail, unid.	1	<1%
	Nail, wire	1	<1%
	Nail, wrought or cut	2	<1%
	Nailrod	6	<1%
	Needle	5	<1%
	Nut	1	<1%
	Pin	2	<1%
	Pot	1	<1%
	Spider or skillet	1	<1%
	Spike	1	<1%
	Staple	3	<1%
	Tack	21	1%
	Tool, unid.	2	<1%
	Tooth	1	<1%
	Tumbler	1	<1%
	Unidentified	142	8%
	Wedge	3	<1%
	Wire	117	6%
Lead	Bullet	1	<1%
	Shot	17	1%
	Sprue	2	<1%
	Unidentified	1	<1%

Material	Form	Count	Percentage
Metal, unid.	Wire	1	<1%
TOTAL		1815	100

Table 11. Metal artifacts from Wingo's.

Artifacts of Needlework, Sewing, and Adornment

Buttons

In the 18th-century, buttons commonly fastened men's garments, while women's clothing was typically held together with pins or laces, although there were exceptions (White 2005:57; Beaudry 2006:14-15). Button sizes varied over time, but generally coat buttons were largest (18mm to 35mm), waistcoat and breeches buttons of mid-size (14.5mm to 19.5mm) and sleeve buttons smallest (9mm to 18mm) (White 2005:57; Rivers Cofield 2012:112). Sleeve buttons, also known as cuff-links, show more variability in size and shape than other clothing fasteners.

Mid-to-late 18th-century button makers crafted their products from diverse materials including bone, pearl, horn, ceramics, glass, and a variety of metals. Birmingham, England became the center for metal button production on an industrial scale (White 2005:50). Metal buttons were cast or stamped out of sheet metal; some cast copper alloy buttons were spun on a lathe to remove mold seams and to form the cone-shaped anchor for the shank. These are known as "spun back cast" with "shanks cast in boss" (Hinks 1988:53, 59-60; White 2005:50, 64). Alloy buttons could be used as produced, plated with tin or silver, or dipped in a mixture of gold powder, mercury, and nitric acid to produce a gilt surface (White 2005:50-51). All of these finishes were popular in the last quarter of the 18th century, although by the turn of the century, gilding surpassed white metal materials and surfaces in popularity (Heath 1999).

Small factories produced shanks, the iron or brass loops that held button discs on clothing, and sold them to large button manufacturers, who attached them to button backs with solder and rosin (White 2005:51). Because shanks were added to the buttons, and were fashioned of relatively thin metal wire, they were the weak points of button design, subject to breakage and subsequent loss. Methods of attachment changed over time as manufacturers innovated to provide more durable products and to gain efficiency in production. Prior to 1750, shanks were cast with the body of copper alloy buttons and drilled to create an eye. In the second half of the century, a wire loop was placed within a cone or metal lump that was integral to the button, or soldered directly on to the back of the button. Soldered shanks were originally formed of a wire loop with straight sides which is known as an alpha shank. A later modification consisted of flattening a portion of the shank ends in order to increase the contact between the wire and the button. This form is known as an omega shank (Hinks 1988:59-60; White 2005:64).

Fourteen buttons and three shanks were recovered from Wingo's from plow zone or from subfloor pit contexts (10). All were made of white metal and are of one-piece construction. Thirteen of the buttons were made of copper alloys— including tombac, an alloy of copper, zinc and arsenic— and one was made of pewter. The most common manufacturing technique identified was spun back cast (10), followed by stamped (2), cast (1) and unidentified (1).

ER Number	Button Material	Button Type	Post-manufacture modification	Size (mm)	Decoration?
032B	Unidentified white metal	Spun back cast shank cast in boss	Shank bent	17	None visible
035B	Unidentified white metal, tinned	Spun back cast alpha shank	None	18	None
0154B	Unidentified white metal	Spun back cast alpha shank	Shank broken	17	None visible
0154B	Unidentified white metal	Spun back cast alpha shank slightly domed	Edge broken, shank broken	18	None visible
0162B	Unidentified white metal, tinned	Stamped alpha shank	None	13	None
0168B	Tombac, tinned	Spun back cast shank cast in boss	None	17	Engraved, starburst
0183B	Unidentified white metal, tinned	Spun back cast shank cast in boss	Pierced, shank broken	26	Engraved circle and hatching
0281B	Tombac?	Spun back cast cone shank	None	17	None visible
0281H-E 1/2	Unidentified white metal, tinned	Stamped alpha shank	None	15	None
285B	Pewter (very similar design as)	Cast unidentified shank type	Shank broken	17	Engraved starburst
0285E-N ½	Unid. White metal, tinned	Spun back cast shank cast in boss	Shank broken	17	None
0286B	Tombac, tinned	Spun back cast shank cast in boss	None	17	None
0300B	Tombac , tinned?	Unidentified manufacture shank cast in boss	Shank broken, edges of button broken, 3 x's near edge	15+	None originally
0308B	Tombac?	Spun back cast shank cast in boss	Shank broken	18	None visible

Table 12. List of buttons from Wingo's contexts.

The most common shanks were shanks cast in boss (7) and alpha type (5). One cone shank and one unidentified shank were also found. Three buttons were decorated with engine-turned engraving. Thirteen of the buttons were small to medium in size, ranging from 13mm to 18mm, and were likely used as fasteners on men's breeches or waistcoats. One, measuring 26mm, was likely used as a coat button. The most common size was 17mm. All buttons were recovered by screening through quarter-inch mesh. They were distributed fairly evenly across the site. Five were found in occupation layers while the remaining eleven were retrieved from plow zone contexts (Figure 38).

Three copper alloy alpha-type button shanks were also found; two from dry-screening and one from water screening. Each was associated with fill of the western subfloor pit (ER0281E and ER0281J (2)).

Figures 56 and 57. Button from ER 0168B, front (left), back (right).

Decorated and plain buttons from plow zone

Three decorated buttons were recovered from the site; two with variations on a starburst pattern and one with a wreath design.

The tinned tombac button from ER0168B is spun back cast with an iron alpha-type shank (Figures 56 and 57; Table 12). The button front has been wheel-engraved with a 12-pointed starburst pattern. The button's size is consistent with use on a waistcoat. It was manufactured from ca. 1770 to 1800 (Hinks 1988:60, 91).

A second decorated button was recovered from plow zone in ER0285B (Figures 58 and 59; Table 12). This layer sealed feature 0285C-L, the eastern subfloor pit. The button is made of cast pewter, with a mold seam visible on the back. It likely dates to the mid-18th century (Hinks 1988:52-54). An uneven layer of iron corrosion products covers both the front and back, and the shank is largely missing.

A 12-pointed starburst, with rounded rather than pointed tips, and multiple lines at the end of each point, is engraved on the face of this button. It is very similar to designs found on a complete button and a button fragment recovered from the North Hill (ER1741A/1-2, 16mm and ER1739G/1-8, 15-16mm). Other star motifs at the North Hill include ER1801G/2-3, an eight-pointed lobed star (or flower) set within an engraved scalloped border, ER1742H/4-1, a lead button with an 8-pointed star set within a flower, and two star-and-roulette designs (see below).

Figures 58 and 59. Button from ER 0285B, front (left), back (right).

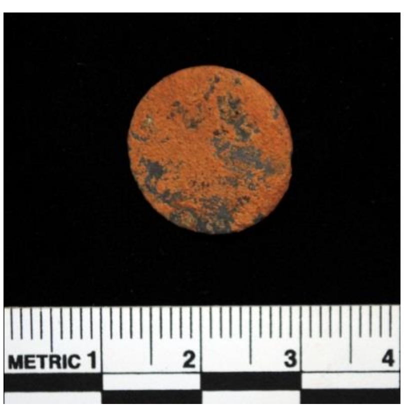
The final wheel engraved button was found in ER0183B (Figures 60 and 61; Table 12). Made of tinned copper alloy, it is spun-back cast. The center of the button face is concave, and the concavity is surrounded by a wheel-engraved rouletted design made up of two nested circles in-filled with hatching. The button is missing its shank, although remnants indicate it was cast in boss, a technique popular from the 1750s until about 1800 (Hinks 1988:53-54).

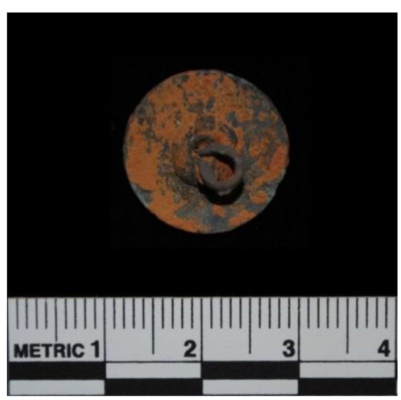
Figures 60 and 61. Button from ER 0183B, front (left), back (right).

Four rouletted buttons were also found at the North Hill. A large, spun-back cast tombac button (1546E/3-1, 25 mm) has central rouletting, but lacks the concavity. Instead, the rouletted circle is surrounded by an engine-turned star. Another large button (1739A/1-1, 27mm) although in poor condition, exhibits two circles infilled with crosshatching around its outer edge. A smaller, slightly domed button of tinned copper alloy (1739G/1-5, 17mm) and a tinned copper alloy button (1546D/1-1, 17mm) have similar designs on the borders of their faces, and button 1546D/1-1 has a wheel-engraved star in the center.

Sometime following manufacture, the rouletted button from Wingo's was pierced with an irregular hole which intrudes the outer edge of the central design (Figures 60 and 61). It may have been strung and used for

adornment, perhaps following the breakage of the eye.





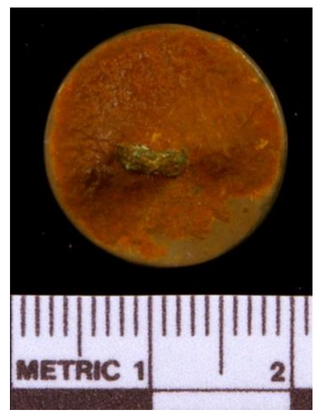
Figures 62 and 63. Button from ER 032B front (left) and back (right).

The remaining eleven buttons found at Wingos are all undecorated. Eight were recovered from plow zone, and three from feature fill. The plow zone buttons will be discussed first.

The button found in ER 032B is most likely spun-back cast, and has a shank cast in boss (Figures 62- 64; Table 12). The face is largely obscured by corrosion products, but it appears to be undecorated. It was manufactured between the 1750s and 1800 (Hinks 1988:53-54).

Figure 64. Detail of the back of the button from ER032B. Note "wing" visible below the lower portion of the bent shank. This wing is characteristic of the manufacturing technique known as "shank cast in boss" (Hughes and Lester 1981:221).

A plain tinned button was recovered from plow zone in ER035 (Figures 65 and 66; Table 12). The button's back is heavily corroded, but it appears to be spun-back cast with a copper alloy alpha shank. It was probably manufactured from the 1770s to1800 (Hinks 1988:59-60).



Figures 65 and 66. Button from ER 035B, front (left), back (right).

Two nearly identical one-piece buttons were excavated from ER0154B (Figures 67 and 68; Table 12).

Button 1 is complete and measures 17mm in diameter. Button 2 is 18mm in diameter with a broken edge. It is slightly convex. The size of these buttons suggests their use on a

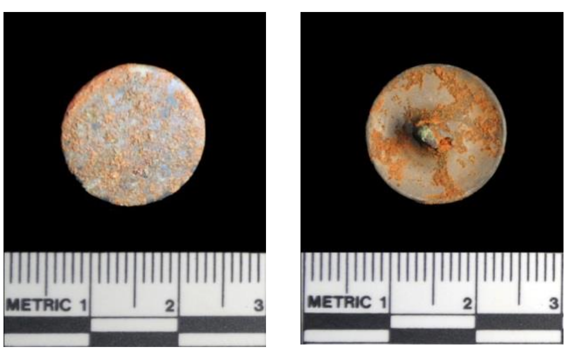
Figures 67 and 68. Spun-back cast cu alloy buttons from ER 0154B.

waistcoast (Hinks 1988:91). Both are spun-back cast with alpha shanks and are made of tinned copper alloy or tombac. They date from the 1770s to1800 (Hinks 1988:59-60).

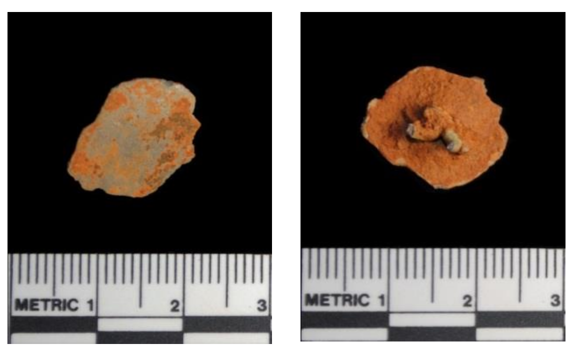
The one piece copper alloy button from ER 0162B has an alpha shank with a brass wire and appears to have been stamped (Figures 69 and 70; Table 12). The surfaces have worn off, but it appears to have remnant plating below the shank attachment and in a small area of the face. This button also dates from the 1770s to 1800 (Hinks 1988:59-60). Another spun-back cast tombac button with a brass wire shank cast in boss was recovered from ER0286B (Figures 71 and 72; Table 12). It measures 17mm like many of the other buttons found at Wingo's.

An incomplete tombac button was recovered from ER 300B (Figures 73 and 74; Table 12). It measures 15mm by 13mm. Large portions of the edge have been broken off. The remains of the shank indicate that it was cast in boss with a brass wire. Under magnification, three faint x's can be seen in a row near one edge on the button's face. They appear to have been scratched into the button's face after manufacture.

Figures 69 and 70. Button from ER0162B front (left) and back (right).



Figures 71 and 72. Button from ER0286B front (left) and back (right).



Figures 73 and 74. Button from ER 0300B front (left) and back (right).

These buttons date from the 1770s to1800 (Hinks 1988:59-60).A similarly broken (although not similarly scratched) button was recovered at the North Hill (ER1546B2-2). Tombac is brittle and subject to breakage, but the extent of damage to both buttons raises the question of whether these buttons were intentionally altered.

The final button recovered from plow zone was found in ER0308 (Figures 75 and 76; Table 12). It is a spun-back cast white metal button (likely made of tombac) with a shank cast in boss. The shank is missing. This button was manufactured from the 1750s to 1800.

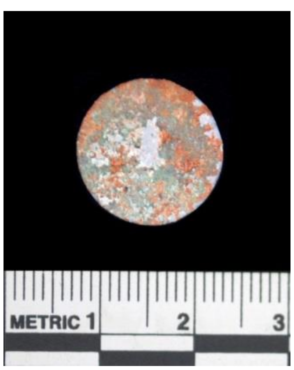
Figures 75 and 76. Button from ER 0308B front (left) and back (right).

Buttons from features

Two buttons and three button shanks were recovered in association with the western subfloor pit. One was recovered from plow zone, while the remaining button and shanks were found in pit fill.

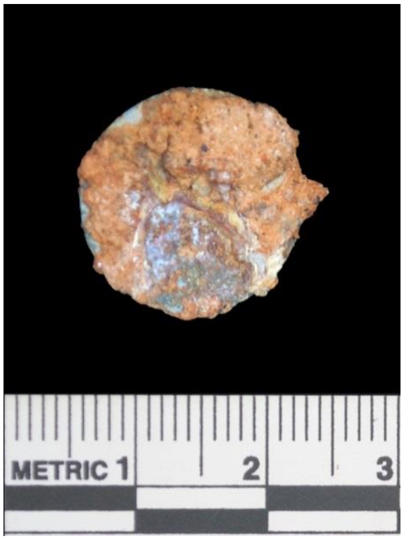
ER0281B, plow zone above the subfloor pit contained a single button (Figures 77 and 78; Table 12). It was spun back cast with a cone shank and is made of brass wire (Hughes and Lester 1981:221), a technique common from 1760 to1785 (White 2005:64). The button from ER 281H – E ½ has a tin-plated surface (Figures 79 and 80; Table 12). It is a stamped disc with an alpha shank with a brass wire. It dates from the 1770s to 1800.

Figures 77 and 78. Button from ER 0281B front (left) and back (right).



Figures 79 and 80. Button from ER 0281H-E 1/2 front (left) and back (right).

A tinned copper alloy button is associated with the fill of the eastern subfloor pit (ER0285-E ½) (Figures 81 and 82; Table 12). It is heavily corroded. The shank is broken and the wire is missing, but it was likely cast in boss on a spun back cast button.



Figures 81 and 82. Button from ER 0285E-E 1/2 front (left) and back (right).

<u>Shanks</u>

Three shanks were recovered from fill layers of the western subfloor pit (Figures 83 and 84). Each is a brass wire loop with straight sides and slightly widened ends forming an alpha shank. The shank from ER 281E measures 11mm long and is 7mm at its widest. The other two shanks are from 281J. The larger (left in Figure 84) is 10mm long and 6mm wide at its widest, while the smaller measures 9.5mm long and 6mm wide at its widest point. They were produced from the 1770s to1800.

Figure 83. Alpha shank from ER0281E.

Figure 84. Alpha shanks from ER0281J.

<u>Discussion</u>

Archaeologists have taken a number of different approaches to buttons found on African diasporic sites. Kelso (1986:34) argued that an assemblages of buttons found at quarters along Monticello's Mulberry Row was evidence of quilt making, with buttons discarded from recycled fabrics and deposited into subfloor pits. Heath (1999a, 1999b:53) and

Galle (2010) have associated buttons with gendered adornment practices and consumer behavior, while Thomas and Thomas (1999) have included buttons, beads, charms and other artifacts worn on the body as evidence of embodied practices for communicating gender and other social identities. Galle (2004) and Lee (2012b:176) have also interpreted the presence of buttons at quarter sites as evidence of seamstresses living and working in or near the quarters where they were found.

The enslaved people living at Wingo's did not choose the style or fabric of their provisioned work clothing. The coarse osnaburg from which it was fashioned was known as "negro cloth," effectively communicating the racial status of those forced to wear it. Buttons on plantation-issued clothing contributed to defining people as slaves to the broader population of free central Virginians (Baumgarten 1988). However, runaway advertisements and store accounts indicate that enslaved people often acquired, through purchase, gifting, or theft, new and second-hand clothing, cloth, buttons, buckles and other clothing-related accessories (Heath 1999a). Buttons served to draw distinctions between individuals and members of defined groups, and subtly acted in opposition to the racialized identities imposed on enslaved people by whites. Small, portable consumer goods such as buttons allowed people to express personal taste and signal chosen associations, functioning as meaningful social markers within society beyond Wingo's. Through their use, individuals communicated awareness of broader social trends and their ability and willingness to participate in them or to deviate from them (Heath 1999a; Galle 2010). In focusing on the ways in which attributes such as color, completeness, decoration, material, and size of buttons on clothing might have contributed to the complex process of constructing identity, as well as considering factors like cost, and whether buttons appear in sets or a single examples, archaeologists can move towards a richer understanding of ways in which enslaved people dressed, the importance they associated with particular styles, and their access to mass-produced goods (Heath 1999:64; Thomas and Thomas 2004; Galle 2010).

Figure 85. Thimble fragment, ER0170B.

Thimble, Straight Pins and Needles

A small assemblage of artifacts relating to sewing and clothing management was also found, including a fragment of a copper alloy thimble and six complete or fragmentary straight pins.

A portion of the body or side of a thimble was found in plow zone in ER0170B (Figure 85). Thimbles were produced in Birmingham, England in the 18th-century and nearly all American examples found on sites predating the 1790s were imported (Beaudry 2006:98-99). About the end of the 17th century, thimble makers began to apply the indentations mechanically, creating regular-sized circular dimples on the surface (known as knurling) spaced at regular intervals in a pattern known as "honey combed" (Holmes 1985:21; Hill 1995:89). The Wingo's thimble was probably short, domed, and made in two parts by a method known as deep-drawing (Hill 1995:86; Beaudry 2006:102-103, Table 4.1).

Mary Beaudry uses the indentations as a way of identifying a thimble's purpose. Because knurling on a thimble made needles easier to push, larger indentations typically corresponded with size or thickness of the needle. Larger, heavier thimbles have larger indentations than smaller, lighter thimbles. Beaudry suggests that heavier thimbles best survive in archaeological contexts (Beaudry 2006:101). She also points to the size and quality of a thimble as an indication of the type of sewing activity for which it was intended and whether an adult man, woman, or child likely wore it (Beaudry 2006:111). These diagnostic characteristics of size and indentations may suggest patterns of use (such as needlework or tailoring.) in addition to the age and gender of its owner (Hill 1995:91). A thimble could become "…a highly personalized object both because it was worn on the body and hence personal in a direct sense and because it was used for an activity considered quintessentially feminine, through which women could choose to define themselves, at least in part. For these reasons, women often went to great lengths to keep track of and to curate their thimbles" (Beaudry 2006:100). Though only a fragment remains of the thimble once present at Wingo's and these characteristics are difficult to observe, Hill's and Beaudry's points are interesting to consider in understanding how the thimble may have been used, who might have used it, and how its owner may have thought about it.

Figure 86. ER0285F-N1/2.

Four complete copper alloy straight pins and two fragments were recovered from the site, all from subfloor pit contexts. The four complete pins, all with wound heads, ranged from 25mm through 30mm in length (Figures 86-89). Straight pins could be used for various purposes in the colonial world. It would be a mistake to immediately assume they were only used for sewing (Beaudry 2006:22). Pins also served as clothing fasteners for those who could not afford buttons, as fasteners for blankets and other fabrics, and to hold together other materials such as paper documents. More generally, pins gave flexibility to children's and women's clothing, where the ability to change size to accommodate changing bodies through age or pregnancy was necessary (Beaudry 2006:10-15). Despite this possible range of uses, Beaudry's (2006:24, Table 2.1) pin size typology indicates that the pins at Wingo's were most likely common sewing pins, also called "short whites," as they fall into the category ranging from 25mm to 30mm.

Figure 87. ER 0285E.

These pins were probably imported from England, since 18th-century efforts at pin production in the colonies were unsuccessful (Beaudry 2006:19). Eleanor Breen (2013:333-337) has looked at the acquisition of pins at Mount Vernon, finding that George Washington ordered 90,000 of them from British factors over a period of less than 20 years. Archaeologists found 1,201 complete pins and fragments at the South Grove Midden and 118 at the House for Families (Breen 2013:330-331). Breen believes that Washington supplied the pins in use at Mount Vernon, and the demand for them was so high that sufficient quantities could not be purchased locally. Pins, she believes, helped hold Washington to the outmoded and somewhat inefficient consignment system.

There is no similar set of records to indicate whether the pins at Wingo's were provisioned by Jefferson or purchased by residents in small quantities at local stores. A quick perusal of Jefferson's accounts for the year 1777 indicates that he purchased 2 papers of pins on November 22 for 18 shillings and another unknown quantity of pins at a "public store" on December 6 for 24 shillings, about the cost of the 200 needles he purchased for C.H. Harrison the following February, for which he paid 20 shillings (Bear and Stanton 1997:454, 455, 459). A close reading of the Memorandum Books may prove useful for understanding the circulation of pins, needles, and other small items associated with sewing within the plantation. Beaudry (2006:21, 29) argues that until the mid-19th century when technology changed and pin prices plummeted, pins were valuable and people went to some lengths to keep track of them.

Figures 88 and 89. Straight pin, ER 0281J – E ½ (left); and straight pin, ER0281G (right).

In addition to copper alloy straight pins, two iron pins or needles and three probable needle fragments, also of iron, were recovered (Figures 90 and 91). All were found in subfloor pit contexts. Due to corrosion or fragmentation, it is not possible to identify an eye on any of the specimens, which is the principal way of distinguishing between pins and needles. Needles were typically made of iron or steel, while most pins were made of copper alloy wire. A complete pin/needle was recovered from an occupation layer of ER 0281J-E ½ and a partial pin/needle (shank and tip) was found in 0285C-S ½. The remaining two fragments were from ER 0285E - N ½ and 0285 J). Needles are not recovered as frequently as straight pins from archaeological sites due to their low preservation rate. Beaudry has found that needles were more expensive than pins and were used and owned in fewer numbers than their cheaper counterparts (Beaudry 2006:44).

Figures 90 and 91. Needle (?), ER 0281J – E ½ (left); Needle (?) ER 0285C-S ½ (right).

Like pins, needles found on 18th-century Americans sites were likely of British manufacture (Beaudry 2006:50).

Needles are the most diagnostic and positive evidence of sewing, as they were most often used for this single purpose (Beaudry 2006:44). If the Wingo’s pins/needles are indeed sewing needles, they might have had a bevel eye (Beaudry 2006:55, Fig. 3.3). The bevel eye lacked a bulge to prevent the needle from leaving an obvious hole in the fabric. Both objects have a normal point (Beaudry 2006:55, Fig. 3.4), meaning the long, gradual taper allowed easy passage through material. Its extreme sharpness would help initial piercing (Beaudry 2006:55). Needles could be used for sewing, darning and embroidery, making tapestry or for special functions (Beaudry 2006:51), although in the context of Wingo’s, it seems likely that needles would have been used for sewing and mending clothing.

Shoe Buckle

Fragments of three iron buckles were found at the site. Two were associated with horse leathers and the third, from ER 0139B, was a curved-ended chape for an oval shoe buckle. Compared to buckles made of precious metals, or even of copper alloy, 18th-century iron buckles were inexpensive and simple, usually with little or no decoration (Abbitt 1973:30). A pair of matching buckles, of which one is pictured in Figure 92, was recovered at the Poplar Forest North Hill quarter. These may have been standard issue for the shoes of enslaved adults working on the plantation during the 1770s or 1780s, or may have been available at the local store. More ornamental copper alloy buckles, some stamped with floral or geometric decorations, and some tinned or silvered, were found at the North Hill, but this fragment is the only shoe-related artifact recovered from Wingo’s.

Figure 92. Oval steel shoe buckle from the North Hill quarter, ER1546B/4-1 (right) with fragment from Wingo’s, ER 0139B (left).

Lead Shot and Gunflint

Shot are small, dense globes of lead used as projectiles with firearms. Seventeen pieces of lead shot and two pieces of sprue were found at Wingo's (Table 13). Seven of the shot were recovered by water screening. These ranged from 3 to 10mm in diameter and 0.2 to 4.0g in weight. Five of the ten were also from subfloor pit contexts, four from ER 281 and one from ER 285. Seven of the lead shot (ERs 0129B/1, 0229B, 0281E, 0281G, 0398B, 046B/1, 047B/1, 048B/1) have direct evidence of mold seams and/or sprue, and were cast in a mold (Faulkner 1986:84). Hamilton suggests that "If the ball is perfectly round with faint mold lines, it was made in a production mold, and, if an early or mid 18th-century context, was most likely cast in Europe and shipped over in kegs" (Hamilton 1987:128). Four pieces of shot (ERs 0156B, 0281H, 0285F, 0285K) exhibit the dimpling characteristic of the Rupert method of manufacture, where liquid lead was poured through the openings of a strainer into cold water, where it hardened. These ranged in size from 3.41 to 4.22mm in diameter, and from 0.2 to 0.4 g. in weight.

Context		Count	Manufacturing Method	Completeness	Weight (g)	size (mm)
0281G	Shot	1	Cast in mold	Complete	0.2	3.51
0281E	Shot	1	Cast in mold	not recorded	0.9	5
047B/1	Shot	1	Cast in mold	Complete	1.4	6.29
0398B	Shot	1	Cast in mold	Complete	3.4	8.49
048B/1	Shot	1	Cast in mold	Complete	3.7	8.57
046B/1	Shot	1	Cast in mold	Complete	4	8.6
0129B/1	Shot	1	Cast in mold	Complete	3.8	8.63
0229B	Shot	1	Cast in mold	Complete	2.2	6.98 x 8.0
0285F	Shot	1	Rupert method	Complete	0.39	3.28 x 4.15
0285K	Shot	1	Rupert method	Fragment	0.3	3.41 x 4.15
0281H	Shot	1	Rupert method	Complete	0.4	3.74 x 4.22
0156B	Shot	1	Rupert method	Complete	0.2	3.44 x 3.9
0281J	Shot	1	Unidentified	Fragment	0.7	5
065B/1	Shot	1	Unidentified	not recorded	3.3	10.26
0281D	Shot	1	Unidentified	Fragment	0.2	3 to 4
0393B	Shot	1	Unidentified	Complete	2.3	5.87 x 8.63
0281K	Shot	1	Unidentified	Fragment	3.5	not recorded

Table 13. Lead shot type, completeness, weight and size from Wingo's.

The pieces of shot were used for hunting. Most fall into size ranges associated with the hunting of birds and small game, although the shot measuring 10.26 is consistent with large buckshot (Breen 2013:325-326, Table 7-21). Enslaved people typically hunted to supplement plantation provisions, and also sold animal pelts at local stores.

A single dark grey gunflint was found in ER 0159B, measuring 15mm x 26mm. A later lead bullet was also recovered.

Figure 93. Fork, ER 062B.

Iron Tools and Implements

A small collection of iron tools was recovered from the site in addition to objects relating to food preparation and consumption and two partial horseshoes. The tools include three kyles or wedges, a marking awl, and two gimlets or bits (Table 11). Wedges were used to secure metal tools, such as axes, picks or hammers, into wooden handles. Measurements for the three Wingo's wedges are summarized in Table 14. Carpenters used marking awls to score lines for cutting or to make designs in wood (Salaman 1990:269). The Wingo's awl, found in ER 0281E, is 15.5cm in length, with a narrow handle broadening into a chiseled end measuring 13mm in width. A gimlet or bit was found in ER 0140B. It measures 4cm in length and 4mm wide with a spooned end. The second tool of this type was found in ER 0395B, and was 4.6cm long. The tips of both artifacts are obscured by corrosion. If they are gimlets, the screw end has broken off of each. Gimlets and bits were woodworker's tools used for boring; the screw end of the gimlet made a hole large enough to form a pilot hole for a nail or screw, while the spoon bit cut a broader hole for dowels, pins, or larger points of insertion for furniture (Salaman 1990:85, 208-210). Wedges and a gimlet were also recovered at the Poplar Forest Quarter Site (Heath 1999:48-49).

A two-tined steel fork, a fragment of a cast iron pot, and an iron handle for a skillet or spider were associated with dining. The fork, found in ER 062B, had two-tines (Figure 93). A partial tang remains, along with a baluster-shaped metal handle of a style typical of the third-quarter of the 18th century (Noel Hume 2001:180, 182). The pot fragment is from the body of the vessel. The cast iron handle measures 8.2cm long, 2.8cm wide, and 4 mm in thickness.

Finally, an iron tumbler for a plate stock lock was recovered from the fill of the western subfloor pit (ER 0281F-E ½). Evidence of locks, both stock locks and padlocks, has also been found at the North Hill and Quarter sites.

Context	Complete	Length (mm)	Width (mm)	Notes
ER 063B	No (shank broken)	45	9-10	7mm at broken end tapering to 1mm at tip
ER 285A	Yes	57	n/a	
285D-N ½	No (shank broken)	43	10	5mm at thickest
285F S ½	No (shank broken)	53	10	

Table 14. Measurements for wedges.

Glass

Two hundred and thirty-eight fragments of glass were found at Wingo's, of which the majority (N=230) were associated with vessels (Figure 94, Table 15). There were 5 fragments of leaded glass, 217 fragments of non-leaded glass, and 16 fragments that were not tested for lead content. Bottles (76%) dominated the assemblage followed by unidentified forms (14%) and unidentified tableware (7%). Only three fragments of window glass, weighing less than 2 g., were recovered. One was found in ER 0281J, near the base of the subfloor pit, while the other were found in plow zone. Window glass has been found in plow zone contexts at the North Hill in plow zone contexts, and in both plow zone and feature fill at the Quarter Site. It's ubiquity at the latter site suggests that the early 19th-century cabins there may have had glazed windows, acquired through the efforts of site residents (Heath 2012:124).

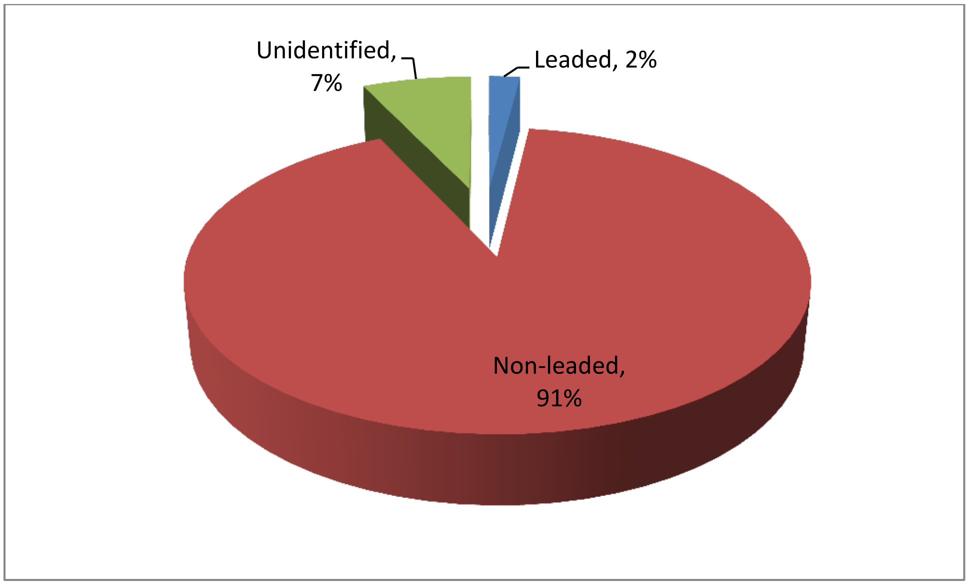


Figure 94. Percentage of leaded, non-leaded, and unidentified glass.

Form	Count	Percent
Bottle	180	76
Flake	2	< 1
Fob seal	1	< 1
Paste jewel	1	< 1
Unidentified tableware	16	7
Unidentified	33	14
Flat glass, other	2	<1
Flat glass, window	3	<1
TOTAL	238	100

Table 15. Glass forms at Wingo's.

Vessel Glass

The majority of glass vessels (N=179) are dark green or green and represent the remains of a minimum of two cylindrical bottles and one case bottle. One light green fragment was too small to identify to form. Forty-three fragments of colorless glass represent containers, tableware, or are too small to identify. Two fragments of amber container glass were also recovered. One glass sherd was too small to assess its color.

A minimum of eight glass vessels has been identified from the site (Table 16). Six of the vessels (five bottles and one unidentified tableware form) were found in plow zone and were comprised of one to two fragments each. A cylindrical green bottle (Vessel 2), most of which was excavated from the western pit feature (ER281C-L), could be reconstructed from finish to shoulder. Other base and body fragments are most likely part of this vessel, but do not mend. A possible pharmaceutical bottle is represented by non-contiguous sherds from the eastern pit feature (ER285J-N 1/2) and from plow zone.

Vessel Number	**Form**	**Color**	**Completeness**	**Rim or Base Diameter**	**Number of sherds; Proveniences**
Vessel 1	Rectangular Bottle	Brown	Body	--	1; 033B
Vessel 2	Wine Bottle	Green	Finish to shoulder; non-contiguous base sherds	30mm, rim	14; 0281F (9 sherds); 0281E (2 sherds); 02A (1 sherd); 046B/1 (1 sherd); 047A (1 sherd); 064B (1 sherd); 0162B (1 sherd); 0281A (1 sherd); 0282B(1 sherd); 0281C-E 1/2 (1 sherd); 0388B (1 sherd)
Vessel 3	Wine Bottle	Dark Green	Finish	--	2; 016B/1
Vessel 4	Bottle	Colorless	Base	30mm, base	1; 0290B
Vessel 5	Bottle	Colorless	Body/Base	--	1; 0286B
Vessel 6	Bottle?	Colorless	Body	--	3; 016B/1;0161B; 0183B; 0282B; 0285H; 0285J-N 1/2
Vessel 7	Tableware	Colorless	Rim	--	1; 034B
Vessel 8	Rectangular Bottle	Dark Green	Body	--	1, 0299B

Table 16. Glass Vessels at Wingo's.

Container Glass

British and European glassblowers produced short-necked, flared-lipped, straight-sided bottles in dip molds for home use and for export to the colonies in the 17th, 18th, and into the 19th centuries. Their thin, flat surfaces were easily broken, and these bottles became known as "case bottles" because they were stored and carried in wooden boxes (called "cellars" or "cases") (Noël Hume 2001b:62, 69-70).

Wine and Case Bottles

The manufacture and use of dark green, mouth-blown globular glass bottles in standardized sizes and shapes began in the mid-17th century, and gained in popularity by the end of that century (Lanmon 2011:19-20). By the 1730s, bottles had become cylindrical in shape, and over the remainder of the 18th century the lengths of necks and bodies, the styles of push-ups, and the shape of finishes changed in ways that archaeologists have attempted to quantify and date (Jones 1986, 2000; Noël Hume 1961, 2001b). Green glass bottles served as containers for beer, wine, champagne and liquors, anchovies, capers, fruit, mustard, olive oil, olives, pickles, snuffs and a variety of chemicals, and were made in specialized forms and sizes (Jones 1986:11-12). British glass houses exported vast quantities of bottles to the North American colonies, while smaller numbers arrived from the Netherlands, France, and likely other European manufacturers, and some were produced by American glass blowers (Jones 1986:13-14; Noël Hume 2001:60, 70-71). Once their original contents were consumed, bottles could be refilled. Attributing actual use is difficult barring the presence of residues or the survival of original contents (Kelso 1997:41-42).

Two sherds recovered at the site may represent fragments of case bottles, Vessels 1 and 8. Alternately, these sherds may represent fragments of pickle bottles, wide-mouthed, flat sided rectangular vessels ranging in size from a half-pint to a gallon (Figure 95) (Jones and Smith 1985:60, Figure 71).

One hundred and eighty-two fragments of dark green or green cylindrical bottle glass have been recovered at Wingos. Of these, 104 dark green and 45 green sherds are fragments of bottle finishes, necks, shoulders, bodies, or push-ups. An additional 33 fragments are most likely from cylindrical glass containers, but are either too small, or too melted, to be positively identified.

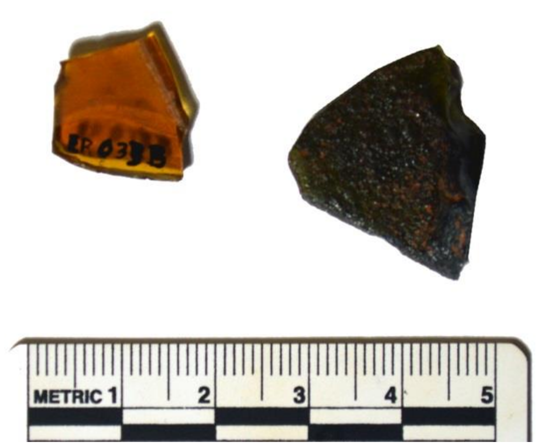


Figure 95. Amber (Vessel 1) and dark green (Vessel 8) case or pickle bottles.

<u>*Vessels 1 and 8:*</u>
Vessel 1 is thin, amber glass with a ridge along one side that indicates the location of a corner

for a square vessel. Noël Hume (2001b:70) notes that 18th-century Dutch case bottles were often made with amber metal. Vessel 8, a fragment of a flat panel and corner, is made of dark green glass with heavily eroded surfaces. The thickness of this fragment suggests that it may have belonged to a pickle bottle rather than a case bottle (Figure 95; Table 16).

Vessel 2: This vessel, recovered from the fill of the western subfloor pit (ER281E and 281F) consists of ten sherds that mend to form the finish, neck, and shoulder of a cylindrical green wine bottle (Figures 96 and 97; Table 16). Additional body and base sherds from nearby plow zone do not mend, but appear to be part of this vessel. The neck is cylindrical, an attribute common to bottles of the 1770s and 1780s (Jones 1986:47-48). The lip is fire-polished and tooled upward, while the applied string rim is down-tooled, creating a V-shaped profile to the finish. Although not an exact match, this combination of attributes fits most closely with Olive Jones's Group 1, V-finish category of bottle finishes, which appeared on cylindrical British bottles in the 1760s, and of which she has a documented example from as late as 1783 (Jones 1986:49 and Figure 19). The overall shape of the vessel also is consistent with a post-1760s date, as the body of the bottle appears to be fairly tall and narrow (Jones and Smith 1985:14). A base fragment recovered from plow zone in the vicinity of the structure (ER0282B) crossmends with a second cluster of bottle base

Figure 96. Finish, neck and shoulder of Vessel 2.

Figure 97. Detail of finish for Vessel 2 (ER0281E and F).

sherds that were recovered in topsoil and plow zone contexts ER02A, 047A, 0162B, and 064B (Figure 98). These formed a base with a rounded heel (Jones 1986:91) with a diameter of 110 mm. Additional kick-up fragments were recovered in close proximity to the western subfloor pit (ERs 0281A mended with 0388B) and from within pit fill (ER0281C-E ½ mended with 064B and 046B/1). These two mended pieces do not mend with each other or with the base described above, but have a similar diameter, thickness, and rounded heel and are likely non-contiguous parts of it. Together, these sherds are likely associated with Vessel 2. Two mended body sherds from ER0281C-E ½ are also likely parts of this vessel, as are a number of smaller sherds recovered from across the site. The metal of the bottle is characterized by bands of small to medium inclusions. The exterior surface of the base is crizzled, while the exterior surface of the neck and body is covered with thin, waving lines of weaker glass and some patination.

Figure 98. Vessel 2.

<u>*Vessel 3:*</u> Vessel 3 consists of a dark green bottle finish and neck fragment from ER16B/1 (Figure 99; Table 16). The top of the lip is missing. The remaining portion of the lip, and the down-tooled string rim, form a V-shaped profile. The vessel has an eroded surface and interior patination. Other sherds found at the site exhibit similar color, surface texture, and devitrification, and may be non-contiguous fragments of the same vessel. These include: ER03A (3 fragments), ER035B, ER063B (2 fragments), ER0134B/1, ER0138A, ER0140B, ER0145B, ER0171B, and ER0281B (base). The base, with a

Figure 99. Vessel 3 (ER 016B/1).

dome- shaped push-up, measures 80 mm in diameter.

Pharmaceutical and Patent Medicine Bottles

Small, delicately-blown vials and bottles were used throughout the 18th century as containers for a variety of medicines. Medical compounds marketed as named brands (usually in the name of "experts," but often by multiple competitors) began to appear in the 17th century, and reached their peak of circulation in the 19th century. Anderson's Scot pills were sold as early as the 1630s in England. By the late 17th-century liquid medicines, called cordials, were patented and advertised for sale in London newspapers. Well-known brands of the 18th century included Daffy's Elixir (previously known as Elixir Salutis); Godfrey's Cordial; Dr. Bateman's Pectoral Drops, British Oil; Hooper's Female Pills; Darby's Carminative; Dr. Steer's Opodeldoc; Turlington's Balsam of Life; and Friar's Balsam (Griffenhagen and Young 1957).

Figure 100. "Darbys Carminativ." Figure 8 in Griffenhagen and Young 1957.

In their study of early patent medicines, Griffenhagen and Young report that from 1711 to 1776, 75 medical compounds were patented, and numerous other non-patented remedies were advertised for sale. In Virginia, advertisements for English patent medicines first appeared in the *Virginia Gazette* in the 1730s, and increased steadily into the 1760s (Griffenhagen and Young 1957).

Beyond advertising, marketing strategies included packaging in distinctively-shaped bottles, some of which were mold-blown to accommodate embossed lettering, and the extensive use of ornate or boldly-printed paper labels. Darby's Carminative and Steer's Opodeldoc were sold in embossed bottles; the former proclaiming "DARBY'S" on one side and "CARMINATIV" on the other (note the missing E at the end of the word), the latter embossed simply with "OPODELDOC" (Figures 100 and 101). Turlington's Balsam of Life was also sold in distinctive packaging; an earlier bottle bore the embossed date of "1750," while a post-1754 bottle of more angular shape had a more extensive label (Griffenhagen and Young 1957; Noël Hume 2001:72-74) (Figure 102).


Figure 101. “Opodeldoc." Figure 13 in Griffenhagen and Young 1957.

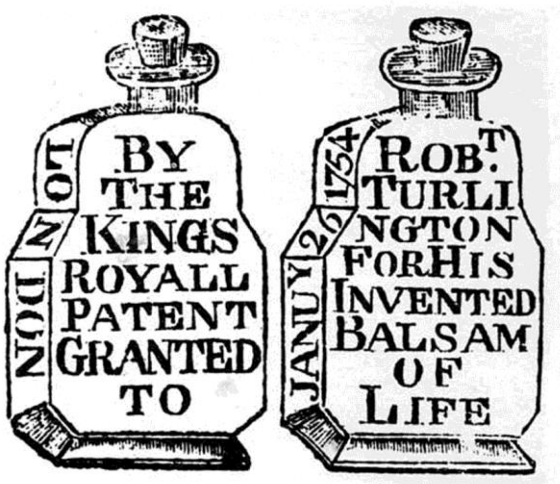


Figure 102. "Turlington's Balsam of Life" bottles, front and back, as pictured in a circa 1755-1757 brochure. Figure 13 in Griffenhagen and Young 1957.

A minimum of three pharmaceutical bottles has been recovered from Wingo's.

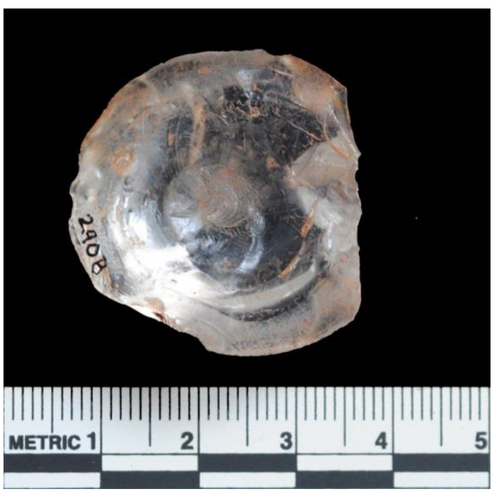


Figure 103.Base of Vessel 4 showing glass-tipped pontil scar (ER0290B).

Vessel 4: Vessel 4 is comprised of two sherds: a single, non-leaded, colorless glass bottle base with a glass-tipped pontil scar, and a small base fragment. Both were recovered from plow zone in unit ER290, immediately south of the eastern subfloor pit. The base measured 30 mm in diameter (Figure 103; Table 16).

Vessel 5: Approximately 10-15 ft. to the north, above or in close proximity to the eastern subfloor pit, excavators uncovered another non-leaded colorless bottle glass fragment. It has been partially melted. An embossed letter "E" is still preserved in the vessel wall, followed by a partial letter made up of a raised vertical line (Figure 104; Table 16). The embossed "E" appears to have been associated with text oriented horizontally, rather than vertically, on the vessel's body. It possibly made up part of the words "PATENT", "GRANTED" or "INVENTED" on a Turlington's bottle. Unfortunately, without additional lettering, it is impossible to be sure. Nevertheless, the size and style of the lettering appears to be consistent with mid-to-late 18th-century medicinal bottles.

Figure 104. Colorless glass body fragment with embossed "E" and partial letter to the left (ER0286B).

Figure 105. Colorless glass body fragment with surface texture from contact with a mold during manufacture (ER0282B).

Vessel 6: Six body sherds of very thin (0.55-2 mm), slightly curved, non-leaded colorless glass appear to come from the same vessel (Figure 105). Two were recovered from the vicinity of the structure or within feature fill (ER0282B and ER0285H, 0285J-N 1/2). The others were recovered in plow zone units ER016/1, 0161 and 0183. Each has a series of thinly spaced, wavy lines on the exterior surface. They likely represent another unique vessel, possibly a pharmaceutical bottle.

Tableware

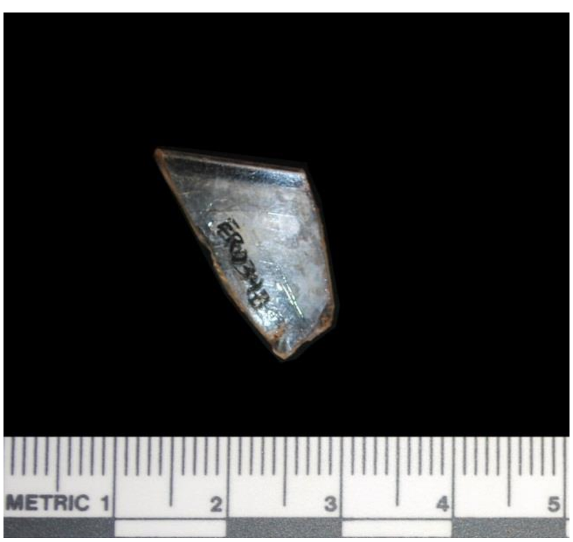


Figure 106. Leaded tableware rim fragment (ER034B).

Five fragments of leaded, colorless glass have been recovered from plow zone contexts at Wingo’s. Three (ERs 03A, 012A/1, 0138B) are small, non-diagnostic body sherds. One (ER064B) is thick, curved, and appears to be the lower portion of the bowl of a stemmed drinking glass. The final fragment has been assigned a vessel number.

Vessel 7 is made up of a single, undecorated rim sherd from an unidentified tableware (Figure 106; Table 16). The rim is fire polished; the fragment is too small to determine a rim diameter.

Non-Vessel Glass

Flat Glass

Three fragments of window glass, and two fragments of mirror glass, have been recovered from the site. The window glass measures approximately 1 mm in thickness, and ranges in color from light green to colorless. Two fragments were recovered from plow zone (ER033B and 034B), and one heavily-patinated fragment (less than 15mm) was found in the fill of the western subfloor pit (ER281J). The paucity of window glass at the site, especially in association with the structures, suggests that the dwelling did not have glazed windows.

Three pieces of colorless flat glass recovered from plow zone (ER0175B and 0283B) measured 3-4mm in thickness. Although no silvering survives, it is likely that these fragments are pieces of mirror glass.

Two unusual glass objects were recovered at the site; a paste jewel and a fob seal with a colorless glass intaglio set in a copper alloy frame and handle.

Paste Jewel

Glass, or "paste," jewels were common elements of low-cost jewelry during the 18th and 19th centuries, used in rings, pendants, shoe buckles, cuff links and buttons to substitute for more expensive gemstones. Made of colorless or colored glasses—both leaded and unleaded—some were blown in molds to create facets, textures, or decorative motifs such as flowers or stars. Others may have been cut. (Figures 107 and 108).

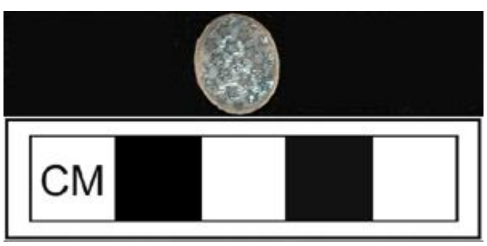


Figure 107. Molded, colorless paste jewel with star motif. Monticello, Site 7 (Photo courtesy of www.daacs.org).

Figure 108. Molded, leaded glass paste jewel with molded floral motif. Monticello, Site 8 (Photo courtesy of www.daacs.org).

At Wingo's, a single, non-leaded, colorless paste jewel was recovered from the fill of the western subfloor pit, in a layer filled with architectural rubble (ER281F). The jewel measured 9 mm in diameter. It is extremely worn, with wear extending across the face of the jewel unevenly (Figures 109 and 110).

Two other jewels similar to the Wingos' example have been recovered from late 18th-century contexts at Poplar Forest (Table 17). At the North Hill, excavators found a colorless, faceted jewel in the upper level of an erosion gully filled with domestic trash. The fill layer dated from ca. 1790 to 1820. The jewel, measuring approximately 10 mm, has a slight degree of wear around the edges, but the surfaces are well preserved (Figure 111).

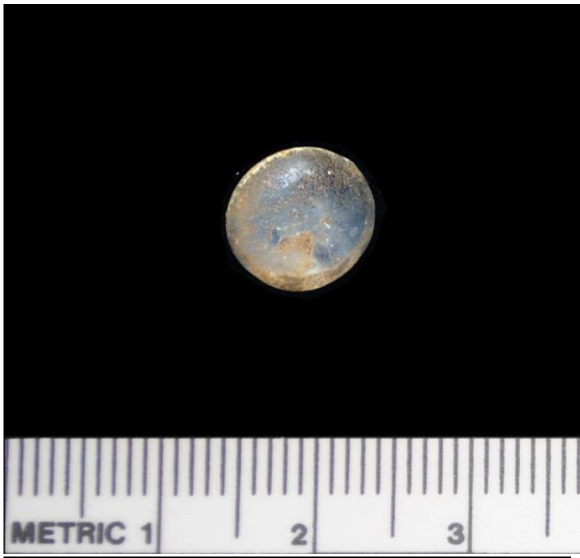


Figure 109. Paste jewel, front, ER 0281F.

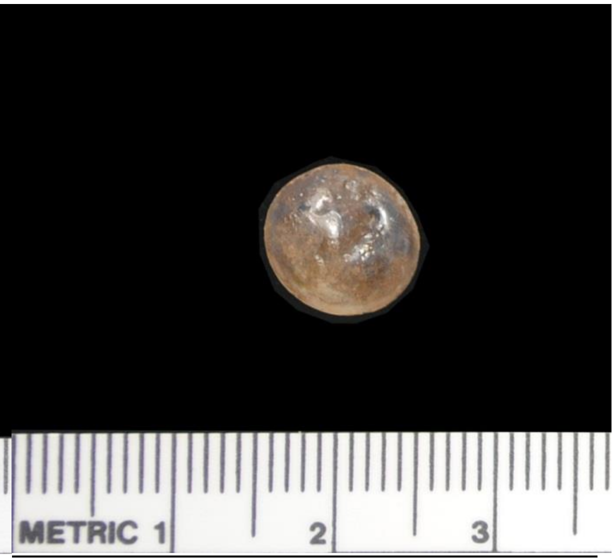


Figure 110. Paste jewel, back, ER 0281F.


Figure 111. Paste jewel recovered at the North Hill (ER1801C/1). Photo by Les Schofer.

Just east of the North Hill, across the property boundary, neighboring landowners found numerous artifacts dating to the second half of the 18th century in their vegetable garden. Excavations undertaken in the garden during the winter of 1995 revealed the bottom of a rectangular feature (most likely a subfloor pit nearly destroyed by years of roto-tilling) and a small assemblage of artifacts in the garden soil. Among them was a second paste jewel (ER1229A/1). Also colorless and faceted, it was heavily worn, much like Wingo's jewel.

No paste jewels were found at the Poplar Forest Quarter Site (dating from 1790-1812). However, at Site A, a late antebellum slave cabin located south of the extant South Tenant House, three specimens were found in the fill of a subfloor pit. All three were faceted, with two made of colorless glass and one of pink glass. The jewels range in size from 6 to 13 mm. The fill consisted of 11 layers and lenses, with an overall *tpq* of 1858. Additionally, two colorless faceted, and one yellow faceted jewels were found in plow disturbed soils immediately overlying or adjacent to the pit. Two other paste jewels have been recovered from disturbed contexts south of the mansion house (Table 17).

Archaeologists throughout the Chesapeake have found paste jewels in a variety of plantation contexts. Although varied in form, shape, and decoration, the majority of jewels found on quartering sites dating from the mid-18th through the mid-19th centuries appear to have been simply faceted. Of the examples recorded in Table 17, colorless and blue jewels are most common, represented by eight examples each, followed by green (N=6), purple to purple-red (N=2) and red (N=1 or 2).

Site	Subsite	Date Range	Context	Master Context	Count	Size (mm)†	Color	Decoration	Condition	Source
Poplar Forest	Wingo’s	1770s	ER0281F	Subfloor pit fill	1	9	Colorless	Molded	Very worn	PFDB
Poplar Forest	North Hill	1760s-1810	ER1801C/1	Top layer of erosion gully fill	1	10.25	Colorless	Molded, faceted	Edges slightly worn	DAACS
Poplar Forest	Anderson's Garden	1760-1800	1229A/1	Plow zone	1	10	Colorless	Molded, faceted	Very worn	PFDB
Poplar Forest	Site A	1840-1860	ER2353R/4	Subfloor pit fill	1	7	Colorless	Molded, faceted	Not recorded	PFDB
Poplar Forest	Site A	1840-1860	ER2352BB/4	Subfloor pit fill	1	12.7	Colorless	Molded, faceted	Not recorded	PFDB
Poplar Forest	Site A	1840-1860	ER2352BB/4	Subfloor pit fill	1	6	Pink	Molded, faceted	Not recorded	PFDB
Poplar Forest	Site A	1840-present	ER2353A/4	Plow zone	1	19.05	Yellow	Molded, faceted	Not recorded	PFDB
Poplar Forest	Site A	1840-1860	ER2353C/1	Midden	1	7.62	Colorless	Molded, faceted	Not recorded	PFDB
Poplar Forest	Site A	1840-present	ER2353G/3	Plow Zone	1	Not recorded	Not recorded	Molded, faceted	Not recorded	PFDB
Poplar Forest	Bamboo	Disturbed	ER2390A/3	Modern topsoil	1	Not recorded	Green	Not recorded	Not recorded	PFDB
Poplar Forest	South Lawn	Disturbed	ER319A	Bulldozed layer	1	Not recorded	Not recorded	Molded, faceted	Not recorded	PFDB

Site	Subsite	Date Range	Context	Master Context	Count	Size (mm)†	Color	Decoration	Condition	Source
Palace Lands		1747-1769	50	Subfloor pit fill	5	Not recorded	Green-blue (4), blue (1)	Not recorded	Not recorded	DAACS
Palace Lands		1747-1769	54	Subfloor pit fill	1	Not recorded	blue	Not recorded	Not recorded	DAACS
Palace Lands		1747-1769	54	Subfloor pit fill	1	Not recorded	Colorless	Molded, faceted	Not recorded	DAACS
Palace Lands		1747-1769	193	Post mold	1	Not recorded	Not recorded	Molded, faceted	Not recorded	DAACS
Richneck	AL	1740s-1778	AL0008	Plow zone	1	Not recorded	Blue or green*	Molded, faceted	Not recorded	Franklin 2004; DAACS
Richneck	AL	1740s-1778	AL00025	Subfloor pit fill	1	Not recorded	Blue or green*	Molded, faceted; star in the center	Not recorded	Franklin 2004; DAACS
Richneck	AL	1740s-1778	AL00025	Subfloor pit fill	1	Not recorded	Blue or green*	Not recorded	Not recorded	Franklin 2004; DAACS
Richneck	AL	1740s-1778	Not recorded	Not recorded	1	Not recorded	Blue or green*	Not recorded	Not recorded	Franklin 2004
Utopia	Utopia III	1730-1750	058E	Subfloor pit fill	2	Not recorded	Not recorded	Not recorded	Not recorded	DAACS
Utopia	Utopia IV	1750-1775	12C	Subfloor pit fill	1	Not recorded	Not recorded	Not recorded	Not recorded	DAACS

Site	Subsite	Date Range	Context	Master Context	Count	Size (mm)†	Color	Decoration	Condition	Source
Fairfield Quarter		1725-1775	273A	Plow zone	1	7.79	Dark purple	Molded, faceted	Not recorded	DAACS
Monticello	Site 7	1750-1805	012A	Plow zone	1	13.22	Green	Molded, has flat back	Not worn	DAACS
Monticello	Site 7	1750-1805	015A	Plow zone	1	10.32	Green	Molded, faceted	Not worn	DAACS
Monticello	Site 7	1750-1805	049A	Plow zone	1	11.43	Green	Molded, faceted	Worn	DAACS
Monticello	Site 7	1750-1805	094B	Plow zone	1	12.62	Colorless	Molded stars	Not worn	DAACS
Monticello	Site 8	1770-1800	345C	Plow zone	1	11.25	Colorless	Molded, faceted	Worn	DAACS
Monticello	Site 8	1770-1800	350C	Plow zone	1	12.29	Not recorded	Molded	Not recorded	DAACS
Monticello	Site 8	1770-1800	363B	Plow zone	1	9.87	Red	Molded flower	Not recorded	DAACS
Monticello	Site 8	1770-1800	364B	Plow zone	1	13.76	Not recorded	Molded, "raspberry"	Not recorded	DAACS
Monticello	Site 8	1770-1800	371B	Plow zone	1	10.9	Colorless	Molded snowflake	Not recorded	DAACS
Monticello	West Kitchen Yard	1771	354AC	Fill of dry well	1	11.41	Green	Cut or molded, faceted	Worn	DAACS
Monticello	West Kitchen Yard	Disturbed	468A	Modern pipe trench	1	10.62	Colorless	Molded, geometric	Worn	DAACS

Site	Subsite	Date Range	Context	Master Context	Count	Size (mm)†	Color	Decoration	Condition	Source
Monticello	Building s	1790-1830	831D3	Occupation layer	1	8.2	Intense dark red purple	Molded	Not recorded	DAACS

Table 17. Paste jewels recovered from Poplar Forest and other Chesapeake plantations.

*DAACS does not record color; Franklin (2004) notes that there were two blue and two green jewels, but does not provide context information to clarify which jewel was which color. † Size is longest length.

Seal

Figure 112. Seal side view (0285B).

Mounted seals descended from signet rings, pieces of jewelry with designs embedded within the ring's face. Members of the gentry class, mostly men, used signets to identify themselves through initials or symbolic devices pressed in wax on legal documents, business, and personal correspondence. Signets, and later seals with looped attachments that were worn on the body, but not necessarily on the finger, were generally made of precious or semi-precious stones, and mounted in silver or gold (Fales 1995:18-20). By the early 19th-century, when fob watches came into style, jewelers began to attach seals to watch chains or chatelaines, and these objects became known as fob seals (Fales 1995:128-129; Beal 2008).


Figure 113. Fob seal intaglio (ER0285B).

A seal within a copper alloy mount was uncovered at Wingo's in ER 0285B in the plow zone sealing the eastern subfloor pit (Figures 112 and 113). It was made of colorless glass. The glass measured 13mm x 16mm, with the total object measuring 18mm x 22-23mm long and weighing 5.2 grams. Unfortunately, this artifact appears to have been stolen from the Faulkner Archaeology Laboratory and is no longer available for study.

Another seal with an identical design was found at Cardiff University in Wales and donated to the National Museum of Wales in 1924 (Figure 114).Unfortunately this object has no other context information associated with it. It is made of blue glass and is 15.2mm long, 13.5mm wide, 4mm in thickness, and 1.6g in weight (Iles 2015, personal comm). The original purpose of both seals is not known. The objects themselves, however, provide some clues about the design's possible meaning and the purpose of the seal.


Figure 114. Intaglio from National Museum of Wales. Accession number 24.520, catalogue number D43

The intaglios contain a set of symbols relating to British nobility: a coronet, an orb, and two scepters. A review of coronet styles for the British nobility reveals that rank was denoted by the number decorative elements:

…the coronets of the nobility in England consist of pearls and leaves (called usually, from their trefoil form, strawberry leaves), either entirely of one or the other, or of both alternated. Thus the baron's coronet, having eight large pearls, presents four to the eye, and is therefore thus depicted. The viscount's has sixteen, eight being represented in blazon. The earl's has four small pearls on points, alternated with leaves. The marquis's displays four leaves, alternated with four pearls of larger size; while the coronet of a duke has a circlet of eight strawberry leaves, four being presented to the eye. All these are arranged around the border of the cap of estate of scarlet velvet, and are lined with a rim of ermine. (Jenkins 1886:88-89).

The coronet on the seals consists of a trefoil leaf in the center, two small spikes (it is unclear if they are topped by pearls or plain), and the sides of two additional leaves (Figures 113 and 114), indicating that it is a ducal coronet. Examples of similar coronets can be found in the personal crests engraved by William Sharpe (1800) during the 18th-century (Figures 115-118).

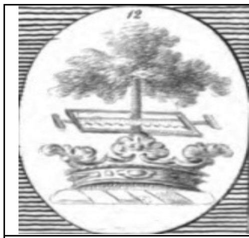
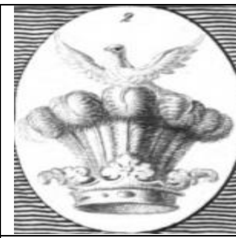
			

Figure 115. Sharpe, No. 12, Plate 3.	Figure 116. Sharpe, No. 6, Plate 4.	Figure 117. Sharpe, No. 6, Plate 5.	Figure 118. Sharpe No. 2, Plate 7.

Figures 115-118:British crests depicting ducal coronets (Sharpe 1800).

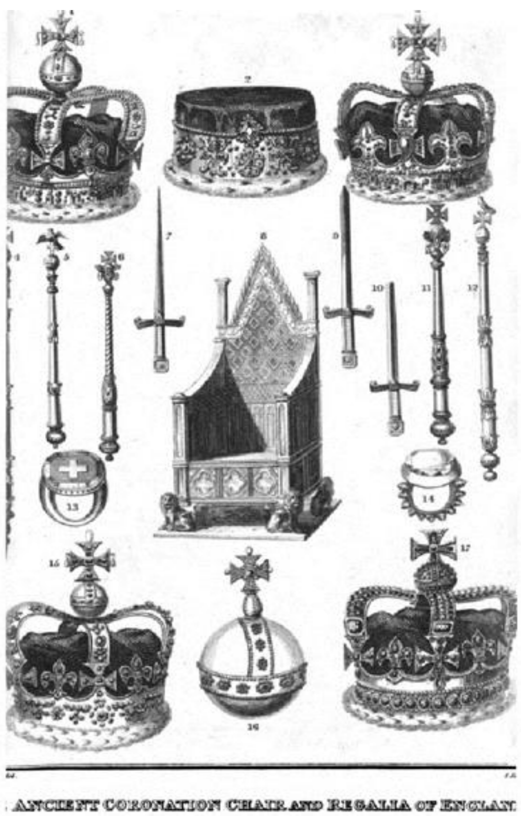


Figure 119. Plate IV (Thomson 1820 showing royal accouterments).

Rather than depicting symbols like an oak tree, lion's paw, unicorn, or dove rising from a plume of feathers—all iconography associated with specific ducal families— the remaining symbols on the seals are public and associated with royalty. Immediately above the coronet is a circle topped by a cross and encircled by a band, with a second band rising from the center to the base of the cross. This symbol depicts the Sovereign's orb, a golden ball representing the global power of the monarch and the rule of Christianity. (Figure 119, No. 16). On either side of the orb, extending down to the top of the coronet, are two scepters. These resemble the King's Sceptre with the Dove, described as 3ft. 7 in. long, with a "mound" at the top supporting a Jerusalem Cross. A dove is perched atop the cross, symbolizing mercy and the spiritual role of the monarch (Thomson 1820:85) (Figure 119, No. 5). The level of detail on the intaglios is much simplified; however the top of both scepters appears to represent the dove with outstretched wings. Both the Sovereign's orb and the Sceptre with the Dove were designed for Charles II in 1661 (Royal Exhibitions; The British Monarchy 2008/9).

Why a seal with symbols representing the highest level of peerage, and the royal Crown itself, is present at a slave quarter in central Virginia is a mystery. Both John Wayles and Thomas Jefferson served as representatives of the crown in public office; Wayles as King's attorney and Jefferson as a member of the colonial legislature. The seal, although laden with symbols of power, was also made of fairly inexpensive materials. Glass substituted for the more standard practice of using semi-precious or precious jewels for seals, and copper alloy took the place of silver or gold. It is possible then, that the seal was manufactured as an affordable accouterment of public office, distributed to communicate public and official, rather than personal and private, identity. If this were the case, it is surprising that other seals like this one have not been found in colonial contexts. The seal may have been given away once royal symbols no longer carried power in Virginia. Its association with a context dating to the years of, or immediately following, the American Revolution, is intriguing.

Ceramics

A total of 218 historic ceramic fragments were recovered, of which 182 were originally part of ceramic vessels; 29 were white ball clay, 6 were coarse earthenware tobacco pipes, and 1 was either a ball clay pipe fragment or a fragment of refined earthenware. Pipes are discussed in a separate section of this report. One hundred and eighty-six ceramic sherds were assigned to vessels.

The assemblage was almost equally divided between vessels used for food preparation and storage, and vessels for serving food and beverages, with 48% utilitarian, 43% table or teawares, and 9% unidentified (Figure 120, Table 19).

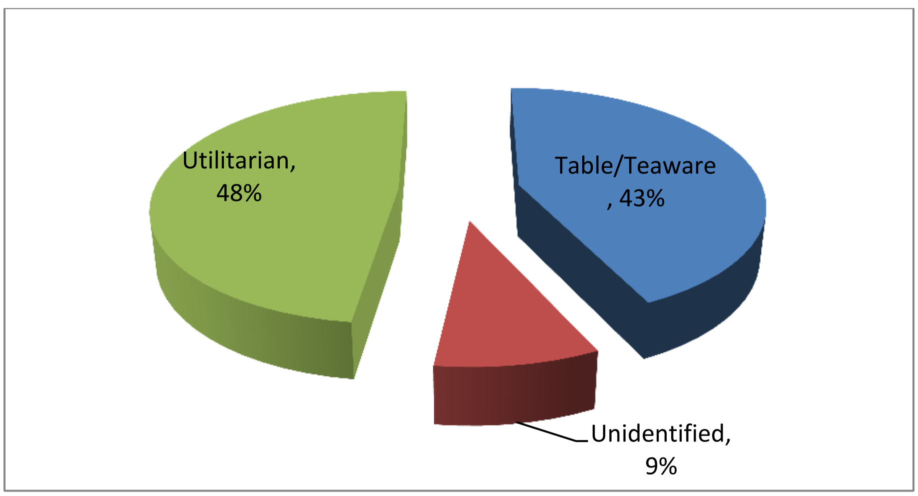


Figure 120. Percentage of ceramic vessel forms.

The identified ceramics are summarized in Table 18 by count and percent of the assemblage.

Ceramic Types		Count	Percent
Coarse earthenware			
Coarse earthenware, unid.		9	5
Colonoware		53	29
Redware, black glaze		3	2
Redware, unid.		4	2
	Subtotal	69	38
Refined earthenware			
Creamware		60	32
Tin-glazed earthenware		11	6
probable tin-glazed earthenware		3	2
Refined earthenware, unid.		2	1
Pearlware		1	< 1
Whiteware		1	< 1
	Subtotal	78	41
Utilitarian stoneware			
British brown stoneware		5	3
Fulham stoneware		18	10
Westerwald		11	6
	Subtotal	34	19
Refined stoneware			
White salt-glazed stoneware		3	2
probable White-salt glazed stoneware		1	< 1
	Subtotal	4	2
	Total	186	100

Table 18. All identified historic ceramics recovered from Wingo's by count and percentage.

One hundred sixty-two (87%) are 30mm or less in diameter; the largest sherd, a base fragment from a Fulham jar or bottle, measures 65mm. Based on sherd counts, creamware is the best represented type found at the site, followed by colonoware and utilitarian British brown stoneware (a combined count of British brown and Fulham). Differences in breakage can inflate the counts for fragile or low-fired wares, however.

Distributions of these three groups were plotted to see if any patterns could be seen that might reflect different patterns of discard (and potentially use) at the site. The colonoware and English stoneware distributions are quite similar, tending to cluster around the location of the cabin and within the eastern enclosure and midden south of it. Creamware sherds were much more ubiquitous.

Minimum Vessel Count

Various methods have been developed for quantifying vessels present at archaeological sites, including sherd counts or weights; estimated vessel equivalents (EVEs) based on weight or rim or base diameters; and estimates of vessels represented (EVREPs). EVREPs translate into minimum vessel counts (MVCs), which are typically based on the quantity of unique vessel rims or bases (Orton et al. 1993:171-173; Poulain 2013). Each method has its strengths and weaknesses, but generally EVEs and MCVs are recognized as providing a more accurate assessment of vessel numbers than simple counts or weights (Sussman 2000; Poulain 2013). High degrees of fragmentation, large numbers of undecorated sherds, and assemblage size all affect the accuracy of the count (Brooks 2001:45-46, Poulain 2013). Fragmentation is a factor in quantifying the Wingo's assemblage, but it is somewhat offset by the small size of the assemblage.

In creating this minimum count, the following process was undertaken. Following cataloguing, ceramic sherds were sorted into groups by type, decoration, and form where possible, and crossmending was attempted. Within each group, minimum vessels were assigned based on the greater number of unique rim or bases. Because of the small size of the assemblage, it was often possible to assign body sherds—based on firing characteristics, inclusions in the paste (viewed under a low power 1X-3X binocular microscope), thickness, distinctive imperfections in the glaze, or decorative treatments—to particular vessels, even though rims or bases were not present (see Poulain 2013:108-109 for a discussion of this method). This analysis resulted in what Brooks has called a "sensible minimum (2001:45); "a common sense statement…that there are at least this many vessels in the assemblage, and that this minimum is acceptably close (though in most cases lower) to the actual number of vessels."

Testing from the 2000, 2007-2009, 2011 and 2012 field seasons permitted the identification of a minimum of 20 ceramic vessels from the site. The small nature of the ceramic assemblage, small sherd size, and the inability to reconstruct many of the vessels precludes extensive discussion of form or foodways practices. All vessels are less than one quarter complete and six are represented by a single sherd. Table 19 summarizes ceramic type, form and associated sherds for each vessel.

Stoneware

There are a minimum of four stoneware vessels; a mug, a jar or bottle, a bottle, and an unidentified table or teaware form. All are hollow wares.

Figure 121. Vessel 1, Westerwald mug or tankard.

Utilitarian Stoneware

Vessel 1: Eight body, one handle, and two base fragments of a Westerwald stoneware mug or tankard were recovered from plow zone (Figure 121; Table 19). The body ranges in thickness from 3.7 to 4.6mm, and the vessel had a base diameter of 9-10cm. It is the most elaborately decorated vessel in the assemblage, with portions of the outer ring of a sprigged medallion, characterized by a series of small open circles enclosing raised dots; incised decoration, some in-filled with blue; a molded handle; and a cordoned base. The edge style of the medallion and the incising is similar in style to a GR marked gorge, dating from 1720 to 1750 illustrated by Noel Hume (2001a:105, Figure v.13b), although the form is different. Other examples of similar sprigging on medallions dating from 1720 to 1760 are illustrated by Glenn (2002:175, Figure 10).

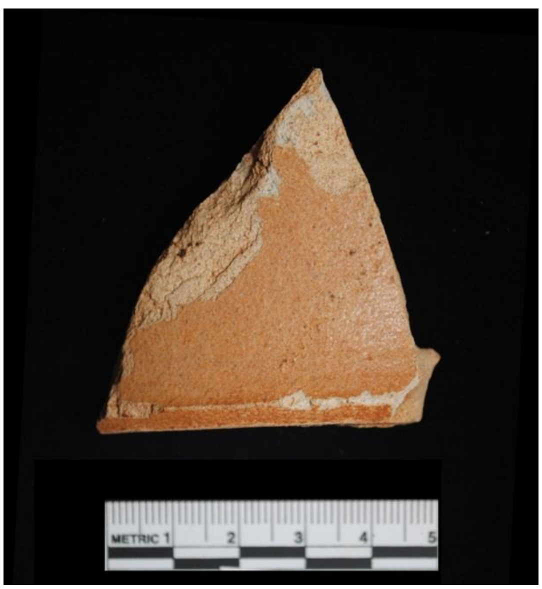


Figure 122. Vessel 2, base of Fulham stoneware vessel, ER0143B.

Vessel 2: Thirteen or fourteen body and two base sherds comprise a British Brown/Fulham salt-glazed stoneware storage jar or bottle. One fragment was found in the fill of the western subfloor pit (ER281E-W1/2); the rest were recovered from plow zone (Figures 122 and 123; Table 19). The body is buff with a grey core caused by uneven firing in the kiln. This core appears on 15 of the 16 sherds associated with this vessel and is one of the diagnostic features that allow non-contiguous sherds to be assigned to it. Three of the non-contiguous body sherds have an exterior slip of iron-oxide, and one has an interior dark salmon slip. The body ranges in thickness from 4. 6 to 9.3mm near the base. Measuring 12cm in diameter, the base is tooled around the outer edge.

Six sherds mend to form a portion of the base and sides of the hollow ware, which appears to have been more globular than ovoid in shape. The base is similar in diameter and curvature to the base of a globular storage jar in the collection of one of the authors (Figure 123). Fragment ER0399B, the lone sherd that does not have a reduced core, fits the curve of the upper shoulder/ neck juncture of such a vessel. If that sherd is not part of this vessel, then it is possible that the vessel is a bottle

Ware	Type	General Form	Specific Form; Decoration	Rim or Base Diameter	Number of sherds; Proveniences
V.1. Stoneware	Westerwald	Hollow ware	Tankard; cobalt painted, sprig molded, incised, cordoned	100mm base	11: 012B/1 Crossmends with 0396B and 0302B; 0138B crossmends with 0144A; 0141B crossmends w/ 0286B; 0143B; 0395B; 0396B (2)
V.2. Stoneware	English Brown/ Fulham	Hollow ware	Bottle or jar	12cm base	15: 034B; 047B/1; 063B (2); 0139B (2); 0281 E-W ½; 0285B; 0395B; 143B (base) crossmends with 0167B(base), 0301B,0396B, 0399B (2); 0399B?
V.3. Stoneware	English Brown/ Fulham	Hollow ware	Bottle	30mm bore diameter	5: 019A (3 frags. mend); 058B; 0143B
V.4.Stoneware	White Salt Glazed	Hollow ware	Hollow ware	--	3:0 285E-N½; 0156B(2)
V.5. Coarse EW	Black lead glaze, red body	Hollow ware	Hollow ware	--	3: 016B/1 crossmends w/ 0159B; 0143B
V.6. Coarse EW	Clear lead glaze, buff body, reduced core	Hollow ware	Hollow ware	approx. 50mm base	5; 062B (base) mends w/062B (base); 62B; 0285K - S½ #35; 0285B
V.7. Coarse EW	Clear lead glaze, red body	Unidentified	Unidentified	--	3: 048B/1 (2); 0393B
V.8. Coarse EW	Colonoware	Hollow ware	Necked jar	--	1; 281G (shoulder)
V.9. Coarse EW	Colonoware	Hollow ware	Hollow ware	approx. 10-12 cm rim	2; 285K- N½ (rim); 284B (base)
V.10. Coarse EW	Colonoware	Hollow ware	Hollow ware	--	1: 289B
V.11. Coarse EW	Colonoware	Hollow ware	Hollow ware	Rim	1: 063B
V12. Coarse EW	Colonoware	Hollow ware	Hollow ware; incised line on rim	approx. 14-18cm rim	12: 50B; 0154B; 062B (rims); 046A/1; 063B; 0139B; 0154B; 0169B; 0285B; 0285C; 0285E-N½; 0382B
V.13. Refined EW	Tin glaze	Hollowware	Hollowware; partial blue painted foliate motif	--	8; 0171B (4, 3 mend); 0399B; 034B (base) crossmends w/ 0139B (base), 0163B (base)
V.14. Refined EW	Tin glaze	Flatware	Flatware	--	1; 0309B (well)
V. 15. Refined EW	Creamware	Hollow ware	unidentified (deep cream)	--	2: 0129B (crossmends with 0297B)

Ware	Type	General Form	Specific Form; Decoration	Rim or Base Diameter	Number of sherds; Proveniences
V.16. Refined EW	Creamware	Flatware	Plate (light cream)	--	6: 0106B (rim); 0183B (rim); 016B/1 (2) (well); 065B/1 (well); 0171B (well)
V.17. Refined EW	Creamware	Hollow ware	Possible tankard; beaded, sprig molded, molded handle	80mm base	21; 154B (base) crossmends w/ 141B (base); 045B mends w/ 045B; 0169B mends with 0391B; 0109B (handle); 0290B (handle); 031B (handle); other likely associated sherds include: 032B(2), 047B/1; 065B; 141B; 0281F-E½;285K-E ½; 0289B; 0308B; 0310B (2); 0386B
V.18. Refined EW	Creamware	Flatware	Plate		2: 0392B (rim); WG3 (well?)
V.19. Refined EW	Pearlware		Unidentified	--	1: 0396B
V.20. Refined EW	Whiteware	Hollowware	Bowl?; red transfer print	10-12 cm rim	1; 171B (rim)

Table 19. Ceramic type, form and associated sherds per unique historic vessel.

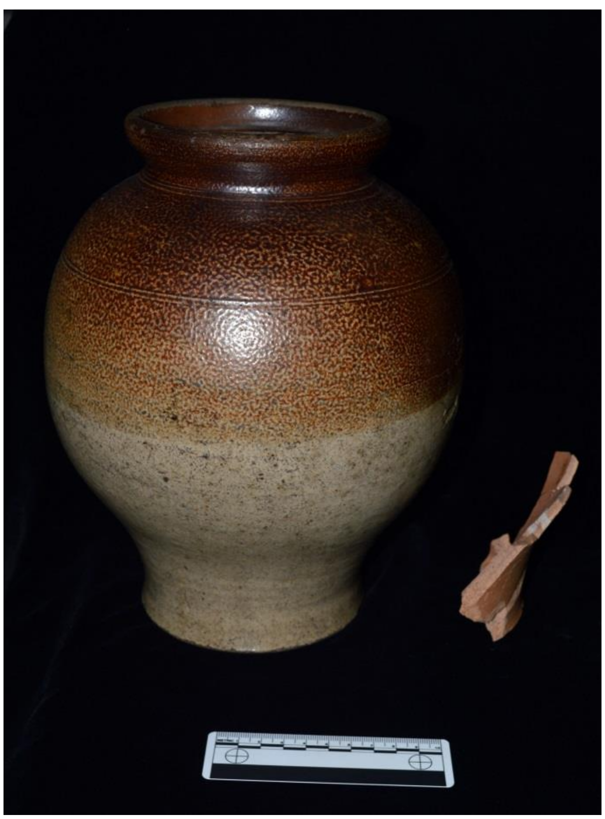


Figure 123. Fulham jar (left); Vessel 2 base (right).

rather than a jar. The base is similar to the form of a mid-18th century ale bottle illustrated by Skerry and Hood (2009:69).

Vessel 3: Three fragments mend to form the lip and partial neck of a British Brown/Fulham salt-glazed stoneware bottle. Two other non-contiguous sherds were likely part of this vessel. All were recovered from plow zone (Figure 124; Table 19). None of the sherds have the characteristic firing core noted in Vessel 2, and the paste appears to be more red than buff in color. Each sherd is covered with an iron-oxide slip, resulting in a rich brown color. Noël Hume (2001b:78) notes that English stoneware bottles were popular from 1690 to 1770. He describes their necks as cordoned below the lip. The Wingos vessel has a raised string rim, in imitation of a glass bottle, with a bore diameter of 30mm. From the interior of the neck to the exterior of the string rim it is 13.3mm thick; the neck measures 4.3mm in thickness.

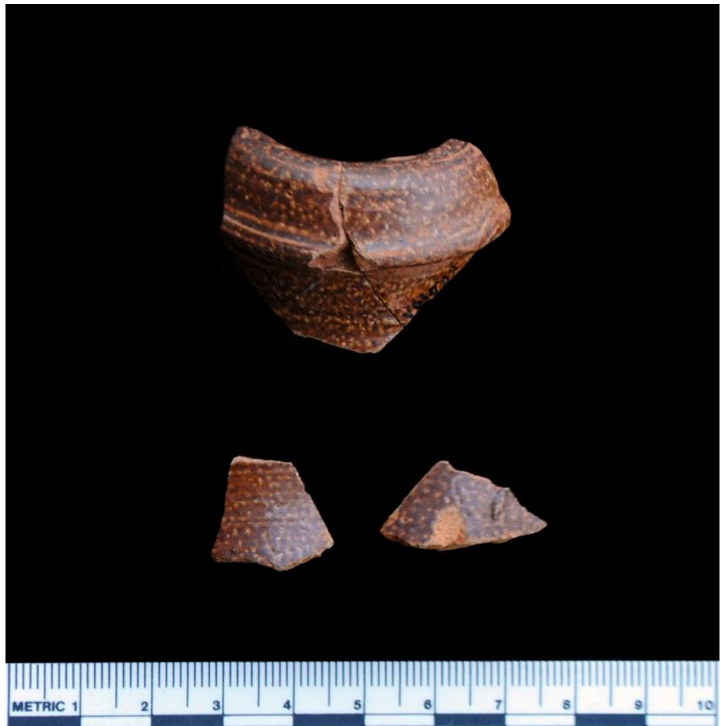


Figure 124. Vessel 3, British brown stoneware bottle.

Refined Stoneware

Vessel 4: The single white salt-glazed stoneware vessel consists of a rim sherd and two body sherds, all undecorated. One body fragment was recovered from the fill of the eastern subfloor pit (ER285E-N1/2); the other two came from plow zone (Table 19). The rim has a maximum thickness of 4mm; the body sherds are 1.5 to 2mm thick.

Coarse Earthenware

There is a minimum of eight historic coarse earthenware vessels; all with identifiable forms are hollow ware. Three are wheel thrown and glazed. The remaining vessels are colonowares: handbuilt, fired without the use of a kiln, and unglazed (Noël Hume 1962; Deetz 1988; Ferguson 1988, 1992:44-55; Heath 1996; Kern 2010:93-94). All are undecorated with the exception of Vessel 12 which had an incised line on the inner, upper part of the rim.

Wheel Thrown, Glazed Coarse Earthenware

Vessel 5: This red-bodied, manganese glazed, wheel-thrown vessel is an unidentified, utilitarian form comprised of three body sherds recovered from plow zone (Figure 125; Table 19). It has the glossy black glaze and red clay characteristic of Buckley, but not the yellow clay mixed in the paste. Ordinarily, this vessel would not be recognized in a minimum vessel count, given the lack of diagnostic formal attributes (measurable rim or base). However, it is different enough from the other coarse earthenware present at the site to merit its own vessel designation. The exterior surface of each sherd has spalled off, with wall thicknesses having been greater than 4.4 to 4.7mm. The paste is dominated by very fine to fine quartz inclusions, with lesser amounts of fine hematite and unidentified very fine black mineral inclusions.

Figure 125. Vessel 5, Manganese-glazed redware, unidentified form. Two of three sherds.

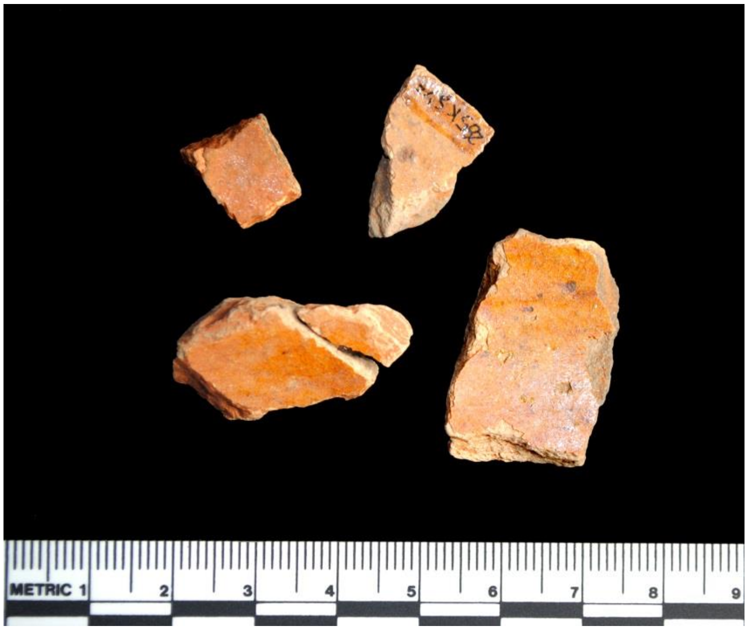


Figure 126. Vessel 6, Lead-glazed coarse earthenware, unidentified form.

Vessel 6: This unidentified, utilitarian hollow form consists of two base fragments that mend and three body sherds. One body fragment was recovered from a fill layer of the eastern subfloor pit (ER285K-S1/2), while the rest were found in plow zone (Figure 126; Table 19). The vessel has a thin lead glaze on both interior and exterior surfaces. The paste contains very fine quartz and unidentified black mineral inclusions, and possibly some very fine fragments of mica. The core of the vessel is unevenly reduced. The base is approximately 8mm thick, with the mended fragments being too small to accurately measure a diameter. Body sherds range in thickness from 4.0-5.8mm.

Vessel 7: Three sherds comprise the lead glazed, red-bodied unidentified utilitarian Vessel 7. Like Vessel 5, it is comprised only of non-diagnostic body sherds. However, the paste is quite distinct from Vessels 5 or 6, being soft, evenly fired, and orange-red in color. It is dominated by very fine quartz and unidentified black mineral inclusions, with lesser amounts of very fine hematite. The surface of two of the sherds has spalled off; the third has faint remnants of lead glaze on both the interior and exterior surfaces and measures 6mm in thickness.

Colonoware

Fifty colonoware sherds from a minimum of five vessels were recovered at Wingo's. Individual sherds were sorted using a low-powered binocular microscope into three informal groups based on paste and firing attributes. Groups A and C share a similar paste, comprised of very fine to fine quartz, very fine unidentified black mineral inclusions, and fine hematite inclusions. Group C sherds are fully oxidized, while Group A sherds exhibit more variability in thickness and firing, with surface clouding present on some fragments. The paste of sherds assigned to Group B contains very fine quartz and black mineral inclusions, fine hematite, and fine to medium quartz, making sherds of this group feel coarser in texture. Many sherds in this group have core reduction and some are completely reduced. Vessels 8-10 were assigned to Group A; Vessel 11 to Group C, and Vessel 12 to Group B.

A sample of sherds from each group, as well as few colonoware pipe fragments and some daub from the site were analyzed using pXRF technology (Table 20; see pXRF section below and Appendix 7). The low-powered microscopic groupings matched some of the chemical results, but not all. Generally, groups A and C tend to correspond to chemical group 2, while Group B and chemical group 3 match, with one exception. Group A exhibited the most within-group variability, with one falling into chemical group 1, and another falling into none of the three chemical groups. Further pXRF sampling might prove useful.

Context	Microscopic group	Chemical group
0281G	Group A	Misc.
0284B	Group A	n/a
0285K-N 1/2	Group A	Group 2b
0289B	Group A	Group 2c
047B/1	Group A	Group 1
046A/1	Group B	n/a
ER050B	Group B	Group 3
062B	Group B	Group 3
0139B	Group B	n/a
0154B	Group B	Group 3
0169B	Group B	Group 2c
0238B	Group B	n/a
0285C	Group B	n/a
285E-N1/2	Group B	n/a
0382B	Group B	Group 3
063B	Group C	Group 2a

Table 20. Comparison of microscopic and chemical groups.

Vessel 8: This vessel consists of a single sherd, the partial shoulder of a necked jar, recovered from the fill of the western subfloor pit (ER281G) (Figure 127, Tables 19 and 20). The paste is light brown and unevenly fired, with a partially reduced core and fire clouding on the exterior surface ranging from grey to black. The exterior surface is smoothed and was possibly lightly burnished. The body ranges in thickness from 6.9 to 9.68mm.

Figure 127. Vessel 8, ER0281G exterior.

Figure 128. Vessel 9, ER284B exterior.

Chemically, this vessel did not fit into any grouping and is graphed with the miscellaneous group (see Figure 148).

Vessel 9: A poorly-formed rim sherd and a thick body sherd make up Vessel 9. The rim was recovered from the fill at the bottom of the eastern subfloor pit (ER285K N-1/2), while the body sherd (ER284B) was found in plow zone just north of the western subfloor pit (Figures 128, 129, 131-133,

Figure 129. Vessel 9, ER284B interior.

Tables 19 and 20). Whereas Vessel 8 is of even thickness and has an intentionally smoothed exterior, Vessel 9 appears to have been made by someone with limited potting skills. The straight rim was pinched from a fairly thick body (rim thickness is 7.1-7.8mm, body thickness ranges from approximately 11 to 13.4mm just below the rim). The sherd ER 0284B ranges in thickness from 7.4 to 12.2 mm, and may also have been curving up to a now-missing rim. Both sherds are underfired, with the rim sherd exhibiting a partially reduced core and a small area of fire clouding on the lip. The exterior of both sherds is roughly smoothed. The vessel was assigned to Group 2b. Based on the curvature of the rim, the opening of the vessel was between 10 and 12 cm in diameter, indicating that the vessel was relatively small when complete.

Vessel 10: A single sherd (ER 0289B) comprises Vessel 10, an unknown hollow form (Figure 130, Tables 19 and 20). The core is reduced and the body is quite thick, measuring approximately 14mm. One edge appears to have had a V notched into it; the interior surfaces of the V are smoothed and consistent with the rest of the exterior surface of the sherd and do not appear to have been formed by breakage. Chemically, this vessel was assigned to Group 2c.

Figure 130. Vessel 10, ER289B exterior. Not notch on top of sherd.

Vessel 11: A single rim sherd from plow zone comprises Vessel 11, also an unknown hollow form (Tables 19 and 20). It is evenly fired and thickly potted, with the lip measuring approximately 4mm, widening to 10.4mm approximately 15mm below. The sherd is too small to estimate a rim diameter. Chemically, this sherd was assigned to Group 2b.

Figures 131 and 132. Vessel 9, ER285K-N ½ exterior (above left); interior (above right).

Figure 133. Vessel 9, ER285K-N ½ rim profile.

A non-vesselized sherd of this same paste group was recovered in the fill of a feature in ER 0382E. It is slightly curved, with a finger print impression on the interior surface.

Vessel 12: The paste contains very fine quartz and black mineral inclusions, but also fine hematite and fine to medium quartz. Vessel 12 consists of three non-contiguous rim sherds, all recovered from plow zone, and two fairly large body sherds recovered from plow zone near the eastern subfloor pit and from the first fill layer of that pit (ER 0285C) (Figure 134, Tables 19 and 20). Seven additional non-contiguous body sherds that share similar paste may be associated with this vessel. Six were found in plow zone and one in the fill of the eastern subfloor pit (ER285E-N1/2).

Figure 134. Vessel 12, Rim sherds from ERs050B, 062B and 0154B.

The rim sherds are everted, with a flattened lip, and each has an incised line running parallel to the edge of the rim that creates a slight step in the profile (the outer edge of the rim is slightly higher than the inner edge, with the incised line marking the boundary). The rim diameter is between 14 and 18cm. The rim is approximately 10mm thick, while the body ranges from 6.3 to 9.7mm. The core is reduced, with areas of the vessel surface also exhibiting reduction or fire clouding. The exterior surface of many of the sherds associated with this vessel has spalled away, but where it remains, it has been smoothed. Most the sherds that were tested with pXRF fell into chemical Group 3, with the exception of 0169B, which fell into Group 2c and may have been mistakenly assigned to this vessel.

<u>*Refined Earthenware*</u>

Tin-glazed earthenware

There are a minimum of eight refined earthenware vessels: two tin glazed, four creamware; one pearlware and one whiteware. Most (five) are hollow wares, two are flatware, and one is too small to identify to form.

Figure 135. Vessel 13, ER 0171B.

Vessel 13: Five body fragments and three undecorated base/footring sherds comprise a hollow tin-glazed vessel with a painted, partial cobalt blue foliate motif on the exterior surface (Figure 135, Table 19). The interior surfaces of both body fragments are spalled off, so it is impossible to ascertain wall thickness. Noël Hume notes that teawares went out of favor, due to problems with glaze loss, and are rarely found on colonial sites after 1750. However, larger tablewares were in production until the early 19th century (Noël Hume 2001:111). At Poplar Forest, small amounts of tin glazed earthenware have been recovered from both the North Hill (with cobalt blue, floral decorations, manganese purple floral decoration, and green floral decoration) and Quarter sites (one sherd with a green leaf) in general contexts that date from the 1760s or early 1770s to 1813.

Vessel 14: This tin-glazed vessel is represented by a single fragment of the well of a plate (Table 19). The paste is buff colored. Very little glaze remains; what is present is undecorated.

Creamware

Vessel 15: Two mended deep cream-colored sherds from plow zone appear to be from the base of a hollow vessel (Table 19). They are 2.7mm thick. The bottom of the sherds is very thinly glazed and is stained and pitted.

Vessel 16: Six non-contiguous body and well sherds recovered from plow zone comprise a thinly-potted, undecorated creamware plate with a thinly-rolled rim (Table 19). Most are spalled, but those with measurable thickness range from 2.2 to 3.3mm.

Vessel 17: Twenty-one sherds, including base, body, handle and handle terminal fragments comprise this vessel, a mug or tankard with a beaded base, one or more turned horizontal bands on the body, and ribbed handle ending in a sprigged foliate terminal (Figures 136 and 137, Table 19). The style of this vessel is similar to wares being produced in Leeds in the 1770s; Towner dates the switch from “bead-and-reel” border patterns to “pearl” beading (which is present on this vessel) to about 1775 (Towner 1959:18). The handle may have looked something like No. 6 illustrated by Towner (1959:76). Vessel wall thickness range from 1.4 to 3.6mm near the base.

Figure 136. Vessel 17 (clockwise), fragments from ERs 031B, 045B and 0169B.

Five sherds from this vessel have been burned, including ER0169B in Figure 136. Two sherds were recovered from the fill of the western subfloor pit; the remainder was found in plow zone (Figure 137).

Vessel 18: Two non-contiguous sherds, a rim and a possible well comprise an undecorated creamware plate, possibly with a Royal pattern rim. The rim sherd is 2.9mm thick. Both sherds were recovered from plow zone (Table 19).

Figure 137. Vessel 17, base from ER 0154B.

Pearlware
Vessel 19: A single sherd of undecorated pearlware was recovered from ER0396B. It is too small to identify a vessel form, and one surface has spalled away. This sherd sets the *tpq* for the site at 1779 (Table 19).

Whiteware
Vessel 20: One rim sherd associated with a whiteware bowl was recovered in plow zone. It is adorned with a deep pink or red rope transfer-printed motif just below the rim on the interior and exterior. The rim diameter falls between 10 and 12cm. As the only whiteware sherd recovered at the site, it dates significantly later than the overall artifact assemblage and is likely associated with post-occupational activity.

<u>*Proveniences*</u>

Of the 20 vessels, 13 were found exclusively in topsoil or plow zone contexts. Fragments of Vessels 4, 6, 9, and 12 were excavated from the eastern subfloor pit and from plow zone Vessel 2 came from the western subfloor pit and plow zone, while Vessel 8 was only found in the western subfloor pit. Fragments of Vessel 17 were recovered from both subfloor pits; from primary fill in the eastern pit and a later fill layer in the western pit.

Ceramic Crossmends

Crossmends between ceramic sherds, though few in number, suggest spatial relationships that existed between plow zone layers (and, in one case, topsoil) both in close proximity and at a distance (Table 21). The farthest distance between proveniences of ceramic sherds that mended was 69 feet from the northeast corners of the test units. This mend links the northern and southern block excavations. The closest distances were found from adjacent units and are probably the result of artifact movement due to tillage. Figures 138 to 143 show the distribution of sherds associated with individual vessels and map mends.

Provenience	Distance from NE Corner to NE Corner of Test Unit
286B to 141B	69 ft.
167B to 143B	42.5 ft.
154B to 141B	18 ft.
34B to 139B	16 ft.
159B to 16B/1	5 ft. (adjacent units)
138B to 144A	5 ft. (adjacent units)

Table 21. Crossmend information.

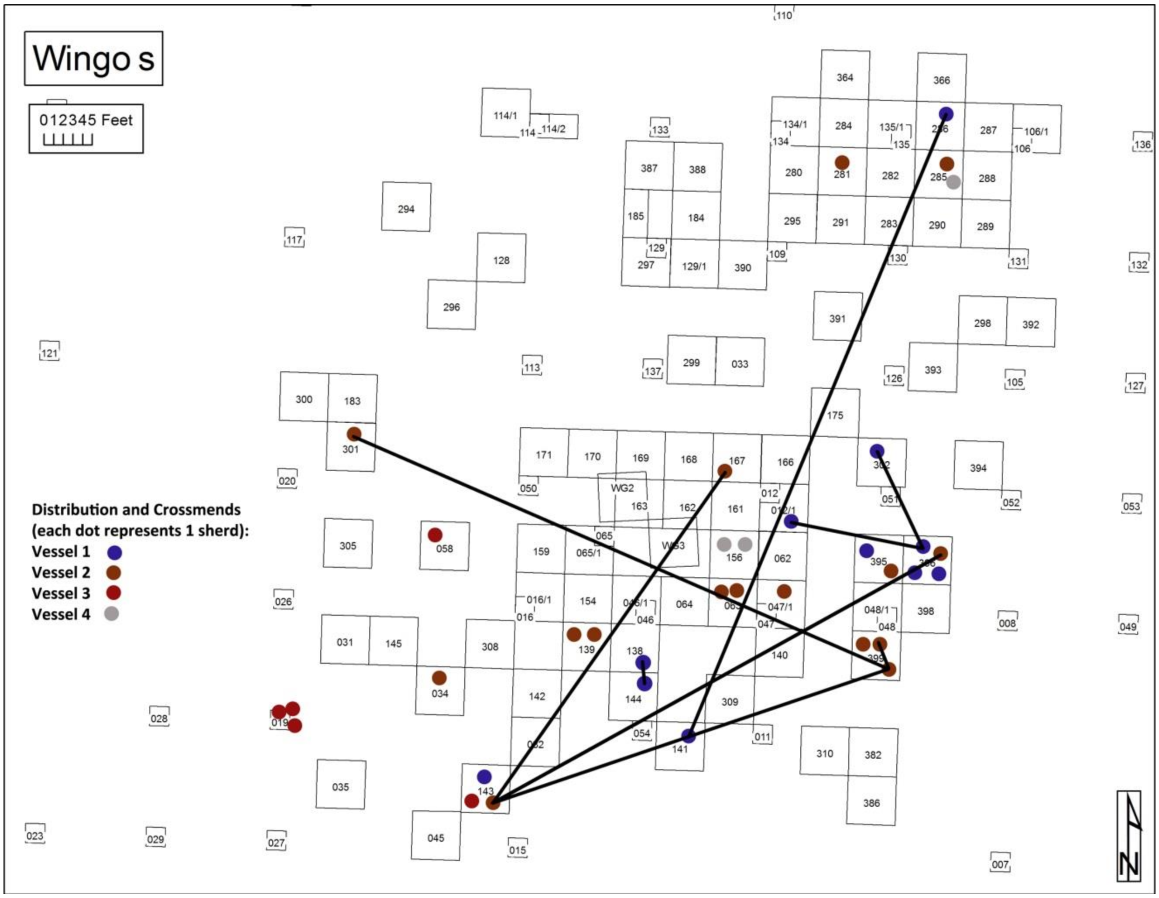


Figure 138. Distribution of stoneware sherds by vessel with crossmends mapped.

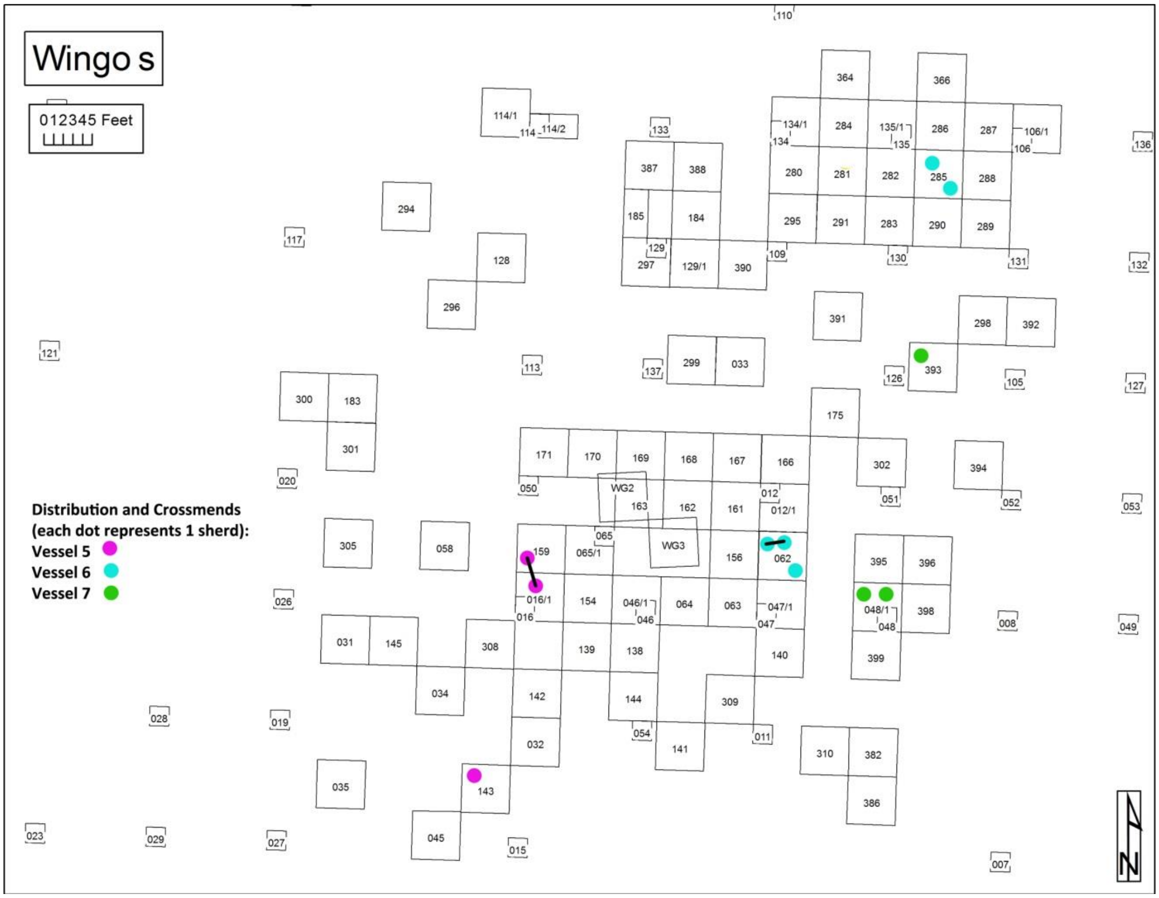


Figure 139. Distribution of wheel-thrown coarse earthenware sherds by vessel with mends and crossmends mapped.

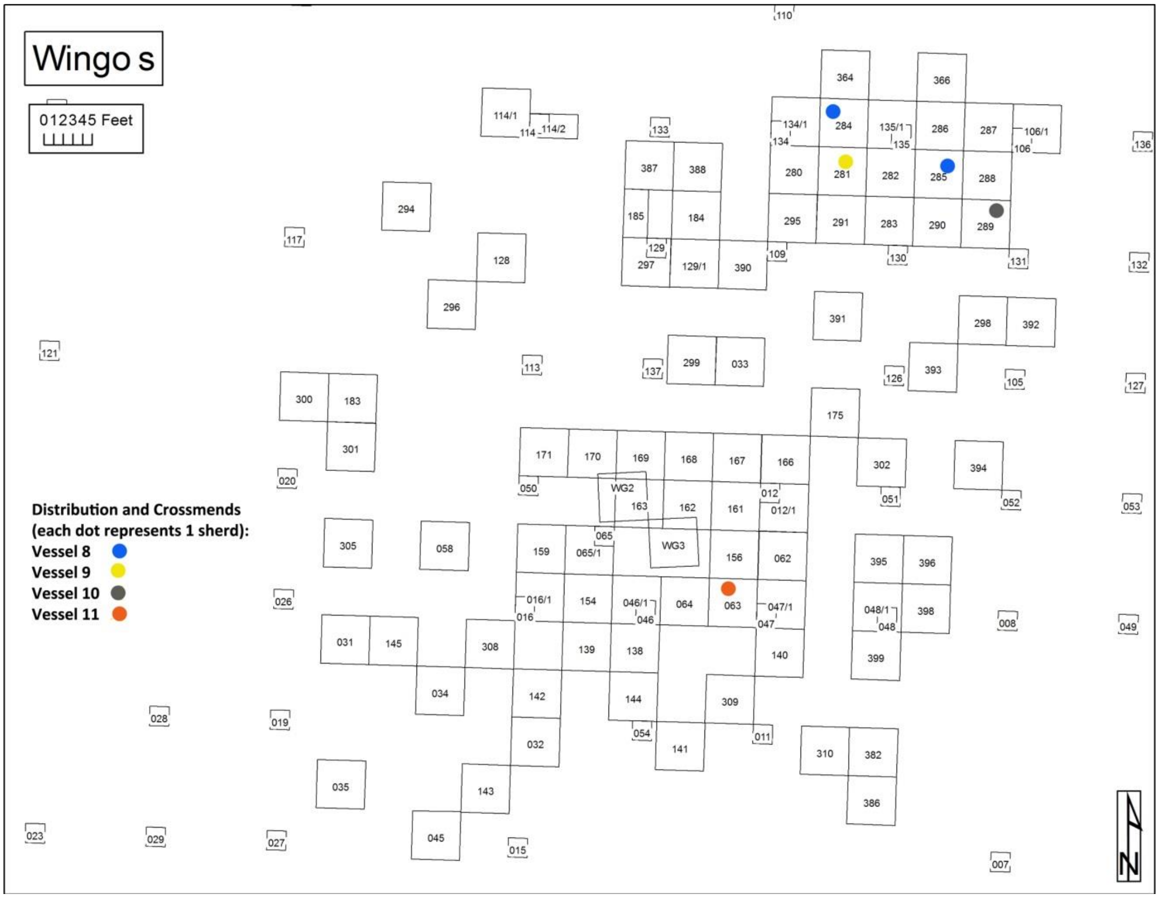


Figure 140. Distribution of colonoware sherds by vessel.

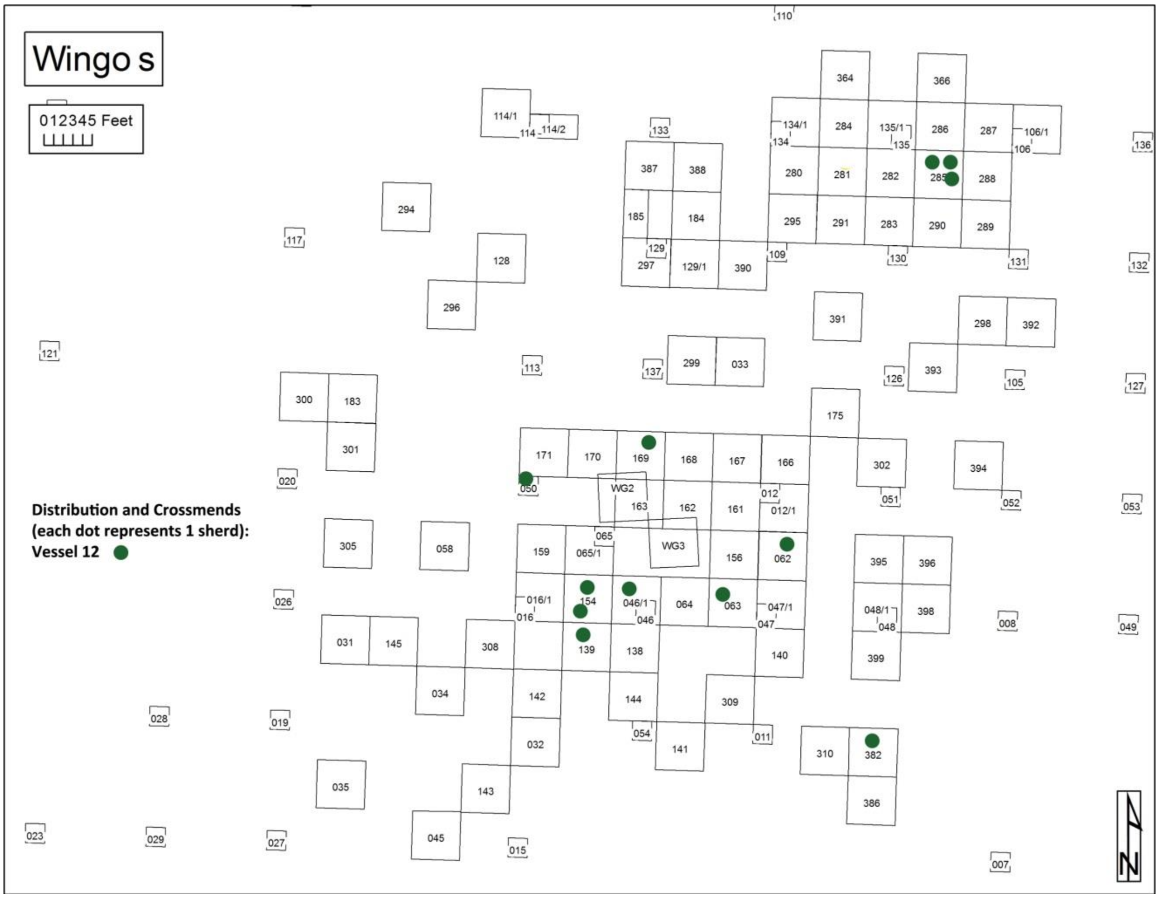


Figure 141. Distribution of Vessel 12 sherds.

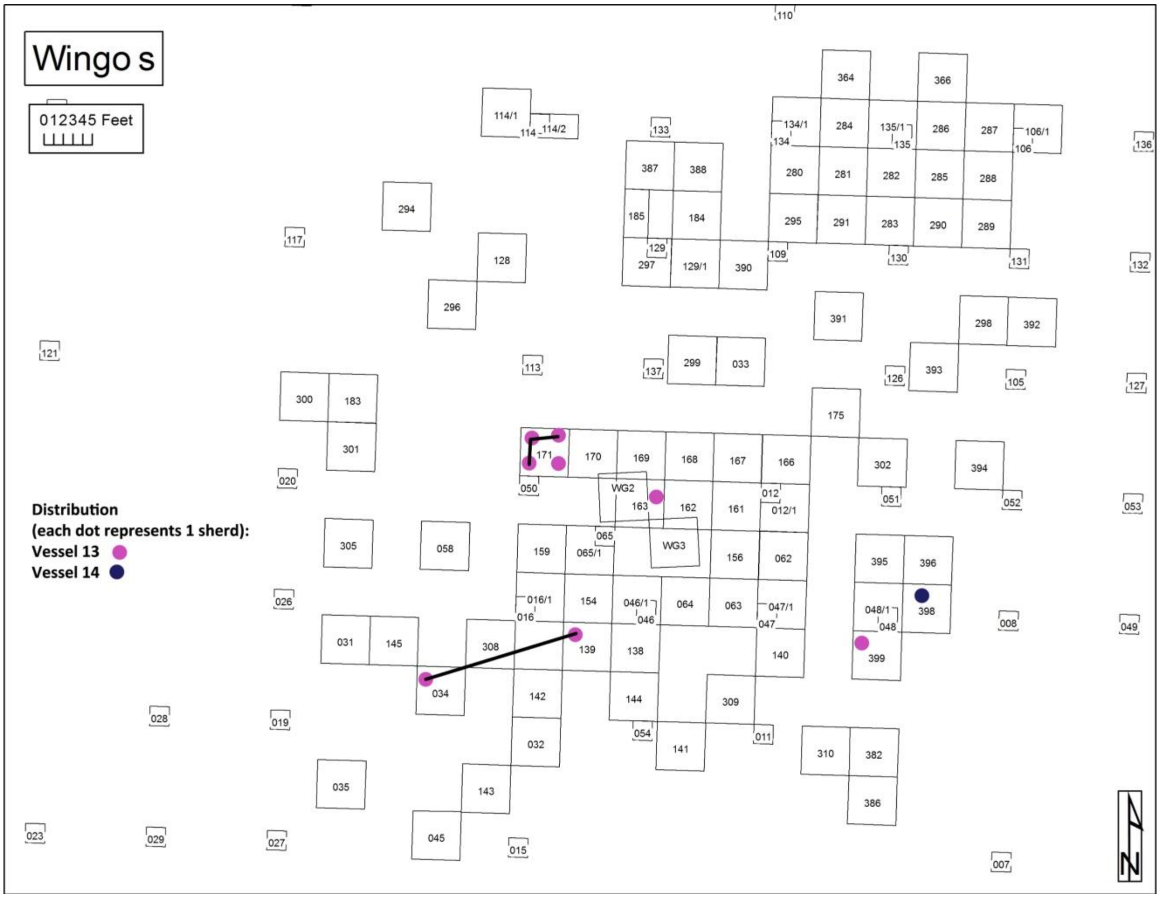


Figure 142. Distribution of tin-glaze sherds, mends, and crossmends.

Figure 143. Distribution of creamware sherds and crossmends.

pXRF Analysis of Daub and Colonoware Samples

X-ray fluorescence (XRF) technology identifies and measures the elements present in an object or sample by exposing the target to X-ray energy and measuring the wavelengths of energy that the sample reemits. When the atoms of a sample are subjected to the source X-rays from an XRF device, electrons from inner energy shells, or valances, are ejected from the atoms of the sample and electrons from outer shells cascade down to fill the vacancies, radiating energy in the process. Each element on the periodic table emits (fluoresces) energy at a diagnostic wavelength, making it possible for an XRF device to identify the elements present by measuring those wavelengths of energy fluoresced by the target sample. The relative proportion of each element present can also be quantified by an XRF device by measuring the intensity of X-rays detected for each characteristic wavelength (Laing 1981: 27; Swanson and Colsman 2006:3-4).

Ceramic artifacts for this analysis included daub and colonoware vessel and pipe fragments. All artifacts were assayed using a Bruker Tracer V-III+ portable X-ray fluorescence (pXRF) analyzer. Power and filter settings were chosen that are appropriate for the capture and quantification for the broadest number of elements possible due of the variety of materials involved and the exploratory nature of this preliminary analysis. These included 40 kV voltage and 35 amp power settings, no filter, and a vacuum pump for 300 seconds (5 minute) runs. The data used for analysis were gathered directly from the height of the peak for each element represented in the energy spectrum, measured in units of counts per second.

In order to compare the relative intensity of multiple elements across a variety of materials, Z-scores were calculated and graphed using Microsoft Excel. The Z-score for each observation is the number of standard deviations above (positive values) or below (negative values) the mean observation for each element.

Daub (Figure 144) was analyzed to test the possibility that colonoware was made using the same on-site clay source that was used for making daub. First the daub had to be analyzed to determine if it had a uniform chemical signature. The samples proved to exhibit some degree of uniformity, with the most variation in calcium, iron and zinc. Figures 145 and 146a-c show groupings of daub, colonoware vessel, and pipe fragments divided by similarities in chemical distributions. Figure 147 (group 3) shows the most uniformity in chemical composition between samples. During vessel analysis, these were assigned to a single vessel (Vessel 12), and the results of the pXRF support this designation. Finally, samples that did not fit well with others in the study are grouped in Figure 148, with a pipe bowl (ER0281B) representing the greatest outlier in the total sample.

The overall sample size of colonoware from the site is too small to yield statistically significant results; however the colonoware in Group 2 shares the greatest chemical similarity to daub found at the site and may be evidence of on-site production of pottery. Certainly the pottery itself supports this argument as it is poorly made, exhibiting variable thickness, surface clouding and spalling. Sherds associated with Group 3 show the greatest within-group uniformity, but clearly differ chemically from the daub and do not appear to have come from the same source.

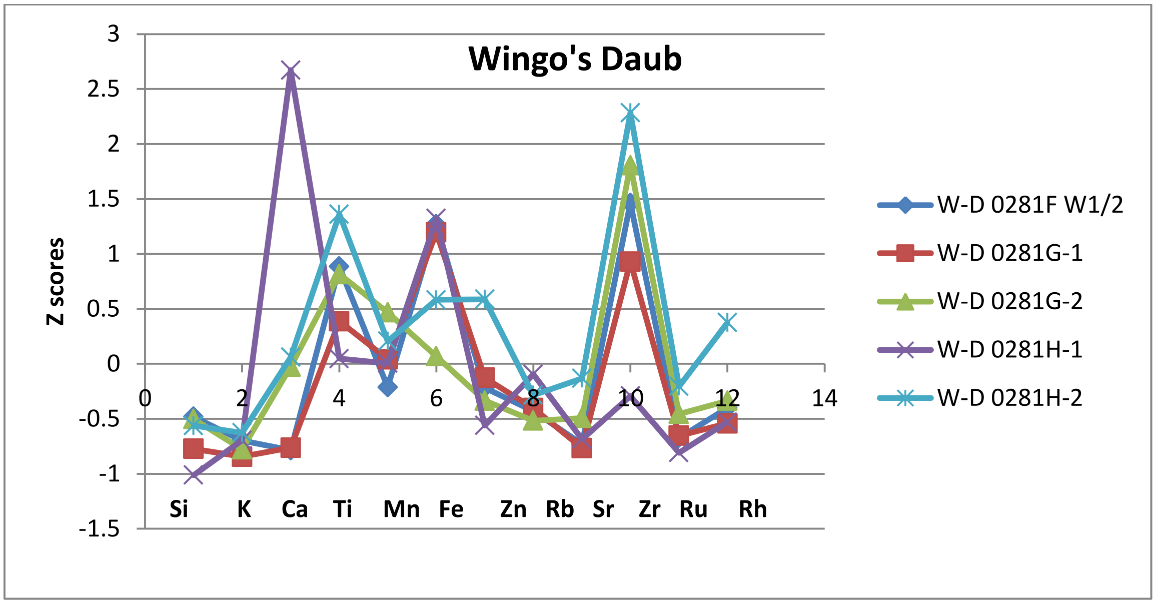


Figure 144. Chemical values for daub.

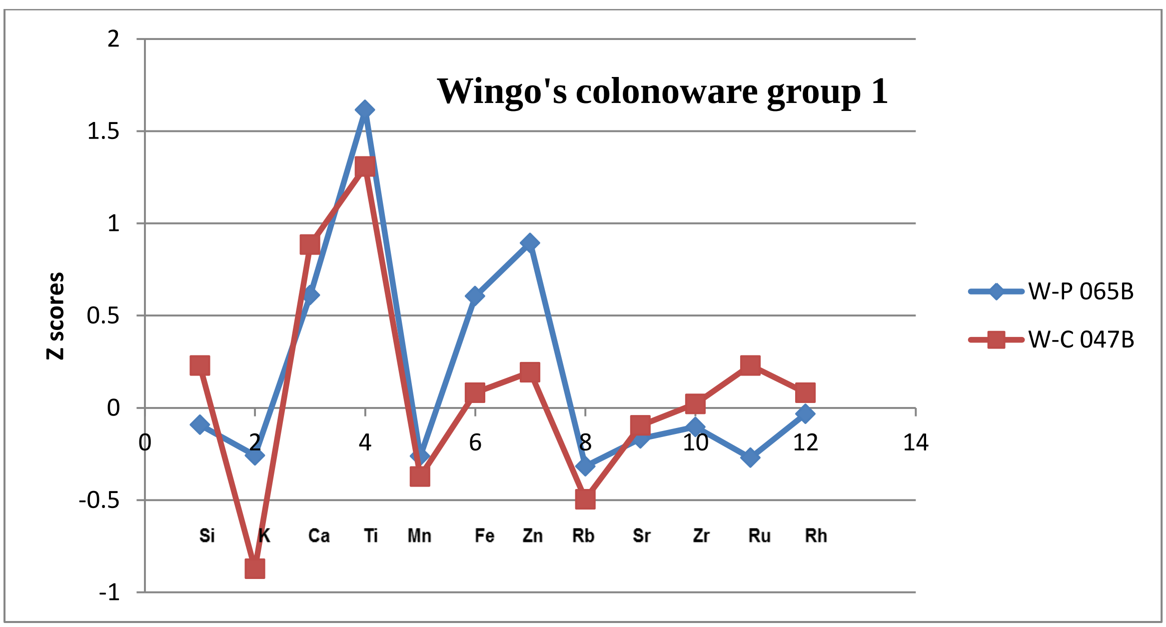


Figure 145. Chemical values for colonoware, grouped by similarity of signatures. Group 1.

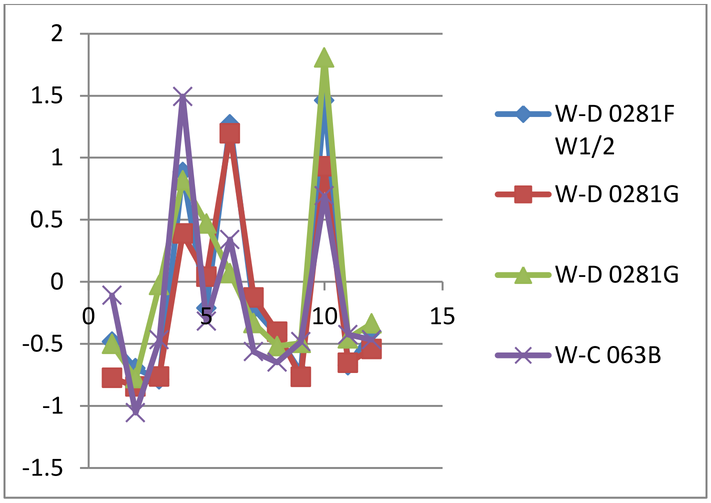


Figure 146a. Group 2a, chemical values for colonoware and daub, grouped by similarity of signatures. (W-D signifies daub; W-C signifies ceramic).

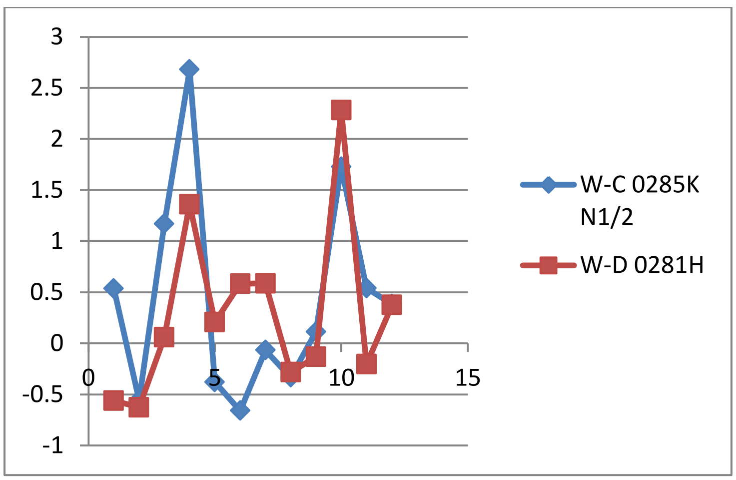


Figure 146b. Group 2b, chemical values for colonoware and daub, grouped by similarity of signatures. (W-D signifies daub; W-C signifies ceramic).

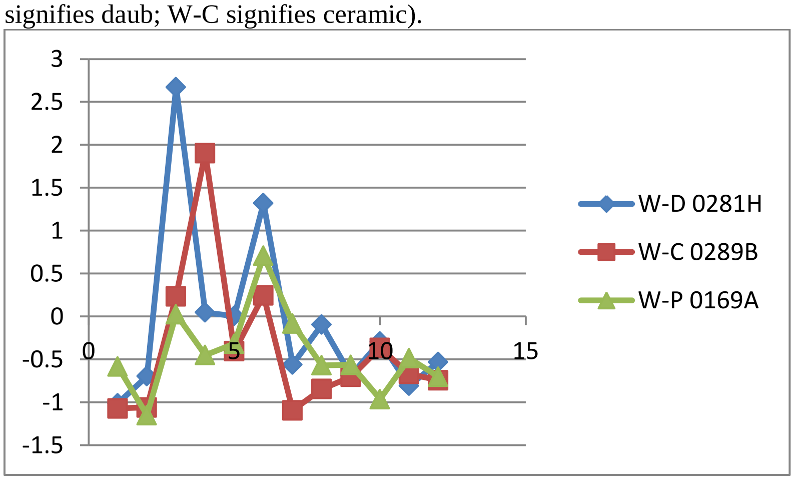


Figure 146c. Group 2c, chemical values for colonoware and daub, grouped by similarity of signatures. (W-D signifies daub; W-C signifies ceramic).

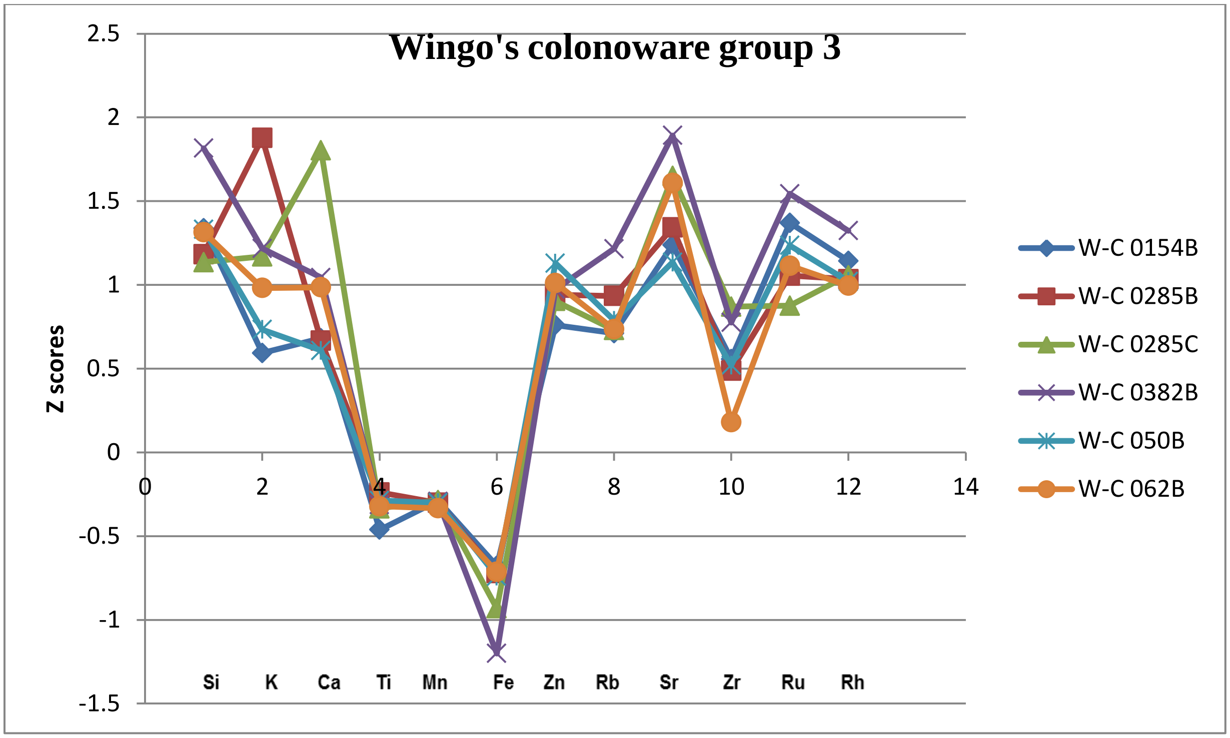


Figure 147. Chemical values for colonoware, grouped by similarity of signatures. Group 3.

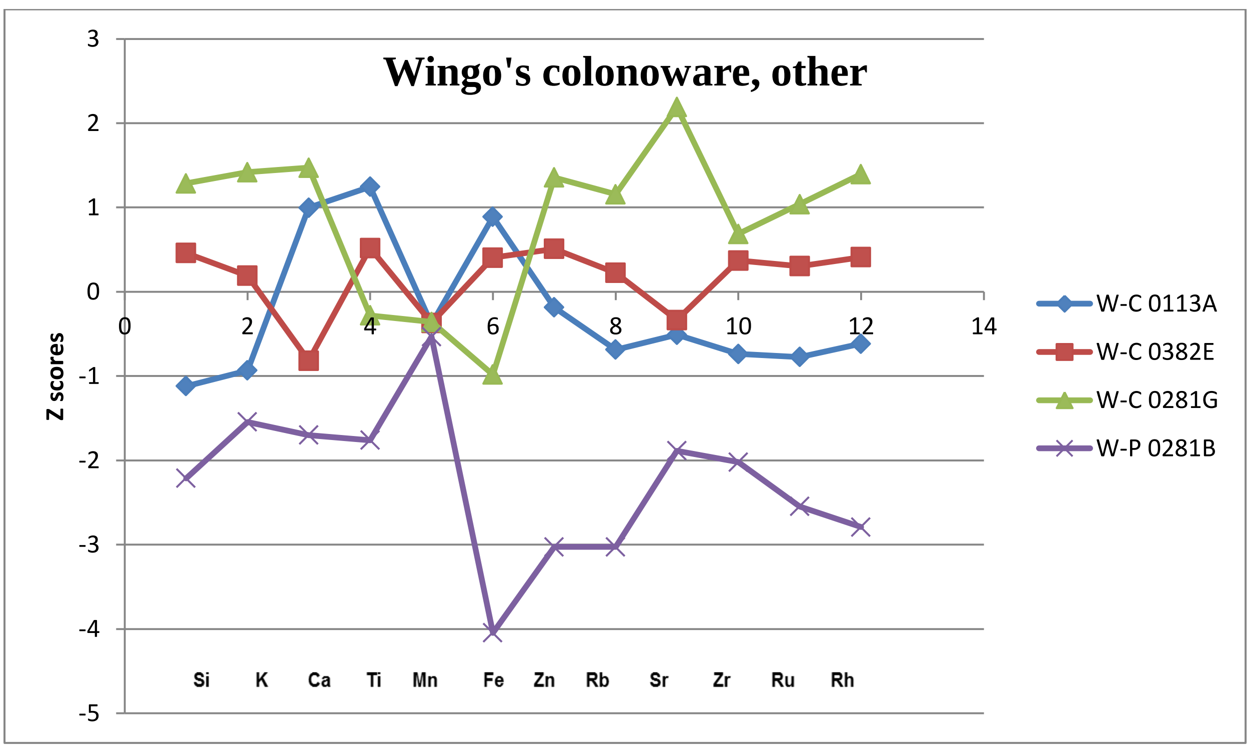


Figure 148. Chemical values for colonoware, sherds that did not fit groups 1-3.

Tobacco Pipes

Wingo's spans a period of transition in pipe making and smoking practices, when English white ball clay pipes were being replaced by American-made earthenware pipes known as "elbow pipes." The best known of these were made by Moravian potters in North Carolina as early as the 1770s (Noël Hume 2001b:308), but it is likely that production was also occurring at a small scale in central Virginia.

Testing from the 2001, 2007-2009 and 2011-2012 field seasons resulted in the recovery of thirty-five tobacco pipe fragments; twenty nine of white ball clay and six fragments of coarse earthenware (Table 22). None was recovered from water screen or flotation samples. The majority (N=23) came from the areas of block excavations south of the structure; seven were uncovered within or near the structure (within 20 ft. of the features), one was excavated from the fill of the eastern subfloor pit (ER0285E N 1/2), three were found approximately 25 ft. south and another was located approximately 35 ft. west of the cabin (Figure 153).

Figure 149. Interior of ER 0302B.

Figure 150. ER 062B showing chewed end (left).

Twenty-two of the white ball clay fragments were from pipe bowls; five from stems, one included the stem/bowl juncture of a pipe (with a major portion from the stem), and one was unidentified. Four stems and the stem/bowl juncture yielded bore diameters of 4/64ths of an inch, popular in the period between 1750 and 1800. The remaining stem fragment measured 5/64th of an inch, a size popular from 1710 to 1750 (Harrington 1978:64). All of the pipe fragments were unmarked with the possible exception of one recovered from ER062B, which bears faint traces of a possible rouletted circle.

Ten of the pipe bowls and the stem/bowl juncture fragment showed evidence of heavy use, with burned interior surfaces (Figures 149, 151, 152, 154, 157, 159). In some cases, burning penetrated the clay except for a thin layer of white on the surface. Three stems (062B, 0114B/1, and 0169B) have been significantly altered by chewing (Figures 150, 151, 152).

Figure 151. ER 0114B/1 and ER 0169B showing chewed ends (left).

Figure 152. Detail of pipe stem showing tooth wear and irregular mouthpiece.

The six coarse earthenware sherds were all bowl fragments. Two fragments (ER 0281B and ER 0394B) have evidence of lead glaze (Figures 163 and 164). Two of the unglazed fragments (ER 0169A and ER 0394B) have incised decoration (Figures 160 and 161)(see below under pipe descriptions). Five fragments were recovered from the block excavations south of the structure, while excavators found one of the glazed fragments in a unit overlying the western subfloor pit.

Minimum Pipe Analysis

A minimum vessel analysis permitted the identification of a minimum of nine tobacco pipes at the site. Attributes of each pipe are summarized in Table 22 below. The pipes were comprised of from one to seven sherds, with Pipe 1 being the most complete from mouth piece to stem-bowl juncture. Four pipes were imported and made of white ball clay, while five were locally manufactured red clay. Pipe 5, the only local pipe able to be minimally reconstructed, is European in form. Pipes 6 and 7 are unglazed and both show incised marks on the surviving bowl fragments. It is unclear whether they are historic or prehistoric in manufacture. Pipes 8 and 9 retain some traces of lead glaze, and can therefore be assigned to the historic period.

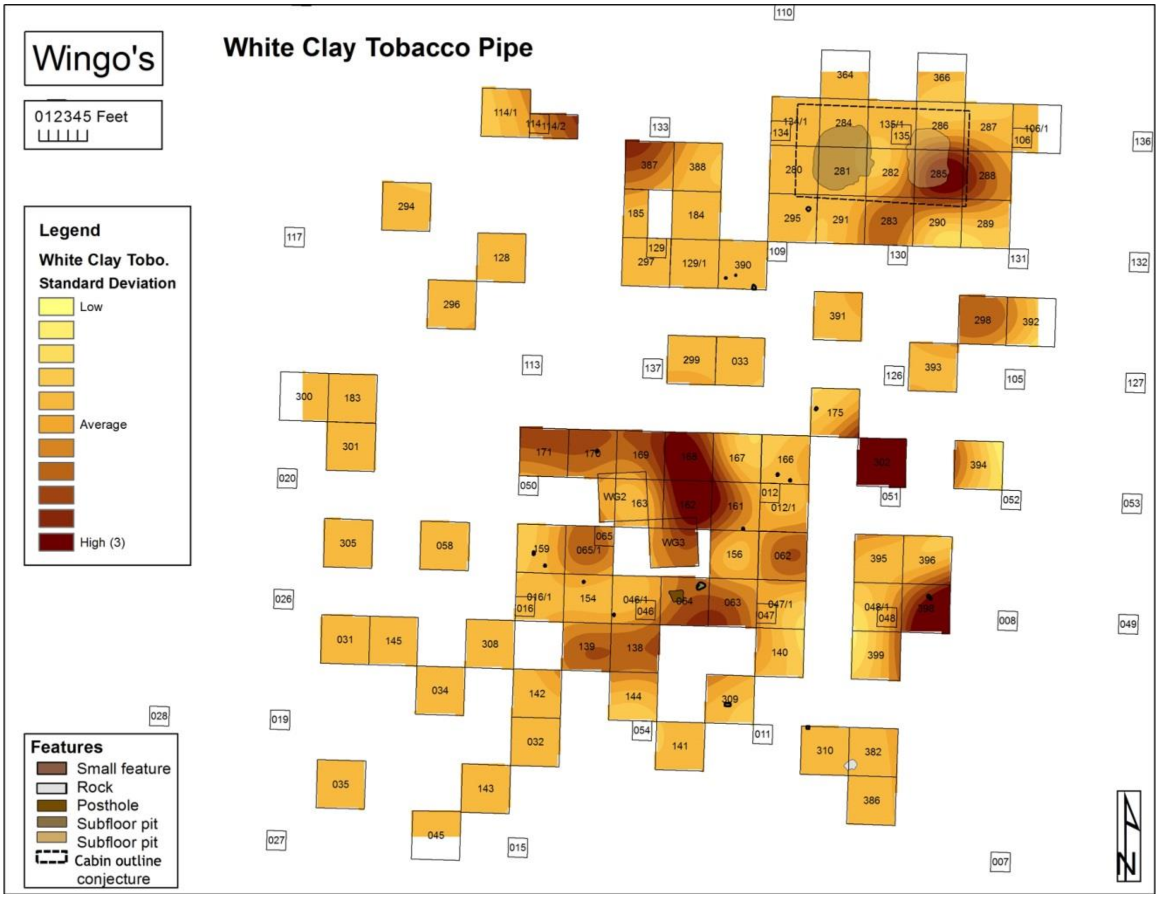


Figure 153. Distribution of white ball clay tobacco pipes.

Figure 154. Pipe 1.

Tobacco Pipe 1: This pipe is mostly complete from the mouthpiece to the stem-bowl juncture (Figure 154; Table 22). The end of the pipe has tooth wear marks. The stem measures 70mm (2.8 in.) from the end to the juncture. The pipe was probably longer at one point in time, broke along the stem, but was reused, as the tip of the mouthpiece is irregular yet exhibits use-wear. (Stem sherd ER 0169B, not a part of Pipe 1, displays a similar pattern of tooth wear and irregularly finished mouthpiece; stem sherd 014B/1 has more pronounced tooth wear just above a jagged break in the stem). In the 18th-century, both long and "short pipes," also known as a "common sale" or "Hunter," were in use. Evidence in George Washington's invoices and orders to his English factor indicates that in the 1760s and 1770s, he ordered both long and short pipes, with the vast majority of the orders being for the short variety (3,600 in one order for short pipes versus about 144 for long pipes). Eleanor Breen hypothesizes that the shorter size was most commonly provisioned to enslaved or hired laborers (Breen 2013:324-325). Kathryn Barca attempted to determine short pipe lengths from archaeological samples (Barca 2012). Her method was unsuccessful, yielding results of pipe stem lengths less than 7 to 8 inches for 74% of her sample, with some less than 3 inches. She concluded that such short-stemmed pipes could not have been smoked (Barca 2012:71-76). Perhaps stems of the length of Pipe 1 would not have been sold, but this pipe appears to have been smoked.

Bowl sherds ER 064B, 0162B, ER0285E N1/2 and ER302B may have been part of this pipe, although they do not physically mend to the stem section, and only ER 064B and ER 0162B mend to each other. The sherd from ER 0285E N1/2 represents the only evidence of tobacco pipe discard in either of the sub-floor pit features. The sherds are too small to measure the diameter of the bowl's rim.

Figure 155. Pipe 2.

Tobacco Pipe 2: This pipe is comprised of only two, non-mending sherds and is distinguishable from Pipe 1 in terms of paste and rim thickness (Figure 155; Table 22). The paste of Pipe 2 is harder, grayer, and grainer than Pipe 1, and the exterior is smoothed. Additionally, the thickness of the bowl at the flat-topped rim is more than twice that of Pipe 1. Although bowl fragment ER 065B/1 does not mend, it has the same characteristics of paste and thickness seen in the rim sherd.

Tobacco Pipe 3: Pipe 3 consists of two mending sherds (ER 0170B and ER 0398B) and one non-mending sherd (ER 0298A) (Figures 156 and 157; Table 22). It has a softer paste than Pipe 2 and is slightly pink in color. The bowl, which measures approximately 20mm. in diameter, is thicker than the bowl possibly associated with Pipe 1.

Figure 156. Pipe 3 exterior (ER 0398B).

Figure 157. Pipe 3 interior (ER 0398B).

Tobacco Pipe 4: Pipe 4 (ER 0139B) is a fragment of stem/bowl juncture. The stem is broken and the bore is not measurable. The fragment has a black core, with a white interior and a pinkish-white exterior surface that is probably caused by reduction in the kiln (Figures 158 and 159; Table 22).

Figure 158. Pipe 4 exterior (ER 0139B)

Figure 159. Pipe 4 interior (ER 0139B)

Tobacco Pipe 5: Pipe 5 (ER 065B/1) is made of red clay with fine quartz, mica, and black mineral inclusions (Figure 160; Table 22). The bore diameter is partial, but looks wider than 9/64 in. Although the bowl is not complete, the distance from the stem juncture to the top of the bowl rim equals 13mm. This short distance at the bowl's back (or side facing the smoker) is more similar to the short, squat bowl forms of the 17th century than to the elongated, straight-sided bowls of the 18th century. However, ER 065B/1, while similar to the early forms in height, is lacking the central bulge characteristic of early English pipe bowls. The existing evidence of Pipe 5 suggests a small bowl size as compared to imported white ball clay varieties of the late 18th century, a fact also supported by the rim diameter of Pipe 5 which is 10mm less than the diameter of Pipe 2.

Tobacco Pipe 6: Pipe 6, made up of two small, mending sherds (ER 0169A), is also of red clay with fine quartz, mica, and black mineral inclusions (Figure 160; Table 22). Unlike Pipe 5, however, Pipe 6 is decorated with three horizontal, parallel incised lines and a fourth line that emerges from the bottom parallel line at an angle. It has a thick, flat-topped rim. The rim sherd is too small to measure the diameter of the bowl's rim. Similarly incised coarse earthenware pipe fragments have been recovered from the North Hill site.

Figure 160. (left to right) Pipe 5, Pipe 6, Pipe 8.

Tobacco Pipe 7: Pipe 7 consists of a single red clay bowl sherd (ER 0394B) (Figures 161 and 162; Table 22). The bowl is unglazed, and the paste contains abundant small quartz and black mineral inclusions, but no mica. A faint line, incised below the rim, is visible on the exterior.

Figure 161. Pipe 7 exterior.

Figure 162. Pipe 7 interior.

Tobacco Pipe 8: Pipe 8 consists of a single bowl sherd (ER 0281B) (Figure 160; Table 22). Remnants of lead glaze partially adhere to the exterior surface, while the interior is partially blackened. The paste is similar to that of Pipes 5 and 6 with quartz, mica, and black mineral inclusions, suggesting that the three pipes originated from a similar clay source, despite their differences in surface treatments. Similar lead-glazed pipe bowls have been recovered from the North Hill site, where some were incised under the glaze, and one pipe (ER1745F/2-2) was elbow-shaped.

Tobacco Pipe 9: Pipe 9, made of red clay, appears to have small mica inclusions in the paste, and a thin glaze on the exterior and rim (Figures 163 and 164; Table 22). It is represented by a bowl rim fragment (ER 0395B) that measures 20mm in diameter and is flat.

Figure 163. Pipe 9 exterior.

Figure 164. Pipe 9 interior.

Pipe Number	Form	Color	Completeness	Bore Diameter	Bowl Rim Diameter/ Max. Thickness	Number of sherds; Proveniences
P.1	Tobacco Pipe	White Ball Clay	Bite to stem-bowl juncture and possible assoc. rim	4/64ths	--/1.3mm	7: ER0162B (stem) mends with ER0161B (3 stem frags); ER0162B mends with ER064B (rim); ER0285E N1/2
P.2	Tobacco Pipe	White Ball Clay	Rim and possible assoc. bowl fragment	--	30mm/2.88mm and 6.48mm	2: ER0168A (rim); ER065B/1
P.3	Tobacco Pipe	White Ball Clay	Bowl fragments	-	20mm/2.74mm	2:ER170B, ER0398B and ER298A
P.4	Tobacco Pipe	White Ball Clay	Stem/bowl juncture	-	-/5.1mm	ER0139B
P.5	Tobacco Pipe	Red Clay	Rim	>9/64ths	20mm/1.7mm	1: ER065B/1
P.6	Tobacco Pipe	Red Clay	Rim and bowl fragment	--	--/3.8mm	2: ER0169A (1 rim, mend)
P.7	Tobacco Pipe	Red Clay	Bowl fragment	-	Approx. 20mm/2.5mm	1:ER0394B
P.8	Tobacco Pipe	Red Clay	Bowl fragment	-	--/2mm	1: ER0281B
P.9	Tobacco Pipe	Red Clay	Bowl fragment	-		1:ER0395B

Table 22. Tobacco pipe vessel attributes.

Tobacco Pipe Crossmends

Some information can be ascertained about the stratigraphic and spatial relationships at Wingo's from mends between tobacco pipe sherds. Interestingly, many of the mendable and non-mendable tobacco pipe vessel sherds came from the southern block excavation within or adjacent to an areas believed to have been enclosed. The mendable sherds were excavated from plow zone contexts from adjacent units or were separated by no more than 15 feet (Table 23).

Provenience	Minimum distance/Maximum distance
062B to 0161B	1 in. to 10ft.
0162B to 064B	5ft. to 15 ft.
0170B to 0398B	30ft. to 35ft.

Table 23: Distances between pipe crossmends.

pXRF Analysis of Pipes

Three colonoware pipe fragments from Wingo's were assayed using pXRF to investigate their chemical composition. None appear to follow the chemical pattern for daub, indicating that they were not formed from the same clay source that was used for constructing the cabin. Two of the fragments, ERs 0169A and 065B, have similar signatures, while 0281B is very different (Figure 165).

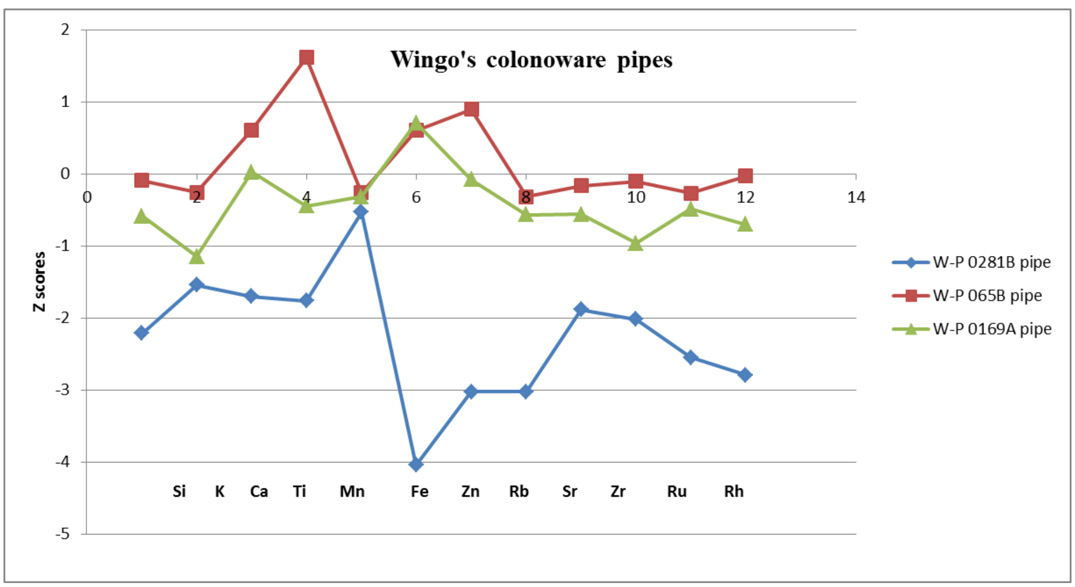


Figure 165. pXRF results for colonoware tobacco pipes.

Comparative Data from the North Hill (Poplar Forest)

One hundred and sixty-four pipe fragments were recovered at the North Hill quarter site at Poplar Forest, a site with occupation dates that overlap with the occupation of Wingo's. Of these, 143 were English ball clay fragments and 21 were made of local earthenware. In analyzing the assemblage of imported pipes, the eight stem/bowl junctures and four stem/base/bowl junctures yield a minimum number of 12 pipes. Using this method, there would be a minimum of one pipe at Wingo's. A ratio of 2.2 stems to each bowl fragment was calculated using bowl fragments (N=38) and stems and bites (which were counted as stems, N=85). Stem/bowl junctures and stem/base/bowl junctures were not included in the count. Eighty-nine of the pipes had measurable bore diameters, with 60 measuring 4/64ths of an inch and 29 measuring 5/64ths. Using Binford's regression formula yields a mean pipe date of 1767 for the site (Table 24).

Size	Count	Product
4/64th	60	240
5/54ths	29	145
Sum	89	385
Product/sum	385/89=4.32	

Y=1931.85-38.26(4.32) =1766.5668

Table 24. Calculation of mean pipe stem date for North Hill quarter.

Twenty-one locally made, coarse earthenware pipe fragments were also recovered at the North Hill. Of these, 17 were bowl fragments, 2 were bites, 1 was a stem and 1 was unidentified. The dominance of bowl to stem fragments suggests that the pipes were elbow-shaped and smoked with a reed. Fourteen of the sherds had clear quartz inclusions, four had rock, two had mica, and one had no inclusions in the paste.

Eight of the coarse earthenware fragments were decorated with incised lines. Six of the decorations consisted of a single (N=3) or double line (N=3) under the rim or around the bite. Two additional pipes had incised decorations on the bowl (Figures 166-168).

Figure 166. Incised pipes from ER1801B3, 1741C3 and 1745A/3. Poplar Forest, North Hill.

Overall, eight fragments were lead glazed: seven bowl fragments and a bite. Two of the glazed pipe bowls had rock inclusions, one had no visible inclusions, and four had clear quartz inclusions. A fifth pipe bowl with quartz inclusions may have thin remnants of a lead glaze as well. Three of the incised pipes were lead glazed.

Without petrographic analysis of the paste or chemical analysis of the glazes or pastes, it is not possible to source these pipes or to ascertain if the pipes found at Wingo's were made by the same maker(s) as those at the North Hill. However, the similarities in decoration, glaze imperfections and some similarities in paste inclusions (mica and quartz) suggest that this may have been the case.

Figure 167. ER1801B2-3 and 1742B2-1, incised bowls. Poplar Forest, North Hill.

Figure 168. ER1739G3, glazed and incised bowl. Poplar Forest, North Hill.

Prehistoric Artifacts

Distribution maps of the lithics recovered during testing indicate that the Wingo's quarter was located south and west of two concentrations of prehistoric artifacts which together extended about 150 ft. north-south (Figure 169). A total of 1,659 lithics associated with flaked tools and their manufacture, in addition to 71 unidentified fragments that may have related to tool production and use, and 3 ground stone tools were recovered in testing and in the 5 ft. x 5 ft. quadrats associated with the historic site (Figures 170 and 171, Table 25). Five cobbles made up the remainder of the stone assemblage. One possible prehistoric pottery sherd was also recovered in a 2 ft. x 2 ft. test (ER 0232).

Quartz dominated the flaked stone assemblage, comprising 63% of the lithics overall, 64% of the debitage, and 46% of the tools. Quartzite was the second most common material, comprising 19% overall, 18% of debitage, and 24% of tools. Both are locally available stones, with quartz cobbles found in abundance in the immediate area of the site. Non-local chert is over-represented in the tool category (16%) in comparison to debitage (9%), suggesting that tools of this material were brought to the site more often than they were produced or repaired there (Figures 170 and 171, Tables 25 and 26).

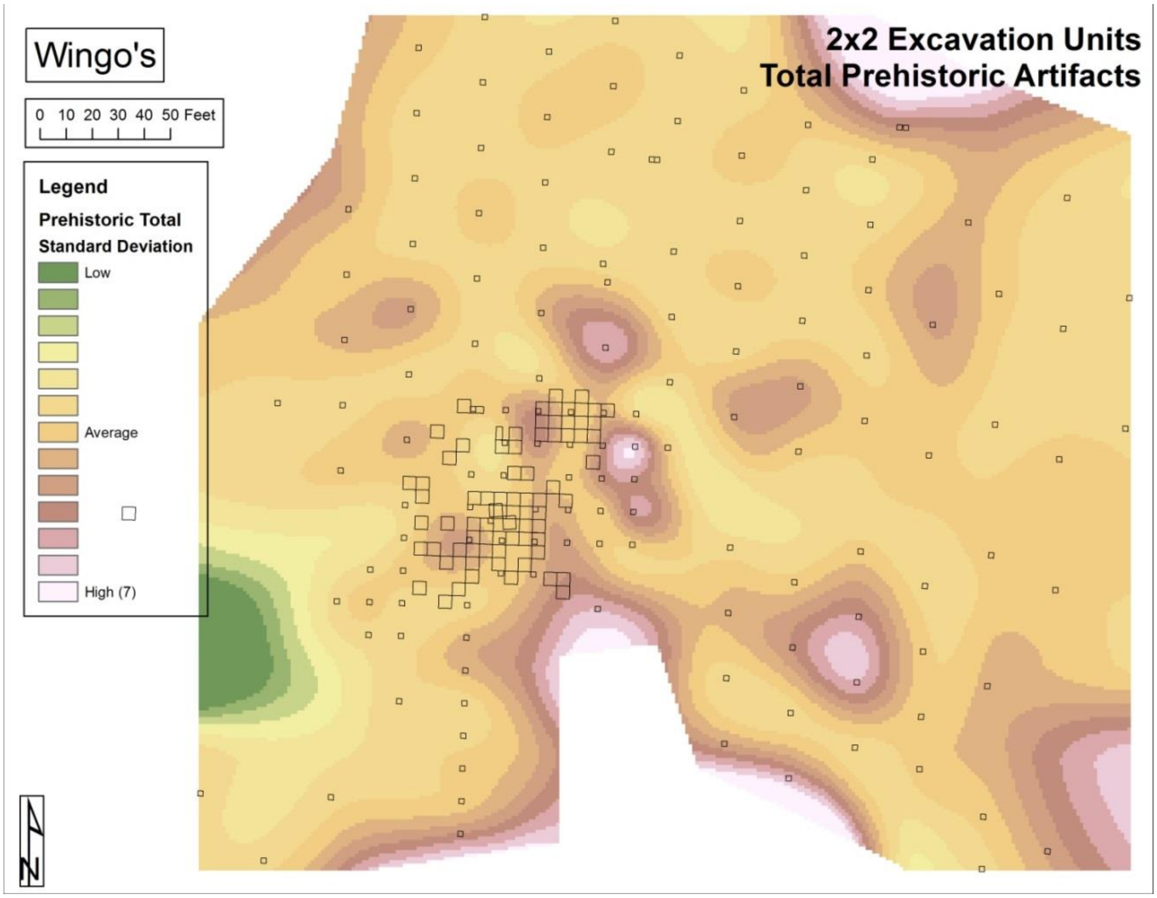


Figure 169. Lithic distribution at Wingo's mapped by Z-scores. Data graphed are from 2 ft. x 2 ft. test quadrats only.

Material	Count	Percentage
CHALCEDONY	**36**	**2%**
debitage	35	2%
tool, flaked	1	<1%
CHERT	**147**	**8.5**
debitage	136	8%
tool, flaked	11	<1%
JASPER	**1**	<1%
tool, flaked	1	<1%
METAVOLCANIC	**1**	**<1%**
debitage	1	<1%
QUARTZ	**1087**	**63%**
debitage	1014	58%
tool, flaked	31	2%
tool, flaked or flake	2	<1%
unid.	40	2%
QUARTZITE	**326**	**19%**
debitage	293	17%
tool, flaked	16	<1%
tool, flaked or flake	1	<1%
unid.	15	<1%
SANDSTONE	**3**	**<1%**
debitage	2	<1%
unid.	1	<1%
SILTSTONE	**5**	**<1%**
debitage	3	<1%
tool, flaked	2	<1%
UNIDENTIFIED	**128**	**7%**
debitage	104	6%
tool, flaked	6	<1%
tool, flaked or flake	1	<1%
tool, grinding	3	<1%
unid.	14	<1%
TOTAL	1733	100%

Table 25. Prehistoric lithics by material type and form. Debitage includes flakes, cores and shatter;
Tools includes preforms; Tool, flaked or flake includes flaked objects that could not be definitely assigned to either the tool or flake category.

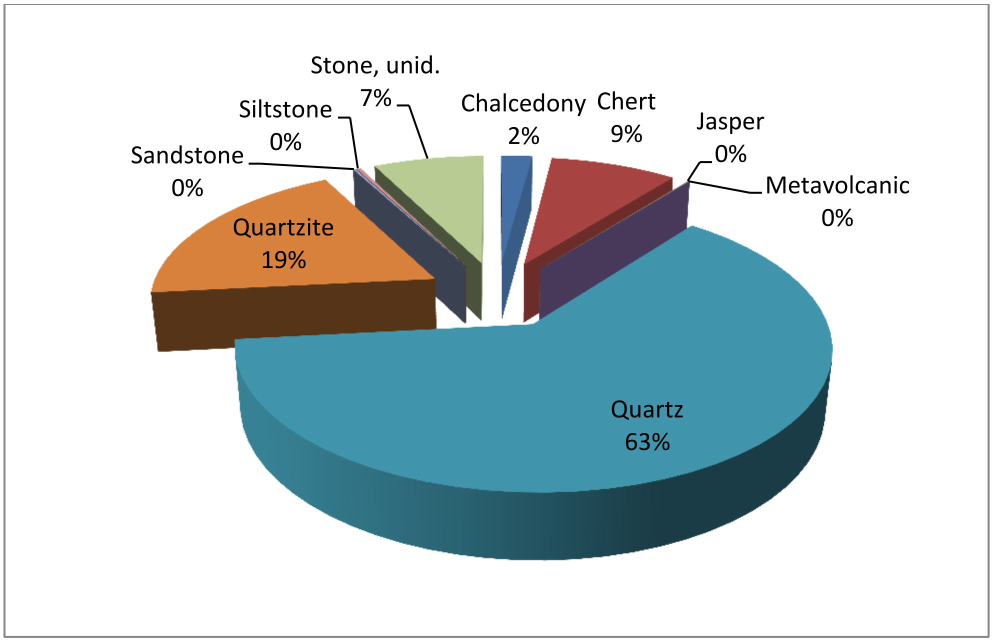


Figure 170. Prehistoric lithics by material type.

Sixty-eight flaked tools or tool parts were recovered, including 26% (N=18) bifaces, 12% (N=8) preforms, 46% (N=31) projectile points, 4% (N=3) scrapers, and 12% (N=8) that were of unidentified function (Table 26).

Thirty-one complete or fragmentary projectile points were found during excavations. Sixteen were complete enough to associate with cultural phases of prehistory, spanning the Early Archaic to the Early to Middle Woodland. Seven projectile points were assigned to types (Figure 172, Table 27).

	Biface	Preform	Projectile Point	Scraper	Tool, unid.	TOTAL
Chalcedony					1	1
Chert	2		5	1	3	10
Jasper			1			1
Quartz	9	6	13		3	31
Quartzite	6		9		1	16
Siltstone		2				2
Stone, unid.	1		3	2		6
TOTAL	18	8	31	3	8	68

Table 26. Prehistoric tools by material type and functional category.

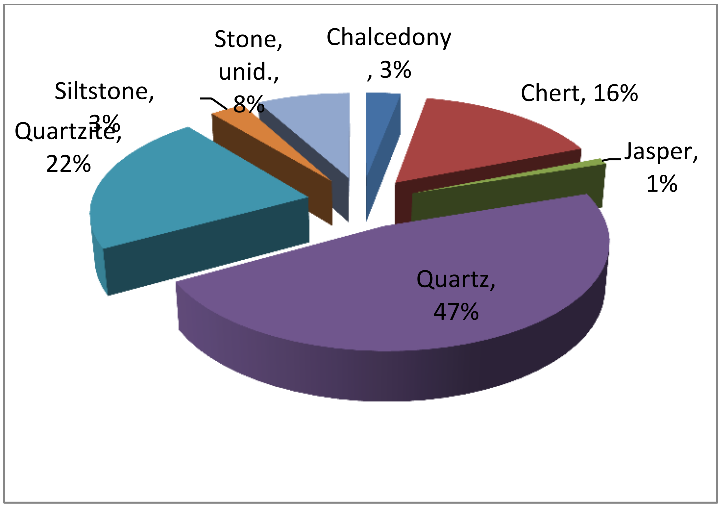


Figure 171. Prehistoric tools by material.

Figure 172. Sample of lithics found at Wingo's in 2009.
Top: unidentified, Morrow Mountain II, flake, unidentified
Bottom: Kirk Corner Notched, Morrow Mountain, Kirk Corner Notched, Morrow Mountain II

<u>Historic Use of Lithic Artifacts</u>

Flaked tools and debitage have been recovered at both the North Hill and Quarter Site quarters at Poplar Forest, mostly in plow zone contexts. More broadly, archaeologists have found prehistoric lithics associated with slave quarters throughout the Southeast, interpreting them as collected and curated curiosities, objects of ritual and spirituality, or as inter-cultural objects of exchange (Orser 1995:52; Russell 1997:72-27; Wilkie 1995:142-143; Leone and Fry 1999; Wilkie 2000:188-189; Kern 2010:186-188). By looking at the relationship between lithic types, sizes and depositional layers of the pits at Wingos, we attempt to test the idea that these objects were intentionally curated by site residents.

One hundred and fifty-five lithic fragments were recovered from the fill of both subfloor pits: 155 in ER 0281C-L, and 117 in ER 0285C-L. The assemblage in the western pit consisted of 80% (N=124) debitage, 4% (N=6) tools, and 16% (N=25) unidentified material. One hundred and forty-two (92%) of the lithic artifacts were 25mm in size or smaller; and 13 (8%) measured between 25 and 55mm. A chert flake, a chalcedony flake, and a siltstone preform were recovered in ER 0281J (one in the west and one in the east sections). They appear to have been deposited in

the pit after the structure was abandoned but before it was demolished. A second siltstone preform, and chalcedony, chert, quartz and quartzite debitage larger than 25mm were deposited with other objects during the period when the cabin was demolished and the pit was filled.
The lithics in the eastern pit were comprised of 81% (N=95) debitage, 3% (N=3) tools, and 16% (N=19) unidentified fragments. Ninety-seven percent (N=113) of debitage and unidentified fragments were 25mm in size or smaller. These likely represent prehistoric debris that eroded out of the earthen floor of the cabin and was inadvertently swept into the pit during cleaning episodes. The remaining four lithics consist of a piece of milky quartz shatter (0285D-N1/2), measuring 30 to 35mm, a chert flake measuring 35 to 40mm (0285E), and two flaked stone tools. The first tool, a complete Kirk Corner-notched projectile point made of chert, was found in ER 0285C-N 1/2. The second, a quartz tool of unidentified type with serrated edges, was broken. The tip to this tool was found in layer 0285E, while the main portion of the tool was recovered from layer 0285J-N1/2 (Figure 173).

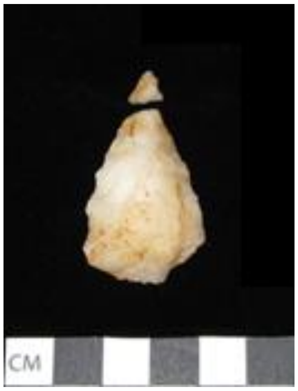


Figure 173. Quartz tool from eastern subfloor pit.

It seems likely that the larger lithics in the eastern pit were intentionally collected in the 18th-century by site residents, and are not the result of random re-deposition from earlier occupations. Whether residents used these as tools, or whether they fulfilled other purposes, is not known.

Three modified stones relating to food processing were found at the site; a nutting stone, a grinding stone, and a pestle. The nutting stone measures 41.5cm long by 23.5cm wide, and is approximately 4mm thick (Figures 174-176). It is made of a laminar stone with coarse black and white minerals,which began to crack as it dried following excavation. One face of the stone contains 7 to 10 depressions approximately 15cm to 20mm in diameter, arranged around a larger oval depression measuring 9cm x 13mm. The opposite side is coated in a white substance that appears to be whitewash or paint (Figure 176). The smaller indentations were used to hold nuts in place for extraction of nutmeat, while the larger depression was likely used for grinding. The stone was found in association with other stones, daub, and architectural debris in the fill of the western subfloor pit in context 0281F. It appears that site occupants found the stone and re-used it as part of a stone base that supported the wooden stack to the cabin’s chimney. The white substance may indicate that the non-indented surface faced the cabin interior and was covered with whitewashing, although no other stones recovered from the cellar fill were similarly coated.

A grinding stone was recovered from ER 0281G, the daub-filled layer of the subfloor pit just below the deposit that contained the nutting stone. The stone measures 28.6cm by 23cm at its widest point, and is 7cm tall. One face contains a depression in the center that measures 12cm long by 14.5cm wide, with a smaller depression in the center measuring 5cm x 3cm and about 2.5cm deep (Figure 177). This stone may have been created and used for grinding either in prehistory or by site residents. It may also have been recycled as part of the chimney base.

Finally, a stone pestle or mano was found in plow zone in ER 0135B in a quadrat placed between and just north of the two subfloor pits. It measures 18cm long by 3.5cm to 4cm wide, and was 3cm thick. The ends appear to be battered, indicating that the stone was used for pounding (Figures 178 and 179).

Broad Cultural Period	Cultural Period	Type	Context	Material	Dimensions*
Archaic	Early Archaic	Palmer	0391B	Quartzite	44x26
Archaic	Early Archaic	Palmer?	0393B	Chert	17x16
Archaic	Early Archaic	Kirk Corner-notched	0285C-N1/2	Chert	48x30
Archaic	Early Archaic	Kirk Corner-notched	0145B	Chert	41x22
Archaic	Early Archaic	Hardaway	032A	Chert	30x20
Archaic	Early Archaic	unknown	0145B	Stone, unid.	26x?, 6 thick
Archaic	Middle Archaic	Morrow Mountain II	0283B	Stone, unid.	35x20
Archaic	Middle Archaic	Morrow Mountain II	0287B	Quartzite	33x20
Archaic	Middle or Late Archaic	unknown	0295B	Jasper	39x19
Archaic		unknown	0364B	Quartz	34x24
Archaic	Early Archaic	unknown	0128B	Quartzite	?x24
Archaic?		unknown	0310B	Quartzite	30-35+
Woodland		unknown	0300B	Stone, unid.	10-15+
Woodland	Early to mid-Woodland	unknown	0161B	Quartz	29x16
Woodland		unknown	0302B	Quartz	20-25+
Woodland		unknown	0302B	Quartz	15-20+

Table 27. Projectile Points found at Wingo's.
*Dimensions, in mm, are length x width
+ Approximate size of fragment

Figure 174. Nutting stone, top, ER 0281F.

Figure 175. Detail of nutting stone surface, ER 0281F.

.

Figure 176. Nutting stone reverse side with whitewash or white paint, ER 0281F.

Figure 177. Grinding stone, ER 0281G.

Figure 178. Pestle recovered from ER 0135B/1.

Figure 179. End of pestle showing evidence of use, ER 0135B/1.

CHAPTER 5: HISTORIC FAUNAL AND MACROBOTANICAL REMAINS

A diverse assemblage of faunal and macrobotanical (floral) remains recovered from plow zone (faunal) and subfloor pit contexts (faunal and floral) provides important information about foods consumed, subsistence practices, possible consumer activities carried out by site residents, and environmental change.

FAUNAL REMAINS

A total of 4,986 faunal remains were counted from Wingo's contexts. They were nearly evenly divided between animal bone and eggshell. Tiny gastropods native to the site contributed to the final count (N=703) but were not analyzed further. The following section summarizes faunal identifications and analysis that are detailed in Appendix 2, and provides a closer look at the differences between the faunal assemblages within the subfloor pits.

The vast majority of remains (N=4,759) were associated with the two subfloor pits. The association between bones and pit contexts is likely due to micro-environmental conditions, with soil pH in both pits conducive to bone preservation, and more intensive sampling strategies that included screening through ¼ in. mesh, floating approximately 10 L from each context, and water screening about 50% of each pit context (Appendix 6).

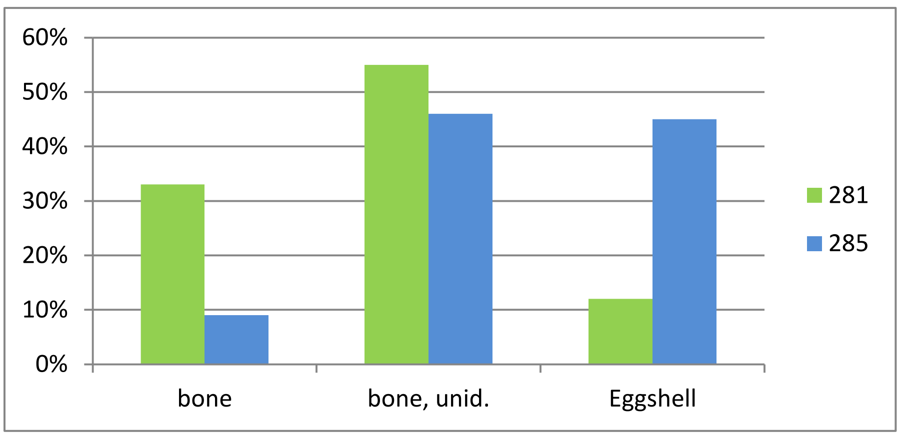


Figure 180. Subfloor pit faunal frequencies.

Pit 281 had nearly three times as many bones (N=1817), a much higher proportion of identifiable bone, and a much higher proportion of bone to eggshell than Pit 285 (N=608) (Figures 180-182). The majority of bones found at the site came from ER 0281J, which is believed to represent post-occupational fill prior to the destruction of the cabin.

Ninety percent of non-gastropod faunal remains were unidentified, with 1,138 completely unidentified bones, 865 unidentified bird remains (57 bones, 1,807 egg shell fragments), and 854 unidentified mammals for a total of 3,857 unidentified or minimally identified bones. Fragmentation resulting from food preparation, disposal patterns, and post-depositional taphonomic processes resulted in only 119 bones at the site with a weight of more than 5g. The average bone weight from plow zone was 0.17 g., and 0.18 g. for bones found in subfloor pit contexts.

Six hundred and six bones could be identified at least to order, of which four hundred twenty-six could be assigned to family or species. The most common non-commensal animals that were able to be identified to family or species (here ordered by count) were *Sus scrofa* (pig), *Gallus gallus* (chicken), *Sylvilagus florindanus* (eastern cottontail rabbit), and *Bos taurus* (cow). Biomass estimates resulted in a slightly different list, with *Sus scrofa*, *Bos taurus*, *Odocoileus virginianus* (white tailed deer), *Gallus gallus*, and *Sylvilagus florindanus* providing the greatest

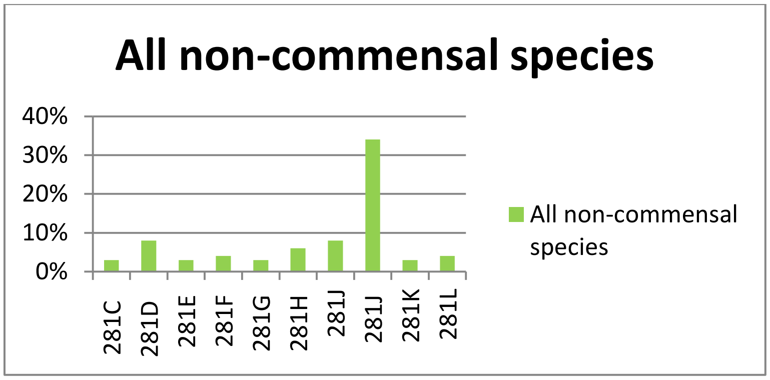


Figure 181. Distribution of non-commensal bone in ER 0285C-L.

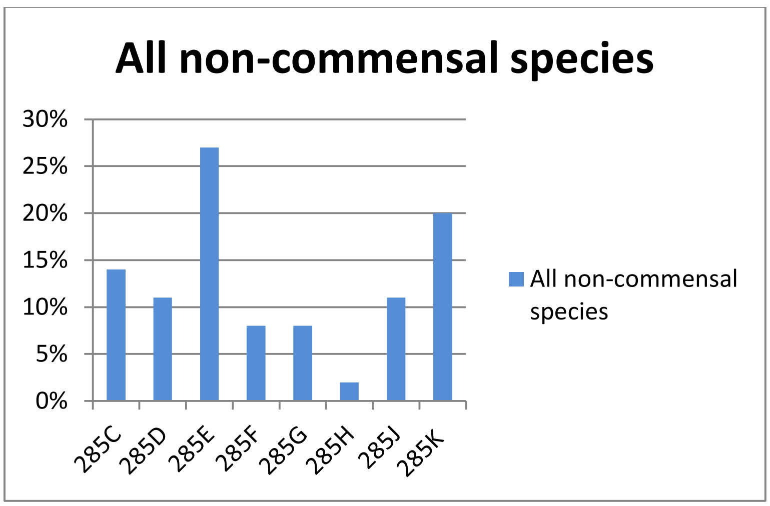


Figure 182. Distribution of all non-commensal bone from ER 0285C-L.

quantities of meat. Four other non-commensal mammalian taxa were represented including *Ovis/Capra* (sheep/goat), *Marmota monax* (groundhog), *Didelphis marsupialis* (opossum), and *Sciurus sp.* (squirrel). In addition to chickens, birds included members of the *Anseriformes* (goose, swan, duck) and *Passeriformes* (song bird) families. *Osteichthyes* (bony fish) and *Testudines* (turtle) were also consumed. A member of the *Anura* (frog) family may also have been eaten. Commensal species included *Canis familiaris* (dog) and *Peromyscus* (deer mouse). All were found in subfloor pit contexts except the single sheep/goat tooth, and the two bones associated with the ground hog.

The faunal remains from Wingo's are remarkably consistent with those found at the North Hill. Flotation of feature strata yielded 90.5% of the total 5,422 faunal remains uncovered at that site.

Eggshell made up the majority of the faunal material (N=2,757; 51%), with bone constituting the remainder (2,149; 49%). Of the total, 4,158 bones and eggshells were associated with the circa 1760s to 1785 occupation of the North Hill, with an additional 790 bones and eggshell fragments found in undated contexts. Four hundred seventy-four faunal remains are associated with a later phase of occupation that extended into the first quarter of the 19th century (Andrews 1999:1-2). One hundred eighty-one bones from the entire site were identifiable. Species present in the first phase of occupation at the North Hill included *Bos taurus*, *Canis familiaris*, *Didelphis virginianus*, *Gallus gallus*, *Marmota monax*, *Procyon lotor* (raccoon), *Rattus* sp., *Scirius carolinensis*, *Sus scrofa*, *Sylvilagus floridanus*, a member of the Cricetidae family (mouse, rat, lemming or vole) and a member of Centrarchidae family (freshwater bass or sunfish) (Andrews 1999:7). This assemblage is nearly identical to Wingo's, differing only by the presence of a raccoon and rat, and the family of fish.

Enslaved people managed herds of cow, pig, and sheep at Wingo's for meat, dairy products, and fiber. The skeletal part distribution for pigs indicates that animals were slaughtered on-site rather than provisioned from off-site sources. The data are less strong for cow, but bones associated with the axial and forequarter regions of the skeleton support on-site slaughter of cattle as well.

The size and distribution of lead shot can augment the data provided by faunal analysis to suggest the sizes of animals hunted and the area of the site in which they were processed (Figure 183 and Table 13). A single large buckshot was used for killing large game animals such as deer, while the remaining pieces were best suited for shooting small mammals and birds. Eight of nineteen pieces of lead shot or sprue were found in the fill of the subfloor pits; the remaining eleven pieces were found in plow zone. One (ER 0229B) was in a small quadrat some distance from the main portion of the site; the other ten clustered in or at the edge of the eastern half of the enclosure. This distribution supports the inference that site occupants used this area of the site for food processing.

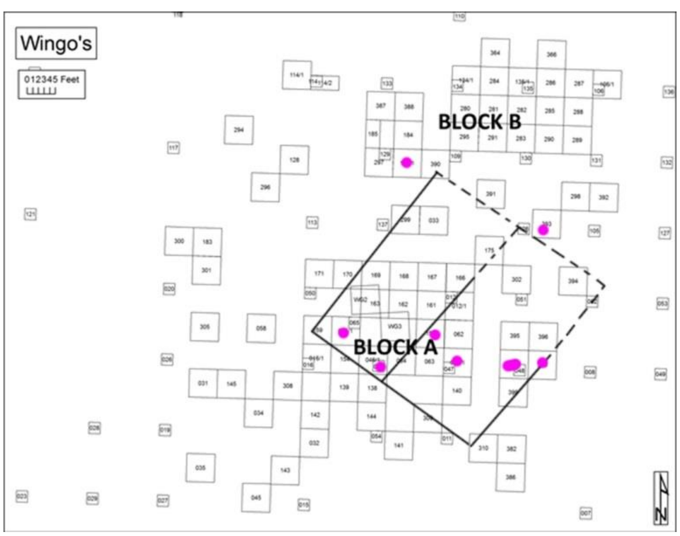


Figure 183. Distribution of lead shot in plow zone.

While eggshell found in the fill of the subfloor pits proved impossible to identify, Lamzik's study (2013) of poultry raising and egg consumption at a later Poplar Forest quarter indicates that by the late antebellum period, enslaved people were raising and consuming chickens, ducks, geese, guinea fowl, turkey, and eating passerines and bobwhites as well. By examining the morphology of archaeologically-recovered eggshell, she was able to assign many specimens to species, to determine whether the egg had hatched or its contents had been consumed prior to hatching, and to distinguish between domestically-produced eggs and those gathered from wild nests. The documentary evidence is also clear that enslaved women and some men raised poultry in the 18th century and sold eggs. The quantity and ubiquity of eggshell in deposits associated with both Wingo's and the North Hill indicate that enslaved people relied on eggs as a dietary staple. The spatial data suggest that chickens and perhaps other birds were raised in the western half of the enclosure at Wingo's.

MACROBOTANICAL REMAINS

While meat was an important aspect of diet, enslaved people also prepared and consumed a variety of fruits, vegetables and edible wild herbs and greens. Systematic sampling of contexts from both subfloor pits was undertaken for flotation. The results yielded an assemblage of 4,668 seeds and plant parts from 46 taxa, and a diverse assemblage of wood and monocot stems (Henderson and Trigg 2012). Appendix 4 contains a detailed report of the botanical findings that focused exclusively on charred remains.

Plant taxa associated with occupation layers in both pits include seeds of tobacco, clover, flax and wheat, associated with commercial plantation crops and cover crops; corn, beans and cow peas that enslaved residents might have grown in a garden or might have acquired from the plantation; peaches and pear from a nearby orchard; and wild species including blueberry, sumac and grape gathered from field edges or woodlands. Nuts from hickory or black walnut and the seed of a Kentucky coffee tree were also recovered, as well as chenopodium, dock, purslane, wild grass, goosegrass, and knotweed. Unidentified burned starchy material, possibly from potato or burned flour, was ubiquitous in both subfloor pits, with the highest quantities associated with occupation layers.

Plants associated with ER 0281K, a pre-destruction, post-occupation layer of the western pit, included grains (maize, wheat, rye), peaches, nut shells (hickory, black walnut), goosefoot seeds, wild grass seeds, and the starchy substance that has been interpreted as charred potato or flour. Henderson and Trigg believe that some of the grass seeds may have been associated with a grass lining to insulate the pits' interiors, were waste products from grass harvested for basket making, or perhaps fell off of broomcorn brooms. A diverse variety of seeds and plant parts were also found in destruction layers. Some may have been deposited naturally by wind, erosion, or commensal animals; others may have originally been deposited in middens that were used to fill the features. Monocot stems, at least some of which are believed to represent corn stalks, appear to have been used as binder for daub or in the construction of the chimney. One fragment of daub contained a charred peach pit, and the quantity of burned pits found associated with daub and other architectural debris suggests that they were also used to make daub.

Plant remains that are unique to Wingo's and can be associated with the occupation and pre-destruction abandonment phases of the site include a single tobacco seed, two flax seeds, three cow peas, a pear pip and six blueberry seeds. There is strong documentation for tobacco production at Poplar Forest during the late 18th century—and indeed we posit that Wingo's was established expressly to produce tobacco to help settle Wayles' debts—yet the tobacco seed found there is the only one to have been recovered at that property to date. The rarity of seeds is due to the practice of removing the flowering portion of most plants to encourage the growth of large leaves for harvesting. Thomas Mann Randolph reported that enslaved people living on Jefferson's Albemarle County lands had planted tobacco of their own in 1798, a practice which Jefferson sought to eliminate to draw "a line between what is theirs & mine" (Betts 1987:268-269). It is possible that the Wingo's seed is the result of an earlier effort by enslaved people to grow their own crop tobacco crop there, but without further evidence it is impossible to do more than speculate.

In 1774, Jefferson ordered 10 bushels of flax-seed and 10 of hemp seed (Bear and Stanton 1997:383). In 1790 he urged his plantation manager, Nicholas Lewis, to get underway with the production of hemp, cotton, flax and wool “for the negroes” (Betts 1944:152). Years later, he wrote that “flax is so injurious to our lands, and of so scanty produce, that I have never attempted it” (Betts 1987:252), yet he grew it in small quantities from time to time (Betts 1987:250-251). Enslaved people at Jefferson’s Elk Hill plantation grew cotton in the 1770s, and it is possible that site residents grew flax at Wingo’s for their own use.

Cow peas, like clover, added nutrients to exhausted soils, and Jefferson incorporated them into his crop rotations. Peas also may have been grown in kitchen gardens. Enslaved men and women gathered clover seeds, and from the late 1760s to the early 1780s, Jefferson purchased seeds from them by the pint and the quart, along with goosegrass and wild grass seed (Bear and Stanton 1997:40, 79-81, 145-150, 208, 258-259, 265, 293, 286, 294, 471, 521).

Many of the plants found at Wingo’s have also been recovered at the North Hill, the site immediately adjacent to it known as Anderson’s, and the Quarter (Raymer 2003, Tables 1a and 1b; Bowes and Trigg 2012, Table 8.1) (Table 28). The North Hill site exhibits the greatest diversity, in part due to different methodologies applied to sample collection between sites and in part due to differences in the number and types of features at each site. The North Hill and Wingo’s were more rigorously sampled than was the Quarter Site, and the North Hill also included the greatest number of features sampled and a larger overall sample size than any of the other sites (Raymer 2003). Assemblage differences may also reflect different food procurement strategies based on household size or composition (Heath 2004; Mrozowski et al. 2008).

Macrobotanical remains recovered from Site 8, a late 18th-century quarter at Monticello, share much in common with the Poplar Forest assemblages, although they are less diverse than the Wingo’s and North Hill assemblages. Orchard fruits include apples and peaches, while persimmons may have been collected from surround woodlands. Peas, corn and wheat were either plantation crops or grown in house-yard gardens, while grapes, blackberry-dewberry might have been gathered along with a variety of wild greens that included sedge, rumex sp. (dock), amaranth, goosefoot, and grasses (Bon-Harper 2006). The only species not found at a late 18th- or early 19th-century Poplar Forest quarter context is apple.

Major Use	Common Name	Scientific Name	Habitat		Season of Availability	Sites where Recovered		
						North Hill	Quarter	Andersons
Condiment	Poppy	*Papaver sp.*	Cultigen; rare escape	Garden Crop	May-June	X		
Fruit	Blackberry/Raspberry	*Rubus sp.*	Cultigen, fence rows, thickets	Edge Zone/Understory	June-July	X	X	
Fruit	Cherry	*Prunus sp.*	Cultigen; frequently escaped	Edge Zone/Understory	June-August		X	
Fruit	Elderberry	*Sambucus canadensis*	Moist soil, meadows	Edge Zone/Understory	July-August	X		
Fruit	Grape	*Vitis sp.*	Cultigen; low woods, streams	Edge Zone/Understory	August-October	X	X	
Fruit	Huckleberry	*Gaylussacia sp.*	Woods, clearings	Edge Zone/Understory	July-September		X	
Fruit	Peach	*Prunus persica*	Cultigen; frequently escaped	Gardens, Edge Zone/Understory	June-July	X		X
Fruit	Persimmon	*Diospyros virginiana*	Dry woods, old fields	Edge Zone/Understory	September-October	X		
Fruit	Strawberry	*Frageria sp.*	Cultigen, old fields	Garden Crop	April-June	X		
Fruit	Sumac	*Rhus sp.*	Woodlands, thickets, pastures	Edge Zone/Understory	August-October	X		
Vegetable	Common Bean	*Phaseolus vulgaris*	Cultigen	Agricultural Fields/Gardens	Summer-Fall	X	X	
Vegetable	Maize	*Zea mays*	Cultigen	Agricultural Fields/Gardens	June-October	X	X	X
Vegetable	Millet	*Setaria italica*	Cultigen	Agricultural Fields/Gardens, Cover Crop	Summer-Fall			X
Vegetable	Oats	*Avena sativa*	Cultigen	Agricultural Fields/Gardens	May-June	X		
Vegetable	Rye	*Secale cereale*	Cultigen	Agricultural Fields/Gardens	May-June	X		
Vegetable	Sorghum	*Sorghum sp.*	Cultigen	Agricultural Fields/Gardens	October	X		
Vegetable	Sunflower	*Helianthus sp.*	Cultigen, naturalized in fields	Agricultural Fields/Gardens	July-October	X	X	
Vegetable	Wheat	*Triticum aestivum*	Cultigen	Agricultural Fields/Gardens	May-June	X	X	
Nut	Acorn Shell	*Quercus sp.*	Rich woods	Edge Zone/Understory, Mature Woods	September-November	X		
Nut	Black Walnut	*Juglans nigra*	Rich woods	Edge Zone/Understory, Mature Woods	October		X	
Nut	Hickory Shell	*Carya sp.*	Uplands, bottomlands	Edge Zone/Understory, Mature Woods	October	X	X	X
Edible Herb	Bedstraw	*Galium sp.*	Woods, clearings, roadsides	Edge Zone/Understory	April-July	X	X	
Edible Herb	Carpetweed	*Mollugo verticillata*	Waste places, introduced	Open Fields, Disturbed Areas	May-frost	X		
Edible Herb	Dock	*Rumex sp.*	Fields, waste places	Open Fields, Disturbed Areas	Late summer-autumn	X		
Edible Herb	Goosefoot	*Chenopodium sp.*	Disturbed soil, waste places	Open Fields, Disturbed Areas	June-frost	X	X	X
Edible Herb	Knotweed	*Polygonum sp.*	Fields, waste places	Open Fields, Disturbed Areas	June-frost	X		
Edible Herb	Pennsylvania Smartweed	*Polygonum pensylvanicum*	Fields, waste places	Open Fields, Disturbed Areas	July-frost	X	X	
Edible Herb	Pigweed	*Amaranthus sp.*	Fields, pastures, waste places	Open Fields, Disturbed Areas	June-frost	X		
Edible Herb	Pokeweed	*Phytolacca americana*	Fields, waste places	Open Fields, Disturbed Areas	May-frost			X
Edible Herb	Purslane	*Portulaca oleracea*	Waste places, introduced	Open Fields, Disturbed Areas	May-October	X		
Edible Herb	Vervain	*Verbena sp.*	Fields, waste places	Open Fields, Disturbed Areas	July-September	X		
Weed	Jimsonweed	*Datura stramonium*	Waste places, introduced	Open Fields, Disturbed Areas	July-October	X	X	
Ornamental	Violet	*Viola sp.*	Alluvial woods, streamsides	Edge Zone/Understory, Ornamental	April-June	X		
Weed	Copperleaf	*Acalypha virginica*	Waste places	Open Fields, Disturbed Areas	June-frost	X		
Weed	Nightshade	*Solanum sp.*	Waste places, fields, roadsides	Open Fields, Disturbed Areas	June-October	X		
Weed	Ragweed	*Ambrosia sp.*	Fields, waste places	Open Fields, Disturbed Areas	July-frost	X		
Weed	Prickly Mallow	*Sida spinosa*	Fields, waste places	Open Fields, Disturbed Areas	June-October	X		
Weed-Grass	Agropyron	*Agropyron*	Fields, waste places	Open Fields, Disturbed Areas	June-August	X		
Weed-Grass	Goosegrass	*Eleusine indica*	Waste places	Open Fields, Disturbed Areas	June-October	X	X	
Weed-Grass	Grass Family	Gramineae		Open Fields, Disturbed Areas		X	X	X
Unknown-Other	Composite Family	Compositae				X		

Table 28: Macrobotanicals recovered at the North Hill, The Quarter and Andersons (from Raymer 2003, Table 1b).

CHAPTER 6: INTERPRETATIONS AND CONCLUSIONS

Site interpretations center on the interrelated themes of environment, spatial organization, foodways, and consumerism that together help us to understand the materiality of slavery at Wingo's.

ENVIRONMENTAL MODIFICATION AND SPATIAL ORGANIZATION

Macrobotanical remains from the site provide insights into the plantation environment and the micro-environments of the quarter itself. Oak and hickory dominated the hardwood forests of the Virginia piedmont prior to European settlement, and these two species constitute 93% of the wood charcoal found at Wingo's. The remaining 6% includes Kentucky coffee tree, maple, dogwood, chestnut, tulip poplar, and pine (Trigg and Henderson 2012; Henderson 2013:59). Enslaved people arriving at the site must have spent considerable time clearing old growth forest; shaping timbers to construct housing, storage buildings and fencing; and clearing and preparing fields. Unused portions of the harvested trees served for high quality fuel woods. Rapid changes to the environment can be seen over time, as the proportion of pine increased in assemblages from 1% at Wingo's to 4% at the North Hill, (where samples were roughly contemporaneous with Wingo's) to 67% at the Quarter in the space of less than 40 years. These changes represent the opening of fields, their eventual abandonment as fertility waned, and their subsequent reforestation with successional species like pine (Heath 2008; Henderson 2013:59-62).

Forest clearance also provided optimal environments for the spread of goosefoot, knotweed, purslane and wild grasses that thrive in waste grounds. While enslaved residents of the Wingo's cabin may have encouraged them to grow nearby, originally these weedy edibles took root throughout the broader plantation as a result of environmental changes that favored their introduction and spread. Weedy plants were 100% ubiquitous at Wingo's (Henderson 2013:62). Agricultural management practices that prioritized orderly fields, woodlots, and pastures for livestock inadvertently provided ideal habitat for rabbits and groundhogs which thrived in the resulting mosaic of field, forest edge, and woodland. New habitat likely spurred a growth in their populations. Fields sown in grains attracted wild birds and deer, while tobacco fields may also have brought turkeys closer to home in the spring and summer as they fed on the worms that infested tobacco plants. The agricultural infrastructure, developed to maximize crop and livestock production, became the means through which new habitats were created for wild plants and animals that became central to the diets of the enslaved.

Archaeological evidence for the cabin itself was confined to the size and placement of two subfloor pits, and the types and distribution of architectural artifacts found within pit fill and plow zone. Based on the alignment and diameter of each pit, and distance between them, the house must have measured at least 10.5 ft. by 18 ft., and contained a minimum of 180 square feet of interior space. It was oriented east-west along the edge of the ridgetop. Wood charcoal recovered in the destruction layers associated with the western subfloor pit (ER 0281) is dominated by oak, suggesting that the structure may have been built of this species. Small amounts of hickory, chestnut, maple, and Kentucky coffee tree from both features probably represent fuel, as does the abundant oak in the eastern subfloor pit (ER 0285). A chimney made of a dry-laid fieldstone base supporting a wood-and-daub stack stood at the west gable end. Burned peach pits found incorporated within a piece of daub indicate that the chimney was either originally constructed, or repaired, during the summer when these fruits were ripe. The structure does not appear to have had glazed windows as only three small fragments of window glass were found at the site. The presence of 68 t-head nails in plow zone quadrats and feature fill associated with the cabin suggests that some aspect of the building's interior woodwork required the use of finish nails (Figure 184). Part of a stock lock was found associated with the destruction of the cabin, indicating that the occupants could lock their door.

Wood impressions in the daub indicate that both sticks and sawn boards were incorporated into the chimney's construction, while a line of nails trailing south of the cabin, deposited with daub after the building was torn down, demonstrate that the chimney was held together by nails rather than solely by morticed logs. Housing of this type was the norm for laborers at both Poplar Forest and Monticello, and was a departure from the post-in-ground houses that characterized most 18th-century slave housing in the Virginia tidewater. While architectural historians have characterized post-set structures as expedient, surely log buildings provided more advantages for planters seeking to find a cheap solution to an often mobile population of plantation workers. Jefferson indicates that it took three enslaved men six days to do the carpentry work for a new house, a time period that included harvesting the timber and assembling the building (Jefferson in Betts 1987:67). Additional time may have been necessary to dig clay for daub or find field stones for a chimney base, but it is clear that log houses could be built by a small number of workers in about a week at relatively little cost. If set on field stones or piers to protect the sills from rot, log buildings outlasted post-in-ground structures. They could also be moved intact or disassembled and rebuilt more efficiently.

Only two 5 ft. x 5 ft. quadrats were excavated north of the cabin, and both contained few historic artifacts. Extensive testing further north failed to locate additional historic artifacts. By contrast, the area southeast and southwest of the cabin contained abundant evidence of domestic activity. The house appears to have been sited at the edge of a fairly level agricultural field, with domestic life confined to the sloping ground that was less agriculturally productive. Similar findings have been made at the North Hill and Quarter sites associated with the old plantation quarter, where structures were built on slopes and adjacent to erosion gullies.

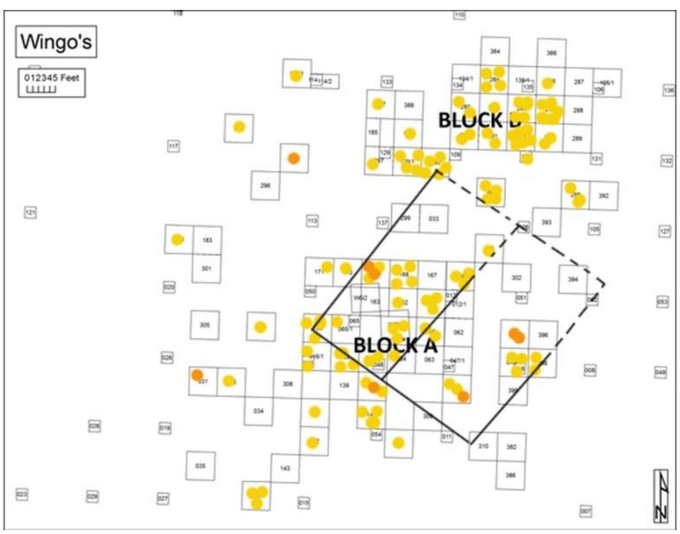


Figure 184. Distribution of t-headed nails at Wingo's.

An enclosure measuring about 36 ft. square extended south of the cabin, oriented roughly 45 degrees off of its east-west alignment. A northeast to southwest line divided the space roughly in half. The enclosure appears to have been made of small-diameter wooden stakes spaced at roughly 4 ½ ft. intervals along the western half of the southern line, and 7 ft. intervals along the dividing line. Not enough of the eastern half was excavated to ascertain a pattern for stake placement. T-headed nails are strongly associated with the dividing line and the southwestern line of the enclosure, with smaller clusters of T-heads at the northwest corner and midway along the eastern line (Figure 184). They may have secured vines or small branches in place that created the woven walls of wattle fencing. The two spaces appear to have fulfilled distinct functions. The eastern half contained relatively few artifacts overall, but concentrations of kitchen-related objects and potassium, magnesium and calcium suggest that site residents may have used this area for cooking. The western enclosure appears to have contained a henhouse or small animal enclosure at the southern end, with the northern end possibly being used for gardening.

Enslaved people may have collected seeds or young plants growing in waste grounds or field edges and encouraged their growth at the edges of house yards, keeping them close to hand for easy access, and creating a series of micro-landscapes within the domestic area that ranged from bare earth to cultivated gardens, with fence lines or yard edges bounded by middens covered with, or in close proximity to, borders of weedy greens, thorny raspberry and blackberry bushes, and perhaps a small number of fruit trees. In addition to providing sustenance, thorny shrubs and trees could provide effective visual and physical barriers, perhaps allowing residents to channel traffic, and access, within and around the site. At Wingo's, artifact and chemical distribution maps suggest that trash deposits off of the southeast and southwest corners of the cabin guided traffic leaving the building from the south along the western edge of the enclosure, through a cleaned yard space to a gap between in a linear midden, and down slope towards a spring. An area approximately 12 to 20 ft. north-south by 20 ft. east-west immediately south of the cabin was bounded by the house, an eastern and western midden, and the north line of the enclosure, providing one segment of a landscape that also contained segmented spaces within the enclosure itself. A large space extending west and southwest of the cabin appears to have been more open and perhaps functioned for more communal activities (Figure 185). Test excavations covering an area 150 ft. north and 200 ft. east of the cabin failed to produce evidence of additional historic occupation (Figure 7). The gradiometer survey encompassed a 100 m x 80 m area around the domestic site (Appendix 3, Figure 5), and identified three areas of high contrast anomalies within the grid. Two of these anomalies, located due north of the cabin, fell within the archaeologically-tested grid and failed to yield cultural evidence; the third, northeast of the cabin was not ground-truthed. Based on these results, it appears that the slave cabin was isolated within the broader landscape of the late 18th-century quarter. Wingo's must have been comprised of multiple structures, including cabins to house the 15 to 20 men, women, and children documented to have lived there from 1774 to 1790, an overseer's house, and agricultural outbuildings that supported the farm during this period. The archaeological evidence suggests a dispersed settlement pattern, with structures spaced at minimum 100 ft. apart, and probably more than 200 ft. from one another.

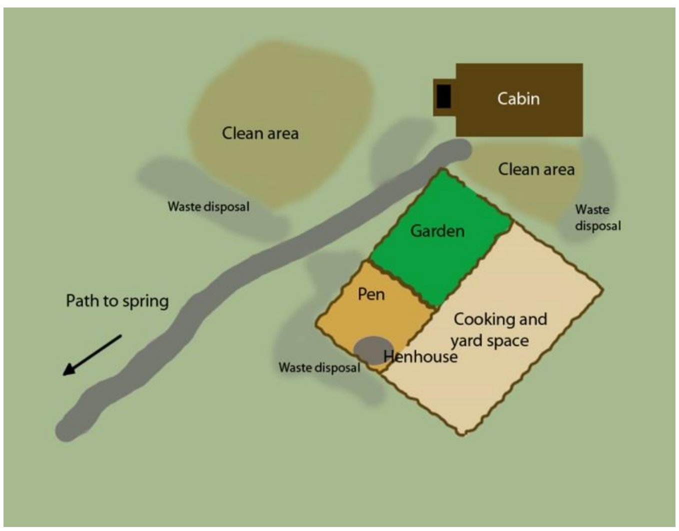


Figure 185. Interpretive reconstruction of domestic landscape of the Wingo's quarter. North is at the top of the image.

This evidence can be compared with the organization of the North Hill and Quarter Sites at Poplar Forest's old plantation, and Site 8 at Monticello, each occupied during the last quarter of the 18th century, with the Quarter Site occupation extending into the second decade of the 19th century. At the North Hill, two late 18th-century houses may have stood within about 75 ft. of one another. A single subfloor pit in ER1546 was contained within a log structure, with a second structure likely located to the east in the modern garden of adjacent landowners at a site known as Anderson's (Raymer 2003:1-2). Evidence of early 19th-century occupation found in plow-disturbed soils along the eastern and southern edges of the North Hill may indicate that the structure at Anderson's, or another building as yet undiscovered, was occupied into the 1810s. The Quarter stood approximately 160 ft. south of the North Hill. It was comprised of a duplex cabin containing two subfloor pits, and two additional structures standing to the east and west. Both are believed to have been used as dwellings for some or all of the period of occupation at the site (Heath 1999, 2012:119-125). At Site 8, four houses for the enslaved were located 25 ft., 50 ft. and 75 ft. apart (DAACS 2008). The relative isolation of the cabin at Wingo's would have resulted in less surveillance by the overseer, and might have allowed site residents to exert a greater degree of control over a broader space than was possible at the old plantation or Monticello quarters. Conversely, the distance between cabins made childcare and care of the sick, organized on a community level in later years at Poplar Forest, more challenging.

FOODWAYS

By the 1790s, Jefferson had begun to record provisioning practices for his Albemarle County plantations that included cornmeal and salt fish. An undated provision list also includes allotments of beef (Jefferson in Betts 1987:51,53,56). In an undated memorandum he noted:

> a barrel of flour yields 17. pecks of flour, & the labourers prefer recieving 1. peck of flour to 1 1/2 peck of Indian meal.
> a barrel of fish, costing 7.D. goes as far with the laborers as 200. lb of pork 14. D

and added that two pickled and barreled herring constituted a ration (Jefferson in Betts 1987:77-78). In her study of slavery at Monticello, Lucia Stanton (2000:29) characterized the weekly food allotment for enslaved adults as a half pound of pork or pickled beef, four salt fish, and a peck of cornmeal. Given the scarcity of provisioned foodstuffs, it is not surprising that enslaved people used their after-hours time to hunt and trap, to grow and gather fruits, vegetables, nuts and edible herbs, and to visit local stores and markets for supplies. Rabbits, squirrels, opossums, and groundhogs could be shot or caught in traps, an efficient way to procure food for people faced with workdays that stretched from sun-up to sun-down. Passerine birds could be netted or hunted in the evenings or on Sundays, when people were not required to work for the plantation. Frogs, turtles and small fish were easily captured from nearby streams and wetlands. Deer could be hunted, and larger birds like ducks, geese, and swans were raised alongside chickens in the house-yard, or hunted if wild.

The macrobotanical assemblage at Wingo's is similar to the North Hill and Quarter Sites at Poplar Forest and Site 8 at Monticello. People at Wingo's also consumed similar plants as residents of the 18th-century Rich Neck plantation quarter in Williamsburg and the late 18th- to mid 19th-century quarter at Wilton in Henrico County (McKnight 2000; Mrozowski et al. 2008). Corn, wheat, bean, black walnut, hickory, sorrel, and members of the sedge family (Cyperaceae) were present at all three sites, while rye, cow pea, and honey locust were recovered from occupation layers at both Wingo's and Rich Neck. Rich Neck residents also consumed melon, little barley, peanuts, and squash, as well as blackberry, cherry, and bedstraw, while at Wingo's occupants had access to pumpkin, blueberry, peaches, and a much wider variety of edible herbs. Squash was also consumed at Wilton, along with oats, hazel nut, and a variety of wild edible herbs.

Analysis of macrobotanicals recovered from the Mount Vernon House for Families, occupied during the third and fourth quarters of the 18th century, yielded corn, wheat, bean, and black walnut as seen at other sites, with peach, wild or domestic cherry, persimmon, and bottle gourd making up the remainder of the assemblage (Shick 2004:49-66). Documentary evidence indicates that Washington purchased watermelons and cucumbers from enslaved people on the plantation as well (Shick 2004:66). The absence of weedy greens from the assemblage is probably due to the analyst's decision to only examine seeds that were 1/8 in. or larger; however the location of the House for Families quarter, adjacent to a cultivated garden and within the maintained landscape of the plantation core, may also have affected residents' access to such plants.

The botanical assemblage from the mid 18th-century Accotink quarter, in Fairfax County, is less similar, with garden plants like celery, mustard greens, and lentils present alongside apples and alfalfa. Corn and wheat, however, were also represented, as were walnuts and hickory nuts, and a variety of wild greens and berries (Gibbons 2005). In his report, Gibbons grouped remains from a cellar under the overseer's house (more than half the assemblage) with specimens from subfloor pits associated with a slave cabin. As a result, the different nature of this assemblage may be due to distinct patterns of plant consumption and use between the two racial groups that were blurred during analysis.

A final comparison can be drawn between Wingo's and the late 17th-century slave quarter at King's Reach in Calvert County, Maryland in order to assess the time depth of patterns of plant consumption. At King's Reach, corn, wheat/oats, beans, squash, sunflower, grape, cherry, plum, sumac, and walnut remains were recovered from a subfloor pit (McKnight 2011). While the species of wild edibles may vary from site to site, their presence as a group forms an important component of diet. This short survey of macrobotanicals from quarter sites reveals that corn, wheat, beans and peas, tree nuts, orchard fruits (apples, peaches, pears, plums), and wild edible fruits and greens were mainstays of enslaved diets in the 18th- to early 19th-century Virginia, and that all of these botanical groups, with the exception of edible herbs, were present in the diet from as early as the 1690s. Many of these foods are largely absent from the documentary record as it relates to slavery, yet they had become standard fare for enslaved workers by the 18th century and staples of an emerging southern cuisine that cross-cut racial lines by the 20th century. Enslaved practices relating to plant consumption appear to have developed early in the Chesapeake, and like those centered on meat, were well adapted to the available resources within plantation settings.

Corn, wheat and rye could be stored as kernels or ground into meal or flour. Corn was both a plantation and a garden crop, and the presence of both cupules and as kernels indicates that enslaved people typically had access to entire cobs. The presence of corn stalks at Wingo's supports the interpretation that enslaved people grew corn for themselves, or that they had ready access to plants from plantation fields. Macrobotanical analysts typically interpret other grains (barley, oats, rye, wheat) as provisioned. The presence of identifiable grains from these plants at multiple quartering sites throughout the Chesapeake suggests that some common method of distribution was in use, rather than unique circumstances at each site resulting in their preservation. Henderson (2013:50) argues that their presence may be a result of the distribution of "seconds," roughly ground flour that retained unprocessed grains within it. If this were the case, the widespread use of seconds for provisioning, alongside the distribution of inferior sizes of salt fish, is an example of the way that slave owners sought to impose racial boundaries through everyday practices during this period (Klippel, Synstelien and Heath 2010). Franklin and Mullins have argued that African America practices of poultry raising, oystering, fishing, and the consumption of small game animals that occurred across the Chesapeake also became racialized by the 19th century, if not earlier (Mullins 1999; Franklin 2001:100-103).

Other plants were gathered and consumed fresh, dried, or preserved to provide nutrients and seasonal variety. Subfloor pits provided storage space for crops like squash or potatoes that preserve best in cool, dark environments with near-constant temperatures (Samford 2007). Enslaved residents may have stored preserved or dried fruits and vegetables in bottles and jars made of glass, stoneware and coarse earthenware placed within pits. At Wingo's, foods were boiled, fried or stewed in cast iron pots and skillets, or roasted in open fires. Residents served food with a mixed lot of tin-enameled hollow and flatwares, plates and hollow ware made of fashionable creamware and pearlware, and colonoware bowls and jars. Beverages were served in stoneware and creamware tankards, or possibly in a leaded glass goblet or drinking glass. The small size and mixed variety of ceramics and glassware present at the site suggests piecemeal acquisition, with vessels ranging from high quality, stylish, beaded and sprig-molded creamware to locally made, unglazed or lead glazed coarse earthenwares.

Many of the wild herbs and fruits consumed at Wingo's had medicinal qualities, and could be used to treat snakebite, skin irritations, burns, swelling, sores, worms and a variety of other internal disorders (Heath 2001; Mrozowski et al. 2008). These plants must have been carefully prepared in teas and tinctures, with some being dried for later use and mixed to create salves and ointments. Three pharmaceutical bottles found at the site indicate that enslaved residents also acquired mass-marketed remedies. One, a possible Turlington's Balsam of Life bottle, was advertised as curing "rheumatism, gout, stone, gravel and various other disorders" (General Advertiser 1747).

CONSUMERISM

Enslaved consumers operated in both the formal and informal economies throughout New World slave societies (McDonald 1993; Berlin and Morgan 1995; Penningroth 2003; Hauser 2008; Martin 2008). Informal systems of production and exchange were most developed in the Caribbean, but even in the more restricted environment of colonial Virginia, enslaved people were active in the marketplace by the mid-18th-century (Schlotterbeck 1995; Heath 1997; Walsh 1997; Hamrick and Hamrick 2007; Breen 2013; Heath 2016). Documentary evidence indicates that enslaved Virginians produced a variety of goods for exchange within home plantations, between neighboring plantations, at local markets and at stores. In his personal accounts, Jefferson recorded 182 separate instances of paying enslaved individuals during the period from

1767 to 1790, of which 156 entries were payments for goods (Bear and Stanton 1997). Manufactured items that he purchased from enslaved men and women included baskets, brushes, a canoe, combs, a cooler, two hogsheads, a ladle, a pair of swingle trees, toothbrushes, a tub, wax, and a wooden bowl. He bought clover, corn, cotton, fodder, grass seed (goose grass, grass seed, greensward and timothy), a gourd, hominy beans, hops, melons, oats, potatoes, and watermelon. Enslaved people also sold him chickens, ducks, fowls, partridges, pullets, turkeys, and venison in addition to eggs, leather, and squirrel skins. Finally, Jefferson purchased a live raccoon and three mockingbirds. In all he engaged in exchanges with at least 81enslaved people owned both by himself and by 13 different slaveholders. Only a few of these exchanges can be traced to his 1781 visit to Poplar Forest. During the 1770s, Martha Jefferson purchased chickens, ducks, pullets and eggs; cucumbers, hops, peas, potatoes and potato seeds; a cup, knitting needles, pails, soap, and trays from enslaved people that she owned, that her father owned, or who were owned by Mr. Carter, Mr. Hickman, Mr. Lewis, and Mrs. Meriwether.

The Jeffersons recorded that most purchases were made within the home plantation of Monticello or while visiting the homes of relatives, neighbors, and friends. While enslaved residents of Wingo's may have entered into exchange relationships with each other, with overseers and their family members, or with other Jefferson employees who had business at Wingo's, the opportunities for earning money through within-plantation exchange appear to have been severely constrained by the absence of a resident planter. Life on a home plantation presented enslaved producers with sales opportunities that were far fewer without the market that the big house and its visitors provided.

Community structure may have also played a role in limiting exchange opportunities. Research on household dynamics has indicated that households progress through predictable cycles of age-dependent events, including birth, marriage, and death (LeeDecker 1994; Wilkes 1995; Jennings 2010). These cycles affect production for market, which is dependent on family size, and is primarily influenced by the number and age of young dependents whose maintenance requires resources that could otherwise be sold or bartered (Hammel 2005). As children become teenagers, household productivity increases. Productivity is also high among unmarried adults and healthy elderly members of a community. The applicability of this model has not been broadly tested within the context of slavery, where options and choices were much more constrained. However, preliminary findings from a study of consumerism among the enslaved at Monticello suggests that this pattern is valid (Heath 2004). There, production for the marketplace was highest among single young men, families with teen or adult offspring, and elderly, healthy men. Because Wingo's was newly settled, the population was skewed towards families with young children, limiting productive capacity. Jefferson's early management also resulted in intra- and inter-plantation movement of people, undermining the social stability that people needed to form bonds with family, friends, and neighbors that allowed for resource creation (building traps, creating, planting, and maintaining gardens, for example) and resource pooling (sharing livestock, sharing tools, sharing time) that allowed for successful production (Penningroth 2003).

The labor force at Wingo's made the productivity of the plantation possible and ensured Jefferson's success in the formal economy. However, the occupants of the cabin appear to have engaged to only a limited extent with the formal economy to meet their own needs. Some goods that they owned, such as engraved white metal buttons or molded creamware tankards, were fashionable, and residents probably procured them at local stores or markets through their own efforts. Others objects were low cost and mass-produced (lead glazed coarse earthenware, British brown stoneware, iron shoe buckles), and might have been provisioned. Still others, including colonoware vessels and tobacco pipes, circulated outside of the formal economy, while outdated durable goods found at the cabin, such as tin-glazed earthenware and Westerwald stoneware, might have circulated through informal channels as well.

Twenty-six percent of identified ceramic vessels (twenty-nine percent of all sherds), and five of a minimum of nine tobacco pipes, were made of colonoware. Each unique vessel also had a unique pXRF signature, indicating that each was made of clays derived from a different source. Two of the subgroups in Group 2 had similar elemental distributions to pieces of daub, which also fell into distinct subgroups. More work will need to be done to strengthen the results, but the preliminary data indicate that at least some of the clay used to produce colonoware shared a source with some of the daub. These results suggest production on or near the site, as daub, like brick, was made in close proximity to construction sites. Each pipe that was tested had a unique elemental signature as well; the pipe from ER 0169A came closest to matching a fragment of daub from the site and a piece of colonoware vessel (ER 0289B), but the matches were not exact (Figure 146c). Future analysis of colonoware vessels and pipes found at the North Hill could provide interesting comparative data and could further resolve if wares across the plantation came from multiple sources, and how many sources might have been located at Poplar Forest. Further work could also contribute to an understanding of the geography of informal exchange networks among the enslaved in Bedford County. Lee (2012a) has attempted a similar study of production and exchange with stone pipes that appear on later quartering sites.

CONCLUSIONS

Research at Wingo's illuminated the processes of community formation that were likely duplicated, albeit at different scales, across the piedmont in the mid-to late 18th century. Planters sent mixed-sex groups dominated by young people to clear fields, build infrastructure, and establish new plantation communities. In the case of large planters, people tied by bonds of kinship or shared histories on eastern holdings might have been moved together, ensuring some continuity between old and new laboring groups. Like Wayles and Jefferson, planters might have moved overseers and their households, establishing familiar managers to facilitate the creation of new plantations. These employees and their households, particularly the enslaved people that they brought with them to support their own needs, also meant that people arrived in unfamiliar places with at least some social connections.

A previous study of family formation at Poplar Forest (Heath 2012) indicates that the establishment of a new plantation meant the introduction of multiple unrelated individuals and family groups to a new place, resulting in a period of intermarriage and the growth of kin networks. Over time, as a result of intra-plantation unions, the population became increasingly interrelated, and people were forced to look further afield for a spouse, entering into abroad marriages that extended ties across plantation boundaries. These ties, in turn, could lead to greater economic and social opportunities, although they placed real constraints on family life. The first wave of settlement at Wingo's appears to reflect, at least in part, the maturation of kin networks at Indian Camp following at least thirty years of settlement there. By the 1780s, however, the population of the Poplar Forest plantation, including Wingo’s, incorporated individuals from Wayles’ and Jefferson’s holdings in Albemarle, Goochland, Powhatan, Amelia and Cumberland Counties, beginning a new cycle of intra-plantation marriage and the growth of kin networks that would continue into the second decade of the 19th century.

Life on a quarter farm on the piedmont frontier meant material privation for the enslaved for the first few decades. People likely arrived with few material positions, were subjected to heavy labor necessary to make the plantation financially viable, and had limited opportunities for interactions with planters, their families, and their guests that might have yielded small financial rewards. On the other hand, a degree of autonomy and privacy can be inferred from the settlement pattern at Wingo’s that diminished over time as plantation populations grew and living areas for laborers became more centralized.

Our work at Wingo’s also demonstrates how plantation agriculture and the bonds of slavery came together to give rise to a foodways tradition shaped by new land management practices that encouraged the growth of weedy greens, wild edible fruits, and the concentration of small and medium game animals and birds in close proximity to living and work areas. People subjected to meager rations and with limited time for food procurement and preparation developed a cuisine that merged provisioned meats, fish and grains, with local resources that could be efficiently hunted, gathered or procured. People also turned to small-scale gardening and poultry raising to manage the risk of food shortages, to ensure dietary breadth, and, as circumstances allowed, to accumulate surplus with which to engage in the marketplace. Together, the socio-legal strictures, economic structure, and demographic cycles of slavery and plantation management shaped the materiality of life in piedmont quarters in the late 18th-century.

BIBLIOGRAPHY

Abbitt, Merry W.
1973 The Eighteenth-Century Shoe Buckle. In *Five Artifact Studies* Ivor Noël Hume, editor, pp. 25-53. Colonial Williamsburg Occasional Papers in Archaeology, Volume 1. The Colonial Williamsburg Foundation, Williamsburg, VA.

Barca, Kathryn Gertrude
2012 "The Best Kind of Long Ones:" Tobacco Smoking at George Washington's Mount Vernon. MA thesis, Department of Anthropology, The George Washington University, Washington, DC.

Baumgarten, Linda
1988 "Clothes for the People," Slave Clothing in Early Virginia. *Journal of Early Southern Decorative Arts* 14(2):26-70.

Beal, Peter
2008 *A Dictionary of English Manuscript Terminology.* Oxford University Press, Oxford, UK.

Bear, James A. Jr. and Lucia C. Stanton, editors
1997 Jefferson's Memorandum Books, Accounts, with Legal Records and Miscellany, 1767-1826. Volume 1. Princeton University Press, Princeton, NJ.

Beaudry, Mary C.
2006 *Findings, The Material Culture of Needlework and Sewing.* Yale University Press, New Haven, CT.

Berlin, Ira and Philip D. Morgan, editors
1995 *The Slaves' Economy, Independent Production by Slaves in the Americas.* Frank Cass, London, England.

Betts, Edwin Morris, editor
1944 *Thomas Jefferson's Garden Book, 1766-1824*. American Philosophical Society, Philadelphia, PA.
1987 *Thomas Jefferson's Farm Book, with Commentary and Relevant Extracts from other Writings.* University Press of Virginia, Charlottesville, VA.

Betts, Edwin Morris and James A. Bear, editors
1986 *The Family Letters of Thomas Jefferson.* University of Virginia Press, Charlottesville.

Bon-Harper, Sara
2006 Background, Site 8. The Digital Archaeological Archive of Comparative Slavery, < http://www.daacs.org/sites/site-8/#background >. Accessed 22 December 2015.

Bon-Harper, Sara and Sean Devlin
2012 Spatial Data and the Use of Exterior Domestic Space. Paper presented at the Annual Meeting of the Society for Historical Archaeology, Baltimore, MD.

Bowes, Jessica and Heather Trigg
2012 Social Dimensions of Slaves' Use of Plants at Poplar Forest. In *Jefferson's Poplar Forest, Unearthing a Central Virginia Plantation,* edited by Barbara J. Heath and Jack Gary, pp.155-171. University of Florida Press, Gainesville.

Boyd, Julian P., editor
1958 *The Papers of Thomas Jefferson*. Vol 15, 27 March 1789 to 30 November 1789. Princeton University Press, Princeton, NJ.
1961 *The Papers of Thomas Jefferson. Volume 16, 20 November 1789 to 4 July 1790.* Princeton University Press, Princeton, NJ.

Breen, Eleanor
2013 *The revolution before the Revolution? A Material Culture Approach to Consumerism at George Washington's Mount Vernon, VA.* PhD dissertation, Department of Anthropology, University of Tennessee, Knoxville. University Microfilms International, Ann Arbor, MI.

British Monarchy
2008/9 The Crown Jewels. < http://www.royal.gov.uk/MonarchUK/Symbols/TheCrownJewels.aspx >. Accessed 11 December 2015.

Brockmann, H. Jane
2004 Variable Life-History and Emergence patterns of the Pipe-Organ Mud-Daubing Wasp, Trypoxylon politum (Hymenoptera: Sphecidae). *Journal of the Kansas Entomological Society* 77(4):503-527.

Brooks, Alasdair
2001 The Comparative Analysis of Late 18th- and 19th- Century Ceramics: A Transatlantic Perspective. PhD. Dissertation, Department of Archaeology, University of York, UK.

Chambers, S. Allen Jr.
1993 *Poplar Forest and Thomas Jefferson.* The Corporation for Jefferson's Poplar Forest, Forest, VA.

DAACS
2008 Site 8 Map. Created by Jesse Sawyer, The Archaeological Archive of Comparative Slavery < http://www.daacs.org/wp-content/uploads/2013/03/Site8_sitemap.pdf >. Accessed 7 December 2015.

Deetz, James A.
1988 American Historical Archaeology, Methods and Results. *Science* 239(4838):362-367.

Dunnell, Robert C. and Jan F. Simek
1995 Artifact Size and Plowzone Processes. *Journal of Field Archaeology* 22(3):305-319.

Eltis, David, Stephen D. Behrendt, David Richardson and Herbert S. Klein, editors
1999 The trans-Atlantic slave trade: a database on CD-ROM. Cambridge University Press, Cambridge, UK.

Fales, Martha Gandy
1995 *Jewelry in America, 1600-1900.* Antique Collectors' Club. Woodbridge, UK.

Faulkner, Alaric
1986 Maintenance and Fabrication at Fort Pentagoet 1635-1654: Products of an Acadian Armorer's Workshop. *Historical Archaeology* 20(1):63-94.

Ferguson, Leland
1988 Looking for the 'Afro' in Colono-Indian Pottery. In *Archaeological Perspectives on Ethnicity in America* edited by Robert L. Schuyler, pp.14-28. Baywood, Farmingdale, NJ.
1992 *Uncommon Ground, Archaeology and Early African America, 1650-1800.* Smithsonian Institution Press, Washington, D.C.

Fesler, Garrett
2012 Excavating the Spaces and Interpreting the Places of Enslaved Africans and their Descendants. In *Cabin, Quarter, Plantation, Architecture and Landscapes of North American Slavery*, edited by Clifton Ellis and Rebecca Ginsburg, pp. 27-49. Yale University Press, New Haven, CT.

Franklin, Maria
2001 The Archaeological Dimensions of Soul Food: Interpreting Race, Culture, and Afro-Virginian Identity. In *Race and the Archaeology of Identity*, edited by Charles E. Orser, Jr., pp. 88-107. The University of Utah Press, Salt Lake City.
2004 *An Archaeological Study of the Rich Neck Slave Quarter and Enslaved Domestic Life.* Colonial Williamsburg Research Publications. Dietz Press, Richmond, VA.

Galle, Jillian E.
2004 Designing Women: Measuring Acquisition and Access at the Hermitage Plantation. *Engendering African American Archaeology, A Southern Perspective*, edited by Jillian E. Galle and Amy L. Young, pp.39-72. University of Tennessee Press, Knoxville.
2010 Costly Signaling and Gendered Social Strategies among Slaves in the Eighteenth-Century Chesapeake: An Archaeological Perspective. *American Antiquity* 75(1):19-43.

Gary, Jack, Eric Proebsting and Lori Lee
2010 Culture of the Earth: The Archaeology of the Ornamental Plant Nursery and an Antebellum Slave Cabin at Thomas Jefferson's Poplar Forest. Design Group, Lynchburg, VA.

General Advertiser
1744 Advertisement (Turlington's Balsam of Life). Saturday, January 24, 1747 column 3. London, England.

Gibbons, Kevin S.
2005 Analysis of Macrobotanical Remains from the Accotink Quarter (Site 44FX0223). In The Accotink Quarter: Archaeological Data Recovery at Site 44FX0223, Fairfax County, Virginia, edited by Boyd Sipe, Craig Rose and Jeremy Smith, Vol. 3, pp. 981-995. Report to D.R. Horton, Inc., McLean by Thunderbird Archaeology, Gainesville, VA.

Glenn, James
2002 Brown Mugs and Jugs: A Personal Foray into the Field of Collecting. In *Ceramics in America,* edited by Robert Hunter, pp. 171-190. The Chipstone Foundation and University Press of New England, Hanover, NH.

Griffenhagen, George B. and James Harvey Young
1957 *Old English Patent Medicines in America.* Smithsonian Institution, Contributions from the Museum of History and Technology Paper 10. United States National Museum Bulletin 218. Project Gutenberg <http://www.gutenberg.org/files/30162/30162-h/30162-h.htm>. Accessed 20 June 2011.

Hammel, E. A.
2005 Chayanov Revisited: A Model for the Economics of Complex Kin Units. *Proceedings of the National Academy of Sciences of the United States of America* 102(19): 7043-7046.

Hamilton, T. M.
1987 *Colonial Frontier Guns.* Pioneer Press, Union City, TN.

Hamrick, Charles and Virginia Hamrick
2007 *Colonial Supermarket: Daniel Payne's Ledger for his Store at Dumfries in Prince William County, Virginia for the Years 1758-1764, a Transcript.* New Papyrus Publishing, Athens, GA.

Harrington, J.C.
1978. Dating Stem Fragments of Seventeenth and Eighteenth-Century Clay Tobacco Pipes. In *Historical Archaeology, A Guide to Substantive and Theoretical Contributions*, R. L. Schuyler, editor, pp. 63-65. Baywood Publishing Co, Inc., NY. [Originally published in 1954 in the *Quarterly Bulletin of the Archeological Society of Virginia*, 9(1):9-13.

Hauser, Mark W.
2008 *An Archaeology of Black Markets: Local Ceramics and Economies in Eighteenth-Century Jamaica.* University Press of Florida, Gainesville.

Heath, Barbara J.
1996 Temper, Temper: Recent Scholarship on Colonoware in 18th-Century Virginia. In *The Archaeology of 18th-Century Virginia* edited by Theodore R. Reinhart, ed., pp. 149-175. Dietz Press, Richmond, VA.
1997 Slavery and Consumerism: A Case Study from Central Virginia. African Diaspora Archaeology Newsletter 4(2):1-7.
1999a Buttons, Beads and Buckles: Self-Definition within the Bounds of Slavery. In *Historical Archaeology, Identity Formation and the Interpretation of Ethnicity,* Maria Franklin and Garrett

R. Fesler, editors, pp. 47-69. Colonial Williamsburg Research Publications, Dietz Press, Richmond, VA.
1999b *Hidden Lives, The Archaeology of Slave Life at Thomas Jefferson's Poplar Forest.* University Press of Virginia, Charlottesville.
2001 Bounded Yards and Fluid Borders: Landscapes of Slavery at Poplar Forest. In *Places of Cultural Memory, African Reflections on the American Landscape Conference Proceedings,* pp.69-81. US Department of the Interior, National Park Service, Washington, DC.
2004 Engendering Choice: Slavery and Consumerism in Central Virginia. In *Engendering African American Archaeology,* Jillian Galle and Amy Young, editors, pp. 19-38. University of Tennessee Press, Knoxville.
2008 Rediscovering Thomas Jefferson's Poplar Forest. *Quarterly Bulletin of the Archeological Society of Virginia* 63(3):124-136.
2010 Space and Place within Plantation Quarters in Virginia, 1700-1825. In *Cabin, Quarter, Plantation, Architecture and Landscapes of North American Slavery,* edited by Clifton Ellis and Rebecca Ginsburg, pp. 156-176. Yale University Press, New Haven, CT.
2012 Slave Housing, Community Formation and Community Dynamics at Thomas Jefferson's Poplar Forest, 1760s-1810s. In *Jefferson's Poplar Forest, Unearthing a Central Virginia Plantation,* edited by Barbara J. Heath and Jack Gary, pp.105-128. University of Florida Press, Gainesville.
2016 Cowrie Shells, Global Trade and Local Exchange: Piecing Together the Evidence for Colonial Virginia. *Historical Archaeology* 50(2).

Heath, Barbara J. and Amber Bennett
2000 'The Little Spots Allow'd Them': The Archaeological Study of African American Yards. *Historical Archaeology* 34(2):38-55.

Heath, Barbara J. and Jack Gary
2012 "Two Tracts of Land at the Poplar Forest": A Historical and Archaeological Overview of Thomas Jefferson's Plantation Retreat. In *Jefferson's Poplar Forest, Unearthing a Central Virginia Plantation,* edited by Barbara J. Heath and Jack Gary, pp. 1-19. University of Florida Press, Gainesville.

Heath, Barbara J. and Lori Lee
2010 Memory, Race and Place. *History Compass* 8/12:1352-1368.

Heath, Barbara J., Randy Lichtenberger, Keith Adams, Lori Lee and Elizabeth Paull
2004 Poplar Forest Archaeology: Studies in African American Life, Excavations and Analysis of Site A, Southeast Terrace and Site B, Southeast Curtilage, June 2003-June 2004. Manuscript, Thomas Jefferson's Poplar Forest, Forest, VA.
2005 Poplar Forest Archaeology: Studies in African American Life and Landscape, Excavations and Analysis of Site B, Southeast Curtilage, June 2004-August 2005. Manuscript, Thomas Jefferson's Poplar Forest, Forest, VA.

Henderson, Samantha
2013 Understanding Slave Subsistence in the Context of Changing Agricultural Practices:

Paleoethnobotany at Thomas Jefferson's Poplar Forest. MA thesis, Historical Archaeology Program, University of Massachusetts, Boston, MA.

Hill, Erica
1995 Thimbles and Thimble Rings from the Circum-Caribbean Region, 1500-1800: Chronology and Identification. *Historical Archaeology* 29(1):84-92.

Hinks, Stephen
1988 A Structural and Functional Analysis of 18th Century Buttons. Unpublished M.A. thesis, Department of Anthropology, The College of William and Mary, Williamsburg, VA.

Holmes, Edward F.
1985 *A History of Thimbles.* Cornwall Books, New York, NY.

Hughes, Elizabeth and Marion Lester
1981 *The Big Book of Buttons.* New Leaf Publishers, Sedgwick, ME.

Jefferson, Thomas
1776-1794 Farm Book. Unpublished pages 25-26. David Library of the American Revolution, Washington Crossing, PA.
Jefferson Quotes and Family Letters
< http://tjrs.monticello.org/letter/592 >. Accessed 5 December 2015.
< http://tjrs.monticello.org/letter/602 >. Accessed 5 December 2015.

Jenkins, Robert C.
1886 *Heraldry, English and Foreign, With a Dictionary of Heraldic Terms.* Kegal Paul, Trench & Co., London, UK.

Jennings, Julia
2010 *Household Structure, Dynamics, and Economics in a Preindustrial Farming Population: The Northern Orkney Islands, Scotland, 1851-1901.* Doctoral dissertation, Department of Anthropology and Demography, The Pennsylvania State University. University Microfilms International, Ann Arbor, MI.

Jones, Olive R.
1986 *Cylindrical English Wine and Beer Bottles 1735-1850.Studies in Archaeology, Architecture and History.* National Historic Parks and Sites Branch, Environment Canada-Parks. < www.sha.org >. Accessed June 20, 2011.
2000 Glass Bottle Push-Ups and Pontil Marks. In *Approaches to Material Culture Research for Historical Archaeologists, 2nd edition*, David R. Brauner, compiler, pp. 149-160. The Society for Historical Archaeology, California, PA.

Jones, Olive and E. Ann Smith
1985 *Glass of the British Military 1755-1820.* Parks Canada, Hull, Quebec, CA.

Keeler, Robert W.
1978 *The Homelot on the Seventeenth Century Chesapeake Tidewater Frontier*. Doctoral. dissertation, University of Oregon. University Microfilms, Ann Arbo, MI.

Kelso, William M.
1986 Mulberry Row: Slave Life at Thomas Jefferson's Monticello. *Archaeology* 39(5):28-35.
1997 *Archaeology at Monticello, Artifacts of Everyday Life in the Plantation Community.* Monticello Monograph Series, Thomas Jefferson Memorial Foundation.

Kelso, William, Drake Patton and Michael Strutt
1991 Poplar Forest Archaeology Research Report for NEH Grant 1990-1991. For the National Endowment for the Humanities, Washington, by The Corporation for Jefferson's Poplar Forest, Forest, VA.

Kern, Susan
2010 *The Jeffersons at Shadwell.* Yale University Press, New Haven, CT.

King, Julia A. and Henry M. Miller
1987 The View from the Midden : An Analysis of Midden Distribution and Composition a the van Sweringen Site, St. Mary's City, Maryland. *Historical Archaeology* 21(2):37-59.

Laing, Michael
1981 An Introduction to the Scope, Potential and Applications of X-ray Analysis. Pamphlet 2: prepared by the Commission on Crystallographic Teaching of the International Union of Crystallography, University College Cardiff Press, Cardiff, Wales.

Lamzik, Katheryn Elizabeth
2013 "It all began, like so many things, with an egg," An Analysis of the Avian Fauna and Eggshell Assemblage from a 19th-Century Enslaved African American Subfloor Pit, Poplar Forest, Virginia. MA thesis, Department of Anthropology, University of Tennessee, Knoxville, TN.

Lanmon, Dwight P.
2011 *The Golden Age of English Glass 1650-1775.* Antique Collectors' Club, Woodbridge, Suffolk, UK.

Lee, Lori A.
2008 Late Antebellum Slavery at Poplar Forest (1826-1862). *Quarterly Bulletin of the Archeological Society of Virginia* 63(3):165-177.
2012a Carved in Stone: Stone Smoking pipes at Historic Sites in Central Virginia. In *Jefferson's Poplar Forest, Unearthing a Central Virginia Plantation,* Barbara J. Heath and Jack Gary, editors, pp. 129-154. University of Florida Press, Gainesville.
2012b Consumerism, Social Relations, and Antebellum Slavery at Poplar Forest. In *Jefferson's Poplar Forest, Unearthing a Central Virginia Plantation,* Barbara J. Heath and Jack Gary, editors, pp. 172-188. University of Florida Press, Gainesville.

LeeDecker, Charles H.
1994 Discard Behavior on Domestic Historic Sites: Evaluation of Contexts for the Interpretation of Household Consumption Patterns. *Journal of Archaeological Method and Theory* 1(4):345-375.

Leone, Mark P. and Gladys Marie Fry
1999 Conjuring in the Big House Kitchen: An Interpretation of African American Belief Systems Based on the Use of Archaeology and Folklore Sources. *The Journal of American Folklore* 112(445):372-403.

Lewarch, Dennis E. and Michael J. O'Brien
1981 Effect of Short-Term Tillage on Aggregate Provenience Surface Pattern. In Plowzone Archaeology: Contributions to Theory and Technique, Dennis E. Lewarch and Michael J. O'Brien, editors, pp. 7-50. *Vanderbilt University Publications in Anthropology* 27, Nashville, TN.

Marmon, Lee
1991 Poplar Forest Research Report, Part 1: Early Poplar Forest, Stith Through Jefferson. Manuscript, Corporation for Jefferson's Poplar Forest, Forest, VA.
1991 Poplar Forest Research Report, Part 3: African-Americans at Poplar Forest (1766-1946). Manuscript, Corporation for Jefferson's Poplar Forest, Forest, VA.

Martin, Ann Smart
2008 *Buying into the World of Goods:Early Consumers in Backcountry Virginia.* Johns Hopkins University Press, Baltimore, MD.

McDaniel, Jerry C., Cecil F. Bullard, Jr., Charles D. Parker III, Gary F. Whitley and Joe E. Dove
1989 Soil Survey of Bedford County Virginia. United States Department of Agriculture Soil Conservation Service. <
http://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/virginia/bedfordVA1989/bedfordVA1989.pdf>. Accessed November 2012.

McKnight, Justine Woodard
2000 Appendix G, Archaeobotanical Analysis. In Wilton Speaks: Archaeology at An Eighteenth- and Nineteenth-Century Plantation, Data Recovery at Site 44HE493, Associated with the Proposed Route 895 Project, Henrico County, Virginia, by Thomas F. Higgins, III, Benjamin Ford, Charles M. Downing, Veronica L. Deitrick, Stevan C. Pullins, and Dennis B. Blanton, pp. G-1 to G-18. Report prepared for the Virginia Department of Transportation, Richmond by the William and Mary Center for Archaeological Research, Williamsburg, VA.

McDonald, Roderick A.
1993 *The Economy and Material Culture of Slaves: Goods and Chattels on the Sugar Plantations of Jamaica and Louisiana.* Louisiana State University Press, Baton Rouge.

Mellin, Glen
2008 Mud-dauber Egg Chambers. *Inksherds, Newsletter of the Archaeological Society of Delaware.* January:2-3.

Miller, George L. with contributions by Patricia Samford, Ellen Shlasko, and Andrew Madsen
2000 Telling time for Archaeologists. *Northeast Historical Archaeology* 29:1-22.

Minchinton, Walter, Celia King and Peter Waite
1984 *Virginia Slave-Trade Statistics 1698-1775*. Virginia State Library, Richmond, VA.

Morgan, Philip D. and Michael L. Nicholls
1989 Slaves in Piedmont Virginia, 1720-1790. *The William and Mary Quarterly* 46(2):211-251.

Mrozowski, Stephen A., Maria Franklin and Leslie Hunt
2008 Archaeobotanical Analysis and Interpretations of Enslaved Virginian Plant Use at Rich Neck Plantation (44WB52). *American Antiquity* 73(4):699-728.

Mullins, Paul R.
1999 *Race and Affluence: An Archaeology of African America and Consumer Culture.* Kluwer/Plenum Academic Publishers, New York, NY.

Noël Hume, Ivor
1961 The Glass Wine Bottle in Colonial Virginia. *Journal of Glass Studies* 3:90-117.
1962 An Indian Ware of the Colonial Period. *Quarterly Bulletin of the Archeological Society of Virginia* 17:2-14.
2001a *If These Pots Could Talk: Collecting 2,000 Years of British Household Pottery.* The Chipstone Foundation and University Press of New England, Hanover, NH.
2001b *A Guide to the Artifacts of Colonial America.* University of Pennsylvania Press, Philadelphia.

O'Connell, James F.
1987 Alywara Site Structure and its Archaeological Implications. *American Antiquity* 52(1):74-108.

Ogundiran, Akinwumi
2014 Cowries and Rituals of Self-Realization in the Yoruba Region, ca. 1600-1860. In *Materialities of Ritual in the Black Atlantic*, Akinwumi Ogundiran and Paula Saunders editors, pp. 68-86. Indiana University Press, Bloomington.

Orser, Charles E. Jr.
1995 Artifacts, Documents and Memories of the Black Tenant Farmer. *Archaeology* 38(4): 48-53.

Orton, Clive, Paul Tyers and Alan Vince
1993 *Pottery in Archaeology.* Cambridge University Press, New York, NY.

Penningroth, Dylan C.
2003 *The Claims of Kinfolk, African American Property and Community in the Nineteenth-Century South.* The University of North Carolina Press, Chapel Hill.

Pogue, Dennis J.
1988 Spatial Analysis of the King's Reach Plantation Homelot, Ca. 1690-1715. *Historical Archaeology* 22(2):40-56.

Pond, Gail
2001 History of Wingos and Rothsay Property. Manuscript, The Corporation for Jefferson's Poplar Forest, Forest, VA.

Poulain, Maxime
2013 Notes on the Quantification of post-medieval pottery in the Low Countries. *Post-Medieval Archaeology* 47(1):106-118.

Raymer, Leslie
2003 Archaeobotanical Analysis from Data Recovery Excavations at the North Hill and Quarter Sites, Jefferson's Poplar Forest: A Study of Enslaved African-American Subsistence Patterns. Report submitted by New South Associates, Stone Mountain to The Corporation for Jefferson's Poplar Forest, Forest, VA.

Riordan, Timothy B.
1988 The Interpretation of 17th-Century Sites Through Plow Zone Surface Collections: Examples from St. Mary's City, Maryland. *Historical Archaeology* 22(2):2-16.

Rivers Cofield, Sara
2012 Linked Buttons of the Middle Atlantic, 1670-1800. *Journal of Middle Atlantic Archaeology* 28:99-116.

Royal Exhibitions, Orb. < http://royalexhibitions.co.uk/crown-jewels-2/orb/ >. Accessed 11 December 2015.

Russell, Aaron E.
1997 Material Culture and African-American Spirituality at the Hermitage. *Historical Archaeology* 31(3):63-80.

Salaman, R.A.
1990 *Dictionary of Woodworking Tools and Tools of Allied Trades.* The Taunton Press, Newton, CT.

Samford, Patricia M.
2007 *Subfloor Pits and the Archaeology of Slavery in Colonial Virginia.* University of Alabama Press, Tuscaloosa.

Schiffer, Michael B.
1972 Archaeological context and systemic context. *American Antiquity* 37:156-65.

Schlotterbeck, John T.
1995 The Internal Economy of Slavery in Rural PiedmontVirginia. In *The Slaves' Economy, Independent Production by Slaves in the Americas*, edited by Ira Berlin and Philip D. Morgan, pp. 170-181. Frank Cass, London, England.

Sharpe, William
circa 1800 *Sharpe's Crests of the Nobility and Gentry Designed and Etched by the late Mr. Wm. Sharpe for the use of Herald Painters & Engravers & Republished with additions by J.S. Phillips Stone & Steel Engraver to the Trade.* London, UK.
< http://babel.hathitrust.org/cgi/pt?id=uc1.b000939689;view=1up;seq=1 >. Accessed 11 December 2015.

Shick, Laura A.
2004 An Analysis of Archaeobotanical Evidence from the House for Families Slave Quarter, Mount Vernon Plantation, Virginia. Master's thesis, Department of Anthropology, The American University, Washington, DC.

Skerry, Janine E. and Suzanne Findlen Hood
2009 *Salt-glazed Stoneware in Early America.* The Colonial Williamsburg Foundation and University Press of New England, Hanover, NH.

Stanton, Lucia
2000 *Free Some Day, The African-American Families of Monticello.* Thomas Jefferson Foundation, Charlottesville, VA.
n.d. Research notes on Elk Island. Manuscript, Rockefeller Library, Monticello. Charlottesville, VA.

Southwestern Virginia Genealogical Society
1981 Bedford County, Virginia, Taxable property & Tithes for 1782. *Virginia Appalachian Notes* 5(1)1-8.

Sussman, Lynne
2000 Objects vs. Sherds: A Statistical Evaluation. In *Studies in Material Culture Research*, Karlis Karklins, editor, pp. 96-103. The Society for Historical Archaeology, California, PA.

Swanson, Greg and Mark Colsman
2006 XRF Technologies for Measuring Trace Elements in Soil and Sediment: Xcalibur ElvaXXRF Analyzer. An Innovative Technology Verification Report prepared by Tetra Tech EM Inc. Cincinnati, for the U.S. Environmental Protection Agency (EPA) Superfund Innovative Technology Evaluation Program, Washington, DC.

Thomas, Brian and Larissa Thomas
2004 Gender and Presentation of Self: An Example from the Hermitage. In *Engendering African*

American Archaeology, A Southern Perspective, edited by Jillian E. Galle and Amy L. Young, pp.101-131. University of Tennessee Press, Knoxville.

Thomson, Richard
1820 *A Faithful Account of the Processions and Ceremonies of the Kings and Queens of England; exemplified by that of their most Sacred Majesties King George the Third and Queen Charlotte: with all the other interesting proceedings connected with that magnificent festival.* John Major, London, UK. < https://babel.hathitrust.org/shcgi/pt?id=mdp.39015063599925;view=2up;seq=14;size=150 >. Accessed 11 December 2015.

Towner, Donald C.
1959 *English Cream-Colored Earthenware.* Faber and Faber, London, UK.

Trigg, Heather and Samantha Henderson
2012 Report on the Paleoethnobotanical Materials from Wingo's Site (44BE0298).Cultural Resource Management Study no. 54. Prepared for the University of Tennessee, Knoxville by The Andrew Fiske Center for Archaeological Research, University of Massachusetts, Boston, MA.

U.S. Climate Data. < http://www.usclimatedata.com/climate/bedford/virginia/united-states/usva0051>. Accessed 5 December 2015.

1907 Journals of the Council of Virginia in Executive Sessions, 1737-1763 (continued). *Virginia Magazine of History and Biography* 15(1):1-13.

Walsh, Lorena S.
1997 *From Calabar to Carter's Grove, The History of a Virginia Slave Community.* University Press of Virginia, Charlottesville, VA.

Wandsnider, LuAnn
1996 Describing and Comparing Archaeological Spatial Structures. *Journal of Archaeological Method and Theory* 3(4):319-384.

White, Carolyn L.
2005 *American Artifacts of Personal Adornment 1680-1820, A Guide to Identification and Interpretation.* Rowman and Littlefield Publishers, New York, NY.

Wilkes, Robert
1995 Household Life-Cycle Stages, Transitions, and Product Expenditures. *Journal of Consumer Research* 22(1): 27-41.

Wilkie, Laurie A.
1995 Magic and Empowerment on the Plantation. *Southeastern Archaeology* 14(2):140-143.
2000 *Creating Freedom: Material Culture and African American Identity at Oakley Plantation, Louisiana 1840-1950.* Louisiana State University Press, Baton Rouge.

Primary Source

Abbreviations used in text:
MHi: Massachusetts Historical Society, Boston, MA.
PPAmP: American Philosophical Society, Philadelphia, PA.
ViU: Albert and Shirley Small Special Collections Library, University of Virginia, Charlottesville.

County Court Records:
Amelia County Tithables 1736-1771. Library of Virginia, Microfilm Reel 55.
Bedford County Order Book
   Book 3, 1763-1771. Library of Virginia, Microfilm Reel 39.
   Book 6, 1774-1782. Library of Virginia, Microfilm Reel 40.
Bedford County Deed Book 13, 1809-1813. Library of Virginia, Microfilm Reel 6.
Charles City County Order Book 1737-1751. Library of Virginia. Microfilm Reel 14.
Charles City County Deeds and Wills 1766-1774. Library of Virginia. Microfilm Reel 1.
Chesterfield County Order Book 1, 1749-1754. Library of Virginia. Microfilm Reel 38.
Cumberland County Order Book 1, 1749-1751. Library of Virginia. Microfilm Reel 23.
Cumberland County Court Order Book 1752-1758. Library of Virginia. Microfilm Reel 23.
Cumberland County Will Book 1, 1749-1769, Library of Virginia, Microfilm Reel 17.
Goochland County Order Book 6, 1744 – 1749. Library of Virginia. Microfilm Reel 22.
Goochland County Titheables 1, 1735-1769. Library of Virginia.
Henrico County Deeds and Wills No. 2, Part 1, 1725-1737. Library of Virginia. Microfilm Reel 7a.
Henrico County Deeds and Wills No. 2, Part 2, 1725-1737. Library of Virginia. Microfilm Reel 7a.

Maps
N269-3. Thomas Jefferson Papers, Albert and Shirley Small Special Collections Library, University of Virginia Library, Charlottesville.
Map of Poplar Forest including Wingo's, 1790. Thomas Jefferson Papers, Albert and Shirley Small Special Collections Library, University of Virginia Library, Charlottesville.
Map of Poplar Forest ca. 1800. Thomas Jefferson Papers, Albert and Shirley Small Special Collections Library, University of Virginia Library, Charlottesville.

Appendix 1: Sediment Descriptions for Features ER281C-L and ER285C-L.

Context	Munsell	Description
ER281C, 281C-E 1/2	5YR4/4 (100%)	Red-brown clay loam
ER281D	5YR3/3 (90%)	Dark red-brown silty clay loam
	2.5YR4/6 (10%)	Red clay
ER281E, 281E-E 1/2	5YR3/4 (60%)	Dark red-brown silty clay loam
	2.5YR3/6 (40%)	Dark red clay
ER281F, 281F-E 1/2	5YR4/6 (100%)	Yellow-red silty loam
ER281G	7.5YR3/4 (50%)	Dark brown silty clay
	2.5YR3/6 (25%)	Dark red clay
	2.5YR3/2 (25%)	Dusky red silty clay loam
ER281H, 281H-E 1/2	5YR3/2 (60%)	Dark red-brown silty loam
	5YR4/4 (20%)	Red-brown silty clay
	10YR5/4 (15%)	Yellow-brown silt
	10YR8/2 (5%)	Very pale brown silt
ER281J, 281J-E 1/2	5YR3/4 (70%)	Dark red-brown silty clay loam
	2.5YR3/6 (15%)	Dark red silty clay
	5YR3/2 (15%)	Dark red-brown silty clay loam
ER281K, 281K-E 1/2	5YR4/4 (60%)	Red-brown silty clay loam
	2.5YR2/6 (15%)	Dark red silty clay
	10YR4/4 (15%)	Dark yellow-brown silt
ER281L, 281L-E 1/2	5YR3/4 (80%)	Red-brown silty clay loam
	5YR4/6 (20%)	Yellow-red silty clay loam

Table A-1: Sediment descriptions for ER281 subfloor pit contexts.

Context	Munsell	Description
ER285C, 281C-N 1/2	5YR3/4 (80%)	Dark red brown clay loam
	2.5YR4/6 (20%)	Red clay
ER285D, 285D-N 1/2	2.5YR3/4 (90%)	Dark red-brown clay loam
	10YR4/3 (10%)	Brown ash
ER285E, 285E-N 1/2	10YR4/3 (80%)	Brown ash
	2.5YR4/6 (20%)	Red clay
ER285F, 285F-N 1/2	7.5YR4/4 (100%)	Dark brown loamy clay with pockets of ash
ER285G	5YR4/6 (75%)	Yellow-red clay loam
	5YR4/4 (25%)	Red-brown clay loam
285G-N 1/2	5YR3/4	Dark red-brown clay loam
ER285H	2.5YR3/6	Dark red loam
ER285H-N 1/2	5YR4/6	Yellow-red clay
ER285J and J-N 1/2	2.5YR3/4	Dark red-brown clay loam
ER285K, 285K-N 1/2	2.5YR3/4	Dark red-brown clay loam
ER285L	2.5YR3/6	Dark red clay

Table A1-2: Sediment descriptions for ER285 subfloor pit contexts.

Appendix 2: **A Report on the Faunal Remains from Wingo's Quarter (44BE0298), Bedford County, Virginia**

D. Brad Hatch
University of Tennessee, Knoxville
October 2, 2013, revised December 2015

Introduction

Food and food-related behaviors have played a large role in the understanding and study of the lives of enslaved Africans and African Americans in the New World (Crader 1984, 1990; McKee 1987, 1988, 1999; Franklin 1997, 2002, 2004; Mouer 1992; Samford 1996). As one of the primary byproducts of consumption, faunal remains play a significant role in the interpretation of foodways and economies on sites inhabited by enslaved laborers. One such site, Wingo's quarter, located in Bedford County, Virginia, yielded a faunal assemblage consisting of over 4,900 faunal remains, including animal bone (N=2489), gastropod shell, (N=215) and eggshell fragments (N=2282+). This assemblage was recently analyzed by the author in order to better understand subsistence at this late-eighteenth century slave quarter site. This report outlines the methods used in the faunal analysis, the results, and interpretations about the site in relation to the animal remains. Site data are presented in Appendix 1.

Methods

The assemblage was identified using the comparative zooarchaeological collection at the University of Tennessee, Knoxville. Fragments were identified to the lowest taxonomic class possible, element, portion and side of the bone was also recorded and all bone was weighed. Fragments that could not be identified to class, which were numerous due to the fine recovery strategy, were counted and weighed as unidentified. Bone modifications such as butchering marks, rodent and carnivore gnawing, burning, and root etching were also noted in order to better understand taphonomy on the site. NISP was then obtained for the collection. NISP, number of identified specimens present, which is simply a count of fragments, has a tendency to be affected by numerous factors, including the ability to identify elements in different animals, laboratory techniques, site formation processes, and recovery methods (Reitz and Wing 1999:192). Despite the biases that come along with these data it is included in the analysis because of its ease of replication and its standard use in zooarchaeological analyses.

MNI, minimum number of individuals, was then calculated using the method outlined by White (1953) and taking age of the specimens into consideration, which results in a slightly more accurate estimate. Like NISP, however, this method also has biases that are affected by the same factors (Reitz and Wing 1999:195). In addition, the units that are used in the calculation of MNI can affect the result (Horton 1984:269). Therefore, two MNI calculations were completed; one for the whole site and one for the two subfloor pits. Due to the small sample size, however, dividing the assemblage in this way did not significantly change the results.

The final method used for the quantification of faunal remains at Wingo's is biomass obtained by using the allometric regression formulae described by Reitz and Wing (1999:72; see also Reitz and Cordier 1983; Reitz et al. 1987). This method relies upon the biological principle that bone weight and meat weight are correlated. In addition, this relationship is the same throughout time; therefore this method of meat weight estimation from bone weight has less potential room for error than other methods (Reitz and Wing 1999:227). However, like MNI, the way in which the units of excavation are grouped can affect the biomass, therefore two biomass calculations were completed for the entire site and for the two features. Like the MNI calculation, this had little effect on the results, due to the small sample size. Additionally, other concerns with the use of biomass have been raised (Jackson 1989), however it is necessary to employ some form of dietary contribution calculation for species in order to conduct intra-site and inter-site comparisons of the relative contribution of species to diet. Biomass appears to be the least biased of the methods available and it has the advantage of being comparable to the useable meat calculations employed in previous large-scale faunal analyses in the Chesapeake (Bowen 1980, 1994, 1996, 1999; Miller 1984, 1988).

Results

The faunal assemblage from Wingo's consisted of 4,986 counted fragments, the majority of which (4,759) came from two subfloor pit features. Fifteen distinct species were present in the assemblage and 606 bones were identifiable at least to order (Table 1). Of these 606 fragments, the top five non-commensal taxa represented, based upon NISP, were *Artiodactyla*, *Sus scrofa*, *Gallus gallus*, *Sylvilagus floridanus*, and *Bos taurus* (Figure 1). The MNI calculation revealed *Sus scrofa*, *Sylvilagus floridanus*, and *Gallus gallus* to be the top three non-commensal taxa, with 12 other taxa having only a minimum of one individual (Figure 2). It should be noted here that the small size and composition of this assemblage has skewed the MNI and biomass calculations, as discussed below. The top five non-commensal taxa represented by the biomass calculation were *Sus scrofa*, *Bos taurus*, *Odocoileus virginianus*, *Gallus gallus*, and *Sylvilagus floridanus* (Figure 3).

Analyzing the contents of the subfloor pits yielded slightly different results from the overall assemblage, but because of the small sample size these differences are probably not significant (Table 2). The NISP count revealed *Artiodactyla*, *Gallus gallus*, *Sus scrofa*, *Sylvilagus floridanus*, and *Bos taurus* to be the top five taxa represented (Figure 4). *Gallus gallus*, *Sus scrofa*, and *Sylvilagus floridanus* were the top three taxa represented by MNI with nine other taxa having a minimum of one individual (Figure 5). Finally, biomass identified *Sus scrofa*, *Artiodactyla*, *Bos taurus*, *Odocoileus virginianus*, and *Gallus gallus* as the top fix taxa represented (Figure 6). These analyses reveal that, regardless of the quantification method used or the how the assemblage is divided, the most significant non-commensal taxa represented on the site are *Sus scrofa*, *Bos taurus*, *Odocoileus virginianus*, *Gallus gallus*, and *Sylvilagus floridanus*.

Taphonomic processes at Wingo's can be revealed through an examination of other aspects of the faunal assemblage, including bone size, modification, and skeletal representation. Bone sizes were recorded to within 5mm using the size chart recommended for artifacts by analysts with the Digital Archaeological Archive of Comparative Slavery. Bone weight also can be used to represent the average size of fragments within the assemblage. The average weight of a fragment of bone within the Wingo's assemblage was 0.18g; within the subfloor pits the average weight of a single bone fragment was 0.17g. This stands in sharp contrast to other sites recently analyzed at UTK, such as Newman's Neck and Hallowes, where the average bone fragment weighed 1.98g and 2.01g, respectively. The majority of soil from Newman's Neck and Hallowes was only screened through ¼" mesh, while the majority of the bones from Wingos were recovered from subfloor pit contexts which were water screened or floated (Hatch 2011a, 2011b); therefore, discrepancies in size likely indicate post-depositional processes or disposal patterns at Wingo's.

Bone modification within the assemblage included burning, calcining, cut marks, rodent gnawing, carnivore gnawing, and root etching. Within the entire faunal collection from Wingo's 279 fragments were burned and 910 fragments were calcined. While burning, or charring, can result from cooking processes, calcined bone often results from disposal in a fire pit or other non-cooking related activities (Reitz and Wing 1999:133). Only seven fragments showed evidence of cut marks, which gives little evidence for butchery practices, although it should be noted that all of the fragments with cut marks were *Artiodactyla*, *Sus scrofa*, or larger unidentified mammal fragments. Rodent and carnivore gnawing were not common at the site with only three fragments exhibiting rodent modification and two fragments with carnivore gnawing. Finally, there was some evidence of root etching at the site with 22 fragments of bone containing some degree of etching.

In order to better understand the distribution of skeletal portions on the site, fragments from non-commensal mammal taxa were assigned to anatomical regions and compared using NISP (Table 3). Fragments were grouped in one of six categories: the teeth category includes only teeth; the head category includes skull and mandible fragments; the axial category is made up of vertebrae, ribs, and sternum fragments; the forequarter includes the scapula, humerus, radius, and ulna; the hindquarter category is represented by the innominate, sacrum, femur, tibia, and patella; the foot category includes metapodials and phalanges. This analysis revealed teeth to be the most commonly represented portion, particularly for the larger domestic animals, with feet portions being the next most common elements. These distributions of elements may be due to the higher number of teeth for these animals when compared to other elements, particularly *Sus scrofa*, which has 44 teeth when fully mature. Element distribution may also be a function of the greater survivability of smaller denser elements such as teeth and phalanges, which would be more resistant to fragmentation and degradation from acidic piedmont soils.

Discussion and Conclusions

There are several challenges relating to the interpretation of the faunal assemblage at Wingo's that include small sample size and bone preservation. Of the entire assemblage, only 184 fragments of non-commensal species were identifiable. Due to the fine recovery strategy, the vast majority of the bone recovered from the site was either unidentifiable or eggshell fragments.

The fact that almost half of the faunal assemblage was made up of eggshell fragments seems to indicate that the consumption of eggs, rather than the meat of birds, was significant to the inhabitants at Wingo's. Heavy concretions on the surface of the shells obscure diagnostic evidence of species. The attempted removal of these concretions from a sample of eggshells resulted in the destruction of the shells, making it impossible to conduct further analysis until another removal method can be discovered. It is likely that the majority of shells are from chicken eggs. Indeed, there are numerous historical references to enslaved people raising chickens for their own use and for the sale of eggs, and the analysis of eggshell from a later Poplar Forest quarter indicated that chicken shell dominated the assemblage (Franklin 1997:39; Heath 2004; Lamzik 2013).

The identifiable faunal remains from Wingo's are also heavily skewed toward smaller denser bones, particularly teeth and foot portions. As mentioned above, this could be due to soil conditions contributing to the decomposition of more fragile bone fragments, mechanical fracturing, or other post-depositional processes. Harder, denser bones and teeth tend to resist these destructive processes better and preserve longer (Reitz and Wing 1999:117). It should be noted, however, that the majority of the bone recovered from the site came from the subfloor pits, which had average pH values of 7.2 (ER281) and 7.7 (ER285), indicating an alkaline environment that would have favored the preservation of bone (Table 4). Since soil pH does not adequately explain the prevalence of teeth and small, dense foot bones in the assemblage there might be other reasons for the bones recovered.

Two of the most probable explanations for the composition of the assemblage relate to disposal practices at the site and the larger number of teeth and foot bones possessed by an animal compared to other bones. Larger fragments of bone may be lacking from the assemblage because they were disposed of elsewhere on the site. Indeed, the number of other classes of artifacts at Wingo's is relatively sparse, which could indicate refuse disposal in another area of the site. However, extensive testing in a nearly 200 ft. radius north, east and, to a lesser extent south and west of the core of the site failed to discover evidence of more substantial depositional areas (Figure 7).

The assemblage composition can also be explained by examining the skeletons of the animals on the site, particularly pigs. While the skeletal portions do seem to show that teeth and foot bones are over-represented, it is important to be mindful of the number of teeth and foot portions that a single pig possesses. A normal adult pig has 44 teeth and well over 50 foot bones. With these figures in mind, it should be no surprise that these bones are highly represented in the assemblage, particularly since their structure aids in their preservation. Additionally, the presence of fragments from all of the skeletal portions of pigs seems to indicate that the animals were slaughtered and consumed on-site by the occupants at Wingo's, rather than being provisioned.

The contribution of species to the diet of the inhabitants at Wingo's follows similar patterns previously identified in studies of enslaved subsistence (Otto and Burns 1983; Crader 1984, 1990; McKee 1987; Bowen 1996). Based upon biomass calculations, pigs were the most significant contributors to meat diet, followed by cows and chickens. In addition to these domesticates, the inhabitants of Wingo's also supplemented their diet with wild game, including deer, rabbit, and opossum, which were all available in the area. The presence, and importance, of these animals at Wingo's is supported by references in Jefferson's plantation records where he discusses purchasing chickens at Wingo's in 1781 (Bear and Stanton 1997:512) as well as listing hogs, cattle, and sheep, all of which are present in the faunal assemblage, at the site in 1789-1790 (Boyd 1961:189-190).

In general, the faunal assemblage from Wingo’s aligns well with the other artifact categories, in that the collection is relatively poor. The small number of artifacts, specifically faunal remains, can be attributed to numerous factors, including preservation and taphonomic processes, disposal practices that deposited artifacts in unexcavated portions of the site, the absence of sampling in certain portions of the site, or a short-term occupation. While the assemblage does indicate subsistence practices that have been defined in other enslaved contexts, including the keeping of domestic fowl, the importance of eggs, and the reliance on pork, the small sample size makes definitive interpretations about the site tenuous.

References Cited

Bear, James A. Jr. and Lucia Stanton (editors)

1997 *Jefferson's Memorandum Books: Accounts, with Legal Records and Miscellany, 1767-1826.* 2 vols. The Papers of Thomas Jefferson, 2nd ser. Princeton: Princeton University Press.

Bowen, Joanne

1980 Analysis of the Faunal Remains from Clifts Plantation. Appendix in Field Archaeology of the Clifts Planation Site, Westmoreland County, Virginia, by Fraser D. Neiman, pp. 177-221. Submitted to the Robert E. Lee Memorial Association. Manuscript on File, Robert E. Lee Memorial Association Inc., Stratford, VA.

1994 A Comparative Analysis of the New England and Chesapeake Herding Systems. In *Historical Archaeology of the Chesapeake*, edited by Paul A. Shackel and Barbara J. Little, pp. 155-167. Smithsonian Institution Press, Washington, DC.

1996 Foodways in the 18th-Century Chesapeake. In *The Archaeology of 18th-Century Virginia*, edited by Theodore R. Reinhart, pp. 87-130. Archeological Society of Virginia Press, Richmond, VA.

Boyd, Julian P. (editor)

1961 *The Papers of Thomas Jefferson, November 1789 to July 1790.* Volume 16, 30 November 1789 to 4 July 1790. Princeton University Press, Princeton.

Crader, Diana C.

1984 The Zooarchaeology of the Storehouse and Dry Well at Monticello. *American Antiquity* 49(3):542-558.

1990 Slave Diet at Monticello. *American Antiquity* 55(4):690-717.

Franklin, Maria

1997 *Out of Site, Out of Mind: The Archaeology of an Enslaved Virginia Household, ca. 1740-1778*. Doctoral Dissertation, Department of Anthropology, University of California, Berkeley. University Microfilms International, Ann Arbor, MI.

2002 The Archaeological Dimensions of Soul Food: Interpreting Race, Culture, and Afro-Virginian Identity. In *Race and the Archaeology of Identity*, edited by Charles E. Orser, pp. 88-107. University of Utah Press, Salt Lake City.

2004 *An Archaeological Study of the Rich Neck Slave Quarter and Enslaved Domestic Life.* Colonial Williamsburg Foundation, Williamsburg, VA.

Hatch, D. Brad

2011a Bones, Pans, and Probates: A Faunal Analysis of the Newman's Neck Site (44NB180). *Journal of Middle Atlantic Archaeology* (27).

2011b Where Have All the Deer Heads Gone: Faunal Analysis, Chronology, and Native American Interaction at the Hallowes Site (44WM6). Paper presented at the 41st annual meeting of the Middle Atlantic Archaeological Conference, Ocean City, MD.

Heath, Barbara J.

2004 Engendering Choice: Slavery and Consumerism in Central Virginia. In *Engendering African American Archaeology; A Southern Perspective,* edited by Jillian E. Galle and Amy L. Young, pp. 19-38. University of Tennessee Press, Knoxville.

Horton, D. R.

1984 Minimum Numbers: A Consideration. *Journal of Archaeological Science* 11:255-271.

Jackson, H. Edwin

1989 The Trouble with Transformations: Effects of Sample Size and Sample Composition on Meat Weight Estimates Based on Skeletal Mass Allometry. *Journal of Archaeological Science* 16:601-610.

Lamzik, Kathryn Elizabeth

2013 “It all began, like so many things, with an egg,” An Analysis of the Avian Faunal and Eggshell Assemblage from a 19th Century Enslaved African American Subfloor Pit, Poplar Forest, Virginia. M.A. thesis, Department of Anthropology, University of Tennessee, Knoxville. http://trace.tennessee.edu/utk_gradthes/1635

McKee, Larry

1987 Delineating Ethnicity from the Garbage of Early Virginians: Faunal Remains from the Kingsmill Plantation Slave Quarter. *American Archaeology* 6(1):31-39.

1988 *Plantation Food Supply in 19th-Century Tidewater Virginia*. Doctoral Dissertation, Department of Anthropology, University of California, Berkeley. University Microfilms International. Ann Arbor, MI.

1999 Food Supply and Plantation Social Order: An Archaeological Perspective. In *I, too, am America: Archaeological Studies of African-American Life*, edited by Theresa A. Singleton, pp. 218-239. University Press of Virginia, Charlottesville.

Miller, Henry M.

1984 Colonization and Subsistence Change on the 17th-Century Chesapeake Frontier. Ph.D. dissertation, Department of Anthropology, Michigan State University, East Lansing.

1988 An Archaeological Perspective on the Evolution of Diet in the Colonial Chesapeake, 1620-1745. In *Colonial Chesapeake Society*, edited by Lois Green Carr, Philip D. Morgan, and Jean B. Russo, pp. 176-199. University of North Carolina Press, Chapel Hill, NC.

Mouer, Daniel

1992 Chesapeake Creoles: The Creation of Folk Culture in Colonial Virginia. In *The Archaeology of 17th Century Virginia*, edited by Theodore Reinhart and Dennis Pogue, pp. 105-166. The Dietz Press, Richmond, VA.

Otto, John Solomon and Augustus Marion Burns

1983 Black Folks and Poor Buckras: Archaeological Evidence of Slave and Overseer Living Conditions on an Antebellum Plantation. *Journal of Black Studies* 14(2):185-200.

Reitz, Elizabeth J. and Elizabeth S. Wing

1999 *Zooarchaeology*. Cambridge University Press, Cambridge.

Reitz, Elizabeth J. and Dan Cordier

1983 Use of Allometry in Zooarchaeological Analysis. In Animals in Archaeology. Vol. 2, Shell Middens, Fishes and Birds, edited by C. Grigson and J. Clutton-Brock. *British Archaeological Reports International Series* No. 183:237-252. Oxford.

Reitz, E. J., I. R. Quitmyer, H. S. Hale, S. J. Scudder, and E. S. Wing

1987 Application of Allometry to Zooarchaeology. *American Antiquity* 52(2):304-317.

Samford, Patricia

1996 The Archaeology of African-American Slavery and Material Culture. *William and Mary Quarterly* 53(1):87-114.

White, Theodore E.

1953 A Method of Calculating the Dietary Percentage of Various Food Animals Utilized by Aboriginal Peoples. *American Antiquity* 18:396-398.

Figures and Tables

Taxa	NISP	MNI	Bone Weight (grams)	Biomass (kilograms)
<u>*Mammalia*</u>				
Bos taurus	9	1	70.34	1.21
Sus scrofa	107	3	131.29	2.12
Ovis/Capra	1	1	0.33	0.01
Canis familiaris	1	1	0.73	0.02
Odocoileus virginianus	2	1	19.38	0.38
Sylvilagus floridanus	11	2	9.53	0.2
Marmota monax	2	1	0.69	0.003
Didelphis marsupialis	4	1	5.2	0.12
Sciurus sp.	5	1	0.47	0.01
Peromyscus	44		0.37	0.01
Artiodacyla	120		100.81	1.67
Bovidae	1	1	0.29	0.009
Rodentia	2		0.03	0.001
UID *Mammalia*	873		99.53	1.65
<u>*Aves*</u>				
Gallus gallus	70	2	13.98	0.23
Anseriformes	1	1	0.23	0.005
Passeriformes	8	1	0.25	0.006
UID *Aves*	58		3.69	0.07
<u>*Osteichthyes*</u>				
UID *Osteichthyes*	9		0.08	0.004
<u>*Reptilia*</u>				
Testudines	2	1	0.6	0.02
<u>*Amphibia*</u>				
Anura	1	1	0.05	0
Gastropod	215		1.39	0
UID Eggshell	2282		31.12	0
UID	1133		22.35	0
Total	**4961**	**19**	**512.73**	**7.748**

Table 1: Summary of Faunal Remains from All Contexts.

Taxa	**NISP**	**MNI**	**Bone Weight (grams)**	**Biomass (kilograms)**
Mammalia				
Bos taurus	7	1	64.11	1.11
Sus scrofa	67	2	102.83	1.7
Canis familiaris	1	1	0.73	0.02
Odocoileus virginianus	2	1	19.38	0.38
Sylvilagus floridanus	10	2	3.1	0.073
Didelphis marsupialis	3	1	4	0.09
Sciurius sp.	3	1	0.47	0.01
Peromyscus	44		0.37	0.01
Artiodacyla	99		95.21	1.59
Rodentia	2		0.04	0.001
UID *Mammalia*	787		83.52	1.41
Aves				
Gallus gallus	70	2	13.98	0.23
Anseriformes	1	1	0.23	0.005
Passeriformes	8	1	0.25	0.006
UID *Aves*	57		3.6	0.07
Osteichthyes				
UID *Osteichthyes*	9		0.08	0.004
Reptilia				
Testudines	2	1	0.6	0.02
Amphibia				
Anura	1	1	0.05	0
Gastropod	192		1.02	0
UID Eggshell	2271		31.08	0
UID	1123		20.75	0
Total	**4759**	**12**	**445.4**	**6.729**

Table 2: Summary of Faunal Remains from Subfloor Pits.

Skeletal Group	***Artiodactyla***	***Bos taurus***	***Bovidae***	***Didelphis marsupialis***	***Odocoileus virginianus***	***Ovis/Capra***	***Sciurus sp.***	***Sus scrofa***	***Sylvilagus floridanus***
Tooth	26	5	1	0	0	1	1	70	0
Head	0	0	0	0	0	0	2	6	1
Axial	6	2	0	0	0	0	0	9	2
Forequarter	1	1	0	3	1	0	0	5	1
Hindquarter	1	0	0	1	0	0	0	1	3
Foot	1	0	0	0	1	0	1	20	3
Total	**35**	**8**	**1**	**4**	**2**	**1**	**4**	**111**	**10**

Table 3: Skeletal Portion Frequency for All Contexts.

Table 4: pH of plow zone above and fill of subfloor pit layers.

Feature	Test 1	Test 2	Average pH	Notes
281B	5.98	6.02	6	Plow zone
281C	6.34	6.35	6.345	Pit fill
281D	6.7	6.66	6.68	Pit fill
281E	7.78	7.85	7.815	Pit fill
281F	7.63	7.64	7.635	Pit fill
281G	7.54	7.51	7.525	Pit fill
281H	7.5	7.53	7.515	Pit fill
281J	6.93	6.98	6.955	Pit fill
281K	7.91	7.94	7.925	Pit fill
285B	7.46	7.39	7.425	Plow zone
285C	8.0	7.97	7.985	Pit fill, south half
285E	7.7	7.64	7.67	Pit fill
285G	7.51	7.69	7.6	Pit fill
285H	7.6	7.71	7.655	Pit fill
285J	8.05	8.08	8.065	Pit fill
285K	7.96	7.96	7.96	Pit fill

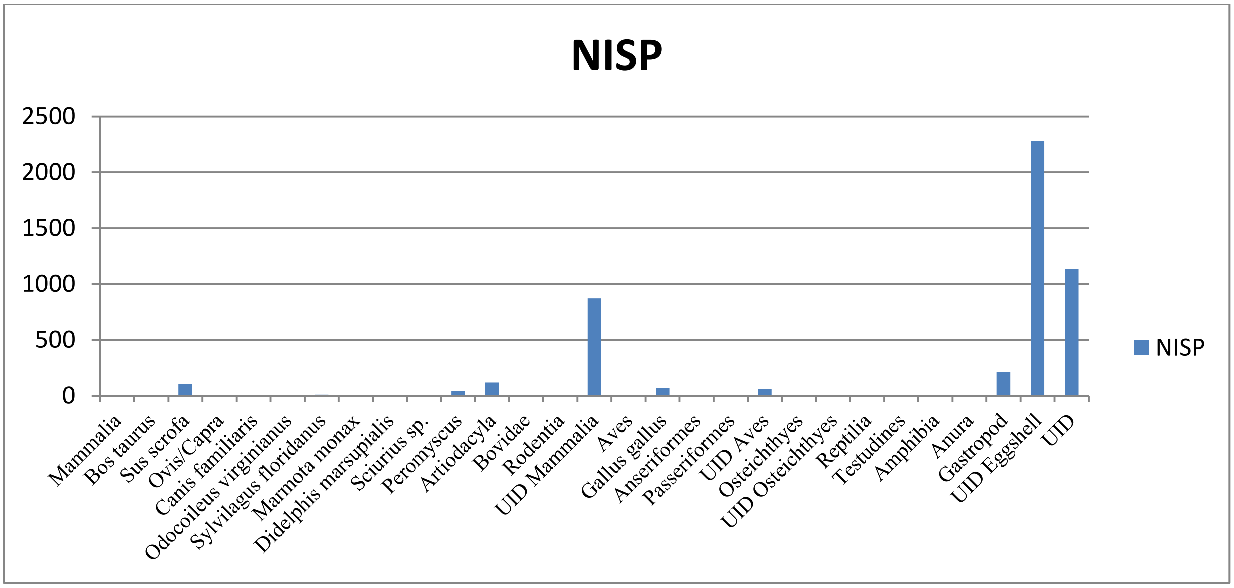


Figure 1: NISP for All Contexts.

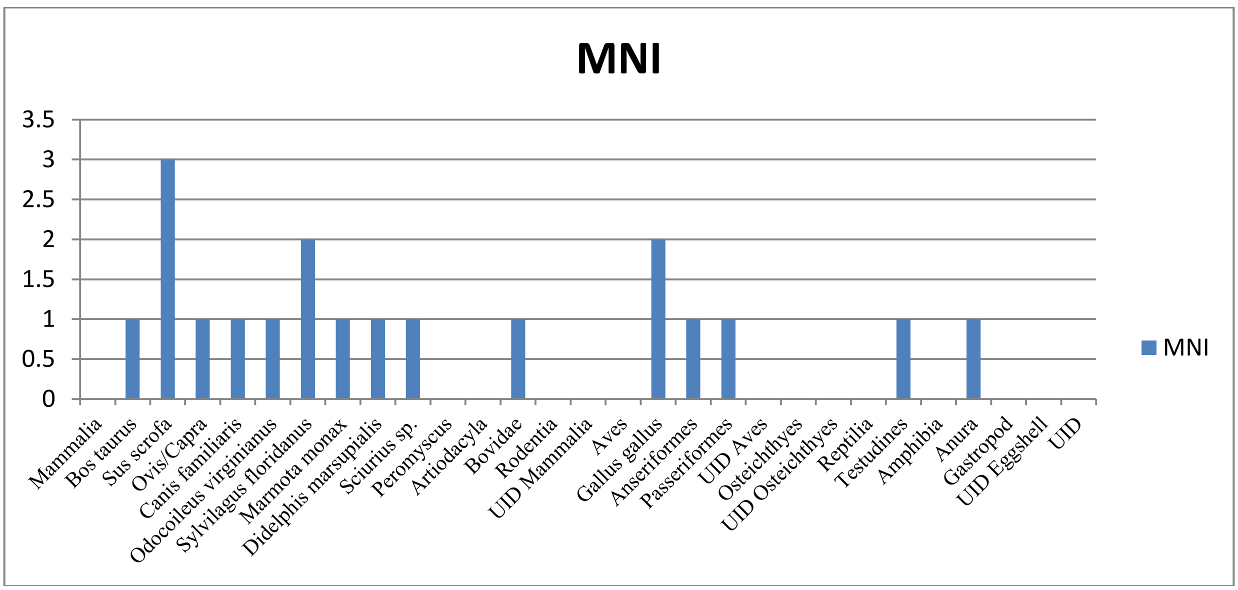


Figure 2: MNI for All Contexts.

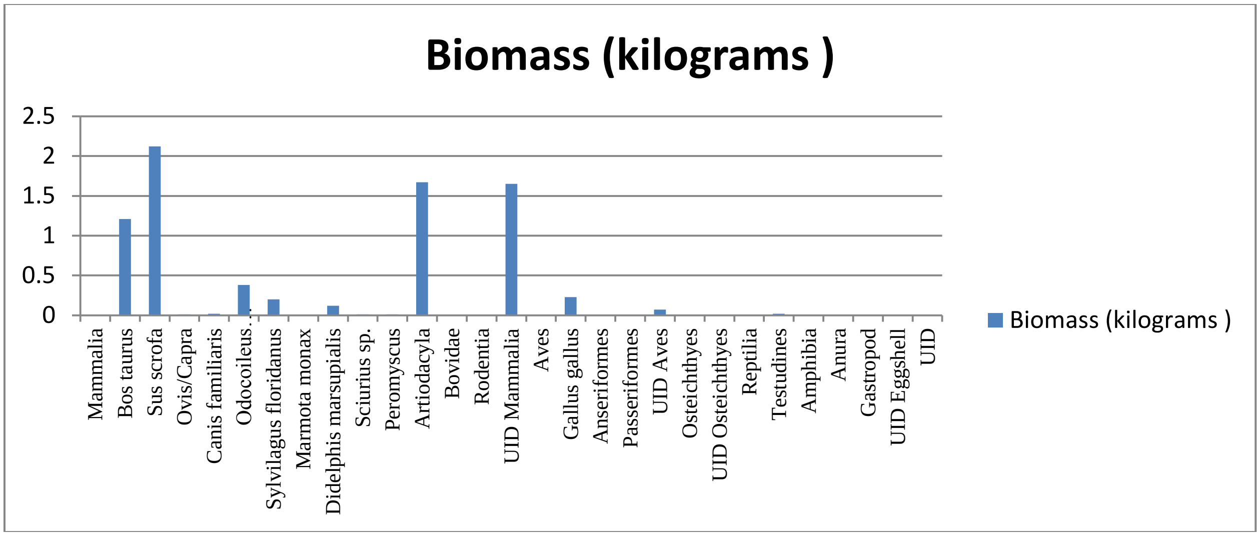


Figure 3: Biomass for All Contexts

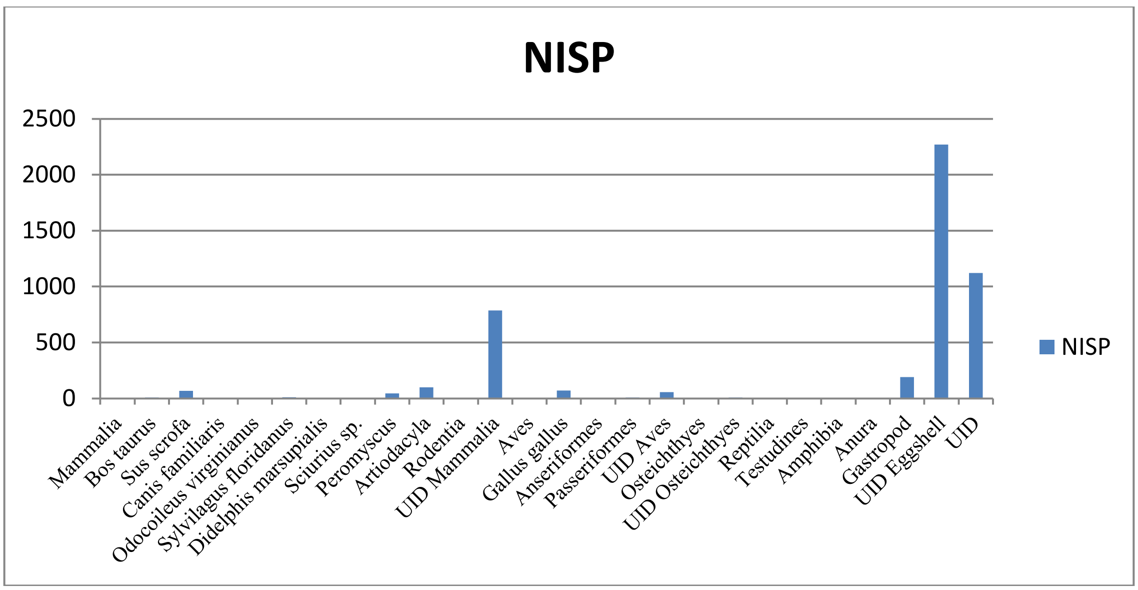


Figure 4: NISP for Subfloor Pits.

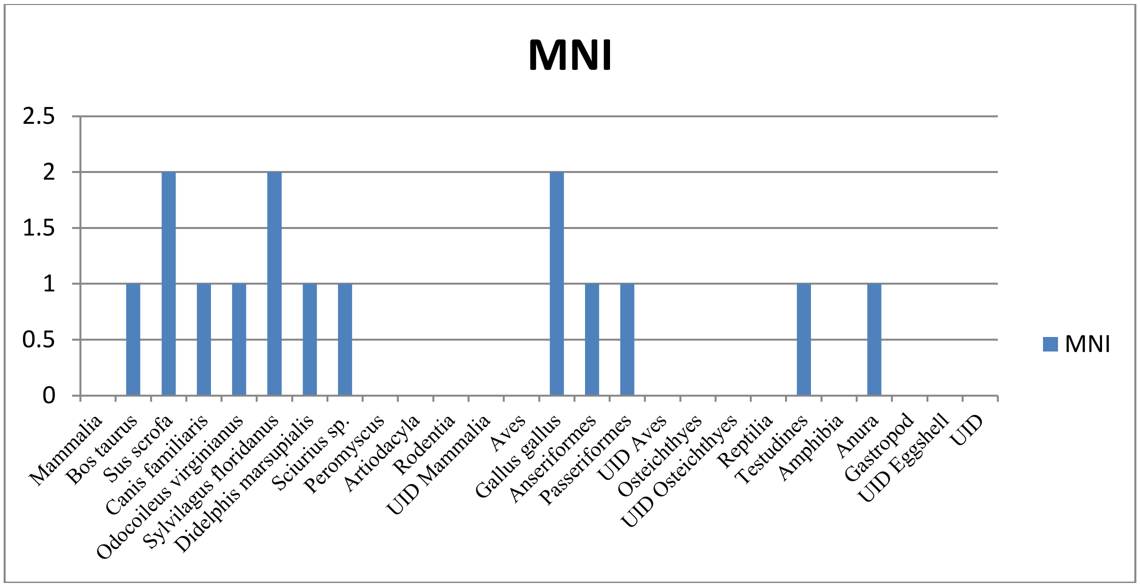


Figure 5: MNI for Subfloor Pits.

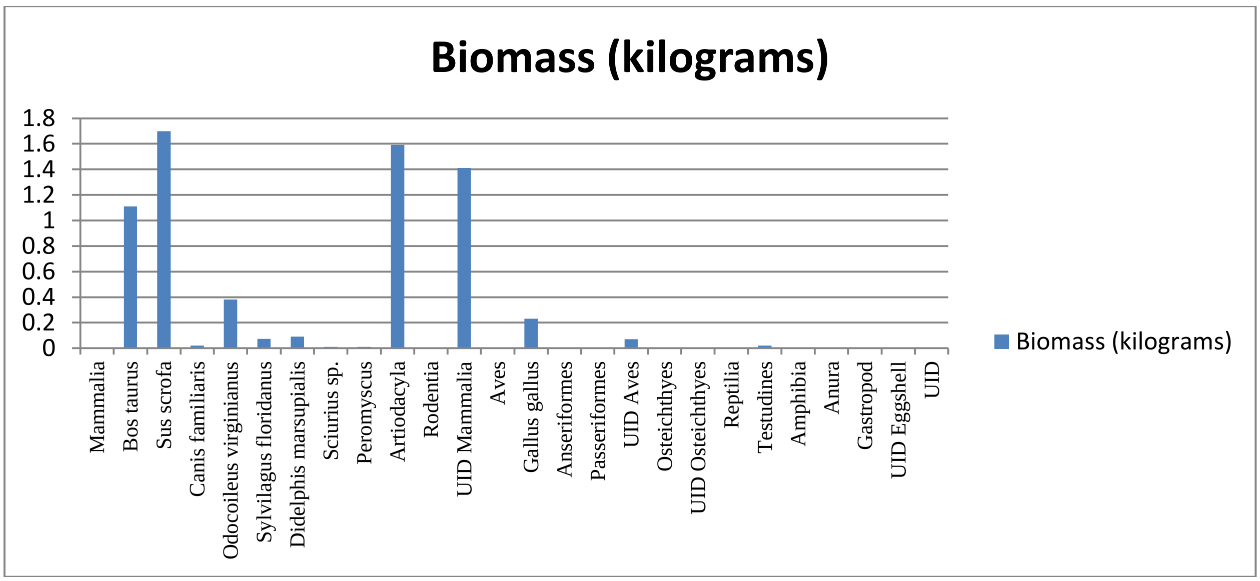
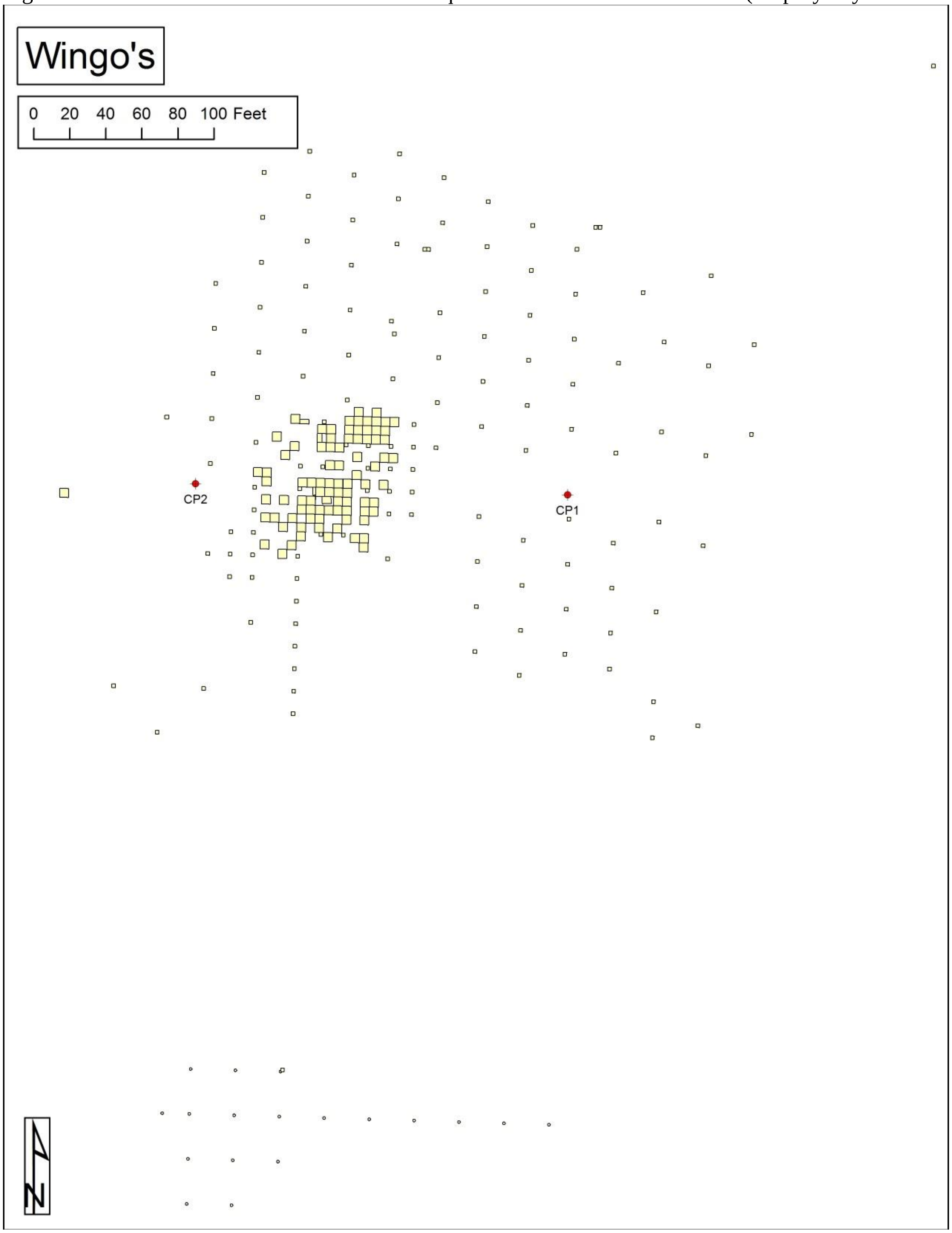


Figure 6: Biomass for Subfloor Pits.

Figure 7: Location of 5 ft. x 5 ft. and 2 ft. x 2 ft. quadrats excavated at 44BE0298 (Map by Crystal Ptacek).



Appendix 1: Faunal bone from Wingo's.

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
0138B	UID Mammal	1				0.22		1					
0138B	Sus Scrofa	2	Molar/Premolar			1.42	1						
0138B	Sus Scrofa	1	Incisor			0.14	1						
0139B	UID Mammal	2				0.5		1					
0139B	Sus scrofa	2	Molar/Premolar			0.51	1						
0140B	UID Mammal	1				0.5			1				
0140B	Sus Scrofa	1	Molar/Premolar			0.94	1						
0145B	Artiodactyla	1	Tooth			0.4	1						
0154B	UID Mammal	4				0.29	1						
0156B	UID Mammal	2				2.13			1				
0156B	Sus Scrofa	1	Molar/Premolar			0.74	1						
0156B	UID Mammal	3				1.42	1						
0159B	Artiodactyla	4	Tooth			0.34	1						
0159B	Sus Scrofa	1	Molar/Premolar			0.65	1						
0159B	Bovidae	1	Molar/Premolar			0.29	1						
0162B	UID Mammal	2				1.01			1				
0162B	Sus Scrofa	1	Molar/Premolar			0.22	1						
0162B	UID Mammal	1	Tooth			0.02	1						
0162B	UID Mammal	1				0.35	1						
0163B	Artiodactyla	1	Tooth			0.09	1						
0166B	UID Mammal	1				0.32		1					
0166B	UID Mammal	2	Tooth			0.06	1						
0167B	UID Mammal	1				0.05			1				
0167B	UID Mammal	2				0.7	1						
0169B	Sus Scrofa	2	Premolar			0.23	1						Two fragments mend
0169B	Sus Scrofa	1	Molar/Premolar			1.27	1						
0169B	Cf. Sus scrofa	1	Tooth	Root		0.28	1						
0169B	UID Mammal	3				0.83	1						
016B/1	Sus Scrofa	3	Molar/Premolar			2.26	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
0170B	UID Mammal	2				0.19	1						
0171B	Sus Scrofa	1	Molar/Premolar			0.43	1						
0171B	Artiodactyla	1	Tooth			0.21	1						
0171B	UID Mammal	2				0.53	1						
0183D	Gastropod	23				0.37	1						
0184B	UID Mammal	1				0.31			1				
0185B	UID Mammal	2				0.65	1						
02B	UID Mammal	3				0.18	1						
02B	UID Bird	1				0.09	1						
032B	Sus Scrofa	1	Molar/Premolar			0.42	1						
033B	UID Mammal	1				0.16			1				
034B	Sus scrofa	2	Canine	Upper		0.73	1						Two fragments
034B	UID Mammal	1				0.03	1						
03A	UID Mammal	9				0.59	1						
03A	Artiodactyla	1	Tooth			0.66	1						
045B	Sus scrofa	1	Molar/Premolar			0.55	1						
045B	Sus scrofa	1	Tooth			0.34	1						
046B	Sus scrofa	1	Molar/Premolar			0.35	1						
046B/1	Didelphis marsupialis	1	Scapula		Left	1.2	1						Root etching present
046B/1	UID Mammal	7				0.21	1						Root etching present
046B/1	Sus Scrofa	1	Humerus	Shaft	Right	5.65	1						Root Etching present, juvenile pig
046B/1	Sus Scrofa	1	Molar/Premolar			0.41	1						
046B/1	Sus Scrofa	1	Premolar	Lower		0.4	1						
047B	UID Mammal	1				0.09	1						
047B/1	Artiodactyla	1	Tooth			0.33	1						
054B	Sus Scrofa	2	Molar/Premolar			0.2	1						
054B	UID Mammal	2				0.04	1						
058A	UID Mammal	1				0.6			1				
064B	UID Mammal	3				0.29			1				
064B	Sus Scrofa	1	3rd Phalanx	Proximal		0.56	1						Juvenile
064B	UID Mammal	1				0.08	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
064B	Rock	1				1.02							
065B/1	UID Mammal	1				0.06			1				
065B/1	UID Mammal	1				0.29	1						
129B	UID Mammal	1				0.17			1				
129B	UID Mammal	2				0.09	1						
141B	UID Mammal	1				0.51			1				
141B	Sus Scrofa	1	Molar/Premolar			0.29	1						
141B	UID Mammal	1	Tooth			0.08	1						
141B	UID Mammal	3				0.22	1						
142B	Bos taurus	1	Molar/Premolar			3.33	1						Heavily worn
142B	Artiodactyla	3	Tooth			0.39	1						Probably Cow
142B	Sus Scrofa	1	Molar/Premolar			0.9	1						
143B	UID Mammal	1				0.3	1						
144B	Sus Scrofa	3	Molar/Premolar			5.58	1						
144B	Artiodactyla	2	Tooth			0.98	1						
144B	Sus Scrofa	1	Premolar			0.25	1						
144B	UID Mammal	4				0.11	1						
161B	UID Mammal	1				0.44		1					
161B	Sus Scrofa	3	Molar/Premolar			1.08	1						
161B	Artiodactyla	2				1.68	1						
161B	UID Mammal	6				1.17	1						
169A	Marmota monax	1	Fibular Tarsal		Right	0.42	1						
169A	Marmota monax	1	Tibial Tarsal		Right	0.27	1						
280B	UID Mammal	2				0.22	1						
280B	Sus Scrofa	1	Molar/Premolar			0.26	1						
280H HF #80	UID Bird	11	Eggshell			0.04	1						
281 F	Artiodactyla	1				3.99		1					Root Etching present
281 HF #86	UID	9				0.03			1				
281 HF #86	UID	1				<0.01		1					
281B	Artiodactyla	1				2.48		1					
281B	UID Mammal	1				0.11		1					

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281B	Sus Scrofa	1	Molar			0.89	1						Moderately worn
281B	Sus Scrofa	2	Premolar			0.8	1						Two mended fragments
281C E1/2	UID Mammal	2				1.93			1				
281C E1/2	Artiodactyla	4				6.33			1				
281C E1/2	UID Mammal	4				1.69			1				
281C E1/2	UID Mammal	3				0.26		1					
281C E1/2	Sus Scrofa	1	Molar/Premolar			1.38	1						
281C E1/2	Artiodactyla	1				1.59	1						
281C E1/2	UID Mammal	4				1.22	1						
281C HF #81	UID	4				<0.01	1						
281C HF #81	UID Bird	4	Eggshell			<0.01	1						
281C HF #82	UID	8				<0.01	1						
281C HF #83	UID	1				<0.01	1						
281C HF #84	UID	8				0.03	1						
281C WS #68	UID Bird	1	Eggshell			<0.01	1						
281C WS #69	UID	2				<0.01	1						
281C-K #8 or #17	UID Bird	4	Eggshell			<0.01	1						
281C-K #8 or #17 H2O 1/8"	UID Mammal	1				<0.01			1				
281C-K #8 or #17 H2O 1/8"	UID Mammal	32				0.64	1						
281C-K #8 or #17 H2O 1/8"	UID Bird	1				0.06	1						
281D #10 HF 1/8"	UID Mammal	4				0.02	1						
281D #10 HF 1/8"	UID Mammal	1				<0.01	1						
281D #11 HF 1/8"	UID Mammal	5				<0.01	1						
281D #12 HF 1/8"	UID Mammal	1				<0.01		1					

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281D #12 HF 1/8"	Sus Scrofa	1	Incisor			0.12	1						
281D #12 HF 1/8"	UID Mammal	1				<0.01	1						
281D #2 H2O 1/4"	UID Mammal	4				0.25			1				
281D #2 H2O 1/4"	UID Shell	1				0.01	1						
281D #2 H2O 1/8"	UID	1				0.03			1				
281D #2 H2O 1/8"	UID	3				0.1		1					
281D #2 H2O 1/8"	Artiodactyla	3	Tooth			0.4	1						
281D #3 H2O 1/4"	UID Mammal	5				2			1				
281D #3 H2O 1/4"	Sus Scrofa	1	Molar/Premolar			0.64	1						
281D #4 H2O 1/8"	Cf. Sus scrofa	1	Molar/Premolar			0.04			1				
281D #4 H2O 1/8"	UID	5				0.37			1				
281D #4 H2O 1/8"	UID	3				0.18		1					
281D #4 H2O 1/8"	UID	10				0.17	1						
281D #5 H2O 1/4"	UID Mammal	6				1.66		1					
281D #5 H2O 1/4"	UID Mammal	2	Tooth			0.04	1						
281D #5 H2O 1/4"	Sus Scrofa	2	Molar/Premolar			0.6	1						
281D #6 HF 1/8"	Cf. Sus scrofa	1	Molar/Premolar			0.12	1						
281D #7 H2O 1/8"	UID	14				0.44			1				
281D #7 H2O 1/8"	Gallus gallus	1	Phalanx			0.01		1					
281D #7 H2O 1/8"	UID	2				0.02		1					
281D #7 H2O 1/8"	Sus scrofa	1	Premolar			0.1		1					
281D #7 H2O 1/8"	Sus scrofa	2	Molar/Premolar			0.25	1						
281D #7 H2O 1/8"	UID Mammal	4				0.07	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281D #7 H2O 1/8"	UID	5				0.2	1						
281D #7 HF 1/8"	UID Mammal	1				0.02			1				
281D #8 H2O 1/16"	UID	2				<0.01			1				
281D #8 H2O 1/16"	Stone?	3				0.05	1						
281D #8 HF 1/8"	UID Mammal	5				0.14			1				
281D #8 HF 1/8"	UID Mammal	1				0.03		1					
281D #8 HF 1/8"	Sus Scrofa	1	Molar/Premolar			0.12	1						
281D #8 HF 1/8"	UID Mammal	2				<0.01	1						
281D #9 HF 1/4"	UID Mammal	1				0.09	1						
281D #9 HF 1/8"	UID Mammal	1				<0.01			1				
281D #9 HF 1/8"	UID Mammal	2				0.02	1						
281E	Bos taurus	2	Molar/Premolar			8.57	1						Two fragments mend
281E	UID Bird	1	Eggshell			0.07	1						
281E	Bos taurus	1	Molar/Premolar			0.92	1						
281E	UID Mammal	2				1.27	1						
281E	Gastropod	6				0.37	1						
281E #1 HF 1/8"	UID Mammal	3				0.01			1				
281E #1 HF 1/8"	UID Mammal	1				0.01		1					
281E #1 HF 1/8"	UID Shell	2				<0.01	1						
281E #10 H2O 1/4"	UID Mammal	2				0.09		1					
281E #17 H2O 1/8"	UID	3				<0.01			1				
281E #17 H2O 1/8"	UID	2				0.02			1				
281E #17 H2O 1/8"	UID	2				0.12			1				
281E #17 H2O 1/8"	UID Bird	1	Eggshell			<0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281E #17 H2O 1/8"	UID	1				0.03	1						
281E #17 H2O 1/8"	Gallus gallus	1	Vertebra			0.06	1						
281E #17 H2O 1/8"	UID Bird	3	Eggshell			0.01	1						
281E #3 HF 1/8"	UID Mammal	2				0.01			1				
281E #3 HF 1/8"	UID Bird	2	Eggshell			0.02	1						
281E #3 HF 1/8"	UID Mammal	1	Tooth			<0.01	1						
281E #4 HF 1/8"	UID Mammal	3				<0.01			1				
281E #51 H2O 1/16"	UID	1				<0.01		1					
281E #51 H2O 1/16"	UID	6				0.19	1						
281E #51 H2O 1/4"	UID Mammal	2				0.38			1				
281E #51 H2O 1/4"	UID Mammal	1				0.74		1					
281E #51 H2O 1/4"	UID Mammal	1				0.48	1						
281E #9 H20 1/8"	UID	1				0.02			1				
281E #9 H20 1/8"	UID	3				0.07		1					
281E #9 H20 1/8"	Gastropod	1				<0.01	1						
281E #9 H20 1/8"	UID	5				0.1	1						
281E #9 H20 1/8"	UID Mammal	1	Tooth			0.02	1						
281E E1/2	UID Mammal	1				0.17		1					
281F #59 H2O 1/8"	UID	2				0.02			1				
281F #59 H2O 1/8"	UID	2				<0.01		1					
281F #60 H2O 1/4"	UID Mammal	1				0.06		1					
281F #60 H2O 1/8"	UID	5				0.08			1				
281F #60 H2O 1/8"	UID	1				<0.01		1					

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281F #60 H2O 1/8"	UID Bird	2	Eggshell			<0.01	1						
281F #60 H2O 1/8"	UID	5				0.11	1						
281F #61 H2O 1/4"	UID Mammal	1				0.43			1				
281F #61 H2O 1/4"	Sus scrofa	1	Petrous Process			1.26	1						
281F #61 H2O 1/4"	UID Mammal	2				0.17	1						
281F #61 H2O 1/8"	UID Bird	1	Eggshell			<0.01			1				
281F #61 H2O 1/8"	UID	9				0.26			1				
281F #61 H2O 1/8"	UID	2				0.02	1						
281F #62 H2O 1/4"	Sus scrofa	1	Tibial Tarsal		Right	8.62		1					
281F #62 H2O 1/8"	UID	2				0.05			1				
281F #62 H2O 1/8"	UID	1				<0.01		1					
281F #62 H2O 1/8"	UID Bird	2	Eggshell			0.02	1						
281F #62 H2O 1/8"	Gastropod	3				<0.01	1						
281F #62 H2O 1/8"	UID	4				0.09	1						
281F #63 H2O 1/4"	Artiodactyla	1	Molar/Premolar			0.8	1						Very worn, unidentifiable
281F #63 H2O 1/4"	Sus scrofa	1	Premolar			1.49	1						
281F #63 H2O 1/4"	UID Mammal	2				0.11	1						
281F #63 H2O 1/8"	UID	2				0.02			1				
281F #63 H2O 1/8"	UID Mammal	1	Tooth			<0.01	1						Appears to be a very smal deciduous tooth
281F #63 H2O 1/8"	UID	4				<0.01	1						
281F #94 H2O LF	UID Mammal	1				<0.01			1				
281F #94 H2O LF	UID Mammal	1				<0.01		1					
281F #94 H2O LF	UID Mammal	1				0.23	1						Round bone, may be part of a tooth

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281F #94 H2O LF	UID Mammal	8				0.35	1						
281F #94 H2O LF	UID Mammal	2	Tooth			0.06	1						
281F H2O #94	UID Fish	1	Scale			<0.01	1						
281F HF #86	UID Bird	18	Eggshell			0.02	1						
281F HF #86	UID	3				<0.01	1						
281F HF #86	Gastropod	3				<0.01	1						
281F HF #86	UID Mammal	1				0.11	1						
281F HF #87	UID Bird	4	Eggshell			<0.01	1						
281F HF #87	Gastropod	4				<0.01	1						
281F HF #88	UID Bird	1	Eggshell			<0.01	1						
281F HF #88	Gastropod	5				<0.01	1						
281F HF #88	UID	2				<0.01	1						
281F LF #85	UID	1				<0.01			1				
281F LF #85	Gastropod	8				<0.01	1						
281F LF #86	Gastropod	2				<0.01	1						
281F LF #87	UID Fish	1	Scale			<0.01	1						
281F LF #88	Gastropod	3				<0.01	1						
281F LF #88	UID Fish	1	Scale			<0.01	1						
281F WS #92	UID Bird	2	Eggshell			<0.01	1						
281F WS #92	Gastropod	1				<0.01	1						
281F WS #92	UID	2				<0.01	1						
281F WS #93	UID	1				<0.01			1				
281F WS #93	UID Bird	1	Eggshell			<0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281F WS #93	UID	7				0.08	1						
281F WS #94	Stone?	1				0.2	1						
281F WS #94	Sus scrofa	1	premolar			1.43	1						Broken into three fragments
281F WS #95	UID	1				0.05			1				
281F WS #95	UID Bird	1	Eggshell			<0.01	1						
281F WS #95	Gastropod	1				<0.01	1						
281G	UID Bird	4				0.52			1				
281G	Artiodactyla	1				11.62		1					
281G	UID Bird	3				0.23		1					
281G	UID Mammal	2				0.96		1					
281G	Artiodactyla	52				22.25	1						Appears that these may be part of the same element, but have fragmented severely
281G #27 HF 1/4"	UID Mammal	2				0.15	1						
281G #27 HF 1/8"	UID Mammal	9				0.2			1				
281G #27 HF 1/8"	UID Mammal	1				<0.01	1						
281G #28 HF 1/4"	UID Mammal	11				4.06			1				
281G #28 HF 1/4"	UID Mammal	1				<0.01			1				
281G #28 HF 1/4"	UID Bird	1				0.01		1					
281G #28 HF 1/4"	UID Mammal	1				0.01	1						
281G #28 HF 1/4"	UID Mammal	10				0.42	1						
281G #28 HF 1/8"	UID Mammal	5				0.04			1				
281G #28 HF 1/8"	UID Mammal	30				0.3	1						
281G #30 HF 1/4"	UID Mammal	1				0.07	1						
281G #54 H2O 1/4"	UID Mammal	3				0.31			1				

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281G #54 H2O 1/4"	Gallus gallus	1	Vertebra			0.47	1						
281G #54 H2O 1/8"	UID	1				0.03			1				
281G #54 H2O 1/8"	UID	2				0.03			1				
281G #54 H2O 1/8"	UID	7				0.23			1				
281G #54 H2O 1/8"	UID	1				0.04		1					
281G #54 H2O 1/8"	UID	1				0.05		1					
281G #54 H2O 1/8"	Cf. Sus scrofa	1	Tooth			0.02	1						Deciduous tooth
281G #54 H2O 1/8"	UID Bird	1	Eggshell			<0.01	1						
281G #54 H2O 1/8"	UID Bird	6	Eggshell			0.06	1						
281G #54 H2O 1/8"	UID	11				0.12	1						
281G #54 H2O 1/8"	UID	4				0.03	1						
281G #55 H2O 1/4"	UID Mammal	1				0.07			1				
281G #55 H2O 1/4"	UID Mammal	3				0.57			1				
281G #55 H2O 1/4"	Didelphis marsupialis	1	Ilium		Left	0.6	1						Portion of acetabulum present
281G #55 H2O 1/4"	UID Mammal	1				0.19	1						
281G #55 H2O 1/4"	UID Mammal	2				0.12	1						
281G #55 H2O 1/8"	UID	8				0.25			1				
281G #55 H2O 1/8"	UID	7				0.12			1				
281G #55 H2O 1/8"	UID	1				<0.01		1					
281G #55 H2O 1/8"	UID	1				0.09		1					
281G #55 H2O 1/8"	UID Bird	2	Eggshell			<0.01	1						
281G #55 H2O 1/8"	UID Bird	2	Eggshell			0.01	1						
281G #55 H2O 1/8"	Sylvilagus floridanus	1	Metacarpal /Metatarsal	Distal and Shaft		0.02	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281G #55 H2O 1/8"	UID	2				0.02	1						
281G #55 H2O 1/8"	Gallus gallus	1	Phalanx			0.06	1						
281G #55 H2O 1/8"	UID	1				<0.01	1						
281G #55 H2O 1/8"	Gastropod	6				<0.01	1						
281G #56 H2O 1/4"	UID Mammal	6				3.14			1				
281G #56 H2O 1/4"	UID Mammal	1	S Skull			<0.01	1						small mammal skull fragment
281G #56 H2O 1/8"	UID	17				0.44			1				
281G #56 H2O 1/8"	UID Bird	7	Eggshell			0.1	1						
281G #56 H2O 1/8"	Gallus gallus	1	Quadrate		Left	0.03	1						
281G #56 H2O 1/8"	Peromyscus	1	Maxilla		Left	<0.01	1						
281G #56 H2O 1/8"	Gallus gallus	1	Phalanx			0.02	1						
281G #56 H2O 1/8"	UID Bird	1				<0.01	1						
281G #56 H2O 1/8"	UID	7				0.19	1						
281G #57 H2O 1/4"	UID	2				0.34			1				
281G #57 H2O 1/8"	UID Bird	2	Eggshell			<0.01			1				
281G #57 H2O 1/8"	UID	4				<0.01			1				
281G #57 H2O 1/8"	UID Mammal	1	Incisor			<0.01		1					Very small mammal
281G #57 H2O 1/8"	UID	1				0.03		1					
281G #57 H2O 1/8"	UID	1				<0.01	1						
281G #58 H2O 1/8"	UID	4				0.16			1				
281G W1/2 #28 HF 1/4"	UID Bird	1	Eggshell			<0.01	1						
281G W1/2 #29 HF 1/4"	UID Mammal	3				0.39	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281G W1/2 #29 HF 1/8"	UID Mammal	23				0.2	1						
281G W1/2 #29 HF 1/8"	UID Mammal	11				0.43	1						
281G W1/2 #30 HF 1/8"	UID Mammal	12				0.28	1						
281H	UID Bird	2				0.29		1					
281H	Didelphis marsupialis	1	Scapula		Right	1.55	1				1		
281H #53 1/4" H2O	UID Mammal	1				0.09			1				
281H #53 H2O 1/16"	UID Bird	1	Eggshell			<0.01			1				
281H #53 H2O 1/16"	UID	7				0.18			1				
281H #53 H2O 1/16"	UID	1				<0.01		1					
281H #53 H2O 1/16"	UID Bird	1	Eggshell			<0.01	1						
281H #53 H2O 1/16"	UID	3				0.09	1						
281H #53 H2O 1/16"	Artiodactyla	1	Tooth			<0.01	1						
281H #53 H2O 1/4"	UID Mammal	5				0.7			1				
281H #53 H2O 1/4"	UID Mammal	1				0.25		1					
281H #53 H2O 1/4"	UID Mammal	3				0.22	1						
281H #53 H2O 1/8"	UID Mammal	13				0.3			1				
281H #53 H2O 1/8"	UID	6				0.18			1				
281H #53 H2O 1/8"	UID	3				0.13		1					
281H #53 H2O 1/8"	UID Mammal	6				0.12	1						
281H #53 H2O 1/8"	UID	6				0.16	1						
281H #53 H2O 1/8"	Stone?	1				0.02							
281H #89	UID Bird	14	Eggshell			0.02	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281H E1/2	UID Mammal	1				0.1			1				
281H E1/2	UID Mammal	1				0.09	1						
281H H2O #86	UID	1				0.12			1				
281H H2O #86	UID Mammal	1				0.92		1					Root Etching Present
281H H2O #86	UID Mammal	1				0.05	1						
281H HF #89	UID	4				0.01			1				
281H HF #89	UID	1				0.02			1				
281H HF #89	Gastropod	2	Shell			0.01	1						
281H HF #89	Gastropod	11	Shell			0.03	1						
281H HF #90	UID	1				<0.01		1					
281H HF #90	UID	1				0.03		1					
281H HF #90	UID	1				<0.01	1						
281H HF #90	Gastropod	11				<0.01	1						
281H HF #90	UID Bird	18	Eggshell			0.05	1						
281H HF #90	Sus scrofa	1	Phalanx			1.71	1						
281H HF #90	UID	13				0.02	1						
281H HF #90	Gastropod	15	Shell			0.02	1						
281H HF #91	UID Bird	6	Eggshell			<0.01			1				
281H HF #91	UID	12				0.25			1				
281H HF #91	UID	5				0.03			1				
281H HF #91	Peromyscus	1	Molar			0.01	1						
281H HF #91	UID	1				0.01	1						
281H HF #91	Gastropod	3	Shell			0.01	1						
281H HF #92	UID	2				0.01			1				

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281H HF #92	UID Bird	2	Eggshell			<0.01	1						
281H HF #92	UID Mammal	6				1.39	1						
281H HF #92	UID	5				0.07	1						
281H HF #92	Gastropod	3	Shell			0.03	1						
281H LF #91	UID	1				<0.01	1						
281H LF #91	Gastropod	2				<0.01	1						
281H LF #92	Gastropod	5				<0.01	1						
281H LF#92	UID Bird	1	Eggshell			0.01	1						
281H WS #85	UID Bird	1	Eggshell			<0.01		1					
281H WS #85	UID Mammal	1				0.16		1					
281H WS #85	UID	2				0.04	1						
281H WS #85	UID	7				0.06	1						
281H WS #86	UID	3				0.01			1				
281H WS #86	UID Bird	2	Eggshell			<0.01	1						
281H WS #86	Gastropod	2	Shell			0.02	1						
281H WS #87	UID Mammal	1				0.49		1					
281H WS #87	Gallus gallus	1	Vertebra			0.21	1						
281H WS #88	Peromyscus	3				0.03			1				
281H WS #88	UID Bird	1	Eggshell			<0.01	1						
281H WS #88	UID	3				0.05	1						
281H WS #88	UID	1				0.22	1						
281H WS #88	UID	1				0.13	1						
281H WS#87	Peromyscus	2				0.01			1				

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281H WS#87	UID	3				0.02			1				
281H WS#87	UID	1				0.04		1					
281H WS#87	UID	4				0.09	1						
281J	UID Mammal	3				0.75			1				
281J	UID Mammal	1				1.39		1					
281J	Gallus gallus	1	Rib	Shaft		0.04		1					
281J	Sus Scrofa	1	Rib	Shaft		2.04	1			1			Four cut marks near one of the broken ends
281J	Sus Scrofa	1	Maxilla		Left	1.72	1						Juvenile
281J	Cf. Sus scrofa	1	Vertebra			0.76	1						Juvenile
281J	Gallus gallus	1	Tarso-metatarsus	Distal and Shaft	Left	0.41	1						No spur, probably female
281J	Bos taurus	2	Cervical Vertebra			43.11	1						One large vertebra, second fragment is from vertebral pad
281J	Sus Scrofa	1	Scapula		Right	8.14	1				1		Probably a juvenile
281J	Artiodactyla	1				0.68	1						Probably pig
281J	Sus Scrofa	1	1st Phalanx	Complete		1.06	1						Recently fused
281J	UID Mammal	1				0.64	1						Root Etching present
281J	Artiodactyla	1	Humerus	Shaft	Right	2.26	1			1			Two cut marks near foramen
281J	Gallus gallus	2	Tarso-metatarsus	Complete	Right	0.88	1						Two fragments that mend midshaft, no spur, probably female
281J	Sus Scrofa	2	Rib	Proximal and Shaft		3.93	1						Two mended fragments
281J	Artiodactyla	1				2	1					1	
281J	Didelphis marsupialis	1	Humerus	Proximal and Shaft	Left	1.85	1				1		
281J	Gallus gallus	1	Humerus	Distal and Shaft	Left	0.65	1						
281J	Gallus gallus	1	Humerus	Distal	Right	0.1	1						
281J	Gallus gallus	1	Coracoid	Distal and Shaft	Left	0.27	1						
281J	Gallus gallus	1	Scapula	Complete	Right	0.36	1						
281J	Gallus gallus	1	Radius	Proximal and Shaft	Right	0.1	1						
281J	Gallus gallus	1	Phalanx	Complete		<0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J	Cf. Gallus gallus	1	Coracoid	Proximal and Shaft		0.24	1						
281J	Sus Scrofa	1	Ulna	Semilunar Notch	Right	5.31	1						
281J	Sus Scrofa	1	Humerus	Shaft	Left	11.19	1						
281J	Sus Scrofa	1	Molar/Premolar			1.42	1						
281J	Sus Scrofa	1	Maxilla		Left	0.91	1						
281J	Sus Scrofa	1	1st Phalanx	Distal and Shaft		2.15	1						
281J	Gallus gallus	1	Humerus	Proximal	Right	0.26	1						
281J	Gallus gallus	1	Coracoid	Shaft	Right	0.29	1						
281J	Sylvilagus floridanus	1	Femur	Proximal and Shaft	Right	1.7	1						
281J	Sylvilagus floridanus	1	Metatarsal	Complete		0.16	1						
281J	Sylvilagus floridanus	1	Metatarsal	Distal and Shaft		0.18	1						
281J	Sylvilagus floridanus	1	Scapula		Right	0.17	1						
281J	Gallus gallus	3	Sacrum			0.48	1						
281J	Gallus gallus	1	Humerus	Proximal	Right	0.23	1						
281J	Gallus gallus	1	Femur	Shaft		0.28	1						
281J	Gallus gallus	1	1st Phalanx			0.08	1						
281J	Gallus gallus	1	Pelvis	Acetabulu m		0.22	1						
281J	Sus Scrofa	1	Rib	Shaft		1.57	1						
281J	Artiodactyla	1	Femur	Shaft		0.89	1						
281J	Sus Scrofa	1	Petrous Process			1.14	1						
281J	Gallus gallus	1	Rib	Shaft		0.08	1						
281J	Sus Scrofa	2	Rib	Shaft		0.75	1						
281J	Sus Scrofa	1	Metacarpal	Shaft		0.08	1						
281J	Sus Scrofa	1	Metacarpal	Proximal		0.69	1						
281J	UID Mammal	3	Vertebra			0.89	1						
281J	UID Bird	1				0.03	1						
281J	UID Mammal	1	Long Bone	Shaft		0.46	1						
281J	UID Mammal	37				7.6	1						
281J	Charcoal	1				<0.01							

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J	UID Bird	4	Eggshell			0.09	1						
281J #26 HF 1/8"	UID Mammal	11				0.11			1				
281J #44 H2O 1/4"	Bos taurus	1	Molar/Premolar			1.56	1						Extremely worn
281J #44 H2O 1/4"	Artiodactyla	1	Rib	Shaft		0.32	1						
281J #44 H2O 1/4"	UID Mammal	1				0.1	1						
281J #44 H2O 1/8"	UID	1				0.03	1						
281J #44 H2O 1/8"	UID	17				0.34	1						
281J #45 H2O 1/8"	UID Bird	7	Eggshell			0.1	1						
281J #45 H2O 1/4"	Artiodactyla	1	Carpal			0.49	1						Possibly small pig, deer, or sheep/goat
281J #45 H2O 1/4"	UID Mammal	1				0.51	1			1			Probably cut during excavation
281J #45 H2O 1/4"	Gallus gallus	2	Vertebra			0.64	1						
281J #45 H2O 1/4"	Sus scrofa	1	Phalanx	Proximal		0.56	1						
281J #45 H2O 1/4"	UID Mammal	1	Vertebra	Vertebral pad		0.04	1						
281J #45 H2O 1/4"	UID Mammal	6				0.68	1						
281J #45 H2O 1/4"	Testudine	1				0.25	1						
281J #45 H2O 1/8"	UID	3				0.05			1				
281J #45 H2O 1/8"	UID	2				0.08		1					
281J #45 H2O 1/8"	Peromyscus	1				0.02	1						Long bone
281J #45 H2O 1/8"	UID	4				0.24	1						Root etching present
281J #45 H2O 1/8"	Gallus gallus	1	Tarso-metatarsus		Right	0.32	1						Two fragment, likely from the same element and individual, missing portion of mid shaft
281J #45 H2O 1/8"	UID Bird	1	Tarso-metatarsus			<0.01	1						Very small bird, possibly passerine
281J #45 H2O 1/8"	UID Bird	2	Phalanx			0.03	1						Very small bird, possibly passerine

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J #45 H2O 1/8"	Gallus gallus	2	1st Phalanx			0.05	1						
281J #45 H2O 1/8"	Gallus gallus	3	Phalanx			0.1	1						
281J #45 H2O 1/8"	Peromyscus	7	Vertebra			0.03	1						
281J #45 H2O 1/8"	Peromyscus	1	Humerus			<0.01	1						
281J #45 H2O 1/8"	Peromyscus	1	Molar/Premolar			<0.01	1						
281J #45 H2O 1/8"	UID	35				0.53	1						
281J #45 H2O 1/8"	UID Mammal	1	Tooth			0.04	1						
281J #46 H2O 1/4"	UID Mammal	1				0.1			1				Not fused
281J #46 H2O 1/4"	UID Mammal	1				1.05			1	1			
281J #46 H2O 1/4"	UID Mammal	1				0.78			1				
281J #46 H2O 1/4"	Artiodactyla	1				0.73	1						
281J #46 H2O 1/4"	Gallus gallus	1	Vertebra			0.13	1						
281J #46 H2O 1/4"	UID Bird	2				0.13	1						
281J #46 H2O 1/8"	UID	4				0.28			1				
281J #46 H2O 1/8"	UID Bird	2	Eggshell			<0.01			1				
281J #46 H2O 1/8"	UID	23				0.66	1						
281J #46 H2O 1/8"	Peromyscus	2	Vertebra			<0.01	1						
281J #46 H2O 1/8"	Rodentia	1	Incisor			<0.01	1						
281J #46 H2O 1/8"	UID Mammal	2				0.08	1						
281J #46 H2O 1/8"	UID	1	Long bone			<0.01	1						
281J #46 H2O 1/8"	UID Bird	35	Eggshell			0.37	1						
281J #47 H2O 1/4"	Gallus gallus	1	Humerus	Proximal	Left	0.43	1						
281J #47 H2O 1/4"	UID Bird	4				0.22	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J #47 H2O 1/4"	Anurae	1	Vertebra			0.05	1						
281J #47 H2O 1/4"	UID Mammal	1				0.09	1						
281J #47 H2O 1/8"	UID Mammal	3				0.07			1				
281J #47 H2O 1/8"	UID	3				0.07			1				
281J #47 H2O 1/8"	UID Bird	1	Eggshell			0.01			1				
281J #47 H2O 1/8"	UID Mammal	40				0.6	1						
281J #47 H2O 1/8"	Cf. Sylvilagus floridanus	1	Rib	Shaft		0.06	1						
281J #47 H2O 1/8"	UID	11				0.2	1						
281J #47 H2O 1/8"	Passerine	1	Humerus	Proximal		0.02	1						
281J #47 H2O 1/8"	UID Bird	1				0.01	1						
281J #47 H2O 1/8"	UID Bird	1	Eggshell			<0.01	1						
281J #47 H2O 1/8"	UID Bird	7	Eggshell			0.04	1						
281J #48 H2O 1/4"	UID Mammal	1	Rib			0.06			1				very small mammal
281J #48 H2O 1/4"	UID	2				0.11			1				
281J #48 H2O 1/4"	Cf. Sus scrofa	1	Petrous Process			1.6	1						
281J #48 H2O 1/4"	UID Mammal	4				1.14	1						
281J #48 H2O 1/4"	UID Bird	1	Vertebra			0.02	1						
281J #48 H2O 1/4"	UID	3				0.02	1						
281J #48 H2O 1/8"	UID	9				0.13			1				
281J #48 H2O 1/8"	UID Mammal	1	Rib			0.03	1						Very small mammal
281J #48 H2O 1/8"	UID	11				0.16	1						
281J #48 H2O 1/8"	Peromyscus	1	Humerus	Distal and Shaft		<0.01	1						
281J #52 H2O 1/8"	UID Bird	1				0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J #52 H2O 1/8"	UID	3				0.02	1						
281J #57 HF 1/8"	UID Bird	1	Eggshell			<0.01	1						
281J #57 HF 1/8"	Gastropod	1				<0.01	1						
281J #57 HF 1/8"	UID Mammal	1				0.02	1						
281J #60 HF 1/8"	UID Mammal	1				<0.01			1				
281J #60 HF 1/8"	UID Mammal	1				0.01	1						
281J #60 HF 1/8"	UID Bird	1				0.01	1						
281J #60 HF 1/8"	Gastropod	1				<0.01	1						
281J #64 H2O 1/4"	UID Mammal	1				0.44		1					
281J #64 H2O 1/4"	Stone?	1				0.18							
281J #64 H2O 1/8"	UID Bird	2	Eggshell			0.01			1				
281J #64 H2O 1/8"	UID	4				0.11			1				
281J #64 H2O 1/8"	UID	3				0.07		1					
281J #64 H2O 1/8"	Peromyscus	6				0.09	1						Assorted long bone fragments, probably two individuals
281J #64 H2O 1/8"	Artiodactyla	2	Tooth			0.23	1						Probably pig teeth
281J #64 H2O 1/8"	UID Bird	3	Phalanx			0.02	1						Small bird, probably a passerine
281J #64 H2O 1/8"	UID Bird	1	Rib			<0.01	1						Small bird, probably a passerine
281J #64 H2O 1/8"	UID Bird	45	Eggshell			0.4	1						
281J #64 H2O 1/8"	Peromyscus	1	Maxilla		Right	<0.01	1						
281J #64 H2O 1/8"	Gallus gallus	1	Phalanx			0.05	1						
281J #64 H2O 1/8"	UID	51				0.76	1						
281J #65 1/4" H2O	Gallus gallus	1	Coracoid		Right	0.64	1						
281J #65 1/4" H2O	Gallus gallus	1	Ulna	Distal and Shaft	Left	0.44	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J #65 1/4" H2O	Gallus gallus	1	Ulna	Proximal	Left	0.15	1						
281J #65 1/4" H2O	Gallus gallus	1	Beak			0.07	1						
281J #65 1/4" H2O	Cf. Gallus gallus	1				0.09	1						
281J #65 1/4" H2O	UID Mammal	3				0.77	1						
281J #65 1/8" H2O	UID Bird	1	Eggshell			0.03	1						
281J #65 H2O 1/8"	UID	1				<0.01			1				
281J #65 H2O 1/8"	UID	1				<0.01		1					
281J #65 H2O 1/8"	UID	9				0.24	1						
281J #65 H2O 1/8"	Stone?	2				0.12							
281J #66 H2O 1/4"	UID	1				0.04			1				
281J #66 H2O 1/4"	Gallus gallus	1	Tarso-metatarsus	Shaft		0.55	1						
281J #66 H2O 1/8"	UID	3				0.06			1				
281J #66 H2O 1/8"	UID	1				<0.01		1					
281J #66 H2O 1/8"	UID Mammal	1	Petrous Process			<0.01	1						Very small mammal
281J #66 H2O 1/8"	Gastropod	1				<0.01	1						
281J #66 H2O 1/8"	UID Bird	1	Eggshell			0.01	1						
281J #66 H2O 1/8"	Gallus gallus	1	Phalanx			0.09	1						
281J #66 H2O 1/8"	UID	10				0.29	1						
281J E1/2	UID Mammal	1	Maxilla			0.19			1				Small mammal maxilla
281J E1/2	UID Mammal	2				0.73			1				
281J E1/2	UID Mammal	2				1.76		1					
281J E1/2	Sus Scrofa	1	1st Phalanx	Complete		0.66	1						Juvenile
281J E1/2	Sus Scrofa	1	Caudal Vertebra			0.86	1			1			One cut mark present, possibly from removal of tail
281J E1/2	Gallus gallus	2	Femur	Complete	Right	1.23	1						Two fragments mend, broken along midshaft

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J E1/2	UID Bird	8	Eggshell			0.2	1						
281J E1/2	Gallus gallus	1	Tibiotarsus	Proximal and Shaft	Right	0.52	1						
281J E1/2	Gallus gallus	1	Tarso-metatarsus	Shaft	Left	0.46	1						
281J E1/2	Sus Scrofa	1	1st Phalanx	Distal		0.44	1						
281J E1/2	Cf. Sus scrofa	1	Femur	Shaft		5.31	1						
281J E1/2	Cf. Gallus gallus	1	Rib			0.11	1						
281J E1/2	UID Bird	10				1	1						
281J E1/2	UID Mammal	15				2.24	1						
281J H2O #79	UID Bird	1	Eggshell			<0.01			1				
281J H2O #79	UID Bird	1	Eggshell			<0.01	1						
281J WS #70	UID	6				0.06	1						
281J WS #72	UID	12				0.04	1						
281J WS #72	UID	13				0.18	1						
281J WS #72	Gastropod	1	shell			0.01	1						
281J WS #73	UID	1				0.01	1						
281J WS #74	UID Mammal	1				0.1	1						
281J WS #75	UID	8				0.1	1						
281J WS #75	Peromyscus	1	Mandible		left	0.01	1						
281J WS #75	UID Fish	2				0.01	1						
281J WS #75	UID Bird	6	Eggshell			0.04	1						
281J WS #75	UID	1				0.01	1						
281J WS #75	Gastropod	1	shell			0.01	1						
281J WS #76	UID	4				0.27		1					
281J WS #76	UID Bird	4	Eggshell			0.06	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J WS #76	UID	8				0.09	1						
281J WS #76	Sciurius sp.	1	Mandible		left	0.14	1						
281J WS #76	Gastropod	1	Shell			0.01	1						
281J WS #77	UID Bird	1	Eggshell			0.01		1					
281J WS #77	UID Bird	10	Eggshell			0.07	1						
281J WS #77	UID	1				0.14	1						Root Etching Present
281J WS #77	UID	2				0.16	1						
281J WS #77	UID	27				0.19	1						
281J WS #77	UID Mammal	2				0.47	1						
281J WS #78	UID	9				0.22	1						
281J WS #78	UID Bird	2	Eggshell			0.04	1						
281J WS #78	Cf. Gallus gallus	1	Phalanx			0.02	1						
281J WS #78	UID	1				0.01	1						
281J WS #78	Gallus gallus	1	Carpo-metacarpus		left	0.24	1						
281J WS #78	Sus scrofa	1	Phalanx			1.32	1						
281J WS #78	Gastropod	1	Shell			0.01	1						
281J WS #79	UID	6				0.12	1						
281J WS #79	UID Fish	1	Scale			0.01	1						
281J WS #79	UID Mammal	1	Metacarpal			0.05	1						Small mammal
281J WS #80	UID	1				0.01		1					
281J WS #80	UID Bird	17	Eggshell			0.19	1						
281J WS #80	UID	21				0.28	1						
281J WS #80	Peromyscus	1	Incisor			0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J WS #80	Gastropod	1	Shell			0.01	1						
281J WS #80	Gallus gallus	1	Carpo-metacarpus	shaft	right	0.19	1						
281J WS #80	Cf. Gallus gallus	1	Scapula	proximal		0.11	1						
281J WS #80	UID	2				0.11	1						
281J WS #81	UID Bird	14	Eggshell			0.14	1						
281J WS #81	UID	23				0.47	1						
281J WS #81	Peromyscus	2				0.09	1						UID long bones
281J WS #81	UID Mammal	4				0.4	1						
281J WS #82	UID	1				0.02			1				
281J WS #82	UID	7				0.04		1					
281J WS #82	UID Bird	7	Eggshell			0.11	1						
281J WS #82	UID	22				0.4	1						
281J WS #82	Gallus gallus	2	Phalanx			0.08	1						
281J WS #82	UID Bird	2				0.22	1						
281J WS #82	Artiodactyla	2				1.9	1						
281J WS #83	UID Bird	20	Eggshell			0.23	1						
281J WS #83	UID Mammal	27				0.31	1						
281J WS #83	Peromyscus	1	Vertebra			0.01	1						
281J WS #83	UID Mammal	3				0.61	1						
281J WS #83	UID Bird	1	Tibiotarsus	proximal		0.07							Probably passerine
281J WS #83	UID Bird	1				0.07	1						
281J WS #84	UID	2				0.08			1				
281J WS #84	UID Bird	8	Eggshell			0.07	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281J WS #84	UID Mammal	1	Metacarpal			0.05	1						small mammal
281J WS #84	UID Mammal	2				0.34	1						
281J WS #84	UID	24				0.4	1						
281J WS #84	Peromyscus	1	Femur			0.01	1						
281J WS #84	Gallus gallus	1	Vertebra			0.04	1						
281J WS #84	Gastropod	1	Shell			0.01	1						
281J WS#83	Peromyscus	1	Tibia			0.02	1						
281J WS#83	Gastropod	2	Shell			0.01	1						
281K E1/2	UID Mammal	1				0.14			1				
281K E1/2	Sus Scrofa	1	Canine	Lower		0.82	1						
281K E1/2	Sus Scrofa	1	1st Phalanx	Complete		0.74	1						
281K E1/2	Sylvilagus floridanus	1	Metatarsal	Complete		0.12	1						
281K E1/2	Gallus gallus	1				0.08	1						
281K HF #93	UID Bird	63	Eggshell			0.27	1						
281K HF #93	Gastropod	2	Shell			0.01	1						
281K HF #93	UID Bird	2				0.1	1						
281K HF #93	UID Mammal	1	Tooth			0.05	1						
281K HF #93	UID	42				0.25	1						
281K HF #94	UID Bird	70	Eggshell			0.35	1						
281K HF #94	Cf. Passerine	7				0.23	1						
281K HF #94	UID	22				0.09	1						
281K HF #94	cf. Sciurius sp.	1	Tibial Tarsal			0.13	1						
281K HF #94	UID Mammal	1	Vertebra			0.39	1						Small mammal
281K HF #94	UID Mammal	2				0.39	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281K HF #95	UID Bird	43	Eggshell			0.21	1						
281K HF #95	UID	15				0.34	1						
281K HF #95	Peromyscus	2	Incisor			0.01	1						
281K HF #96	UID Bird	49	Eggshell			0.34	1						
281K HF #96	Gastropod	2	Shell			0.02	1						
281K HF #96	UID	16				0.23	1						
281K HF #96	Anseriformes	1	Tibiotarsus	distal	left	0.23	1						
281K HF #96	UID Bird	1	Phalanx			0.07	1						
281K HF #96	Peromyscus	1	Mandible		right	0.01	1						
281K LF #94	Gastropod	2				<0.01	1						
281K LF #95	Gastropod	1				<0.01	1						
281K LF #96	Gastropod	3				<0.01	1						
281K WS #91	UID	1				0.02			1				
281K WS #91	UID Bird	34	Eggshell			0.47	1						
281K WS #91	UID Bird	1	Eggshell			0.05	1						
281K WS #91	Gallus gallus	4	Phalanx			0.22	1						
281K WS #91	UID	8				0.18	1						
281K WS #91	Cf. Sus scrofa	1	Tooth			0.18	1						
281L	UID Mammal	3				0.41			1				
281L	Sus Scrofa	2	Molar			4.37	1						Two fragments mend
281L	Gallus gallus	1	Ferculum	Shaft		0.06	1						
281L	Artiodactyla	2				1.39	1						
281L	UID Mammal	6				1.55	1						
281L	Sus Scrofa	1	Skull			0.21	1						
281L E1/2	UID Mammal	2				0.19			1				

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
281L E1/2	Cf. Sus scrofa	1	Humerus	Distal	Left	7.97		1					
281L E1/2	UID Bird	1	Eggshell			0.02	1						
281L E1/2	Sus Scrofa	1	1st Phalanx			0.74	1						
281L E1/2	Sus Scrofa	1	Phalanx			0.13	1						
281L E1/2	Sylvilagus floridanus	1	Ilium		Left	0.41	1						
281L E1/2	Sylvilagus floridanus	1	Rib	Shaft		0.07	1						
281L E1/2	UID Mammal	9				0.33	1						
282B	UID Mammal	8				1.8			1				
282B	UID Mammal	1				0.65		1					
282B	Sus Scrofa	1	Incisor	Lower		0.9	1						
282B	Sus Scrofa	3	Molar			3.81	1						
282B	Sus Scrofa	2	Premolar			0.9	1						
282B	Artiodactyla	1	Tooth			0.17	1						
282B	UID Mammal	4				1.44	1						
282B	UID Bird	2	Eggshell			0.04	1						
282C	UID Mammal	5				1.22			1				
282C	Cf. Sus scrofa	1	Vertebra			0.8	1						Root etching present
282C	Sylvilagus floridanus	1	Tibia	Shaft	Right	1.14	1						Root etching present
282C	UID Mammal	1				0.08	1						Root etching present
282C	UID Bird	1				0.09	1						
282C	UID Bird	2	Eggshell			0.04	1						
283B	UID Mammal	1				0.04			1				
283B	UID Mammal	1				0.41			1				
283B	Artiodactyla	6				7.65		1					
283B	Ovis/Capra	1	Incisor	Lower		0.33	1						
283B	Sus Scrofa	1	Metacarpal	Proximal and Shaft		0.68	1						
285 HF #75	UID	4				0.03			1				
285B	UID Mammal	2				0.13			1				
285B	UID Mammal	1				0.67		1					
285B	UID Mammal	8				0.97	1						
285B	UID Bird	1	Eggshell			<0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285C	UID Mammal	3	Vertebra			1.51	1						Small mammal, between Raccoon and Woodchuck size
285C	UID Bird	5	Eggshell			0.15	1						
285C	UID Mammal	1				0.05	1						
285C N1/2	UID Mammal	1				0.4			1				
285C N1/2	Artiodactyla	1				6.46	1			1			Several thin cut marks
285C N1/2	UID Mammal	2				0.18	1						
285C N1/2	Artiodactyla	2				4.2	1						
285C N1/2 #51 HF 1/8"	UID Bird	7	Eggshell			0.04			1				
285C N1/2 #51 HF 1/8"	UID Bird	1	Eggshell			0.01	1						
285C S1/2 #11 H2O 1/8"	UID Bird	2	Eggshell			<0.01			1				
285C S1/2 #11 H2O 1/8"	UID	2				0.09			1				
285C S1/2 #11 H2O 1/8"	UID Bird	6	Eggshell			0.03	1						
285C S1/2 #11 H2O 1/8"	UID Bird	1	Eggshell			<0.01	1						
285C S1/2 #11 H2O 1/8"	UID	5				0.06	1						
285C S1/2 #11 H2O 1/8"	UID	2				0.07	1						
285C S1/2 #37 H2O 1/4"	UID Mammal	1				0.08	1						
285C S1/2 #37 H2O 1/8"	UID Bird	14	Eggshell			0.14			1				
285C S1/2 #37 H2O 1/8"	UID	1				<0.01		1					

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285C S1/2 #37 H2O 1/8"	UID Bird	7	Eggshell			0.07	1						
285C S1/2 #37 H2O 1/8"	Peromyscus	1	Tibia			<0.01	1						
285C S1/2 #37 H2O 1/8"	UID	19				0.48	1						
285C S1/2 #38 H2O 1/8"	UID Bird	23	Eggshell			0.13			1				
285C S1/2 #38 H2O 1/8"	UID Bird	10	Eggshell			0.05	1						
285C S1/2 #38 H2O 1/8"	UID	1				<0.01	1						
285C S1/2 #38 H2O 1/8"	UID	11				0.44	1						
285C S1/2 #39 1/8" H2O	UID	2				0.14			1				
285C S1/2 #39 1/8" H2O	UID	7				0.31	1						
285C S1/2 #39 H2O 1/4"	Sus Scrofa	1	Premolar			0.16	1						Juvenile pig
285C S1/2 #39 H2O 1/4"	Gallus gallus	1	Fibula	Proximal and Shaft	Left	0.08	1						
285C S1/2 #39 H2O 1/4"	UID Mammal	1				0.49	1						
285C S1/2 #39 H2O 1/8"	UID Bird	4	Eggshell			0.03			1				
285C S1/2 #39 H2O 1/8"	UID Bird	20	Eggshell			0.15			1				
285C S1/2 #39 H2O 1/8"	UID	5				0.18	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285C S1/2 #39 H2O 1/8"	UID Bird	5	Eggshell			0.04	1						
285C S1/2 #39 H2O 1/8"	UID Bird	10	Eggshell			0.07	1						
285C S1/2 #40 H2O 1/4"	UID Mammal	1				0.55	1						
285C S1/2 #40 H2O 1/4"	UID Mammal	2				0.54	1						
285C S1/2 #40 H2O 1/8"	UID	6				0.11			1				
285C S1/2 #40 H2O 1/8"	UID Bird	16	Eggshell			0.17			1				
285C S1/2 #40 H2O 1/8"	Cf. Gallus gallus	1	Phalanx			0.02	1						
285C S1/2 #40 H2O 1/8"	UID	2				0.06	1						
285C S1/2 #40 H2O 1/8"	Stone?	1				0.04							
285C S1/2 #40 H2O 1/8"	UID Bird	10	Eggshell			0.09	1						
285C S1/2 #40 H2O 1/8"	UID Shell	1				<0.01	1						
285C S1/2 #53 HF 1/8"	UID Mammal	4				0.09			1				
285C S1/2 #53 HF 1/8"	UID Bird	3	Eggshell			0.02		1					
285C S1/2 #53 HF 1/8"	UID Bird	3	Eggshell			0.01	1						
285C S1/2 #54 HF 1/8"	UID Bird	1	Eggshell			<0.01		1					

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285C S1/2 #54 HF 1/8"	UID Bird	4	Eggshell			0.01	1						
285C S1/2 #54 HF 1/8"	UID Mammal	1				<0.01	1						
285C S1/2 #55 HF 1/8"	UID Bird	8	Eggshell			0.06			1				
285C S1/2 #55 HF 1/8"	UID Mammal	3				0.03			1				
285C S1/2 #55 HF 1/8"	UID Bird	4	Eggshell			0.02	1						
285C S1/2 #55 HF 1/8"	UID Mammal	1				0.02	1						
285C S1/2 #55 HF 1/8"	Stone?	1				0.03							
285C S1/2 #56 HF 1/8"	UID Bird	7	Eggshell			0.02			1				
285C S1/2 #56 HF 1/8"	UID Mammal	1				0.04	1						
285C S1/2 #70 1/8" HF	UID Mammal	1				0.01	1						
285C S1/2 #70 1/8" HF	UID Bird	1	Eggshell			0.01	1						
285C S1/2 Bag 38 H2O 1/4"	Bos taurus	1	Humerus	Condyle	Left	9.95	1						
285D	Artiodactyla	1	Rib	Shaft		0.5	1						
285D	Artiodactyla	1				1.06	1						
285D	UID Bird	3	Eggshell			0.02	1						
285D N1/2	UID Mammal	3				0.05			1				
285D N1/2	UID Mammal	1				0.96			1				
285D N1/2	UID Mammal	1				0.09	1						
285D N1/2	Canis Familiaris	1	Canine	Lower	Left	0.73	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285D N1/2	UID Bird	2				0.34	1						
285D N1/2	UID Mammal	5				3.01	1						
285D S1/2 #61 HF 1/4"	UID Bird	11	Eggshell			0.09			1				
285D S1/2 #61 HF 1/4"	UID Mammal	2				<0.01			1				
285D S1/2 #61 HF 1/4"	UID Bird	6	Eggshell			0.05		1					
285D S1/2 #61 HF 1/4"	UID Bird	1	Eggshell			<0.01	1						
285D S1/2 #62 HF 1/8"	UID Bird	10	Eggshell			0.06			1				
285D S1/2 #62 HF 1/8"	UID Mammal	1				0.01			1				
285D S1/2 #63 HF 1/4"	Slag?	1				0.18							
285D S1/2 #63 HF 1/8"	UID Bird	9	Eggshell			0.08			1				
285D S1/2 #63 HF 1/8"	UID Bird	3	Eggshell			0.03		1					
285D S1/2 #63 HF 1/8"	Gastropod	1				<0.01	1						
285D S1/2 #63 HF 1/8"	Stone?	2				0.01							
285D S1/2 #63 HF 1/8"	UID Bird	2	Eggshell			0.01	1						
285D S1/2 #63 HF 1/8"	UID Mammal	1				0.03	1						
285D S1/2 #64 HF	UID Bird	19	Eggshell			0.11			1				
285D S1/2 #64 HF	UID Bird	2	Eggshell			0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285D S1/2 #64 HF	Stone?	1				0.01	1						
285D S1/2 #64 HF 1/8"	UID Mammal	6				0.11			1				
285D S1/2 #64 HF 1/8"	UID Mammal	3				0.06	1						
285D S1/2 #65 HF 1/4"	UID Mammal	1				0.04	1						
285D S1/2 #65 HF 1/8"	UID Bird	17	Eggshell			0.07			1				
285D S1/2 #65 HF 1/8"	UID Mammal	1				<0.01	1						
285D S1/2 #65 HF 1/8"	UID Bird	2	Eggshell			0.01	1						
285E	UID Mammal	2				0.25	1						
285E #44 HF 1/4"	UID Mammal	1				0.35	1						
285E HF #75	UID	2				0.02		1					
285E HF #75	UID Bird	42	Eggshell			0.26		1					
285E HF #75	UID	1				0.03	1						
285E HF #75	UID Bird	24	Eggshell			0.09	1						
285E HF #76	UID	8				0.02			1				
285E HF #76	UID	2				0.05			1				
285E HF #76	UID Bird	59	Eggshell			0.24		1					
285E HF #76	UID Bird	22	Eggshell			0.07	1						
285E HF #76	UID	4				0.07	1						
285E N1/2	UID Mammal	5				0.74	1						
285E N1/2	Sus Scrofa	1	Canine	Upper	Left	6.26	1						
285E N1/2	Sus Scrofa	1	Tooth			0.55	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285E N1/2 #12 1/4" H2O	Artiodactyla	1				1.32	1			1			
285E N1/2 #12 1/4" H2O	Sciurius sp.	1	Maxilla		Right	0.2	1						
285E N1/2 #12 1/8" H2O	UID	1				<0.01			1				
285E N1/2 #12 1/8" H2O	UID Bird	3	Eggshell			<0.01			1				
285E N1/2 #12 1/8" H2O	UID Bird	2	Eggshell			0.02			1				
285E N1/2 #12 1/8" H2O	UID	1				<0.01		1					
285E N1/2 #12 1/8" H2O	UID Bird	1	Eggshell			<0.01		1					
285E N1/2 #12 1/8" H2O	UID	7				0.13	1						
285E N1/2 #12 1/8" H2O	UID Bird	1	Eggshell			<0.01	1						
285E N1/2 #12 1/8" H2O	UID Bird	2	Eggshell			<0.01	1						
285E N1/2 #12 H2O 1/8"	UID	2				<0.01			1				
285E N1/2 #12 H2O 1/8"	UID	1				<0.01			1				
285E N1/2 #12 H2O 1/8"	UID Bird	1	Eggshell			<0.01		1					
285E N1/2 #12 H2O 1/8"	UID	2				0.04	1						
285E N1/2 #12 H2O 1/8"	UID	8				0.17	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285E N1/2 #13 1/4" H2O	UID Mammal	3				0.1			1				
285E N1/2 #13 1/8" H2O	UID	11				0.13			1				
285E N1/2 #13 1/8" H2O	UID Bird	2	Eggshell			<0.01		1					
285E N1/2 #13 1/8" H2O	UID Bird	2	Eggshell			<0.01		1					
285E N1/2 #13 1/8" H2O	UID	2				0.07	1						
285E N1/2 #13 1/8" H2O	UID Bird	3	Eggshell			0.02	1						
285E N1/2 #13 1/8" H2O	Stone?	1				<0.01							
285E N1/2 #13 1/8" H2O	UID Bird	3	Eggshell			<0.01	1						
285E N1/2 #13 H2O 1/8"	UID Mammal	1				0.07			1				
285E N1/2 #13 H2O 1/8"	UID	7				0.09			1				
285E N1/2 #13 H2O 1/8"	UID	1				0.05	1						
285E N1/2 #14 H2O 1/8"	UID Mammal	1				0.04			1				
285E N1/2 #14 H2O 1/8"	UID Bird	5	Eggshell			0.02			1				
285E N1/2 #14 H2O 1/8"	UID Mammal	2				<0.01			1				
285E N1/2 #14 H2O 1/8"	UID Mammal	1	Rib	Shaft		0.02	1						Very small mammal

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285E N1/2 #14 H2O 1/8"	UID Bird	3	Eggshell			0.04	1						
285E N1/2 #14 H2O 1/8"	UID	1				0.04	1						
285E N1/2 #14 H2O 1/8"	UID Mammal	6				0.05	1						
285E N1/2 #14 H2O 1/8"	UID Bird	2	Rib	Shaft		<0.01	1						
285E N1/2 #14 H2O 1/8"	Clear Plastic?	1				<0.01							
285E N1/2 #43 HF 1/8"	UID Bird	1	Eggshell			0.01			1				
285E N1/2 #43 HF 1/8"	UID Mammal	1				<0.01	1						
285E N1/2 #43 HF 1/8"	Stone?	4				0.08							
285E N1/2 #43 HF 1/8"	UID Bird	7	Eggshell			0.02	1						
285E N1/2 #43 HF 1/8"	Stone?	1				<0.01							
285E N1/2 #44 HF 1/8"	UID Bird	4	Eggshell			<0.01			1				
285E N1/2 #44 HF 1/8"	UID	6				0.15			1				
285E N1/2 #44 HF 1/8"	UID Bird	4	Eggshell			<0.01		1					
285E N1/2 #44 HF 1/8"	UID	1				0.03		1					
285E N1/2 #44 HF 1/8"	UID Bird	8	Eggshell			0.03	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285E N1/2 #44 HF 1/8"	UID	2				<0.01	1						
285E N1/2 #45 HF 1/8"	UID Bird	1	Eggshell			<0.01			1				
285E N1/2 #45 HF 1/8"	UID Mammal	3				0.05			1				
285E N1/2 #45 HF 1/8"	UID Mammal	1				0.01	1						Very small mammal
285E N1/2 #45 HF 1/8"	UID Bird	6	Eggshell			0.02	1						
285E N1/2 #45 HF 1/8"	UID Mammal	1	Incisor			0.01	1						
285E N1/2 #45 HF 1/8"	UID Mammal	4				0.07	1						
285E N1/2 #46 HF	UID Bird	6	Eggshell			0.02			1				
285E N1/2 #46 HF	UID Bird	1	Eggshell			0.01	1						
285E N1/2 #46 HF 1/4"	Sus Scrofa	1	Molar/Premolar			0.3	1						
285E N1/2 #46 HF 1/4"	UID Mammal	1				0.01	1						
285E N1/2 #46 HF 1/8"	UID Mammal	1				0.01		1					
285E N1/2 #46 HF 1/8"	Glass?	1				<0.01							
285E N1/2 #47 HF 1/8"	UID Bird	5	Eggshell			0.03			1				
285E N1/2 #47 HF 1/8"	UID Mammal	6				0.05			1				
285E N1/2 #47 HF 1/8"	UID Bird	2	Eggshell			0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285E N1/2 #47 HF 1/8"	UID Fish	1	Rib			<0.01	1						
285E N1/2 #47 HF 1/8"	UID Mammal	2				0.03	1						
285E N1/2 #48 HF 1/8"	UID Bird	6	Eggshell			0.02			1				
285E N1/2 #48 HF 1/8"	UID Mammal	3				0.01			1				
285E N1/2 #48 HF 1/8"	UID Mammal	1				<0.01		1					
285E N1/2 #48 HF 1/8"	UID Bird	3	Eggshell			0.01	1						
285E N1/2 #48 HF 1/8"	Stone?	2				0.02							
285E N1/2 #48 HF 1/8"	UID Mammal	6				0.06	1						
285E N1/2 #49 HF 1/8"	UID Bird	5	Eggshell			0.01			1				
285E N1/2 #49 HF 1/8"	UID Mammal	7				0.05			1				
285E N1/2 #49 HF 1/8"	UID Mammal	1				0.05		1					
285E N1/2 #49 HF 1/8"	Stone?	2				0.02							
285E N1/2 #49 HF 1/8"	UID Bird	3	Eggshell			0.01	1						
285E N1/2 #49 HF 1/8"	UID Mammal	2				0.05	1						
285E N1/2 #51 HF 1/4"	UID Mammal	1				0.04	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285E N1/2 #51 HF 1/8"	UID Mammal	4				0.02			1				
285E N1/2 #52 HF 1/8"	UID Bird	1	Eggshell			<0.01			1				
285E N1/2 #52 HF 1/8"	UID Bird	8	Eggshell			0.03			1				
285E N1/2 #52 HF 1/8"	UID Mammal	11				0.1			1				
285E N1/2 #52 HF 1/8"	UID Mammal	2				0.08		1					
285E N1/2 #52 HF 1/8"	Peromyscus	2	Molar/Premolar			0.01	1						Probably juvenile
285E N1/2 #52 HF 1/8"	UID Bird	2	Eggshell			0.01	1						
285E N1/2 #69 1/8" HF	UID Bird	1	Eggshell			<0.01	1						
285F	UID Mammal	1				0.03	1						Small mammal
285F #89 H2O 1/8"	UID Bird	3	Eggshell			<0.01			1				
285F #89 H2O 1/8"	UID Mammal	5				0.14			1				
285F #89 H2O 1/8"	UID Bird	2	Eggshell			<0.01	1						
285F N1/2	Artiodactyla	1				0.7	1						
285F N1/2 #66 HF 1/8"	UID Mammal	1				0.01			1				
285F N1/2 #66 HF 1/8"	UID Bird	9	Eggshell			0.06			1				
285F N1/2 #66 HF 1/8"	UID Mammal	1				0.01	1						
285F N1/2 #66 HF 1/8"	UID Bird	4	Eggshell			0.03	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285F N1/2 #67 HF 1/8"	UID Bird	1	Eggshell			0.09			1				
285F N1/2 #67 HF 1/8"	UID Mammal	2				0.05	1						
285F N1/2 #67 HF 1/8"	UID Bird	2	Eggshell			0.01	1						
285F N1/2 #68 HF 1/8"	UID Bird	9	Eggshell			0.07			1				
285F N1/2 #68 HF 1/8"	UID Mammal	1				0.09			1				
285F N1/2 #68 HF 1/8"	UID Bird	4	Eggshell			0.02	1						
285F N1/2 #68 HF 1/8"	UID Mammal	2				0.05	1						
285F N1/2 #69 1/8" HF	UID Bird	5	Eggshell			0.01			1				
285F N1/2 #69 1/8" HF	UID Mammal	2				0.02			1				
285F S1/2 #41 H2O 1/4"	UID Fish	1				<0.01	1						Possible fish bone fragment
285F S1/2 #41 H2O 1/8"	UID Bird	38	Eggshell			0.23			1				
285F S1/2 #41 H2O 1/8"	UID	3				0.03			1				
285F S1/2 #41 H2O 1/8"	UID Bird	9	Eggshell			0.07			1				
285F S1/2 #41 H2O 1/8"	UID Bird	10	Eggshell			0.07		1					
285F S1/2 #41 H2O 1/8"	UID Bird	7	Eggshell			0.05	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285F S1/2 #41 H2O 1/8"	UID Bird	11	Eggshell			0.08	1						
285F S1/2 #41 H2O 1/8"	Peromyscus	1	Vertebra			<0.01	1						
285F S1/2 #41 H2O 1/8"	Gastropod	1				<0.01	1						
285F S1/2 #41 H2O 1/8"	UID	9				0.14	1						
285F S1/2 #41 H2O 1/8"	UID	3				0.06	1						
285F S1/2 #41 H2O 1/8"	UID	1				<0.01	1						
285F S1/2 #41 H2O 1/8"	UID Bird	2	Eggshell			0.02	1						
285F WS #90	UID Bird	1	Eggshell			0.02		1					
285F WS #90	UID Bird	4	Eggshell			0.05	1						
285F WS #90	UID	1				<0.01	1						
285G #24 HF 1/8"	UID Bird	1	Eggshell			<0.01			1				
285G #24 HF 1/8"	UID Bird	2	Eggshell			0.03	1						
285G N1/2	UID Bird	3	Eggshell			<0.01	1						
285G S1/2 #15 1/4" H2O	UID Bird	1	Eggshell			0.03	1						
285G S1/2 #15 1/8" H2O	UID Bird	27	Eggshell			0.14			1				
285G S1/2 #15 1/8" H2O	UID	4				0.03			1				
285G S1/2 #15 1/8" H2O	UID Bird	4	Eggshell			0.05	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285G S1/2 #15 1/8" H2O	Peromyscus	1	Incisor			<0.01	1						
285G S1/2 #15 1/8" H2O	UID	2				<0.01	1						
285G S1/2 #16 H2O 1/8"	UID	2				0.1							not bone
285G S1/2 #16 H2O 1/8"	UID	2				<0.01	1						
285G S1/2 #19 H2O 1/8"	UID Bird	2	Eggshell			0.01		1					
285G S1/2 #19 H2O 1/8"	UID	1				0.07	1						
285G S1/2 #19 H2O 1/8"	UID	1				<0.01	1						
285G S1/2 #20	Cf. Sylvilagus floridanus	1	Auditory Bulla			0.21	1						
285G S1/2 #20 H2O 1/8"	UID Bird	1	Eggshell			<0.01		1					
285G S1/2 #20 H2O 1/8"	UID	2				<0.01	1						
285G S1/2 #20 H2O 1/8"	UID Bird	1	Eggshell			<0.01	1						
285G S1/2 #21 1/8" H2O	UID Bird	2	Eggshell			0.04		1					
285G S1/2 #21 1/8" H2O	UID	2				0.04		1					
285G S1/2 #21 1/8" H2O	UID	1				<0.01	1						
285G S1/2 #21 H2O 1/4"	Artiodactyla	1	Vertebra	Vertebral pad		0.24	1						Possibly a small pig
285G S1/2 #21 H2O 1/8"	UID Bird	2	Eggshell			0.03	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285G S1/2 #22 HF 1/8"	UID Mammal	1	Mandible			<0.01	1						Very small mammal, 3 teeth present
285G S1/2 #22 HF 1/8"	UID Bird	6	Eggshell			0.02	1						
285G S1/2 #22 HF 1/8"	UID Mammal	7				0.21	1						
285G S1/2 #23 HF 1/8"	UID Bird	2	Eggshell			<0.01			1				
285G S1/2 #23 HF 1/8"	UID Bird	9	Eggshell			0.05	1						
285G S1/2 #24 HF 1/8"	UID Mammal	1				<0.01	1						
285G S1/2 #24 HF 1/8"	Stone?	2				0.2							
285G S1/2 #25 HF 1/8"	UID Mammal	2				0.01			1				
285G S1/2 #25 HF 1/8"	UID Mammal	1				0.04		1					
285G S1/2 #25 HF 1/8"	Rodentia	1	Incisor			0.03	1						Small rodent
285G S1/2 #25 HF 1/8"	Daub?	7				0.19							
285G S1/2 #25 HF 1/8"	UID Bird	5	Eggshell			0.03	1						
285G S1/2 #25 HF 1/8"	UID Mammal	1				<0.01	1						
285G S1/2 #29 1/8" H2O	UID	3				0.07	1						
285G S1/2 #29 H20 1/4"	UID Mammal	3				0.05	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285G S1/2 #29 H2O 1/8"	UID Bird	1	Eggshell			<0.01			1				
285G S1/2 #29 H2O 1/8"	UID Bird	2	Eggshell			0.04	1						
285G S1/2 #30	UID Bird	1	Eggshell			0.02	1						
285G S1/2 #30 H2O 1/8"	UID Bird	2	Eggshell			<0.01			1				
285G S1/2 #30 H2O 1/8"	UID	1				0.03	1						
285G S1/2 #30 H2O 1/8"	UID Bird	3	Eggshell			0.02	1						
285G S1/2 #31 1/8" H2O	UID	4				0.09	1						
285G S1/2 #31 1/8" H2O	UID Bird	3	Eggshell			0.03	1						
285G S1/2 #32 1/8" H2O	UID Bird	1	Eggshell			<0.01			1				
285G S1/2 #32 1/8" H2O	Peromyscus	1	Vertebra			<0.01	1						
285G S1/2 #32 1/8" H2O	UID	3				0.02	1						
285G S1/2 #32 1/8" H2O	UID Bird	8	Eggshell			0.08	1						
285G S1/2 #32 H2O 1/4"	UID Bird	1	Eggshell			0.03	1						
285G S1/2 #32 H2O 1/8"	Gastropod	1				<0.01	1						
285G S1/2 #33 1/8" H2O	UID Bird	1	Eggshell			<0.01		1					
285G S1/2 #33 1/8" H2O	UID Bird	1	Eggshell			<0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285G S1/2 #33 H2O 1/8"	UID	1				<0.01	1						
285G S1/2 #33 H2O 1/8"	UID	1				<0.01	1						Possible fish scale
285G S1/2 #35 HF 1/8"	UID Mammal	1				0.01			1				
285G S1/2 #35 HF 1/8"	UID	1				0.01		1					
285H	Artiodactyla	2	Sternum			0.5	1						Texture of bone indicates that this is part of the sternum, probably a pig
285H #77 HF 1/8"	UID Mammal	1				<0.01			1				
285H #77 HF 1/8"	UID Bird	11	Eggshell			0.02	1						
285H H2O #77	UID	1				0.04			1				
285H H2O #77	UID	3				0.04	1						
285H H2O #80	Stone?	17				0.12	1						
285H H2O #80	UID	13				0.03	1						
285H H2O #80	Stone?	3				0.25	1						
285H HF#79	UID	2				<0.01			1				
285H HF#79	UID Bird	1	Eggshell			0.01		1					
285H HF#79	UID Bird	8	Eggshell			0.03	1						
285H HF#79	UID	8				0.08	1						
285J #25 1/8" H2O	UID Bird	2	Eggshell			<0.01			1				
285J #25 1/8" H2O	UID Bird	1	Eggshell			<0.01		1					
285J #25 1/8" H2O	UID Bird	5	Eggshell			0.04	1						
285J #25 1/8" H2O	UID	2				<0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285J #25 1/8" H2O	Gastropod	7				0.05	1						
285J N1/2	Sus Scrofa	1	Tooth			0.11			1				Deciduous tooth
285J N1/2	UID Bird	1	Eggshell			<0.01			1				
285J N1/2	Artiodactyla	1				8.25	1						Root Etching present
285J N1/2	UID Bird	2	Eggshell			<0.01	1						
285J N1/2	UID Bird	11	Eggshell			0.33	1						
285J S1/2	Gallus gallus	1	Femur	Shaft	Left	0.29	1						Juvenile
285J S1/2	Gallus gallus	1	Rib	Shaft		0.3	1						
285J S1/2	Artiodactyla	1				1.78	1						
285J S1/2	UID Mammal	1				0.12	1						
285J S1/2 #28 1/4"	UID Bird	2	Eggshell			<0.01	1						
285J S1/2 #26 H2O 1/8"	UID	4				0.09			1				
285J S1/2 #26 H2O 1/8"	UID Bird	1	Eggshell			<0.01		1					
285J S1/2 #26 H2O 1/8"	Peromyscus	1	Mandible			<0.01	1						
285J S1/2 #26 H2O 1/8"	UID	1				<0.01	1						
285J S1/2 #26 H2O 1/8"	Gastropod	7				0.06	1						
285J S1/2 #26 H2O 1/8"	UID Bird	15	Eggshell			0.15	1						
285J S1/2 #27 1/8" H2O	UID	2				0.09	1						
285J S1/2 #27 H2O 1/4"	UID Bird	6	Eggshell			0.12	1						Fragments stuck together
285J S1/2 #27 H2O 1/8"	UID	1				0.03			1				
285J S1/2 #27 H2O 1/8"	UID Bird	8	Eggshell			0.08	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285J S1/2 #27 H2O 1/8"	UID Bird	4	Eggshell			0.08	1						
285J S1/2 #27 H2O 1/8"	Gastropod	1				<0.01	1						
285J S1/2 #28 H2O 1/8"	Gastropod	1				<0.01			1				
285J S1/2 #28 H2O 1/8"	UID	2				0.02			1				
285J S1/2 #28 H2O 1/8"	UID Bird	2	Eggshell			<0.01			1				
285J S1/2 #28 H2O 1/8"	UID Fish	1	Scale			<0.01	1						Possible fish scale
285J S1/2 #28 H2O 1/8"	UID Bird	40	Eggshell			0.46	1						
285J S1/2 #31 HF 1/4"	UID Mammal	1				0.23	1						
285J S1/2 #31 HF 1/8"	Stone?	1				0.02							
285J S1/2 #31 HF 1/8"	UID Mammal	3				0.01	1						
285J S1/2 #31 HF 1/8"	UID Bird	5				0.05	1						
285J S1/2 #32 HF 1/8"	UID	1				0.01			1				
285J S1/2 #32 HF 1/8"	Gastropod	1				<0.01	1						
285J S1/2 #32 HF 1/8"	UID Mammal	2				0.01	1						
285J S1/2 #32 HF 1/8"	Stone?	1				0.01							

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285J S1/2 #32 HF 1/8"	UID Bird	6	Eggshell			0.03	1						
285J S1/2 #33 HF 1/4"	UID Bird	1	Eggshell			0.02	1						
285J S1/2 #33 HF 1/8"	UID Bird	1	Eggshell			<0.01			1				
285J S1/2 #33 HF 1/8"	UID Bird	1	Eggshell			<0.01		1					
285J S1/2 #33 HF 1/8"	Daub?	3				0.18							
285J S1/2 #33 HF 1/8"	Stone?	3				0.05							
285J S1/2 #33 HF 1/8"	Gastropod	1				<0.01	1						
285J S1/2 #33 HF 1/8"	UID Bird	1	Eggshell			<0.01	1						
285J S1/2 #34 1/8" HF	UID Mammal	1	Tooth			0.02			1				
285J S1/2 #34 1/8" HF	UID Bird	3	Eggshell			0.03	1						
285J S1/2 #35 HF 1/8"	UID Bird	6	Eggshell			0.05	1						
285J S1/2 #35 HF 1/8"	Gastropod	1				<0.01	1						
285J S1/2 #36 HF 1/8"	UID Mammal	1				0.01			1				
285J S1/2 #36 HF 1/8"	UID Bird	7	Eggshell			0.05	1						
285J S1/2 #37 HF 1/8"	Gastropod	1				<0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285J S1/2 #37 HF 1/8"	UID Bird	11	Eggshell			0.08	1						
285J S1/2 #37 HF 1/8"	UID Mammal	1				0.03	1						
285J S1/2 #37 HF 1/8"	Stone?	2				0.02							
285J S1/2 #39 HF 1/8"	UID Bird	6	Eggshell			0.04	1						
285J S1/2 #40 1/8" HF	Daub?	1				0.06							
285J S1/2 #40 1/8" HF	UID Bird	6	Eggshell			0.08	1						
285J S1/2 #40 1/8" HF	Stone?	1				0.02							
285J S1/2 #41 1/8" HF	UID Bird	3	Eggshell			0.02	1						
285J S1/2 Bag#26 1/4" H2O	UID Mammal	3				<0.01	1						
285K N1/2	UID Mammal	2				0.09			1				
285K N1/2	UID Mammal	1				<0.01			1				
285K N1/2	UID Mammal	1				<0.01		1					
285K N1/2	Odocoileus virginianus	1	Tibial Tarsal	Complete	Left	11.09	1					1	Root Etching present
285K N1/2	Gallus gallus	1	Ulna	Shaft	Left	0.13	1						
285K N1/2	Artiodactyla	1				1.45	1						
285K N1/2	UID Mammal	5				0.97	1						
285K N1/2	Artiodactyla	1	Vertebra			0.58	1						
285K N1/2	UID Bird	400+	Eggshell			15.16	1						
285K S1/2	Gallus gallus	1	Tarso-metatarsus	Shaft	Left	0.22	1						Juvenile
285K S1/2	Cf. Odocoileus virginianus	1	Humerus	Shaft	Left	8.29	1						
285K S1/2	UID Mammal	2				0.58	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285K S1/2	UID Bird	75+	Eggshell			2.16	1						
285K S1/2	Gastropod	1				<0.01	1						
285K S1/2 #13 HF 1/8"	UID Mammal	6				0.05			1				
285K S1/2 #13 HF 1/8"	UID Bird	3	Eggshell			0.02	1						
285K S1/2 #13 HF 1/8"	Gastropod	2				<0.01	1						
285K S1/2 #14 HF 1/4"	UID Mammal	1				1.17	1						
285K S1/2 #14 HF 1/4"	UID	2				0.04	1						
285K S1/2 #14 HF 1/8"	UID Mammal	4				0.03			1				
285K S1/2 #14 HF 1/8"	UID Bird	4	Eggshell			0.04			1				
285K S1/2 #14 HF 1/8"	UID Bird	20	Eggshell			0.19	1						
285K S1/2 #14 HF 1/8"	Gastropod	2				<0.01	1						
285K S1/2 #15 HF 1/8"	UID Mammal	4				0.05			1				
285K S1/2 #15 HF 1/8"	UID Bird	2	Eggshell			0.02			1				
285K S1/2 #15 HF 1/8"	Gastropod	1				<0.01	1						
285K S1/2 #15 HF 1/8"	UID Bird	8	Eggshell			0.04	1						
285K S1/2 #16 HF 1/4"	UID Bird	2	Eggshell			0.02	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285K S1/2 #16 HF 1/8"	UID Bird	4	Eggshell			0.03			1				
285K S1/2 #16 HF 1/8"	Gastropod	2				<0.01	1						
285K S1/2 #16 HF 1/8"	Stone?	4				0.05							
285K S1/2 #16 HF 1/8"	UID Bird	19	Eggshell			0.22	1						
285K S1/2 #17 HF 1/4"	UID Mammal	1				0.09		1					
285K S1/2 #17 HF 1/4"	UID Bird	1	Eggshell			0.05	1						
285K S1/2 #17 HF 1/4"	UID Mammal	1				0.04	1						
285K S1/2 #17 HF 1/4"	Rock	1				0.1							
285K S1/2 #17 HF 1/8"	UID Mammal	8				0.14	1						
285K S1/2 #17 HF 1/8"	UID Bird	10	Eggshell			0.09	1						
285K S1/2 #18 1/8" H2O	UID Bird	1	Eggshell			<0.01			1				
285K S1/2 #18 1/8" H2O	UID	2				<0.01	1						
285K S1/2 #18 1/8" H2O	UID Bird	7	Eggshell			0.04	1						
285K S1/2 #18 1/8" H2O	Gastropod	3				0.01	1						
285K S1/2 #18 1/8" H2O	Stone?	3				0.1							

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285K S1/2 #18 1/8" HF	UID	1				0.01			1				
285K S1/2 #18 1/8" HF	UID Mammal	1				0.03	1						
285K S1/2 #18 1/8" HF	UID Mammal	1				0.01	1						
285K S1/2 #18 1/8" HF	Gastropod	1				<0.01	1						
285K S1/2 #18 1/8" HF	UID Bird	14	Eggshell			0.2	1						
285K S1/2 #19 HF 1/8"	UID Mammal	3				0.03			1				
285K S1/2 #19 HF 1/8"	UID Bird	1	Eggshell			<0.01			1				
285K S1/2 #19 HF 1/8"	UID Bird	1	Eggshell			<0.01		1					
285K S1/2 #19 HF 1/8"	Gastropod	1				<0.01	1						
285K S1/2 #19 HF 1/8"	UID	1				0.01	1						
285K S1/2 #19 HF 1/8"	UID Bird	30	Eggshell			0.21	1						
285K S1/2 #20 HF 1/4"	UID Bird	3	Eggshell			0.08	1						
285K S1/2 #20 HF 1/8"	UID	2				0.02			1				
285K S1/2 #20 HF 1/8"	UID Bird	5	Eggshell			0.02			1				
285K S1/2 #20 HF 1/8"	UID	1	Phalanx			0.01	1						Very small mammal or bird

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285K S1/2 #20 HF 1/8"	Stone?	2				0.02							
285K S1/2 #20 HF 1/8"	UID Bird	24	Eggshell			0.25	1						
285K S1/2 #21 HF 1/8"	UID Mammal	4				0.08			1				
285K S1/2 #21 HF 1/8"	UID Bird	1	Eggshell			0.01			1				
285K S1/2 #21 HF 1/8"	UID Mammal	1				0.07		1					
285K S1/2 #21 HF 1/8"	UID Bird	4	Eggshell			0.02		1					
285K S1/2 #21 HF 1/8"	Gastropod	1				<0.01	1						Fragmented
285K S1/2 #21 HF 1/8"	UID Mammal	1	Phalanx			<0.01	1						Very small mammal
285K S1/2 #21 HF 1/8"	UID Mammal	3				0.03	1						
285K S1/2 #21 HF 1/8"	UID Bird	24	Eggshell			0.25	1						
285K S1/2 #34 1/8" H2O	Gastropod	2				<0.01	1						
285K S1/2 #34 1/8" H2O	UID	2				0.02	1						
285K S1/2 #34 1/8" H2O	UID Bird	39	Eggshell			0.48	1						
285K S1/2 #35 H2O 1/8"	UID	1				0.03			1				
285K S1/2 #35 H2O 1/8"	UID Bird	2	Eggshell			<0.01		1					

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285K S1/2 #35 H2O 1/8"	Gastropod	7				0.06	1						
285K S1/2 #35 H2O 1/8"	Gastropod	4				0.04	1						
285K S1/2 #35 H2O 1/8"	UID Bird	11	Eggshell			0.1	1						
285K S1/2 #35 H2O 1/8"	UID	1				<0.01	1						
285K S1/2 #35 H2O 1/8"	UID	3				0.09	1						
285K S1/2 #35 H2O 1/8"	UID Bird	10	Eggshell			0.09	1						
285K S1/2 #36 1/8" H2O	UID	1				<0.01		1					
285K S1/2 #36 1/8" H2O	Gastropod	21				0.21	1						
285K S1/2 #36 1/8" H2O	UID	2				0.05	1						
285K S1/2 #36 H2O 1/4"	UID Bird	1	Eggshell			0.03	1						
285K S1/2 #36 H2O 1/8"	UID Bird	2	Eggshell			0.03			1				
285K S1/2 #36 H2O 1/8"	UID Bird	46	Eggshell			0.63	1						
285K S1/2 Bag 35 H2O 1/4"	Testudines	1	Carapace			0.35	1						
285L HF #74	UID	5				<0.01	1						
285L S1/2 #42 1/8" H2O	UID	2				0.04			1				
285L S1/2 #42 1/8" H2O	UID Bird	4	Eggshell			<0.01	1						

Context#	Species	NISP	Element	Portion	Side	Weight (g)	Natural	Burned	Calcined	Cut mark	Rodent	Carni-vore	Comments
285L S1/2 #73 HF 1/8"	Gastropod	3				<0.01	1						
285L S1/2 #73 HF 1/8"	UID Bird	2	Eggshell			<0.01	1						
285L S1/2 H2O #96	UID Bird	1	Eggshell			<0.01	1						
285L S1/2 H2O #98	UID	1				0.04	1						
285L S1/2 HF #71	UID	1				<0.01			1				
285L S1/2 HF #71	UID	3				0.02	1						
285L S1/2 HF #72	UID Bird	1	Eggshell			<0.01		1					
285L S1/2 HF #72	UID	1				0.11		1					
285L S1/2 HF #72	UID Bird	2	Eggshell			0.05	1						
285L S1/2 HF#71	UID Bird	4	Eggshell			0.01	1						
285L S1/2 HF#72	UID Bird	4	Eggshell			0.03	1						
285L S1/2 HF#72	UID	4				0.03	1						
289B	Artiodactyla	1	Tooth			0.18			1				
290B	Artiodactyla	3	Tooth			0.28	1						

Appdendix 3:
GEOPHYSICAL PROSPECTION OF THE

WINGO'S SLAVE QUARTER SITE,
BEDFORD COUNTY, VIRGINIA

By

Daniel W. H. Brock,
Stephen J. Yerka, and.
Gerald F. Schroedl

A Report Prepared for:

Dr. Barbara J. Heath

Dr. Gerald F. Schroedl, Principal Investigator
Department of Anthropology

University of Tennessee-Knoxville
250 South Stadium Hall
Knoxville, Tennessee 37996-0720

(865) 974-1861

November 2010

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS **243**
LIST OF FIGURES **244**
INTRODUCTION **245**
INSTRUMENTS, DATA COLLECTION AND PROCESSING **245**
Magnetometer **245**
RESULTS AND RECOMMENDATIONS **248**
Gradiometer Survey 248
REFERENCES **252**

LIST OF FIGURES

Figure **Page**

Figure 1. Map of Virginia showing the location of Bedford County. 246
Figure 2. Map of Bedford County, VA showing the location of Wingos. 246
Figure 3. Area selected for geophysical study. 247
Figure 4. Anomaly classification. 248
Figure 5. Results from the gradiometer survey. 249
Figure 6. Results from the gradiometer survey with outlined anomalies highlighted. 250

INTRODUCTION

Wingos is located in Bedford County, Virginia near the town of Forest (Figures 1 and 2). The Wingos site is a late-eighteenth century slave quarter that was owned at one time by Thomas Jefferson as part of his home at Poplar Forest. On March 30-31, 2007, at the request of Dr. Barbara Heath of the University of Tennessee, Knoxville, a geophysical survey was conducted at the Wingo's site by Dr. Gerald Schroedl, Stephen Yerka, and Daniel Brock from the The University of Tennessee, Knoxville. The purpose of this project was to detect cultural deposits related to the historic occupation of the site through the use of geophysical survey.

The total project area selected for geophysical survey covered approximately 8,000 m^2. The full grid measured 100 m east-west and 80 m north-south and contained a total of 20 20x20 m grids. The survey area was selected by Dr. Heath prior to the survey (Figure 3).

INSTRUMENTS, DATA COLLECTION AND PROCESSING

While performing the geophysical survey, the project area was tied into the real-world space using a Trimble ProXRH global positioning system (GPS) unit. All resulting geophysical output was georeferenced to corner control points and displayed in the NAD 1983 UTM Zone 17N projection. Geophysical equipment included the GeoScan FM-36 flux-gate gradiometer, a type of magnetometer.

MAGNETOMETER

The use of magnetometers has a long and successful record in the discovery, assessment, and interpretation of archaeological deposits (Kvamme and Ahler 2007). Magnetometers measure the strength of the magnetic field surrounding the sensor. For a gradiometer, two sensors are configured such that the gradient difference in the magnetic field is measured. The unit of measure is nanoteslas (nT). Any magnetic object or disturbance alters the background magnetic field. For example, geologic parent material of soils, water table, subsurface disturbances, and buried artifacts will influence the magnetic field. The magnetic field values are recorded and examined for spatial patterns.

The GeoScan FM-36 flux-gate gradiometer is a single sensor fluxgate gradiometer with data logger and one cylindrical sensor assembly for use in geophysics and archaeology. Readings were taken at 0.5 m intervals along the north-south axis. The data logger collected eight reading per meter along each pass.

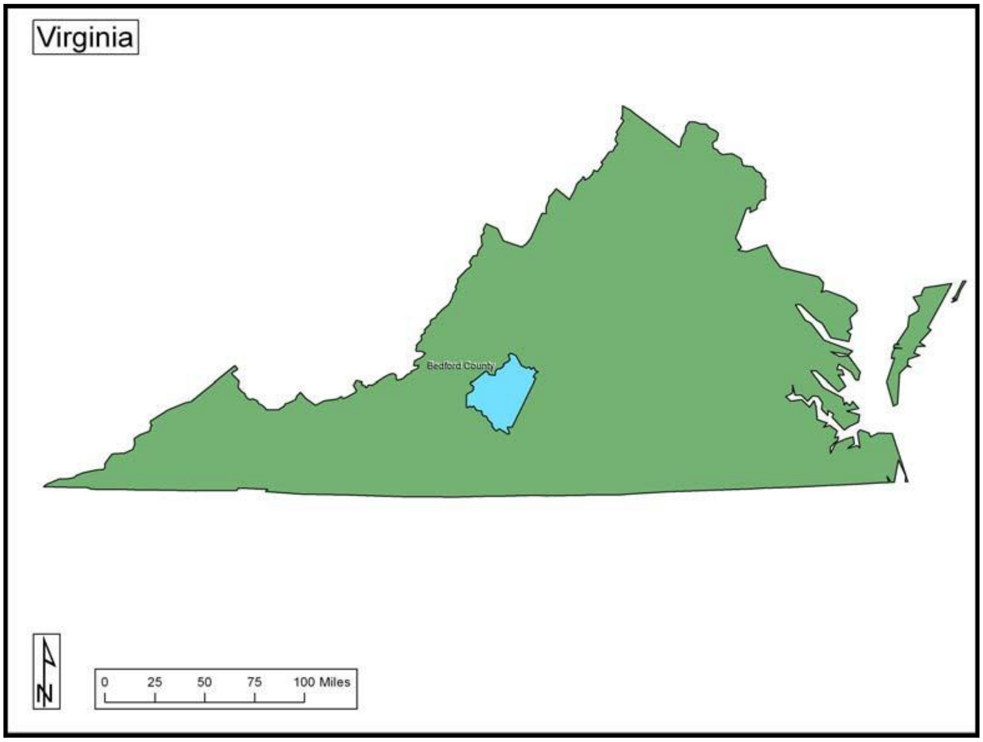


Figure 1. Map of Virginia showing the location of Bedford County.

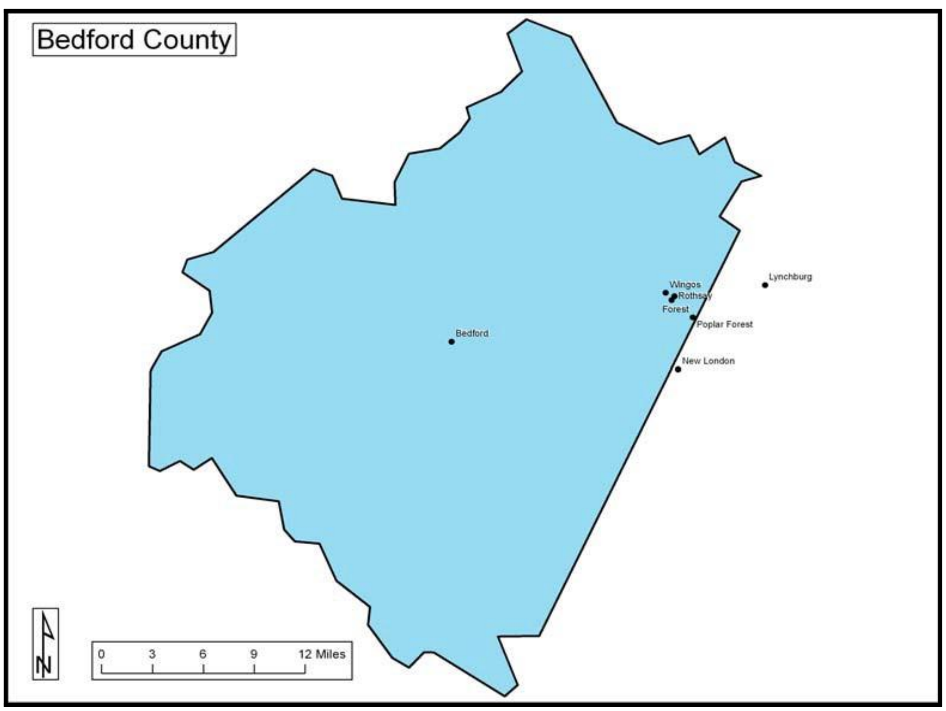


Figure 2. Map of Bedford County, VA showing the location of Wingo's.

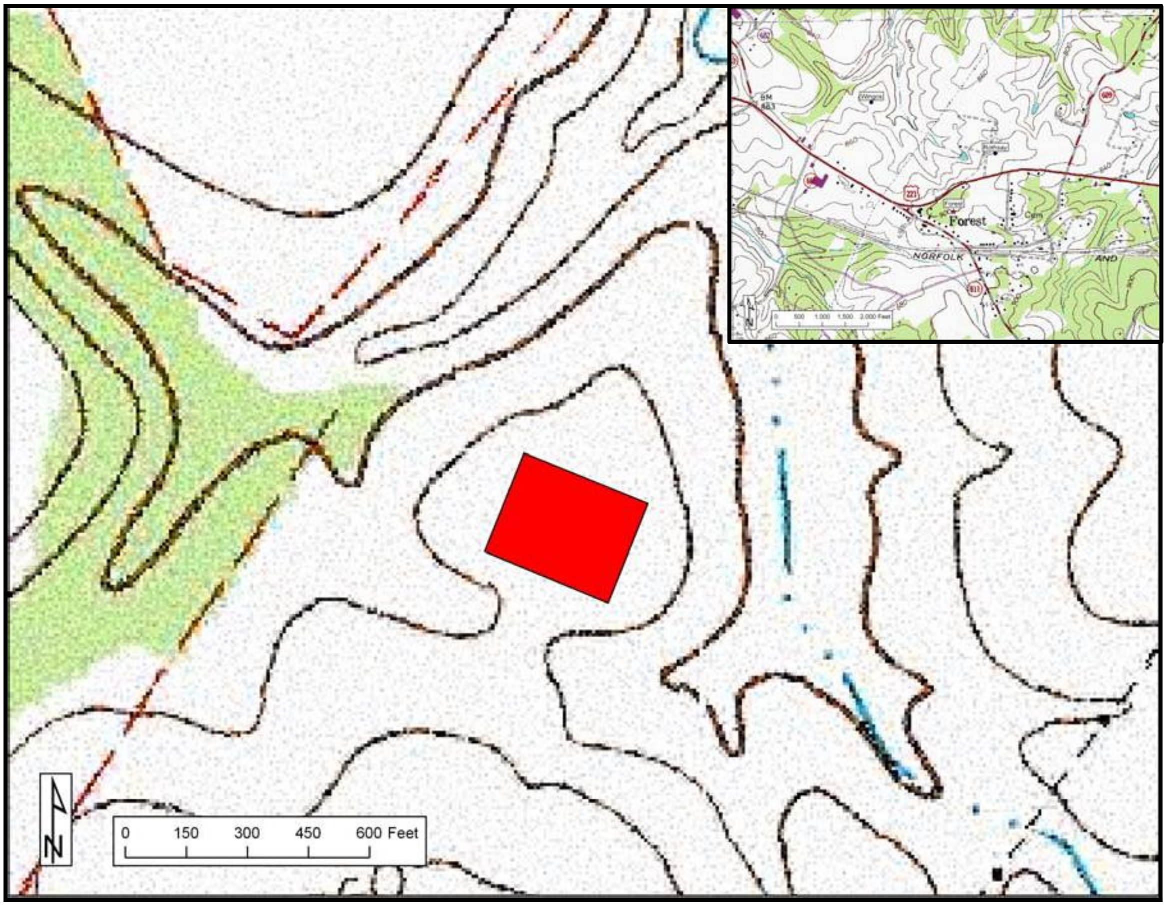


Figure 3. Area selected for geophysical study.

DISSCUSSION OF ANOMALIES

Figure 4 is a general key to the descriptions that are used throughout this report to classify anomalies. Classification is based on the amount of departure from the survey mean, and contrast at the boundary between the anomaly and surrounding background. Additionally anomalies are described as either singular, multiple or complex. Complex anomalies typically are created by overlapping multiple anomalies. When appropriate, anomalies will be characterized as to their possible composition. It is not within the scope of this report to highlight and characterize every anomaly in the following datasets; therefore the results section below is meant to provide a way for the reader to identify anomalies that are not discussed, but obviously appear in the output.

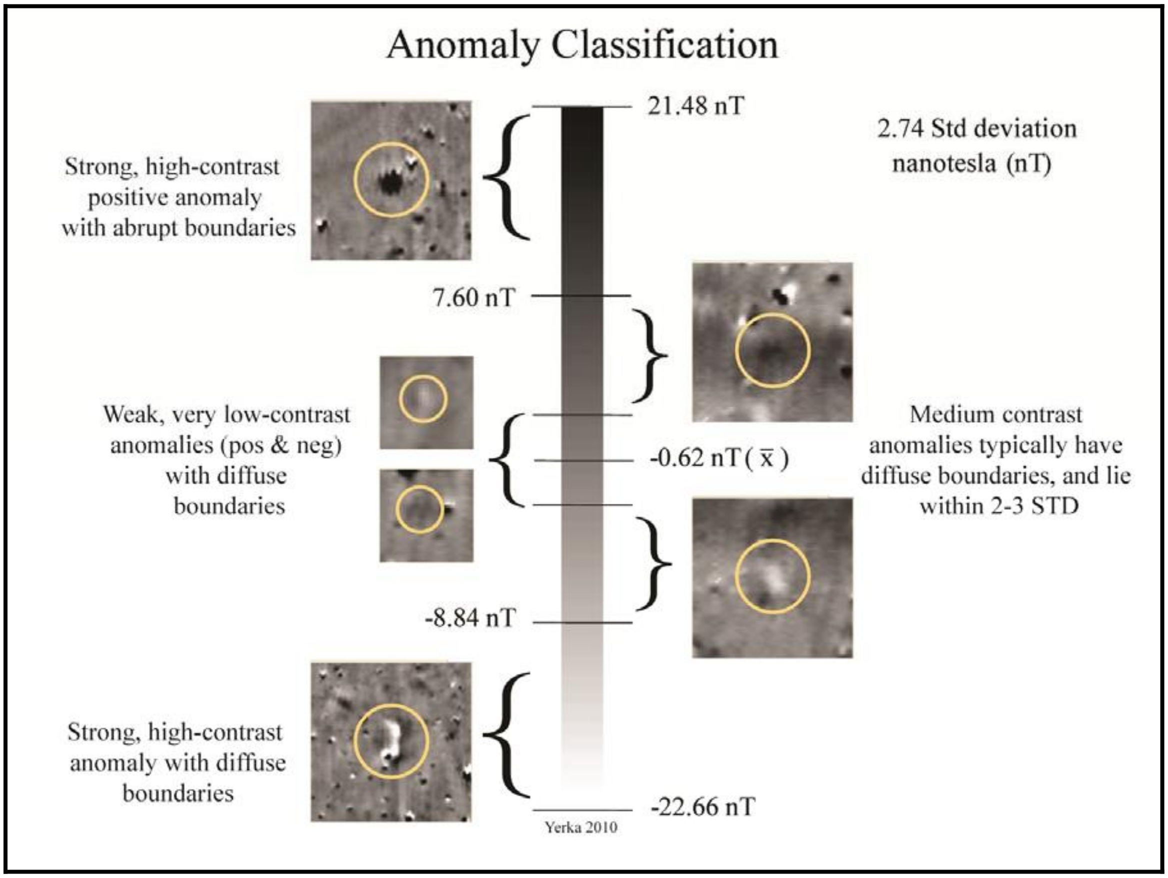


Figure 4. Anomaly classification (adapted from Yerka 2010).

RESULTS AND RECOMMENDATIONS

GRADIOMETER SURVEY

A geophysical survey using a gradiometer generates a map of the local magnetic variation within the study area. The magnetic background is the mean reading within the dataset and is represented by true gray in Figure 5. Any ferrous metal that is near or on the surface will create very high and/or low readings in the magnetic data and is represented by black and white. Gradation between white to black represents deviation from the mean, either positive (white) or negative (black). To preserve image contrast, outlier readings are removed from the dataset resulting in an empty cell (green background).

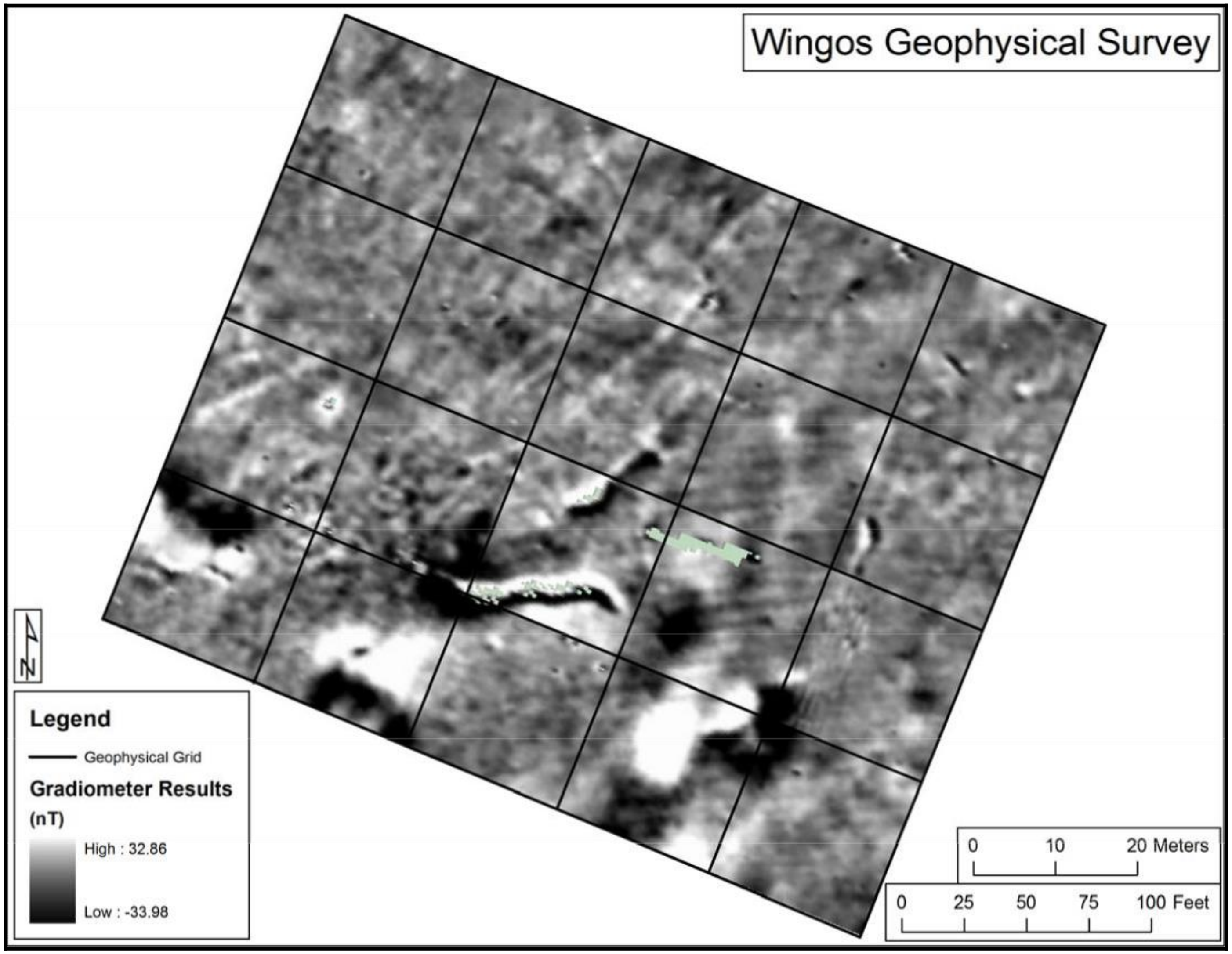


Figure 5. Results from the gradiometer survey.

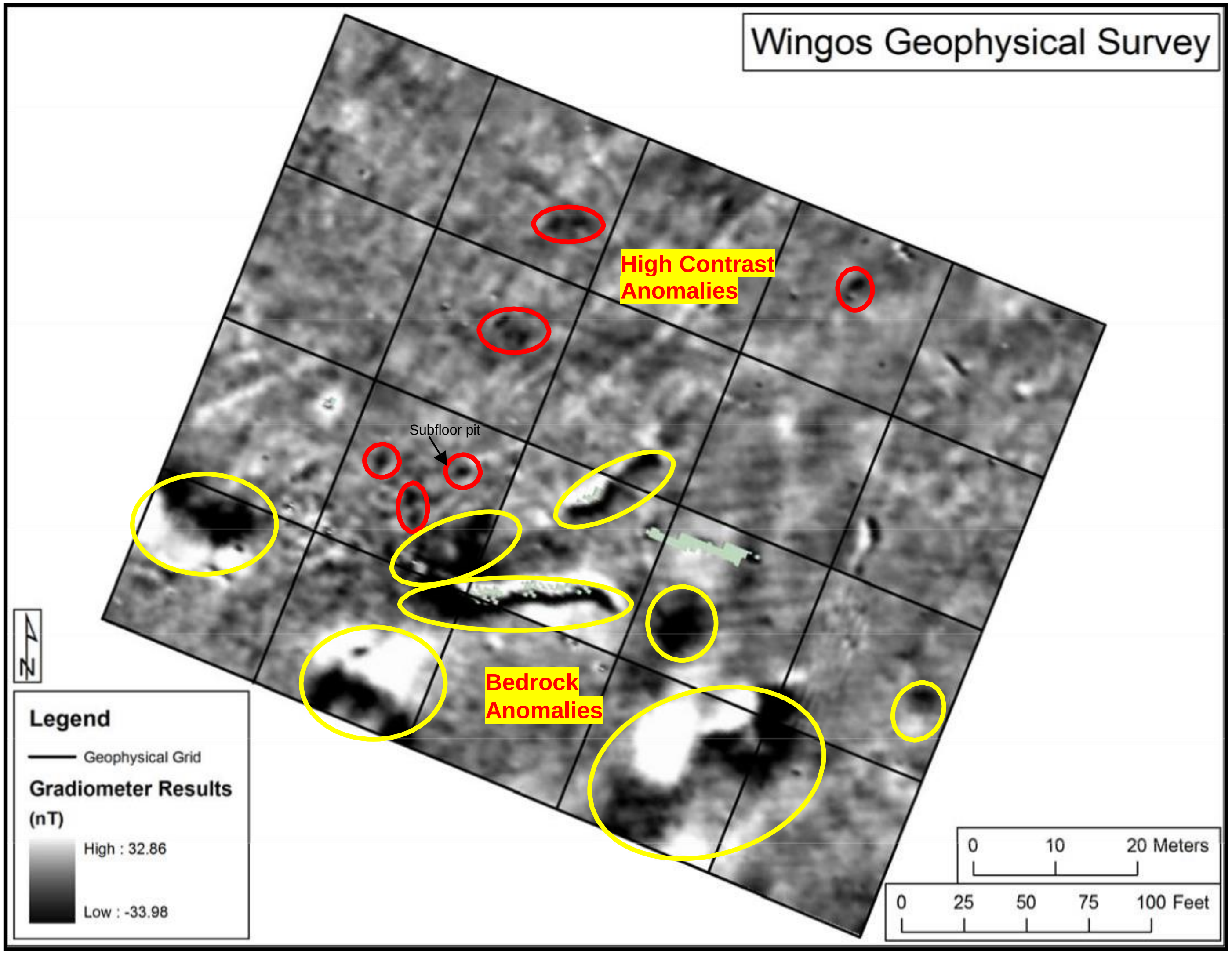


Figure 6. Results from the gradiometer survey with outlined anomalies highlighted.

Results of the geophysical survey within the project area suggest many subsurface anomalies. However, it is not certain that all of these are archaeological features. It is apparent that the local bedrock, greenstone, is highly magnetic and is visible in outcrop features near surface creating large dipole anomalies (black and white) outlined in yellow in Figure 6. These large features should be interpreted as non-cultural. Other features outlined in Figure 6 include high contrast negative anomalies (black) with strong boundaries ranging between -15 and -30 (nT) outlined in red. These anomalies should be considered cultural and possibly related to the historic occupation of the site. Ground-truthing of one of these anomalies within Excavation Record 281 showed positive results for cultural material. A subfloor pit filled with daub and stone was excavated in 2009 by Dr. Barbara Heath within this excavation unit and is labeled in Figure 6. Anomalies similar to this should be considered cultural and ground-truthed. Historic features most likely occur in the area immediately around the positively tested subfloor pit. Other outlined features outside of this area could however represent prehistoric features not associated with the historic component. Our recommendation for future geophysical survey includes initially scanning large areas with the gradiometer approach and then ground-truthing similar high contrast negative anomalies. Further gradiometer survey at the site should produce similar results and help to locate other late eighteenth-century features.

REFERENCES

Kvamme, Kenneth L. and Stanley A. Ahler

2007 Integrated Remote Sensing and Excavation at the Double Ditch State Historic Site, North Dakota. *American Antiquity* 72(3):539-561.

Yerka, Stephen J.

2010 Geophysical Survey at Old Stone Fort State Archaeological Park, Manchester, Tennessee. Unpublished Master's Thesis, University of Tennessee, Knoxville.

Appendix 4: . Report on the Paleoethnobotanical Materials from Wingo's Site (44BE0298) (*Heather Trigg and Samantha Henderson)*

FISKE CENTER
FOR ARCHAEOLOGICAL RESEARCH

The Andrew Fiske Memorial
Center for Archaeological Research
University of Massachusetts Boston
100 Morrissey Boulevard
Boston, MA 02125

Report on the Paleoethnobotanical Materials from Wingo's Site (44BE0298)

by

Heather Trigg and Samantha Henderson

Report submitted to:

Barbara Heath University
of Tennessee

Cultural Resource Management Study no. 54
Andrew Fiske Center for Archaeological Research
University of Massachusetts Boston

July 2012

Introduction

This report details the identification and analysis of macrobotanical materials recovered from Wingo's Site (44BE0298) at Thomas Jefferson's Poplar Forest. Wingo's Site, a quarter farm in use from the 1770s through the 1790s, was occupied by slaves and a white overseer whose task it was to grow tobacco for the plantation. The archaeobotanical analysis of materials from two features at Wingo's Site associated with a single slave dwelling provides information about slaves' plant use and the environment during the early years of Jefferson's ownership of the property, before he constructed the main house, visited regularly, or became actively engaged in plantation affairs and landscaping. However, this was not the first use of this land as it had been an active plantation since the mid-18th century, under Jefferson's father-in-law John Wayles. The identification of plant materials from these contexts will contribute to an understanding of the subsistence activities, lifeways, and the environment of a late 18th-century piedmont Virginia slave community. Moreover, this work provides comparative data for analyses of Jefferson's later activities in the early 19th century and even later in the 19th century when the plantation was managed by Edward Hutter, and with of the North Hill site, whose earliest occupation is probably contemporaneous with Wingo's Site. Barbara Heath, of the University of Tennessee, sent the Fiske Center Paleoethnobotany Lab at the University of Massachusetts Boston 95 floated samples and 103 botanical samples recovered from screens during excavation. This report details our examination of these samples.

Wingo's Site Background and Analyzed Features

According to 18th-century historic maps, Wingo's settlement was located in the northwest corner of Poplar Forest (Figure 1; Heath 1994) and is now located on the western edge of a modern farm, approximately 3 miles from the current boundaries of Poplar Forest (Figure 2). Between 2000 and 2011, archaeologists from the University of Tennessee Knoxville and Thomas Jefferson's Poplar Forest surveyed and tested the area historically identified as the Wingo's site. During the summer of 2009, they identified two features (designated ER281 and ER285) as subfloor pits. These features are 4 feet apart and estimated to be located within the same structure, probably a log house with a daub chimney. Both pits were affected by later agricultural activities and are capped with the plowzone and then a layer of topsoil (Heath et al. 2012). While both features date to the final quarter of the 18th century, it appears that the pit in ER 285 was filled first.

The western pit, located in ER281, was roughly circular, with a diameter ranging from 4.2 to 6.5 ft., and was approximately 1.5 ft. deep. This subfloor pit contains eight cultural layers, 281C through 281K (there is no layer labeled I due to possible confusion with the number 1) and a series of rodent burrows, 281L (Figure 3). Artifact analysis suggests that Layer K reflects primary deposition – a period during the occupation of the dwelling when artifacts and botanicals fell into or were swept into the pit. Layer J most likely represents a time during which the structure was abandoned but the pit was left open. Layers C – H appear to be post-occupational, demolition contexts. After occupation and abandonment, the structure was destroyed, resulting in several layers of demolition debris – dense concentrations of charred wood and daub, particularly in Layer G. Levels A and B represent a layer of topsoil and the plowzone, respectively (Heath et al. 2012). These were not sampled for flotation.

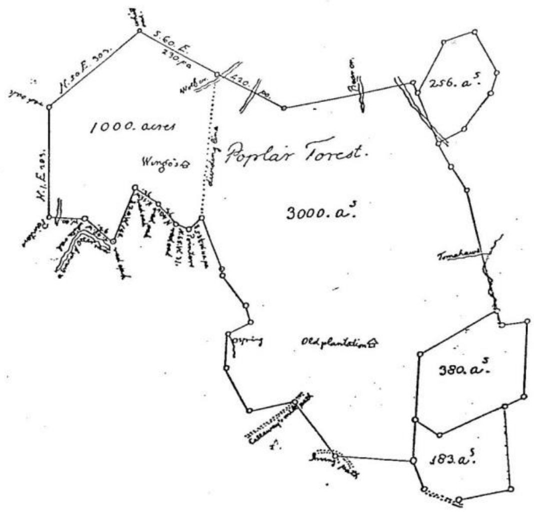


Figure 1. Map of the Poplar Forest Property (circa 1790) including the location of the Wingo's Quarter and the "Old Plantation" (location near which Jefferson would later build his retreat home).

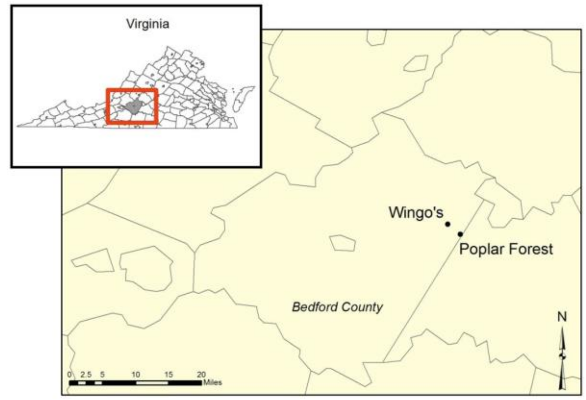


Figure 2. Location of Wingo's Site relative to Poplar Forest. From Heath et al. 2012

The pit feature contained within ER285 is located approximately 4 feet east of ER281. It is similar in size and shape to the pit in ER281 but had significantly different fill. The pit in ER285 was oval in shape measuring 6ft. long by 4ft. wide and 1.5ft. deep from the bottom of the plowzone (Heath et al. 2012). This feature was excavated and sampled similarly to ER281C-L. This feature contained eight cultural layers, 285 C - H, J, and K, and another level along the southern and western edges that most likely represents an animal burrow (Figure 4). Whereas the artifacts and architectural debris within ER281 suggested that it was left open after abandonment and during destruction of the structure, ER285 appears to have been filled before the structure was abandoned (Heath et al. 2012). The fill of ER 285 did not have the large concentrations of daub and other architectural debris, but it did have superimposed layers of charcoal and ash, more consistent with use during the occupation of the dwelling.

Sample Collection and Processing Protocols

Botanical remains were recovered using three different methods: flotation samples, waterscreening, and dry screening. Archaeologists bisected the features and removed sediment for flotation and waterscreening. In ER281, soil from the western two thirds of the pit was saved for flotation and waterscreening. The eastern third of the pit was dry screened in the field. From ER281, 37 flotation samples were taken varying in volume from 1 to 2.75 L with most 2.5 L. A total of 91.25 L of sediment from this feature was floated. From ER285, sediment from the southern half of the feature was removed for flotation and waterscreening, while sediment in the north half was dry screened in the field. Fifty -nine flotation samples were taken with volumes ranging from 0.75 L to 2.5 L (a majority being 2.5 L) for a total volume of 140.75L. All samples were floated in 2009 and 2010 at Poplar Forest using a Flote-Tech Model A machine. Due to the clayey nature of the soil, all samples were soaked in water and 2-3 teaspoons of Calgon for 10-30 minutes prior to flotation (Heath et al. 2012). Light fractions were sent to the University of Massachusetts Boston.

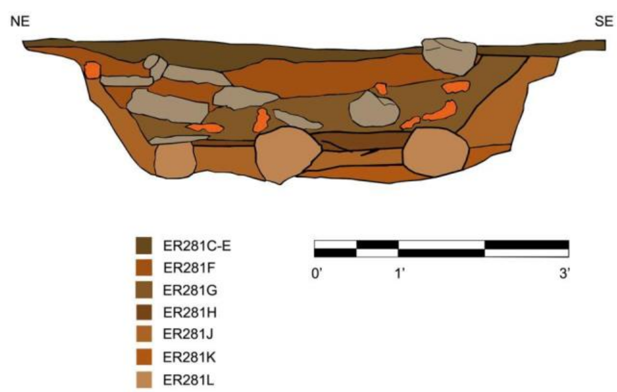


Figure 3. Profile of ER281C-L. From Heath et al. 2012.

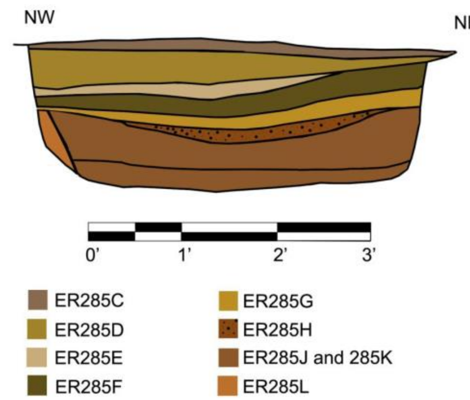


Figure 4. Profile of ER 285C-L. From Heath et al. 2012.

After sample collection for flotation, the remaining soil from the western half of ER281 and the southern half of ER285 was waterscreened through 1/4 in. and 1/16 in. mesh. From ER281 a total of 462 L of soil was waterscreened and from ER 285 a total of 342 L. Students and volunteers at the University of Tennessee Knoxville sorted this material. From the 1/4 in. mesh, all organic material was removed and sent to the University of Massachusetts Boston. The material collected in the 1/16 in. mesh was passed through 1/8 in. and 1/16 in. screens. All organic material from the 1/8 in. screen was then bagged and sent to U Mass Boston. The fraction less than 1/8 in. was examined but no attempt was made to collect all of the charcoal or organic material. As a result, remains recovered from the waterscreened soils are inherently weighted towards larger and more durable organic remains.

Sample Examination and Identification Protocols

Of the 95 samples floated and sent to the University of Massachusetts Boston, 93 were scanned and the organic remains removed and identified (Table 1). The two unscanned samples are light fraction samples 75 and 76 from ER 285 Level E. These samples appeared to have been poorly floated, containing primarily sediment and little organic material and 24.5L of soil in 10 light fraction samples have been scanned from this context. Due to the large quantity of soil that had already been processed from level E of ER 285, we felt it unnecessary to scan these additional samples.

The analyzed samples were scanned under 10 to 40x magnification using a binocular dissecting microscope. With the exception of charred wood, all charred seeds, plant parts, nutshell, and botanical tissues were removed and identification was attempted. In samples with large numbers of seeds from a single taxon, for example those with over 100 wild Poaceae seeds, a sample of 30 seeds were removed and stored; the remaining seeds were counted and returned to the sample. From each light fraction, a sample of 25 charred wood fragments over 2mm in size were randomly selected and identified. They were initially examined under 10 to 40x magnification using a dissecting microscope, but some were viewed under a compound metallurgical microscope at 200 to 600x when necessary for a more specific identification. Identified seeds and wood were separated by taxon, placed in labeled vials or bags and stored in the sample light fraction bags.

All botanical materials were identified to the most specific taxonomic level possible – to family, genus, or, when possible, species. Some seeds, plant parts, and wood pieces remained unidentified, either due to distortion from original charring, their fragmentary nature, poor preservation, or, in the case of charcoal, small size which reduced the number of visible distinguishing characteristics. Botanical materials and charcoal were identified using standard print references (Hoadley 1990; Martin and Barkley 1961; Montgomery 1977), the comparative type collection housed at the Fiske Center for Archaeological Research at the University of Massachusetts Boston, and the United States Department of Agriculture plants database (http://plants.usda.gov).

It is common in flotation samples to find both charred and uncharred plant materials. While non-carbonized seeds from late 18th and 19th century deposits can survive in certain environments, such as waterlogged or desiccated contexts, these subfloor pits do not provide such protective conditions. Thus we consider the uncharred materials to be recent intrusive introductions that do not relate to the archaeological contexts. Similarly, previous investigations of Poplar Forest macrobotanical materials (Bowes and Trigg 2009; Raymer 1996, 2003) have excluded uncharred materials from analysis.

Results

In the course of this analysis, we recovered 4668 seeds and related plant parts (such as cupules and rind fragments) from 46 taxa (Summary Tables 2 through 8), and examined over 2000 pieces of wood and monocot stem from 11 categories (Summary Tables 9 and 10). See Appendix for identifications by sample. Below are the taxa identified from the Wingo's Site, listed alphabetically by family. We detail the various environments in which different plants grow, their uses, and the potential economic importance of many, which can illustrate the multidimensional nature of plant use at Wingo's.

Seeds and Related Plant Parts

Anacardiaceae

Rhus sp.—Sumac

Sumac is a shrubby tree species native to both warm and temperate climates. There are approximately 120 species in the United States which including several species whose fruits are considered edible (Britton and Brown 1896(2):385-388). The seeds recovered from Wingo's most closely resemble *Rhus glabra* (smooth sumac) but there are several other species native to Virginia, including *Rhus typhina* (staghorn sumac) and *Rhus aromatica* (http://plants.usda.gov). Sumac is an early succession tree for it is not highly shade tolerant; as a result it grows in open areas, along forest margins, and in burned areas. It is drought resistant and its berries, which are considered "emergency foods" for wildlife and humans, ripen in late August through September and remain on the plant through the fall and winter (Moerman 1998:472). Across the continent, Native peoples ground sumac fruits into a juice or lemonade. Sumac could have been consumed as a fruit or lemonade by the slaves at Wingo's, especially during the winter or early spring when food might have been scarce. We found 13 sumac seeds.

Caryophyllaceae

The Caryophyllaceae family includes both weeds and cultivated, ornamental plants such as carnations and pinks, and campions. These ornamentals were grown in colonial American gardens (Sumner 2004:190), and planted "in the locks" of the garden fence at Poplar Forest in 1811 (Betts 1944). This family includes large number of weedy species, which inhabit meadows, cultivated grounds, and waste places. We found 2 Caryophyllaceae seeds.

Spergula sp.—Spurry

Spurry is common weed found in fields and waste places throughout the Eastern and Middle United Sates. It is a plant introduced from Europe, not native to North America but it is currently widely distributed (Britton and Brown 1896(2):36). The most common species in the United States is *Spergula arvensis*; *Spergula pentandra* is also found in Virginia but is not nearly as common (http://plants.usda.gov). While the taxon does not seem to have food or economic value, its presence in the archaeobotanical record illustrates the open, cleared nature of the land surrounding Wingo's. We found 1 possible spurry seed.

Chenopodiaceae

Chenopodium sp.—Goosefoot, lambsquarters

Chenopodium is an extremely common weed with around 60 species widely distributed throughout North America. It grows in waste places as well as woods and thickets. *Chenopodium* is a very commonly utilized plant (Britton and Brown 1896(1):570). Throughout North America people consume the leaves as greens and the seeds are considered a pseudo-cereal in some cultures, although this is not common in Eastern North America after the introduction of maize during the Woodland Period. It also has medicinal value as a vermifuge (Moerman 1998:154-155). At Poplar Forest, goosefoot would have grown throughout the plantation and would have been a weed easily collected for food near Wingo's quarter. We recovered 87 *Chenopodium* sp. and 7 seeds identifiable only as Chenopodiaceae family.

Cornaceae

Cornus sp.—Dogwood

Flowering dogwood (*Cornus florida*) is the Virginia state tree and flower but there are numerous species that are present in Virginia and approximately 25 species are native to north temperate zones. Most dogwood species prefer moist soils (Britton and Brown 1896(2):542) and grow as an understory tree for other hardwoods. It is also a common ornamental planting, and Jefferson writes of planting dogwood at Poplar Forest in 1812 (Betts 1944:494). The bark of dogwood, specifically *Cornus florida*, was used medicinally to treat malaria or fever (Moerman 1998). We found 1 dogwood seed.

Nyssa biflora—Southern/water/swamp tupelo

Swamp tupelo is found throughout southeastern North America (Britton and Brown 1896(2):546) growing in wet soils (http://plants.usda.gov). Its presence could indicate that the people at Wingo's frequented the wetland areas or overgrown gullies located nearby. We found 1 tupelo seed.

Cucurbitaceae

The Cucurbitaceae family includes pumpkins, squashes, melons, and gourds. With over 100 genera, this family includes both Old World and New World taxa. Many species are edible and were cultivated in gardens throughout the world. Dry gourds were commonly used as vessels. One seed and eight fragments of plant tissue which most closely resemble *Cucurbita* rind were recovered.

Cucurbita maxima—Winter squash, pumpkin (occasionally)

This species of cucurbit has numerous common names and varieties. It was originally a native of South America but was historically introduced to areas of North America for cultivation and is now widely cultivated. *Cucurbita maxima* is a close relative to *Cucurbita pepo*, a native squash to North America, and commonly cross-pollinates with the native species. Pumpkins, of various species, were a gardened crop and had a variety of food uses. Colonists and Native Americans alike typically stewed pumpkins or baked it in breads. Large, fibrous pumpkins were used as livestock feed (Sumner 2004:126-129). There is some evidence that several Native American groups used parts of *Cucurbita maxima* medicinally, as a diuretic (Moerman 1998:187). In 1794, Jefferson indicated that he planned to plant squashes, which Betts (1944:213) interprets as *C. maxima*. We recovered 1 seed identifiable as *C. maxima*.

Cyperaceae (sedges)

The Cyperacae family consists of around 65 genera and 3000 species with wide geographic distribution. Sedges are grass-like herbs, primarily found in marshy/swampy areas or in moist soils. Sedge leaves could be used for mats or basketry. We identified 6 of these seeds.

Ericaceae

Vaccinium sp.—Blueberry, huckleberry, cranberry

There are around 125 species of *Vaccinium*, which includes blueberries, cranberries, and some huckleberries. These fruits were originally wild fruits but over time, those in particular demand were cultivated (Sumner 2004:122). These many-seeded berries are most common in mountain areas but some species, like cranberries, inhabit swamps and wet areas (Britton and Brown (2):575-580). There are several *Vaccinium* species native to Virginia including *Vaccinium pallidum*, blue ridge blueberry, whose fruit is considered "superior to all other blueberries" (Britton and Brown 1896 (2):579). We found 6 blueberry seeds.

Fabaceae

Bean family species are prized as crops for their nitrogen-fixing qualities, making them excellent crops to replenish depleted soils. Historical records indicate that many cultures intercropped or rotated beans with grains. In addition to the seeds identified to genus, there were 27 specimens that were only identified to Fabaceae. While most of these likely represented wild Fabacaeae species, some appeared to resemble domesticated genera such as *Phaseolus* and *Vigna* but were too fragmentary or damaged to conclusively identify.

Gleditsia triacanthos—Honey locust/sweet locust

This large, deciduous tree produces long, many-seeded pods (Britton and Brown 1896(2):260). This species is naturalized east of the Appalachians (USDA 1974:431-433). Honey locust is a pioneer species commonly found in overgrown pastures, fields, fence lines, and wood lot edges. It prefers moist fertile soils, and is commonly found in the upland areas along river drainages. The dry and pulverized pods can be used as a sweetening agent and as a food (Sumner 2004:202). We found 1 honey locust seed.

Lathyrus sp.—Sweet pea, vetch

This ornamental, flowering plant is a wild perennial pea. There are about 110 species; most like moist and wet environments but they are also found in waste places (Britton and Brown 1896(2):329-331). *Lathyrus latifolius* is the most common species in North America but other species are present in Virginia including *L. odoratus, L. palustris, and L. hirsutus* http://plants.usda.gov). These plants produce pleasing flowers so could be used as an ornamental. The pea pods of some species can be consumed but this uncommon (Moerman 1998:299). We found 1 vetch seed.

Phaseolus sp.— Common bean

This genus includes, among others, *Phaseolus vulgaris, Phaseolus lunatus* (lima bean), and *Phaseolus coccineus*. There is a large amount of variability in seed size, shape, color, and coat markings as well as in pod characteristics even within *Phaseolus vulgaris*. *Phaseolus* tolerates a wide range of soil conditions and flourishes in infertile and marginal sites. Native Americans planted beans throughout their fields interspersed with other crops. As a food, beans have been prepared in a variety of ways: in soups, stews, or baked, or as succotash, cooked with corn cut from the cob (Sumner 2004:77-78). This taxon was common in diets among people of North America, but is infrequently recovered in archaeological contexts, typically because it preserves poorly. We recovered 4 beans.

Trifolium sp. - Clover

There are around 250 species of clover – most are found in fields and waste places (Britton and Brown 1896(2):274-279). Red clover, *Trifolium pratense*, for example is naturalized from Europe but grows wild throughout North America. In addition to growing wild, clover was planted by Jefferson as part of his crop rotations to replenish the nutrients in the soil and to use the crop as animal fodder (Betts 1944). Several taxa can be used as food, the leaves consumed as greens or the flowers made into teas (Moerman 1998:566-567; Sumner 2004:176). We recovered 1 clover seed.

Vigna sp.—Cow pea, black-eyed pea

The cow pea is native to the warm, tropical regions of Africa. Like numerous African cultivars, it was introduced to North America as a result of the slave trade either by slavers as provisions for the trip across the Atlantic or by slaves who attempted to bring familiar crops to their New World. In Africa, cow peas were typically intercropped with sorghum (Carney 2011:14). While cow peas are a cultivated species, they will escape from cultivation and grow wild (Britton and Brown 1896(2):339-340). We identified 3 cow peas.

Fagaceae

Quercus sp.—Oak

Oak is one of the most prevalent trees in the Piedmont of Virginia. There are 70 species of *Quercus* native to the United States and their uses are just as varied (USDA 1974:692). Oaks grow as major canopy tree in the hardwood forests that surrounded Poplar Forest. Few acorn nutshells were found in the deposits and only in ER 281. Acorns were consumed as a food and used as dyes, although some acorns are bitter and require substantial processing before they can be consumed (Sumner 2004). Acorns would have been collected in the forests around the plantation in the same environment as much of the collected fuel wood. We only identified 2 acorn nutshell fragments.

Castanea sp.—Chestnut

Chestnuts are small- to-medium-size deciduous trees that grow in hardwood forests throughout North America. *Castanea dentata* was the most important species in North America and is the only native species of *Castanea* to the United States. The nuts were a popular food among Native Americans and Europeans. The nuts ripen in late August to September (USDA 1974:273-274) and would typically be roasted or stored dry (Sumner 2004:150). We only recovered 1 nutshell fragment identifiable as chestnut.

Juglandaceae

We recovered 3 nutshell fragments were recovered that could only be identified to the Juglandaceae family. These are either walnut or hickory nuts. Many of the 182 unidentified nutshell fragments are probably Juglandaceae.

Carya sp. - Hickory

Carya species include hickory nut and pecans. Hickories were valued for timber and food (USDA 1974:269). Hickory nuts and pecans were used in numerous foods as well as dyes. Only two pieces of hickory nutshell were firmly identified.

Juglans nigra—Black walnut

Black walnuts were used in bread baking as in soups as well as consumed raw or even pickled, although their meat is considered inferior in taste to English walnuts. The fruits of black walnut were also used in dye production (Sumner 2004:150-151). We identified 11 fragments of black walnut.

Lamiaceae

The mint family consists of over 7000 species and contains many of the common culinary herbs, such as mint, sage, oregano, and thyme.

Salvia sp. - Sage

The *Salvia* genus contains over 500 species of sages with wide distribution in temperate and tropical regions (Britton and Brown 1896(3):99-100). There are several species found in Virginia including *Salvia officinalis*, kitchen sage, which is a common cooking herb. Sages grow wild in woods and thickets but are also common garden plants (http://plants.usda.gov). Sages would have been used as flavoring in cooking as well as in teas (Sumner 2004:176, 198). We found 1 possible sage seed.

Mentha sp. - Mint

There are numerous species of *Mentha* present in Virginia (http://plants.usda.gov). These highly fragrant herbs prefer moist soils and waste places; there are several wild species but many mint species are easily gardened. Mints are used as a seasoning, in teas and as a medicinal herb (Sumner 2004:176, 198). We found 1 mint seed.

Linaceae

Linum sp.—Flax

Linum ussitatissimum is the most common cultivated species of flax, and has been cultivated for thousands of years for fiber and oil. In his Garden book Jefferson mentions two different *Linum* species: *Linum usitatissimum* and *Linum virginianum*; he was well aware of the wild species and indicated that it might be useful for fibers (Betts 1944:647). Typically flax seeds produced for oil are significantly larger than use used to produce fibers (Renfrew 1973). The flax seeds identified in the deposits were significantly smaller than *L. usitatissimum* grown for oil and therefore more likely were either the type grown for flax (which is consistent with documentary evidence) or the wild species, *L. virginianum*. *L. virginianum* seeds measure 1.2-1.4 mm long and 0.7-0.8 (-0.9) mm wide (Rogers 1963). We recovered 2 seeds. One seed recovered from Wingo's measured 3.4 mm in length and an estimated 1.7 mm in width (estimated because the seed is damaged), and the second seed, while not measured, was similar in size. These measurements are not consistent with *L. virginianum*, so we suggest that this specimen is the *L. usitatissimum* associated with linen production.

In a 1790 letter, Jefferson wrote of the beginning the "domestic cultivation & manufacture of hemp, flax, cotton & Wool for the negroes" at Poplar Forest (Betts 1944:152). He included flax planting in his crop rotation processes at his plantations (Betts 1944:194), and he writes of slaves at Poplar Forest spinning flax (Betts 1944:466). Thomas Mann Randolph encouraged Jefferson to plant flax in areas along streams and says he sets aside a meadow area for this purpose (Betts 1944:198). In colonial Virginia, enslaved peoples also cultivated flax as a garden crop (Walsh 1993).

Oxalidaceae

Oxalis stricta—Common yellow oxalis/sorrel

Oxalis thrives as an herbaceous weed in woods and fields throughout North America (Britton and Brown 1896(2):346). While sorrel is used for food, it has a harsh salty or sour taste so people do not commonly consume it. Several native groups have used sorrel as an herbal remedy (Moerman 1998:374). We recovered 7 oxalis seeds.

Poaceae

The grass family includes common cultivated grains like maize, wheat, and rye as well as wild grasses. Wild grasses grow in almost every type of environment, from swamps to fields and waste places. Poaceae seeds (caryopses) were identified in almost every layer of both subfloor pits at Wingo's. Jefferson sought grass seed to create the beautifully manicured lawns that surrounded his houses and slaves used grasses to line subfloor pits. We identified 3 Poaceae seeds that we could not determine whether they were a domestic species or wild, and we recovered 3211 wild (non-domestic) grass seeds. There are references to slaves selling grass seeds to Jefferson and others; apparently they harvested seeds and used them as a small source of income (Heath pers. comm.).

In addition to these wild grasses there were three cultivated grains found at Wingo's: *Zea mays* (maize or corn), *Secale* sp. (rye), and *Triticum aestivum* (wheat). Grains like wheat and rye most likely represent grains grown in large scale at the plantation and perhaps provisioned to the people at Wingo's as food, either for humans or livestock. However, maize was both grown as a plantation crop and provisioned to slaves and it was produced in slaves' gardens. We identified 1 grain as Cerealia, wheat or rye, but could not identify it more specifically.

Eleusine indica - Indian goosegrass

Indian goosegrass, a species of wild grass, was identified in several samples from ER 285. This tufted grass, naturalized from the Old World, is typically found in waste places throughout North America. While it is edible, there are few records of groups consuming it in a significant way (Britton and Brown 1896(1):181). We recovered 2 of these seeds.

Panicoid - type – Panic grass

Some of these wild grasses like those in the *Panicum* genus are useful as a food grains (Moerman 1998:376-377). Panic grasses would have grown around the plantation and the quarter and would have been easily collected as a supplemental grain. We recovered 80 of these seeds.

Panicum miliaceum—Broomcorn millet

Two seeds from both pit 281 and 285 were identified as *Panicum miliaceum*, a grass that grows both wild and in cultivation. It was introduced from the Old World, principally China and south Asia (Britton and Brown 1896(1):123). This grain grows wild in waste places but was also cultivated or encouraged. Millet was most likely grown in gardens at Wingo's as a supplementary grain or fodder for livestock. However, this is not a species of millet associated with the African diaspora. These species of millet, *Pennisetum glaucum* (pearl millet), *Eleusine coracana* (finger millet), and *Digitaria* ssp. (fonio) were cultivated in Africa and historical documents note the continued use of millet in gardens of African slaves in the New World (Carney and Rosomoff 2009). We identified 1 one these seeds.

Secale sp.—Rye

Rye was grown a Poplar Forest as a field crop, produced for the support of the farm (Betts 1944:641). When combined with cornmeal it could be made into a bread. We identified 6 grains of rye.

Triticum aestivum—Wheat

Wheat, along with tobacco, was a major cash crop at Poplar Forest during Jefferson's ownership of the property after the winter of 1790 when he sold his first crop. The switch from focusing on tobacco production to wheat drastically changed the nature of slave labor in Virginia (Heath 2012). Many plantation owners eventually abandoned tobacco, which was labor-intensive to grow, depleted soils, and while valuable was not as profitable as it had been in the 17th century, and instead they emphasized wheat as a cash crop, since the market for wheat was more stable than the tobacco market. We identified 35 kernels of wheat.

Zea mays—Corn, maize

Maize has a long history of cultivation in the New World. Both maize kernels and cupules (the part of the cob that holds the kernels) were recovered. This may reflect their use as tinder or fuel. Kernels were eaten whole, made into hominy, added to stews or ground into flour. Maize flour was provisioned to slaves, but they were also allowed to grow it in their gardens. The presence of the cupules in the deposits suggests that the slaves were growing maize. While grown in slaves' gardens, it was also a common field crop. When grown as a plantation crop Jefferson suggested that it should be intercropped with potatoes or peas (Betts 1944:194). We identified 29 maize kernels and 137 maize cupules.

Polygonaceae

The Polygonaceae family includes both *Polygonum* and *Rumex* among other taxa. Many taxa in this family are weedy plants, such as dock and knotweed, but some are cultivated such as buckwheat (*Fagopyrum*). We recovered 25 Polygonaceae seeds that we could not identify to a lower taxonomic level, but they are probably either *Polygonum* or *Rumex*.

Polygonum sp.—Knotweed

This genus includes several hundred species, many of which are edible as greens. They grow in wet soils and waste places and several species grow naturally in Virginia (Britton and Brown 1896(1):555-567). In addition to their use as an edible green, some species, including *Polygonum sagittatum* (present in Virginia) are used as a medicine (Leighton 1986:468). We recovered 67 *Polygonum* seeds.

Rumex sp./*Rumex crispus*—Dock

Most species of *Rumex* are edible and collected as wild leafy greens. In addition to its value as a food, *Rumex* was also used by various native group as a medicinal herb, most likely due to its high amounts of oxalic acid and tannins (http://herb.umd.umich.edu/; http://plants.usda.gov). Some types of *Rumex* were cultivated and Jefferson planted "French sorrel" or *Rumex scutatus* (Betts 1944:213). However, dock is a weedy plant that thrives in disturbed ground. We recovered 11 *Rumex* seeds.

Portulaceae

Portulaca sp. —Purslane

Purslane is a weedy plant found in fields and waste places. While some species are endemic to the New World (Britton and Brown 1896 (1):4-6), most present in Virginia, like *Portulaca grandiflora* or *Portulaca oleracea*, are introduced to the area (http://plants.usda.gov). Purslane is commonly consumed as a leafy green, either cooked or raw (Moerman 1998). We recovered 16 purslane seeds and 1 seeds which we identified to the Portulaceae family.

Ranunculaceae

The members of this family include buttercups and prefer moist habitats. We found 1 Ranunculaceae seed.

Rosaceae

Prunus persica—Peach

Peach is a cultigen introduced to the New World by Europeans. Jefferson grew peaches at both of his plantations and his records indicate that he allowed his slaves to pick fruit from the trees for themselves (Betts 1944). Peach pits were recovered primarily from ER281. Peaches could be consumed raw, baked, or preserved. We identified 244 charred peach pits. One pit was embedded in daub.

Rubus sp.—Raspberry, blackberry

About 250 species of raspberry are distributed throughout North America in environments from dry mountainous soils, woods/thickets, to wet swamps and low grounds. At Monticello, Jefferson had raspberry beds (Betts 1944:348), but these plants grow wild in old fields and forest margins. We found 2 raspberry seeds

Pyrus sp.—Pear

There are approximately 12 species of pear, all of which are native to the Old World. Several species were introduced through cultivation to the New World, including *Pyrus calleryana* (Callery pear) and *Pyrus communis* (common pear). Pears could have grown wild around Poplar Forest, having escaped from cultivation, in thickets and woods. However, it is likely in the 18th century that any pears in Virginia would have been intentional cultivars. We identified 1 pear pip.

Solanaceae

Nightshade family includes many weeds that grow in waste places and fields throughout Virginia. This family includes wild plants like *Physalis* sp. (ground cherry) and *Solanum* sp. (nightshade), as well as cultigens like *Nicotiana* (tobacco), *Solanum tuberosum* (potatoes) and in even peppers (*Capsicum* sp.). There were several seeds from Wingo's identified only to the family of Solanaceae. We found 2 Solanaceae seeds which we could not identify more specifically.

Datura stramonium—Jimsonweed, Jamestown weed

This weed grows in fields and waste places, as well as disturbed environments and urban spaces. It is also known for its medicinal uses by Native American groups, but it is poisonous as a food and can only be consumed in small amounts, as a medicine (http://plants.usda.gov). This plant does not likely represent food use but possible medicinal practices at Wingo's. We found 1 jimsonweed seed.

Nicotiana tabacum—Tobacco

One seed of *Nicotiana tabacum* was identified in level K in pit 281. This species of tobacco is the most commonly cultivated tobacco species. Tobacco, a major cash crop in Virginia since the early 17th century, is particularly evocative of the work that the people at Wingo's most likely endured as part of their responsibilities under Jefferson. Documentary evidence suggests that the Wingo's settlement, in particular, was established to produce tobacco, the profits from which would have been used to pay off John Wayles' (Jefferson's father-in-law) large debts (Heath et al. 2012). The presence of the tobacco, and the seed in particular, at the site supports the notion of production rather than merely consumption. During cultivation, tobacco plants were "topped," a process that removed the flowering stalk and prevented the formation of flowers and seed, which wasted the plant's energy (Cotton 1998). Thus the presence of a charred tobacco seed in this subfloor pit is suggestive of planting of tobacco, not merely its use for smoking or chewing. Tobacco is typically sown in the middle of March (Cotton 1998). We found 1 tobacco seed.

By the time Wingo's was established, planters in Virginia had come to realize that tobacco farming was no longer the cash crop it had been in the 17th century (Samford 2007:103). Most, including Jefferson, had begun diversifying their crops. In 1790 Jefferson wrote of his desire to cease growing tobacco altogether at Monticello and to reduce drastically the amount grown at Poplar Forest (Betts 1944:152). This suggests that at Poplar Forest Jefferson continued tobacco planting later than he did at Monticello, even while tobacco's popularity as a crop waned and wheat became more popular as a cash crop.

Vitis sp.—Grape

Some grapes are cultivated but there are several wild species that grow in Virginia. At Monticello, Jefferson writes of growing grapes (Betts 1944). Because it is difficult to distinguish between domestic grapes and wild grapes, we cannot be certain if the specimen recovered from Wingo's was cultivated or gathered, but since Wingos was occupied before Jefferson became actively involved in Poplar Forest, we are assuming that these specimens are wild. Wild species are typically found in thickets, in forest margins, or lightly shaded forests. Depending on the species, the fruits ripen between late spring into the fall (Britton and Brown 1896(2):407-410). We found 1 grape pip.

Starchy material

In several samples we identified a starchy material that most closely resembles charred potato tubers (Table 8). Jefferson suggested that potatoes be grown with maize planted thinly

(Betts 1944:194). However, many of the pieces were too small to identify, and some of these may be charred pieces of flour – wheat, maize, or rye. We recovered 468 such fragments.

Wood

Aceraceae

Acer sp. - Maple

Maples are deciduous trees and shrubs consisting of over 115 species (USDA 1948:62; Bailey 1949:635). *Acer saccharum* (sugar maple), *Acer saccharinum* (silver maple), *Acer rubrum* (red maple), *Acer negundo* (boxelder) are all common in Virginia and are all shade tolerant and can be found in moist areas (Samuelson and Hogan 2006:76, 80-86; Petrides 1988:64, 68-71). Maples are commonly harvested for their edible sap (Medve and Medve 1990:202-203), but most species do not generate a great deal of heat and are not prime fuel woods. Maple wood was recovered in small amounts (7 pieces) in the charcoal assemblage.

Fabaceae

Gymnocladus dioicus – Kentucky coffee tree

Kentucky coffee tree roots were used for medicines. The wood was used for timber and fence posts (USDA 1974) along with many other construction purposes (www.fpl.fs.fed.us/research/centers/woodanatomy/techsheets). It has also been used as a fuel, but it generates little heat so it would not have been a prime fuelwood. Kentucky coffee tree wood was recovered in several samples, and in significant proportions in ER285G for a total of 73 pieces.

Fagaceae

Castanea sp. – Chestnut

There are five to six species of *Castanea* native to North America, two of which were once prevalent in eastern hardwood forests, mainly along the Appalachians (Samuelson and Hogan 2006:222). It was a dominant tree utilized for its timber (USDA 1948:112), but it generates a low amount of heat when burned. It was a major timber species in the Appalachian region, until most of the mature trees were destroyed by blight in the late 19th century (Sumner 2004:152). We only identified 1 piece of chestnut wood.

Quercus sp. – Oak

There are about 300 species of oak trees (Bailey 1949:329), which are deciduous and grow in the well-drained soils of mature forests (Medve and Medve 1990:204-205). They are most valued for the hardwood timber for construction purposes, especially in white oak, which is more durable (USDA 1948:297). Oak wood can be divided into two types (red oak-type and white oak-type) based on micromorphology of the wood. Red oak-type is found in most areas of the eastern United States, including Virginia (Samuelson and Hogan 2006:288; Petrides 1988:141). The white oak-type is also found in most of the eastern United States north of

Florida, including Virginia (Samuelson and Hogan 2006:230; Petrides 1988:145). At Wingo's, oak was the most common wood taxon identified – 1395 pieces. Some species were also used in basketry.

Juglandaceae

Carya sp. - Hickory

These deciduous trees are a dominant species, after oak, in the hardwood forests throughout the Piedmont. Hickory is a strong heavy wood (Petrides 1988:98) that when burned provides a lot of heat (Medve and Medve 1990:210-211). Hickory wood was common (60 pieces) in the charred wood assemblage.

Magnoliaceae

Liriodendron tulipifera – Tulip or Yellow poplar

Common in Virginia, Tulip or Yellow Poplars are shade tolerant and found on stream banks, well-drained bottomlands, coves and ravines (Samuelson and Hogan 2006:352-353). They serve as the namesake for Thomas Jefferson's Poplar Forest and several of the original poplars still stand today. We only recovered 1 piece of identifiable tulip poplar wood perhaps reflecting its poor quality as fuel wood.

Pinaceae

Pinus sp. – Pine

There are 80 species of pine (Bailey 1949:104) that mainly grow in dry, sandy soils (Petrides 1988:34). About 30 species are native to North America and are valuable timber trees, while some species are used in the protection of steep slopes from erosion (USDA 1948:360). Of the pine species, white pine is both the largest and most valuable (Petrides 1988:62-63). With respect to their value as fuel, pines are generally considered inferior to hardwoods, and this may be the reason we only recovered 9 pieces of charred pine in the assemblage.

Hardwood

In some cases we could not identify charred wood to a more specific taxonomic level, but we could distinguish whether the specimen was hardwood (angiosperm) or softwood (gymnosperm). We identified 37 pieces as hardwood.

Monocot stems

A large number of monocot stems (90 pieces) were identified in the assemblage. Some of these were consistent with maize stalks, but smaller grasses were used to make baskets and to insulate subfloor pits (Samford 2007).

Morphological Types

Ring Porous/Diffuse Porous

For hardwood that could not be identified to a lower taxonomic category, we attempted to assign a morphological category – ring porous or diffuse porous -- based on the arrangement of pores within an annual ring (see Hoadley 1990). While such categories may not tell us what a piece of wood is, it can help us identify possible taxa and more importantly what the wood is not.

Ring porous woods include oaks, hickory, ash, and mulberry among others. Diffuse porous woods include maple, cherry, dogwood, tulip poplar, magnolia, willow, and aspen. We identified 563 pieces of ring porous wood and 34 pieces of diffuse porous wood.

Discussion

The plant remains we recovered reflect slaves' foodways, their activities on the plantation, their construction materials and fuel use, and the plantation's production for the market. While many of the seeds reflect slaves' foodways, wood and even some non-woody botanicals such as corn cobs might represent fuel use and not food production or consumption. Likewise, seeds and other plant parts might be present which were not deliberately used, but which may represent natural, background seeds that were brought into houses on clothing or shoes or windblown and accidentally charred. These are not necessarily indicative of foodways but are accident inclusions in the archaeological record, which can illustrate the nature of the environment or particular activities in which slaves were engaged around Wingo's. Below we discuss considerations of preservation and stratigraphic history for interpretation of the finds. Then we discuss what the findings mean for slaves' subsistence and plantation activities.

Recovery and Stratigraphic History

The recovery techniques and sampling employed also create inherent biases in the collection. Many of the unfloated materials from the subfloor pits were recovered by waterscreening. Waterscreening collects material over 1/8 in., and would not recover smaller botanicals, like tobacco seeds or wild grass and weed seeds for example, which can be less than 1mm in size. However, a large portion of the botanicals recovered that likely represent food consumption and production were large enough that they would have been recovered in the waterscreen.

This analysis, like others undertaken at Poplar Forest, limits its interpretation to the charred materials. It is important to understand the processes by which the plant remains became charred in order to interpret the plants recovered and identified. Seeds and other plant parts must have been exposed to fire whether through cooking, as part of cleaning up, or as a source of fuel. Many seeds in this collection could have been burned during the process of cooking when they were spilled into the fire. Food preparation debris may also have been swept into the fire when the dwelling was cleaned. Alternatively herbs that were hung for drying or storage may have shed seeds, which were later swept into the fireplace.

Catastrophic burning of structures, such as *may* have occurred (it is unclear) during demolition, adds plant materials that would not ordinarily be subject to charring, and aids in the preservation of charred materials that might have been extant in the house but had not been charred during its use. We do need to carefully interpret these remains, however, since unused structures are perfect habitats for wildlife (squirrels and other rodents, and birds) to nest (Miller

1989). Such animals may have added to the seeds present during the abandonment of the structure.

The complex, but well-investigated stratigraphic history of the pits also assists us in interpreting the recovered plants. Below we discuss the botanical assemblage according to the interpretations of the layers by Heath (Heath et al. 2012): *Occupation* covering the period when the structure was inhabited; *Abandonment* for the layer representing the brief period when the structure was empty but had not yet been destroyed; and *Demolition* for the layers representing when the structure was possibly burned and demolished.

Contexts 285C-H and 281K (Occupation)

Because of the thin superimposed layers of ash, Feature 285 Layers C-H and Feature 281 Layer K are interpreted as being deposited when the structure was in use, which gives indications of the plants that were part of the slaves' activities during the occupation of the dwelling. The cultivated plants recovered include tobacco, clover, flax, maize, beans, wheat, cow peas, peaches and pear (Table 2).

Those foods which were fruits presumably gathered from wild plants include blueberry, sumac, and grape, although documents indicate that at Monticello at this time, Jefferson cultivated grapes, raspberries and blueberries; other plants which may have grown wild. The Kentucky coffee tree may have been food or medicine. We also recovered a few nutshells – either hickory or black walnut, but no acorns or chestnuts (Table 4).

Context 281J (Abandonment)

Since Feature 281 Layer J represents a different depositional history (an abandonment period) from 285C-H and 281K, we discuss this layer separately. Layer 281J is interpreted as indicating a post occupational layer. The botanical specimens were perhaps charred during the use of dwelling and ambient in the structure, but not yet swept into the pit when it was abandoned. During the abandonment period, wind and water moved them in to the subfloor pit. Such charred materials would also indicate deliberate use.

Cultivated taxa present in this layer include maize, wheat, rye, and a few peaches. There are few nutshells, only hickory or walnut, associated with this layer. Weedy taxa are limited to goosefoot seeds. There are substantially more (by an order of magnitude) wild grass seeds in this layer than in ER 281K or the ER 285 (Table 7), but their density is lower than in the upper layers of 281. These seeds may have come from sweepings (broomcorn brooms) or the linings of pits or floors; or they may represent natural seed rain brought in by wind or on people's clothing. Additionally, a charred starchy material, tentatively identified as potato (*Solanum tuberosum*), occurs in the highest amounts in this layer (Table 10). This could provide evidence of food material potentially left within the pit. Potatoes and other root vegetables were commonly stored in subfloor pits (Samford 2007).

Contexts 281C-H (Demolition)

The quantity and types of charred materials in these layers require careful consideration as they may be either human or animal introduced or some mixture of the two. Dogwood, tupelo, and raspberries are prime candidates for animal introduction into the abandoned building:

dogwood and tupelo are taxa that do not have food value and they were sparsely recovered. Raspberries are a common food of many animals and were rarely recovered. Some of the other wild, weedy seeds such as *Spergula*, *Portulaca*, *Datura*, *Polygonum*, *Rumex crispus*, and *Oxalis*, which are not found in the Occupation or Abandonment layers, or are not found in large numbers except in the Demolition layers, may also be natural seed rain, reflecting the disturbed area around the abandoned structure. Similarly, the large quantity of Poaceae seeds in these layers may merely be from grasses growing around the structure, which burned and became incorporated into deposits when the building was demolished (Figure 5).

The interpretation of the substantial quantities of wheat, maize, and rye is also difficult. Small seeds such as wheat, maize, and rye could be lost onto the floor of the dwelling and only burnt when the structure was destroyed. However, animals would also collect these taxa and bring them into the dwelling. The peach assemblage likewise is problematic. The largest numbers of peach pits in the assemblage come from these layers. The consumption of peaches for food by slaves is not in doubt. However, attributing the peach pits from these layers to human consumption must be considered carefully because animals also hoard and consume them. Moreover, at least 1 charred peach pit was found embedded in daub, and these may have been used as a sort of binder for the daub, much like the charred monocot stems we recovered. These plant materials may have been charred if the structure was burned during demolition, or if they were associated with the daub around the chimney, when the structure was in use. Likewise, acorns and chestnut only occur, and the majority of walnut/hickory nuts were recovered, in these layers and must be treated as possible animal introductions.

Distinguishing the sources of the plant materials is important, but we are not advocating that the plant remains recovered in the demolition layers be ignored or the information about them discarded. Rather, we suggest that they be interpreted carefully and that quantitative and comparative studies may wish to treat them separately because even the cultigens may have been selected and introduced into the structure and the deposits by rodents or other animals.

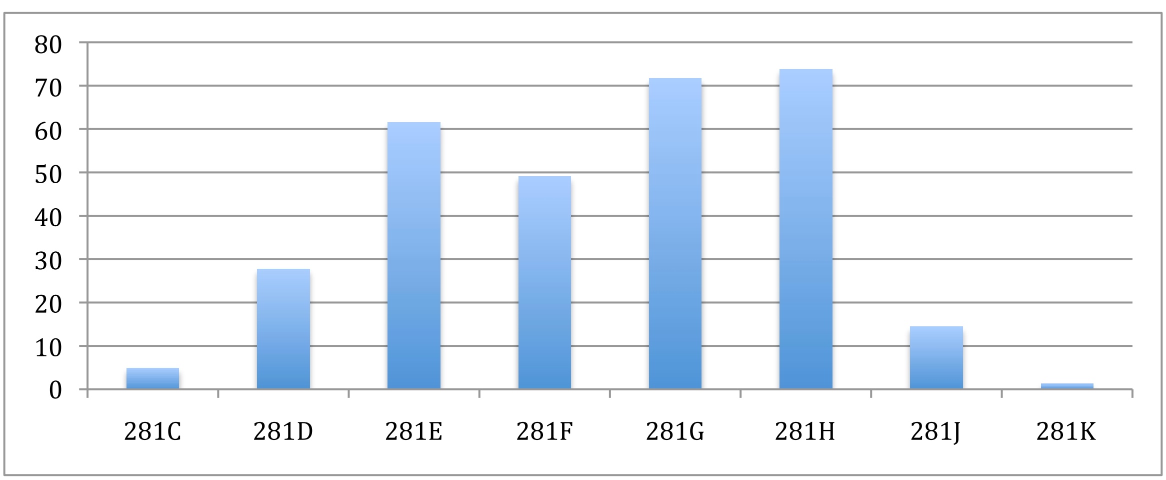


Figure 5. Number of Wild Poaceae Seeds/Liter in ER281C-K

Foodways

The plant remains indicate the inhabitant's of Wingo's quarter were consuming a combination of cultivated and gathered resources. The cultivated resources included both those grown in their own gardens and in the plantation's fields and orchards. The botanical assemblage makes a strong case for slaves growing maize in their own gardens. In Feature 285, the cupules were present in every layer and nearly every layer of Feature 281. The presence of whole kernels and cupules is consistent with slave's production rather than the provisioning of meal during this period.

Slaves may also have grown cow peas, and perhaps squash in their gardens. Peaches, pears, and cereals such as wheat and rye probably came from the plantation's fields and gardens. Wheat, as a plantation cash crop, may have been provisioned because it is not a typical garden crop and we find no archaeobotanical evidence for its cultivation or processing in the immediate area. Typically wheat was provisioned as flour, so the presence of whole kernels is interesting. It may be that the slaves grew their own wheat, but we did not find the plant remains such as chaff or rachis fragments typically associated with wheat production. Alternatively, the slaves may have acquired the wheat directly from the farm's crops.

The foods consumed by the slaves consisted of African, Eurasian, and Native American domesticates. The only African domesticated crop we recovered was cow peas. The type of millet recovered is associated with Asia – China or India rather than Africa, but more likely, these specimens are from a wild species. While maize was domesticated in the New World long before the arrival of Europeans, by the 17th century, it was well known in Africa (Carney and Rosomoff 2009). It was introduced to Cape Verde by 1540 (McCann 2005), to the mouth of the Congo by the mid-16th century, and in the Gold Coast by early 17th century. It was accepted and incorporated into subsistence strategies quickly, so that by the early 18th century Africans were familiar with its cultivation (Carney and Rosomoff 2009). If African slaves viewed this crop as alien, they most likely considered it European rather than Native American.

Weedy plants, encouraged by the disturbance produce by daily activities around the quarter, included goosefoot/lambsquarters whose greens and seeds could have been encouraged in gardens and consumed (Table 5 and Table 6). Greens such as lambsquarters and purslane would have provided seasoning to a bland diet of maize or other cereals as well as vitamins and other necessary micronutrients that those cereals lack. While these were present in small numbers, they may indicate that the greens were eaten.

The non-cultivated plants such as the sumac, grapes, and berries were probably gathered for food from forest margins or older abandoned fields (Table 3); others such as the nuts (Table 4) probably came from forest plants. Although Jefferson visited Poplar Forest and it was an active farm, it appears that Wingo's site was occupied before he implemented his landscaping plans and introduced many of the cultivars, such as specific types of grapes, raspberries, chestnuts, or walnuts (Betts 1944), evident in later years. Since these are prior to such introductions, we interpret the raspberry, grapes, and walnuts as gathered resources from the forest and forest margin rather than produce from the plantations gardens or deliberate plantings.

Fuel and Construction

The wood assemblage was comprised primarily of oak and other hardwoods (Tables 9 and 10). In both features, pine is represented in very small quantities. Combining the data from the two features, there are two major trends in the charred wood assemblage. There is, in general, greater species richness in ER285 (all layers) and ER 281J and K than in the rest of ER281C-H. While oak is dominant in most layers, non-oak species comprise greater proportions of the assemblage (Figures 6 and 7). The charred wood assemblage from the demolition layers is almost exclusively oak, comprising more than 90% of the wood identified in these layers. This is consistent with the different depositional histories that the layers represent.

The large proportion of oak from ER281C-H perhaps represents the architectural pieces of the structure that were burned during demolition. This suggests that the dwelling was probably constructed almost exclusively of oak. Similarly, the presence of monocot stems only in ER 285 suggest possible use in daub, especially since some of the stems were a size consistent with corn stalks. The use and abandonment layers contained a greater proportion of other species – maple, hickory, Kentucky coffee tree, tulip poplar and even a small amount of pine. These pieces of wood probably represent fuelwood burned during the use of the structure. If this is the case, the different types of wood probably represent wood available around the settlement and gathered as available or encountered, rather than selecting for better fuels. Given the relatively high proportion of Kentucky coffee tree wood in 285G and presence of tulip poplar and chestnut (Figure 7), which generate relatively little heat compared to oaks, hickories, and even most maple, it does not appear that the slaves actively selected only for prime fuelwoods.

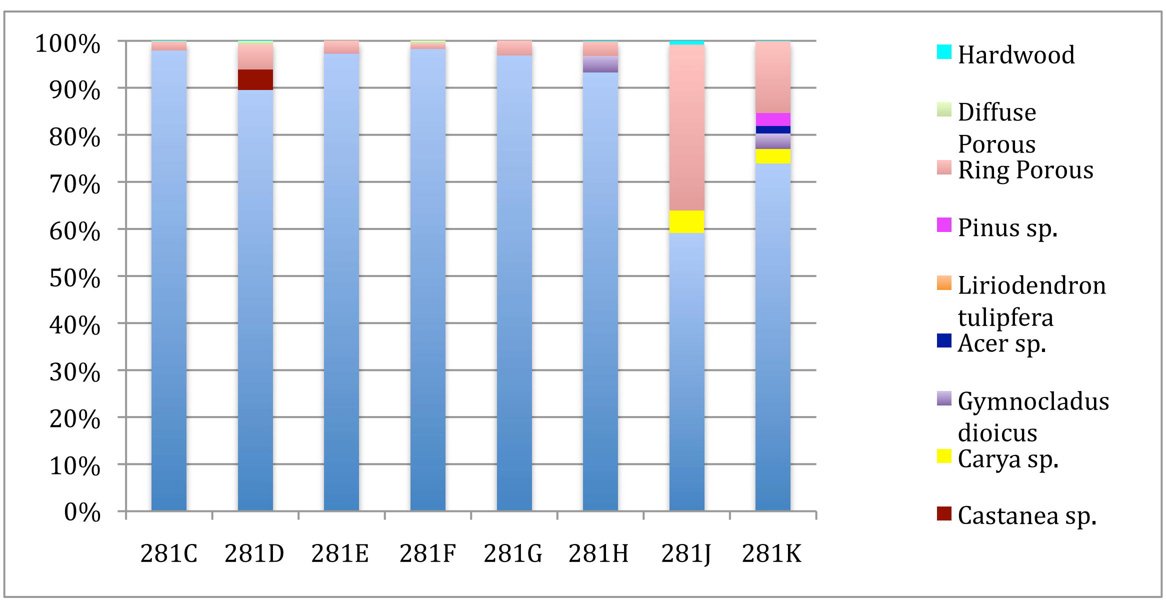


Figure 6. Charred Wood Assemblage from ER 281 by Level

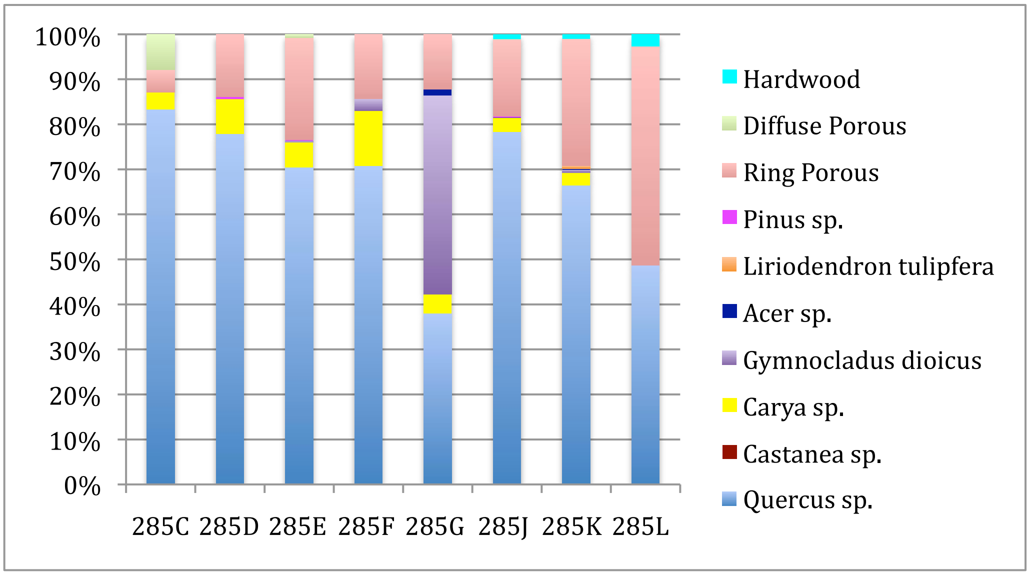


Figure 7. Charred Wood Assemblage in ER285 by Level

Activities

Some of the plant remains reference the types activities in which the slaves were engaged. The presence of wheat and tobacco indicate the slaves' participation in the production of crops for the market. Likewise the presence of rye, flax, and squash may indicate their activities in producing goods for the support of the plantation because some cereals were raised to feed livestock (Jefferson to Joel Yancey July 10 1815, MHS8), and pumpkins and squash were used to fatten pigs (Betts 1944). Flax was used to make clothes for the slaves.

Conclusion

The archaeobotanical material recovered from the Wingo's quarter shows the importance of plant use in the foodways of enslaved Africans at Poplar Forest. In order to identify what material is associated with consumption, it is best, however, to understand the depositional history of the site. The differences between deposits representing use of the structure and those representing abandonment and demolition show how seed rain and natural disturbances can alter an archaeobotanical collection. After this process is understood it is possible to consider the material more likely to relate to use in terms of foodways and use of the surrounding environments. The assemblage from Wingo's shows diverse use of cultivated and gathered wild plants as well as collection of wild plants from varied environments around the quarter.

Plant remains were probably incorporated into the archaeobotanical record through natural seed rain including some of the grasses, some of the weedy plants, and seeds from dogwood and tupelo. Low densities of plants that generally do not have economic uses such as *Spergula*, wild Fabaceae, and Solanaceae may indicate seed rain. Wild grass seeds present an interesting assemblage in that they are recovered in fairly low densities in the occupation and post-occupation layers, but in much higher densities in the post-occupation demolition layers

(281C through 281H). These, too, may represent the seed rain from a disturbed and then abandoned area around the quarter.

Maize was probably grown in the slaves' gardens, the grains used for food and the cobs for fuel. Similarly, cow peas and beans may have been grown in their gardens. Wheat and rye may have been provisioned. Or, like the tobacco and flax seeds, the wheat kernels might represent not food, but the slaves' engagement in tasks on the plantation. Recovering tobacco, clover, and flax is consistent with the tasks that slaves were engaged in during this period of Poplar Forest's history: production of tobacco as the plantation's as a cash crop, flax for the slaves' clothing, and clover as part of the plantation's crop rotation regime.

Carney (Carney and Rosomoff 2009) argues that maize quickly became a part of many African meals and greens were part of African foodways. Wild gathered greens were central to this cuisine as they were an important ingredient of starchy stews and sauces. Starchy flours from millet and later maize were the basis of meals, being cooked into porridge or dumplings. Black-eyed peas were also a part of this cuisine. Carney argues that this cuisine was transferred to the Americas during the period of slavery and is evident in southern cooking today as corn breads, stews, cooked greens, and hush puppies. Some plant remains recovered from Wingo's may be part of such a cuisine even if the slaves who worked at Poplar Forest had never seen Africa. This transfer of cuisine is not complete. Sorghum, another African staple, has been identified at other Poplar Forest contexts, but it appears to be lacking in the samples from Wingo's. Nor was African millet recovered. Their absence must be interpreted carefully because they may simply not have been preserved. Clearly, though, the wheat and rye indicate a more European part of the cuisine making use of the crops grown on the plantation, and the presence of nuts and wild fruits suggest the incorporation of available wild foods.

The food-related taxa identified at Wingo's and other site at Poplar Forest show the diversity of enslaved African foodways. Several plants associated with African foodways, like sorghum and cow pea, have been identified but most taxa are either European or New World in origin. In the late 18th century, many of these crops would have been just as familiar to African or African-American slaves in Virginia. The botanicals recovered also show that gathered plants came from various places from all around the plantation. Food related seeds came from forests, forest margins, agricultural fields, and waste areas.

Table 1. Sample Contexts, Flotation Sample Volumes, Light Fraction Weights, and Samples from Waterscreening with Identified Botanicals

Subfloor Pit ER: 281

Level	Samples	#Samples	Total Weight (g)	Total Volume (L)	Waterscreen Samples with ID Botanicals
C	81, 82, 83, 84	4	138.53	10	none
D	5, 6, 7, 8, 9, 10, 11,12	8	161.68	20.25	1, 2, 3, 4, 5, 6, 7
E	1, 2, 3, 4	4	88.02	10	9, 10, 17, 43, 49, 50, 51
F	85, 86, 87, 88	4	163.5	10	59, 60, 61, 62, 92, 93, 94, 95
G	26, 27, 28, 29, 30	5	102.83	11	54, 55, 56, 57, 58
H	89, 90, 91, 92	4	109.5	10	53, 85, 86, 87, 88
J	57, 58, 59, 60	4	14.22	10	44, 45, 46, 47, 48, 64, 71, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84
K	93, 94, 95, 96	4	90.86	10	91
Total		37	869.14	91.25	

Subfloor Pit ER: 285

Level	Samples	# Samples	Total Weight (g)	Total Volume (L)	Waterscreen Samples with ID Botanicals
C	53, 54, 55, 56, 70	5	69.67	12	11, 37, 38, 39, 40
D	61, 62, 63, 64, 65	5	76.99	10.75	none
E	42, 43, 44, 45, 46, 47, 48, 49, 51, 52	10	269.19	24.5	12, 13, 14
F	66, 67, 68, 69	4	117.9	10	41, 89, 90
G	22, 23, 24, 25	4	41.48	10	15, 16, 19, 20, 21, 30
H	77, 78, 79, 80	4	237.63	10	72-79
J	31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41	11	93.13	21	25
K	13, 14, 15, 16, 17, 18, 19, 20, 21	9	195.35	22.5	34, 35, 36
L	71, 72, 73, 74	4	29.15	10	42, 97
Total		56	1130.49	130.75	
Total		93	1999.63	222	

Table 2. Cultigens

		Zea mays										Prunus persica			
Feature /Level	Volume (L)	Cupules	Kernel	Triticum sp.	Secale sp.	Cerealia	Linum sp.	Cucurbita maxima	Cucurbit rind	Phaseolus sp.	Vigna sp.	Ct.	Wt. (g)	Pyrus sp.	Nicotiana tabacum
281C	10	0	0	0	0	0	0	0	0	0	0	4	0.42	0	0
281D	142.25	2	1	1	1	1	0	0	0	0	0	24	2.29	0	0
281E	89	0	3	3	1	0	0	0	8	0	0	26	3.71	0	0
281F	72.25	4	1	6	0	0	0	0	0	0	0	44	6.77	0	0
281G	65.5	1	2	1	1	0	0	0	0	0	0	17	4.74	0	0
281H	32.25	1	0	11	2	0	1	1	0	0	0	76	10.62	0	0
281J	110.75	9	0	9	1	0	0	0	0	0	0	14	1.28	0	0
281K	13	4	0	1	0	0	1	0	0	0	0	0	0	0	1
Total	535	21	7	32	6	1	2	1	8	0	0	205	29.83	0	1
285C	68.75	16	3	0	0	0	0	0	0	0	1	26	2.14	0	0
285D	10.75	9	3	0	0	0	0	0	0	0	0	1	0.05	0	0
285E	52.25	50	4	1	0	0	0	0	0	3	0	1	0.21	1	0
285F	21	23	7	0	0	0	0	0	0	0	2	0	0	0	0
285G	17.25	2	0	1	0	0	0	0	0	0	0	0	0	0	0
285H	29.5	7	2	0	0	0	0	0	0	1	0	10	0.71	0	0
285J	28	4	0	0	0	0	0	0	0	0	0	1	0.02	0	0
285K	33.25	3	2	1	0	0	0	0	0	0	0	0	0	0	0
285L	18	2	1	0	0	0	0	0	0	0	0	0	0	0	0
Total	278.75	116	22	3	0	0	0	0	0	4	3	39	3.13	1	0

Table 3. Seeds from Trees and Shrubs

Feature/Level	Rubus sp.	Vaccinium sp.	Vitis sp.	Rhus sp.	Cornus sp.	Nyssa biflora	Gleditsia triacanthos
281C	0	0	0	0	0	0	0
281D	2	0	0	0	0	0	0
281E	0	0	0	0	0	0	0
281F	0	0	0	0	1	1	0
281G	0	0	0	0	0	0	0
281H	0	0	0	0	0	0	0
281J	0	0	0	0	0	0	0
281K	0	0	0	0	0	0	0
Total	2	0	0	0	1	1	0
285C	0	0	0	0	0	0	0
285D	0	0	0	3	0	0	0
285E	0	0	0	7	0	0	1
285F	0	1	1	3	0	0	0
285G	0	1	0	0	0	0	0
285H	0	2	0	0	0	0	0
285J	0	1	0	0	0	0	0
285K	0	0	0	0	0	0	0
285L	0	1	0	0	0	0	0
Total	0	6	1	13	0	0	1

Table 4. Nutshell

Feature/ Level	Quercus sp. Count	Quercus sp. Weight (g)	Castanea sp. Count	Castanea sp. Weight (g)	Carya sp. Count	Carya sp. Weight (g)	Juglans nigra Count	Juglans nigra Weight (g)	Juglandaceae Count	Juglandaceae Weight (g)	Unidentified Count	Unidentified Weight (g)	Nut meat (Ct)
281C	0	0	0	0	1	0.15	2	0.13	0	0	0	0	0
281D	0	0	0	0	0	0	0	0	0	0	51	2.27	1
281E	0	0	0	0	0	0	0	0	0	0	45	1.31	0
281F	2	0.05	0	0	0	0	0	0	0	0	16	0.45	0
281G	0	0	1	0.05	0	0	0	0	0	0	38	0.77	0
281H	0	0	0	0	0	0	5	0.27	0	0	4	0.11	0
281J	0	0	0	0	0	0	2	0.06	0	0	3	0.15	0
281K	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0.05	1	0.05	1	0.15	9	0.46	0	0	157	5.06	1
285C	0	0	0	0	0	0	2	0.07	0	0	18	0.3	0
285D	0	0	0	0	0	0	1	0.11	0	0	0	0	0
285E	0	0	0	0	0	0	0	0	0	0	1	0	0
285F	0	0	0	0	0	0	0	0	0	0	6	0.07	0
285G	0	0	0	0	1	0.04	0	0	2	0.04	0	0	0
285H	0	0	0	0	0	0	0	0	1	0.01	0	0	0
285J	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	0	0	0	0	0	0	0	0	0	0	0	0	0
285L	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0.04	3	0.18	3	0.05	25	0.37	0

Table 5. Herbs I

Feature/Level	Rumex crispus	Rumex sp.	Polygonum sp.	Polygonaceae	Chenopodium sp.	Chenopodiaceae	Portulaca sp.	Portulacaeae	Oxalis stricta
281C	1	0	0	0	1	0	0	0	4
281D	0	0	12	12	9	1	0	1	1
281E	0	0	1	8	7	6	2	0	1
281F	2	0	11	5	4	0	2	0	0
281G	1	0	16	0	5	0	5	0	1
281H	0	5	23	0	43	0	6	0	0
281K	0	0	0	0	5	0	0	0	0
Total	4	5	63	25	74	7	15	1	7
285C	0	1	1	0	5	0	0	0	0
285D	0	1	1	0	5	0	0	0	0
285E	0	0	0	0	2	0	1	0	0
285F	0	0	0	0	0	0	0	0	0
285G	0	0	1	0	0	0	0	0	0
285H	0	0	1	0	0	0	0	0	0
285J	0	0	0	0	0	0	0	0	0
285K	0	0	0	0	1	0	0	0	0
285L	0	0	0	0	0	0	0	0	0
Total	0	2	4	0	13	0	1	0	0

Table 6. Herbs II

Feature/ Level	c.f. Spergula	Caryophyllaceae	c.f. Salvia	Mentha sp.	Datura stramonium	Solanceae	Lathyrus sp.	Trifolium sp.	Fabaceae	Ranunculaceae
281C	0	0	0	0	0	0	0	0	0	0
281D	0	0	0	0	0	0	0	0	2	0
281E	0	0	0	0	0	0	0	0	0	0
281F	0	0	1	0	0	0	0	0	0	0
281G	0	0	0	0	0	0	0	0	0	1
281H	1	0	0	1	1	1	0	0	3	0
281K	0	0	0	0	0	1	0	0	0	0
Total	1	0	1	1	1	2	0	0	5	1
285C	0	0	0	0	0	0	0	1	2	0
285D	0	0	0	0	0	0	1	0	4	0
285E	0	1	0	0	0	0	0	0	6	0
285F	0	0	0	0	0	0	0	0	5	0
285G	0	0	0	0	0	0	0	0	2	0
285H	0	1	0	0	0	0	0	0	0	0
285J	0	0	0	0	0	0	0	0	2	0
285K	0	0	0	0	0	0	0	0	1	0
285L	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	0	0	1	1	22	0

Table 7. Grasses and Sedges

Feature/Level	Volume	Poaceae wild	Panicoid	Eleusine indica	Panicum miliaceum	Poaceae-indeterminant	Cyperaceae
281C	10	48	2	0	0	0	0
281D	20.25	551	11	0	1	2	0
281E	10	589	26	0	0	1	0
281F	10	476	17	0	0	0	0
281G	33.5	770	19	0	0	0	2
281H	17.5	737	5	0	0	0	2
281K	13	15	0	0	0	0	0
Total	114.25	3186	80	0	1	3	4
285C	31.5	1	0	0	0	0	0
285D	10.75	4	0	2	0	0	0
285E	45.25	8	0	0	0	0	0
285F	21	1	0	0	0	0	0
285G	32	0	0	0	0	0	0
285H	10	7	0	0	0	0	2
285J	26	2	0	0	0	0	0
285K	23.25	1	0	0	0	0	0
285L	12.5	1	0	0	0	0	0
Total	212.25	25	0	2	0	0	2

Table 8. Unidentified Seeds and Starchy Material

		Starchy Material	
Feature/Level	Unidentified Seed	Ct.	Wt.
281C	1	9	0.15
281D	9	12	0.12
281E	13	13	0.75
281F	0	18	0.62
281G	2	5	0.13
281H	7	5	0.66
281J	0	168	8.56
281K	0	9	0.2
Total	32	239	11.19
285C	0	44	0.78
285D	0	11	0.25
285E	2	72	1.25
285F	0	44	0.78
285G	0	5	0.1
285H	0	3	0.08
285J	1	13	1.45
285K	1	36	3.1
285L	0	1	0.01
Total	4	229	7.8

Table 9. Wood I

Feature/ Level	Quercus sp. Count	Quercus sp. Weight	Castanea sp. Count	Castanea sp. Weight	Carya sp. Count	Carya sp. Weight	Acer sp. Count	Acer sp. Weight	Gymnocladus dioicus Count	Gymnocladus dioicus Weight
281C	37	3.54	0	0	0	0	0	0	0	0
281D	111	3.17	1	0.13	2	0.09	0	0	4	0.07
281E	92	5.87	0	0	0	0	0	0	0	0
281F	96	9.15	0	0	0	0	0	0	0	0
281G	110	6.82	0	0	0	0	0	0	0	0
281H	80	6.74	0	0	0	0	0	0	6	0.25
281J	32	0.74	0	0	3	0.06	0	0	0	0
281K	59	1.77	0	0	2	0.08	1	0.05	1	0.05
Total	617	37.8	1	0.13	7	0.23	1	0.05	11	0.37
285C	79	3.16	0	0	3	0.14	0	0	0	0
285D	88	6.32	0	0	10	0.63	0	0	0	0
285E	161	9.56	0	0	11	0.77	0	0	1	0.04
285F	76	6.17	0	0	3	0.68	0	0	3	0.21
285G	34	1.4	0	0	2	0.16	2	0.05	46	1.63
285H	45	2.29	0	0	3	0.26	1	0.01	10	0.42
285J	157	5.67	0	0	13	0.25	1	0.01	0	0
285K	124	4.43	0	0	8	0.2	2	0.02	2	0.04
285L	14	0.2	0	0	0	0	0	0	0	0
Total	778	39.2	0	0	53	3.09	6	0.09	62	2.34

Table 10. Wood II

Feature/ Level	Liriodendron tulipfera Count	Liriodendron tulipfera Weight	Ring Porous Hardwood Count	Ring Porous Hardwood Weight	Diffuse Porous Hardwood Count	Diffuse Porous Hardwood Weight	Hardwood Count	Hardwood Weight	Monocot Stem Count	Monocot Stem Weight	Pinus sp. Count	Pinus sp. Weight
281C	0	0	13	0.09	1	0.01	2	0.01	0	0	0	0
281D	0	0	45	0.48	26	0.53	5	0.03	1	0.02	0	0
281E	0	0	7	0.16	0	0	0	0	0	0	1	0.01
281F	0	0	3	0.11	1	0.02	0	0	0	0	0	0
281G	0	0	15	0.22	0	0	0	0	10	0.57	0	0
281H	0	0	13	0.25	0	0	1	0.01	72	1.78	0	0
281J	0	0	55	0.44	0	0	8	0.02	7	0.51	0	0
281K	0	0	32	0.48	0	0	1	0.01	0	0	4	0.08
Total	0	0	183	2.23	28	0.56	17	0.08	90	2.88	5	0.09
285C	0	0	15	0.19	3	0.3	0	0	0	0	0	0
285D	0	0	26	1.13	0	0	0	0	0	0	1	0.04
285E	0	0	74	3.08	2	0.1	0	0	0	0	1	0.03
285F	0	0	18	1.1	0	0	0	0	0	0	0	0
285G	0	0	16	0.45	0	0	0	0	0	0	0	0
285H	0	0	10	0.58	0	0	5	0.2	0	0	0	0
285J	0	0	97	1.26	1	0.01	4	0.08	0	0	2	0.02
285K	1	0.04	83	1.88	0	0	4	0.07	0	0	0	0
285L	0	0	41	0.21	0	0	7	0.03	0	0	0	0
Total	1	0.04	380	9.88	6	0.41	20	0.38	0	0	4	0.09

Table 11. Taxonomic Richness of Wood by Feature and Level

Feature/ Level	Number of Mutually Exclusive Taxa
281 C	2
281 D	4
281 E	2
281 F	2
281 G	1
281 H	2
281 J	2
281 K	5
285 C	3
285 D	4
285 E	4
285 F	3
285 G	4
285 H	4
285 J	4
285 K	5
285 L	1

References Cited

Bailey, L.H.

1949 *Manual of Cultivated Plants: Most commonly grown in the continental United States and Canada*. The Macmillan Company, New York.

Betts, Edwin Morris

1944 *Thomas Jefferson's Garden Book 1766-1824*. The American Philosophical Society, Philadelphia.

Bowes, Jessica and Heather Trigg

2009 Social Dimensions of 19th-Century Slaves' Uses of Plants at Poplar Forest. In *The Landscapes and Lives of Thomas Jefferson's Poplar Forest: The Historical Archaeology of a Central Virginia Plantation*, eds. Barbara J. Heath and Jack Gary.

Britton, N. L. and Hon. A. Brown

1898 *An Illustrated Flora of the Northern United States, Canada and the British Possessions: From Newfoundland to the Parallel of the Southern boundary of Virginia, and from the Atlantic Ocean Westward to the 102D Meridian, Vol. III, Apocynaceae to Compositae, Dogbane to Thistle.* New York: Charles Scribner's Sons.

1897 *An Illustrated Flora of the Northern United States, Canada and the British Possessions: From Newfoundland to the Parallel of the Southern boundary of Virginia, and from the Atlantic Ocean Westward to the 102D Meridian, Vol. II, Portulacaceae to Menyanthaceae, Portulaca to Buckbean.* New York: Charles Scribner's Sons.

1896 *An Illustrated Flora of the Northern United States, Canada and the British Possessions: From Newfoundland to the Parallel of the Southern boundary of Virginia and from the Atlantic Ocean Westward to the 102D Meridian, Vol. I, Ophioglossaceae to Aizoaceae, Ferns to Carpet-Weed*. New York: Charles Scribner's Sons.

Carney, Judith and Nicholas Rosomoff

2009 *In the Shadow of Slavery: Africa's Botanical Legacy in the Atlantic World*. University of California Press, Berkeley.

Chambers, S. Allen, Jr.

1993 *Poplar Forest and Thomas Jefferson*. Forest, Virginia: The Corporation for Jefferson's Poplar Forest.

Heath, Barbara

1994 "Discovering the Plantation World of Jefferson's Poplar Forest." *Notes on the State of Poplar Forest,* Vol. 2:13-18.

2012 Slave Housing, Household Formation and Community Dynamics at Poplar Forest, 1760s-1810s. In *Jefferson's Poplar Forest: Unearthing a Virginia Plantation*, edited by Barbara J. Heath and Jack Gary, pp. 105-128. University Press of Florida, Gainesville.

Heath, Barbara, Eleanor E. Breen and Crystal Ptacek

2012 *Archaeological Excavations at Wingos Quarter (44BE0298) Forest, Virginia: Results from the 2000-2011 Seasons.* Report submitted to the National Foundation for the Humanities.

Hoadley, R. Bruce

1990 *Identifying Wood: Accurate Results with Simple Tools*. The Taunton Press, Taunton.

Leighton, Ann

1986 *American Gardens in the Eighteenth Century: "For Use or for Delight"*. Houghton Mifflin Company, Boston.

Martin, Alexander C. and William D. Barkley

1973 *Seed Identification Manual*. University of California Press: Berkeley.

McCann, James

2005 *Maize and Grace: Africa's Encounter with a New World Crop, 1500-2000*. Harvard University Press, Cambridge.

Medve, Richard J. and Mary Lee Medve

1990 *Edible Wild Plants of Pennsylvania and Neighboring States*. The Pennsylvania State University Press, University Park.

Miller, Naomi F.

1989 What Mean These Sees: A Comparative Approach to Archaeological Seed Analysis. *Historical Archaeology* 23(2):50-59.

Moerman, D. E.

1998 *Native American Ethnobotany*. Portland, Oregon: Timber Press.

Montgomery, F. H.

1977 *Seeds and Fruits of Plants of Eastern Canada and Northeastern United States*. University of Toronto Press, Toronto.

Morgan, Philip D.

1998 *Slave Counterpoint: Black Culture in the Eighteenth-Century Chesapeake and Lowcountry*. University of North Carolina Press: Chapel Hill.

Mrozowski, Stephen A., Maria Franklin, and Leslie Hunt

2008 Archaeobotanical Analysis and Interpretations of Enslaved Virginian Plant Use at Rich Neck Plantation. *American Antiquity* 73:699-728.

Petrides, George A

1988 *A Field Guide to Eastern Trees*. Houghton Mifflin Company: Boston & New York.

Raymer, Leslie E.

1996 Macroplant Remains from the Jefferson's Poplar Forest Slave Quarter: A Study in African American Subsistence Practices. New South Associates Technical Report #402. Stone Mountain, Georgia.

2003 Archaeobotanical Analysis from Data Recovery Excavations at the North Hill and Quarter Sites, Jefferson's Poplar Forest: A Study of Enslaved African-America Subsistence Patterns.

Report Submitted to Corporation for Jefferson's Poplar Forest.

Renfrew, Jane

1973 *Paleoethnobotany: The Prehistoric Food Plants of the Near East and Europe*. Columbia University Press, New York.

Rogers, C Marvin

1963 Yellow Flowered Species of Linum in Eastern North America. *Brittonia* 15(2)97-122.

Samuelson, Lisa J. and Michael E. Hogan

2006 *Forest Trees: A Guide to the Eastern United States*. Pearson Prentice Hall: New Jersey and Ohio.

Samford, Patricia

2007 *Subfloor Pits and the Archaeology of Slavery in Colonial Virginia.* University of Alabama Press, Tuscaloosa.

Sumner, Judith

2004 *American Household Botany*. Timber Press, Portland.

USDA

1948 *Woody-Plant Seed Manual*. USDA Miscellaneous Publication No. 645.

1974 *Seeds of Woody Plants in the United States*. Agriculture Handbook No. 450. Forest Service, U.S. Department of Agriculture.

Walsh, Lorena

1993 Slave Life, Slave Society , and Tobacco Production in the Tidewater Chesapeake, 1620-1820. In Cultivation and Culture: Labor and the Shaping of Slave Life in the Americas, eds. Berlin, Ira and Philip D. Morgan. University of Virginia Press: Virginia.

Websites

Cotton, Lee Pelham

1998 *Tobacco: Colonial Cultivation Methods*. Historic Jamestowne, National Parks Service. < http://www.nps.gov/jame/historyculture/tobacco-colonial-cultivation-methods.htm> Accessed 2 April 2012.

USDA Plants Database http://plants.usda.gov

"Wingo's" Engaging the Piedmont: Transitions in Virginia Slavery http://web.utk.edu/~bheath2/project.html Accessed: 24 July 2012

Appendix

Feature/ Level	Type	Sample Number	Volume (L)	Zea mays Cupules	Zea mays Kernel	Tri=cum sp.	Secale sp.	Cerealia	Linum sp.	Cucurbita maxima	Cucurbit rind	Phaseolus sp.	Vigna sp.	Prunus persica	Prunus persica weight (g)	Pyrus sp.	Nico=ana tabacum
281C	Float	LF#81	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281C	Float	LF#82	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281C	Float	LF#83	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281C	Float	LF#84	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281C	1/4"HF	82		0	0	0	0	0	0	0	0	0	0	1	0.02	0	0
281C	Dry Screen			0	0	0	0	0	0	0	0	0	0	3	0.4	0	0
281D	Float	LF#5	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#6	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#7	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#8	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#9	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#10	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#11	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#12	2.75	0	0	0	0	1	0	0	0	0	0	0	0	0	0
281D	Waterscreen	1	35	0	0	0	0	0	0	0	0	0	0	3	0.19	0	0
281D	Waterscreen	2		2	0	0	1	0	0	0	0	0	0	6	0.28	0	0
281D	Waterscreen	3	36	0	0	0	0	0	0	0	0	0	0	6	0.84	0	0
281D	Waterscreen	4		0	1	1	0	0	0	0	0	0	0	1	0.04	0	0
281D	Waterscreen	5	25.5	0	0	0	0	0	0	0	0	0	0	5	0.57	0	0
281D	Waterscreen	6	25.5	0	0	0	0	0	0	0	0	0	0	1	0.16	0	0
281D	Waterscreen	7		0	0	0	0	0	0	0	0	0	0	2	0.21	0	0
281E	Float	LF#1	2.5	0	1	0	0	0	0	0	0	0	0	0	0	0	0
281E	Float	LF#2	2.5	0	0	0	1	0	0	0	2	0	0	0	0	0	0
281E	Float	LF#3	2.5	0	0	1	0	0	0	0	6	0	0	0	0	0	0
281E	Float	LF#4	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281E	Waterscreen	9	12	0	0	1	0	0	0	0	0	0	0	0	0	0	0
281E	Waterscreen	10		0	0	0	0	0	0	0	0	0	0	3	1.05	0	0
281E	Waterscreen	17	20	0	0	0	0	0	0	0	0	0	0	2	0.23	0	0
281E	Waterscreen	43	12	0	0	0	0	0	0	0	0	0	0	10	0.62	0	0
281E	Waterscreen	49	12	0	2	0	0	0	0	0	0	0	0	4	0.33	0	0
281E	Waterscreen	50	11	0	0	0	0	0	0	0	0	0	0	3	0.26	0	0
281E	Waterscreen	51	12	0	0	1	0	0	0	0	0	0	0	2	0.19	0	0
281E	Dry Screen			0	0	0	0	0	0	0	0	0	0	2	1.03	0	0
281F	Float	LF#85	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281F	Float	LF#86	2.5	0	0	1	0	0	0	0	0	0	0	1	0.05	0	0
281F	Float	LF#87	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281F	Float	LF#88	2.5	1	0	1	0	0	0	0	0	0	0	0	0	0	0
281F	Waterscreen	59	13.25	0	0	1	0	0	0	0	0	0	0	0	0	0	0

Feature/ Level	Type	Sample Number	Volume (L)	Zea mays Cupules	Zea mays Kernel	Tri=cum sp.	Secale sp.	Cerealia	Linum sp.	Cucurbita maxima	Cucurbit rind	Phaseolus sp.	Vigna sp.	Prunus persica	Prunus persica weight (g)	Pyrus sp.	Nico=ana tabacum
281F	Waterscreen	60	12.75	1	0	1	0	0	0	0	0	0	0	10	2.31	0	0
281F	Waterscreen	61	13.25	0	0	1	0	0	0	0	0	0	0	1	0.05	0	0
281F	Waterscreen	62	13	0	0	0	0	0	0	0	0	0	0	4	0.87	0	0
281F	Waterscreen	92	2.5	0	0	0	0	0	0	0	0	0	0	11	0.12	0	0
281F	Waterscreen	93	2.5	0	0	1	0	0	0	0	0	0	0	6	0.13	0	0
281f	Waterscreen	94	2.5	0	0	0	0	0	0	0	0	0	0	2	0.2	0	0
281F	Waterscreen	95	2.5	2	0	0	0	0	0	0	0	0	0	2	0.03	0	0
281F	1/4"HF	86		0	1	0	0	0	0	0	0	0	0	0	0	0	0
281F	1/4"HF	88		0	0	0	0	0	0	0	0	0	0	1	0.01	0	0
281F	Dry Screen			0	0	0	0	0	0	0	0	0	0	6	3	0	0
281G	Float	LF#26		0	0	0	0	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#27	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#28	2.5	0	0	1	0	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#29	2.5	0	1	0	0	0	0	0	0	0	0	1	0.04	0	0
281G	Float	LF#30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281G	Waterscreen	54	12	0	0	0	0	0	0	0	0	0	0	2	0.24	0	0
281G	Waterscreen	55	12	1	0	0	1	0	0	0	0	0	0	6	1.07	0	0
281G	Waterscreen	56	11.5	0	0	0	0	0	0	0	0	0	0	1	0.07	0	0
281G	Waterscreen	57	10.5	0	1	0	0	0	0	0	0	0	0	2	0.42	0	0
281G	Waterscreen	58	11	0	0	0	0	0	0	0	0	0	0	3	0.71	0	0
281G	Dry Screen			0	0	0	0	0	0	0	0	0	0	2	2.19	0	0
281H	Float	LF#89	2.5	0	0	2	0	0	0	0	0	0	0	4	0.33	0	0
281H	Float	LF#90	2.5	0	0	2	0	0	0	0	0	0	0	2	0.08	0	0
281H	Float	LF#91	2.5	0	0	1	0	0	1	0	0	0	0	2	0.12	0	0
281H	Float	LF#92	2.5	0	0	0	0	0	0	0	0	0	0	1	0.05	0	0
281H	Waterscreen	53	12.25	0	0	4	2	0	0	1	0	0	0	26	6.15	0	0
281H	Waterscreen	85	2.5	0	0	2	0	0	0	0	0	0	0	0	0	0	0
281H	Waterscreen	86	2.5	0	0	0	0	0	0	0	0	0	0	4	0.32	0	0
281H	Waterscreen	87	2.5	0	0	0	0	0	0	0	0	0	0	13	0.71	0	0
281H	Waterscreen	88	2.5	1	0	0	0	0	0	0	0	0	0	1	0.02	0	0
281H	1/4"HF	91		0	0	0	0	0	0	0	0	0	0	9	0.15	0	0
281H	1/4"HF	92		0	0	0	0	0	0	0	0	0	0	6	0.05	0	0
281H	Dry Screen			0	0	0	0	0	0	0	0	0	0	8	2.64	0	0
281J	Float	LF#57	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281J	Float	LF#58	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281J	Float	LF#59	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281J	Float	LF#60	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Feature/ Level	Type	Sample Number	Volume (L)	Zea mays Cupules	Zea mays Kernel	Tri=cum sp.	Secale sp.	Cerealia	Linum sp.	Cucurbita maxima	Cucurbit rind	Phaseolus sp.	Vigna sp.	Prunus persica	Prunus persica weight (g)	Pyrus sp.	Nico=ana tabacum
281J	Waterscreen	44	12.5	0	0	1	0	0	0	0	0	0	0	0	0	0	0
281J	Waterscreen	45	13	0	0	1	0	0	0	0	0	0	0	0	0	0	0
281J	Waterscreen	46	10	0	0	0	0	0	0	0	0	0	0	4	0.12	0	0
281J	Waterscreen	47	10	0	0	2	1	0	0	0	0	0	0	2	0.18	0	0
281J	Waterscreen	48	13	0	0	1	0	0	0	0	0	0	0	1	0.39	0	0
281J	Waterscreen	64	10.75	0	0	0	0	0	0	0	0	0	0	1	0.14	0	0
281J	Waterscreen	65	12	0	0	1	0	0	0	0	0	0	0	0	0	0	0
281J	Waterscreen	70	2.5	0	0	0	0	0	0	0	0	0	0	1	0.04	0	0
281J	Waterscreen	71	2.5	0	0	0	0	0	0	0	0	0	0	2	0.06	0	0
281J	Waterscreen	73	2.5	2	0	0	0	0	0	0	0	0	0	0	0	0	0
281J	Waterscreen	74	2	1	0	0	0	0	0	0	0	0	0	1	0.05	0	0
281J	Waterscreen	75	2.5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
281J	Waterscreen	79	2.5	0	0	0	0	0	0	0	0	0	0	1	0.02	0	0
281J	Waterscreen	82	2.5	0	0	2	0	0	0	0	0	0	0	0	0	0	0
281J	Waterscreen	83	2.5	1	0	1	0	0	0	0	0	0	0	0	0	0	0
281J	Dry Screen			0	0	0	0	0	0	0	0	0	0	1	0.28	0	0
281K	Float	LF#93	2.5	1	0	1	0	0	0	0	0	0	0	0	0	0	0
281K	Float	LF#94	2.5	0	0	0	0	0	1	0	0	0	0	0	0	0	0
281K	Float	LF#95	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281K	Float	LF#96	2.5	1	0	0	0	0	0	0	0	0	0	0	0	0	1
281K	Waterscreen	91	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#54	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#55	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#56	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#70	UNK	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Waterscreen	11	15.25	1	0	0	0	0	0	0	0	0	1	0	0	0	0
285C	Waterscreen	37	12	1	1	0	0	0	0	0	0	0	0	3	0.18	0	0
285C	Waterscreen	38	12	0	1	0	0	0	0	0	0	0	0	6	0.3	0	0
285C	Waterscreen	39	12	10	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Waterscreen	40	10	3	1	0	0	0	0	0	0	0	0	6	0.5	0	0
285C	Dry Screen			0	0	0	0	0	0	0	0	0	0	11	1.16	0	0
285D	Float	LF#61	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285D	Float	LF#62	2.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285D	Float	LF#63	2.5	3	2	0	0	0	0	0	0	0	0	0	0	0	0
285D	Float	LF#64	2.5	5	1	0	0	0	0	0	0	0	0	0	0	0	0
285D	Float	LF#65	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285D	1/4"HF	62		0	0	0	0	0	0	0	0	0	0	1	0.05	0	0

Feature/ Level	Type	Sample Number	Volume (L)	Zea mays Cupules	Zea mays Kernel	Tri=cum sp.	Secale sp.	Cerealia	Linum sp.	Cucurbita maxima	Cucurbit rind	Phaseolus sp.	Vigna sp.	Prunus persica	Prunus persica weight (g)	Pyrus sp.	Nico=ana tabacum
285E	Float	LF#42	2.5	0	1	0	0	0	0	0	0	1	0	0	0	0	0
285E	Float	LF#43	2.5	0	0	0	0	0	0	0	0	0	0	0	0	1	0
285E	Float	LF#44	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#45	2.5	0	0	0	0	0	0	0	0	1	0	0	0	0	0
285E	Float	LF#46	1.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#47	2.5	7	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#48	2.5	1	1	1	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#49	2.5	5	1	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#51	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#52	2.5	6	0	0	0	0	0	0	0	1	0	0	0	0	0
285E	Waterscreen	12	9.75	27	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Waterscreen	13	12	0	0	0	0	0	0	0	0	0	0	1	0.21	0	0
285E	Waterscreen	14	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285F	Float	LF#66	2.5	0	0	0	0	0	0	0	0	0	1	0	0	0	0
285F	Float	LF#67	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285F	Float	LF#68	2.5	3	0	0	0	0	0	0	0	0	0	0	0	0	0
285F	Float	LF#69	2.5	3	1	0	0	0	0	0	0	0	0	0	0	0	0
285F	Waterscreen	41	8.5	17	4	0	0	0	0	0	0	0	1	0	0	0	0
285F	Waterscreen	90	2.5	0	1	0	0	0	0	0	0	0	0	0	0	0	0
285F	Dry Screen			0	1	0	0	0	0	0	0	0	0	0	0	0	0
285G	Float	LF#22	2.5	0	0	1	0	0	0	0	0	0	0	0	0	0	0
285G	Float	LF#23	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285G	Float	LF#24	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285G	Float	LF#25	2.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285G	Wateerscreen	15	7.25	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285H	Float	LF#77	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285H	Float	LF#78	2.5	2	0	0	0	0	0	0	0	1	0	3	0.1	0	0
285H	Float	LF#79	2.5	3	2	0	0	0	0	0	0	0	0	0	0	0	0
285H	Float	LF#80	2.5	2	0	0	0	0	0	0	0	0	0	0	0	0	0
285H	Waterscreen	72---79	19.5	0	0	0	0	0	0	0	0	0	0	2	0.17	0	0
285H	1/4"HF	78		0	0	0	0	0	0	0	0	0	0	1	0.02	0	0
285H	1/4"HF	79		0	0	0	0	0	0	0	0	0	0	4	0.42	0	0
285J	Float	LF#31	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#32	2.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#33	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#34	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#35	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#36	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Feature/ Level	Type	Sample Number	Volume (L)	Zea mays Cupules	Zea mays Kernel	Tri=cum sp.	Secale sp.	Cerealia	Linum sp.	Cucurbita maxima	Cucurbit rind	Phaseolus sp.	Vigna sp.	Prunus persica	Prunus persica weight (g)	Pyrus sp.	Nico=ana tabacum
285J	Float	LF#37	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#38	2.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#39	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#40	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#41	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Waterscreen	25	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	1/4"HF	35		0	0	0	0	0	0	0	0	0	0	1	0.02	0	0
285K	Float	LF#13	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#14	2.5	0	1	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#15	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#16	2.5	2	1	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#17	2.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#18	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#19	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#20	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#21	2.5	0	0	1	0	0	0	0	0	0	0	0	0	0	0
285K	Waterscreen	36	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#71	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#72	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#73	2.5	0	1	0	0	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#74	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285L	Waterscreen	42	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			813.75	137	29	35	6	1	2	1	8	4	3	244	32.96	1	1

Feature/Le	Type	Sample	Volume	Rubus sp.	Vaccinium sp.	Vi:s sp.	Rhus sp.	Cornus sp.	Nyssa biflora	Gleditsia triacanthos
281C	Float	LF#81	2.5	0	0	0	0	0	0	0
281C	Float	LF#82	2.5	0	0	0	0	0	0	0
281C	Float	LF#83	2.5	0	0	0	0	0	0	0
281C	Float	LF#84	2.5	0	0	0	0	0	0	0
281D	Float	LF#5	2.5	0	0	0	0	0	0	0
281D	Float	LF#6	2.5	0	0	0	0	0	0	0
281D	Float	LF#7	2.5	0	0	0	0	0	0	0
281D	Float	LF#8	2.5	1	0	0	0	0	0	0
281D	Float	LF#9	2.5	1	0	0	0	0	0	0
281D	Float	LF#10	2.5	0	0	0	0	0	0	0
281D	Float	LF#11	2.5	0	0	0	0	0	0	0
281D	Float	LF#12	2.75	0	0	0	0	0	0	0
281E	Float	LF#1	2.5	0	0	0	0	0	0	0
281E	Float	LF#2	2.5	0	0	0	0	0	0	0
281E	Float	LF#3	2.5	0	0	0	0	0	0	0
281E	Float	LF#4	2.5	0	0	0	0	0	0	0
281F	Float	LF#85	2.5	0	0	0	0	0	0	0
281F	Float	LF#86	2.5	0	0	0	0	0	0	0
281F	Float	LF#87	2.5	0	0	0	0	0	0	0
281F	Float	LF#88	2.5	0	0	0	0	0	0	0
281F	Waterscreen	60	12.75	0	0	0	0	1	0	0
281F	Waterscreen	61	13.25	0	0	0	0	0	1	0
281G	Float	LF#26	2.5	0	0	0	0	0	0	0
281G	Float	LF#27	2.5	0	0	0	0	0	0	0
281G	Float	LF#28	2.5	0	0	0	0	0	0	0
281G	Float	LF#29	2.5	0	0	0	0	0	0	0
281G	Float	LF#30	1	0	0	0	0	0	0	0
281H	Float	LF#89	2.5	0	0	0	0	0	0	0
281H	Float	LF#90	2.5	0	0	0	0	0	0	0
281H	Float	LF#91	2.5	0	0	0	0	0	0	0
281H	Float	LF#92	2.5	0	0	0	0	0	0	0

Feature/Le	Type	Sample	Volume	Rubus sp.	Vaccinium sp.	Vi:s sp.	Rhus sp.	Cornus sp.	Nyssa biflora	Gleditsia triacanthos
281J	Float	LF#57	2.5	0	0	0	0	0	0	0
281J	Float	LF#58	2.5	0	0	0	0	0	0	0
281J	Float	LF#59	2.5	0	0	0	0	0	0	0
281J	Float	LF#60	2.5	0	0	0	0	0	0	0
281K	Float	LF#93	2.5	0	0	0	0	0	0	0
281K	Float	LF#94	2.5	0	0	0	0	0	0	0
281K	Float	LF#95	2.5	0	0	0	0	0	0	0
281K	Float	LF#96	2.5	0	0	0	0	0	0	0
285C	Float	LF#54	2.5	0	0	0	0	0	0	0
285C	Float	LF#55	2.5	0	0	0	0	0	0	0
285C	Float	LF#56	2.25	0	0	0	0	0	0	0
285C	Float	LF#70	UNK	0	0	0	0	0	0	0
285D	Float	LF#61	2.5	0	0	0	1	0	0	0
285D	Float	LF#62	2.5	0	0	0	0	0	0	0
285D	Float	LF#63	2.5	0	0	0	0	0	0	0
285D	Float	LF#64	2.5	0	0	0	1	0	0	0
285D	Float	LF#65	0.75	0	0	0	1	0	0	0
285E	Float	LF#42	2.5	0	0	0	1	0	0	1
285E	Float	LF#43	2.5	0	0	0	0	0	0	0
285E	Float	LF#44	2.5	0	0	0	2	0	0	0
285E	Float	LF#45	2.5	0	0	0	1	0	0	0
285E	Float	LF#46	1.5	0	0	0	0	0	0	0
285E	Float	LF#47	2.5	0	0	0	2	0	0	0
285E	Float	LF#48	2.5	0	0	0	0	0	0	0
285E	Float	LF#49	2.5	0	0	0	0	0	0	0
285E	Float	LF#51	2	0	0	0	0	0	0	0
285E	Float	LF#52	2.5	0	0	0	1	0	0	0
285F	Float	LF#66	2.5	0	0	1	2	0	0	0
285F	Float	LF#67	2.5	0	0	0	0	0	0	0
285F	Float	LF#68	2.5	0	0	0	0	0	0	0

Feature/Le	Type	Sample	Volume	Rubus sp.	Vaccinium sp.	Vi:s sp.	Rhus sp.	Cornus sp.	Nyssa biflora	Gleditsia triacanthos
285F	Float	LF#69	2.5	0	1	0	1	0	0	0
285G	Float	LF#22	2.5	0	0	0	0	0	0	0
285G	Float	LF#23	2.5	0	0	0	0	0	0	0
285G	Float	LF#24	2.5	0	0	0	0	0	0	0
285G	Float	LF#25	2.5	0	1	0	0	0	0	0
285H	Float	LF#77	2.5	0	0	0	0	0	0	0
285H	Float	LF#78	2.5	0	2	0	0	0	0	0
285H	Float	LF#79	2.5	0	0	0	0	0	0	0
285H	Float	LF#80	2.5	0	0	0	0	0	0	0
285J	Float	LF#31	2.5	0	0	0	0	0	0	0
285J	Float	LF#32	2.5	0	1	0	0	0	0	0
285J	Float	LF#33	2.5	0	0	0	0	0	0	0
285J	Float	LF#34	2.5	0	0	0	0	0	0	0
285J	Float	LF#35	2.5	0	0	0	0	0	0	0
285J	Float	LF#36	2.5	0	0	0	0	0	0	0
285J	Float	LF#37	2.5	0	0	0	0	0	0	0
285J	Float	LF#38	2.5	0	0	0	0	0	0	0
285J	Float	LF#39	2.5	0	0	0	0	0	0	0
285J	Float	LF#40	2.5	0	0	0	0	0	0	0
285J	Float	LF#41	1	0	0	0	0	0	0	0
285K	Float	LF#13	2.5	0	0	0	0	0	0	0
285K	Float	LF#14	2.5	0	0	0	0	0	0	0
285K	Float	LF#15	3	0	0	0	0	0	0	0
285K	Float	LF#16	2.5	0	0	0	0	0	0	0
285K	Float	LF#17	2.75	0	0	0	0	0	0	0
285K	Float	LF#18	2.5	0	0	0	0	0	0	0
285K	Float	LF#19	2.5	0	0	0	0	0	0	0
285K	Float	LF#20	2.5	0	0	0	0	0	0	0
285K	Float	LF#21	2.5	0	0	0	0	0	0	0
285L	Float	LF#71	2.5	0	0	0	0	0	0	0
285L	Float	LF#72	2.5	0	0	0	0	0	0	0

Feature/Le	Type	Sample	Volume	Rubus sp.	Vaccinium sp.	Vi:s sp.	Rhus sp.	Cornus sp.	Nyssa biflora	Gleditsia triacanthos
285L	Float	LF#73	2.5	0	1	0	0	0	0	0
285L	Float	LF#74	2.5	0	0	0	0	0	0	0
				2	6	1	13	1	1	1

Feature/ Level	Type	Sample	Volume (L)	Quercus sp. Count	Quercus sp. Weight (g)	Castanea sp. Count	Castanea sp. Weight (g)	Carya sp. Count	Carya sp. Weight (g)	Juglans nigra Count	Juglans nigra Weight (g)	Juglandaceae Count	Juglandaceae Weight (g)	Uniden&fied Count	Uniden&fied Weight (g)	Nut meat
281C	Float	LF#81	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281C	Float	LF#82	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281C	Float	LF#83	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281C	Float	LF#84	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281C	Dry Screen			0	0	0	0	1	0.15	2	0.13	0	0	0	0	0
281D	Float	LF#5	2.5	0	0	0	0	0	0	0	0	0	0	6	0.07	0
281D	Float	LF#6	2.5	0	0	0	0	0	0	0	0	0	0	1	0.01	0
281D	Float	LF#7	2.5	0	0	0	0	0	0	0	0	0	0	1	1	1
281D	Float	LF#8	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#9	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#10	2.5	0	0	0	0	0	0	0	0	0	0	0		0
281D	Float	LF#11	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#12	2.75	0	0	0	0	0	0	0	0	0	0	3	0	0
281D	Waterscr	1	35	0	0	0	0	0	0	0	0	0	0	1	0.06	0
281D	Waterscr	2		0	0	0	0	0	0	0	0	0	0	16	0.36	0
281D	Waterscr	4		0	0	0	0	0	0	0	0	0	0	4	0.17	0
281D	Waterscr	5	25.5	0	0	0	0	0	0	0	0	0	0	4	0.11	0
281D	Waterscr	7		0	0	0	0	0	0	0	0	0	0	15	0.49	0
281E	Float	LF#1	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281E	Float	LF#2	2.5	0	0	0	0	0	0	0	0	0	0	1	0.05	0
281E	Float	LF#3	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281E	Float	LF#4	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281E	Waterscr	9	12	0	0	0	0	0	0	0	0	0	0	4	0.11	0
281E	Waterscr	10		0	0	0	0	0	0	0	0	0	0	1	0.09	0
281E	Waterscr	17	20	0	0	0	0	0	0	0	0	0	0	5	0.44	0
281E	Waterscr	43	12	0	0	0	0	0	0	0	0	0	0	18	0.19	0
281E	Waterscr	49	12	0	0	0	0	0	0	0	0	0	0	6	0.16	0
281E	Waterscr	50	11	0	0	0	0	0	0	0	0	0	0	7	0.13	0
281E	Waterscr	51	12	0	0	0	0	0	0	0	0	0	0	3	0.14	0
281F	Float	LF#85	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0

Feature/ Level	Type	Sample	Volume (L)	Quercus sp. Count	Quercus sp. Weight (g)	Castanea sp. Count	Castanea sp. Weight (g)	Carya sp. Count	Carya sp. Weight (g)	Juglans nigra Count	Juglans nigra Weight (g)	Juglandaceae Count	Juglandaceae Weight (g)	Uniden&fied Count	Uniden&fied Weight (g)	Nut meat
281F	Float	LF#86	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281F	Float	LF#87	2.5	2	0.05	0	0	0	0	0	0	0	0	1	0.01	0
281F	Float	LF#88	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281F	Waterscr	59	13.25	0	0	0	0	0	0	0	0	0	0	2	0.11	0
281F	Waterscr	60	12.75	0	0	0	0	0	0	0	0	0	0	8	0.18	0
281F	Waterscr	62	13	0	0	0	0	0	0	0	0	0	0	3	0.15	0
281F	Waterscr	94	2.5	0	0	0	0	0	0	0	0	0	0	2	0	0
281G	Float	LF#26	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#27	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#28	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#29	2.5	0	0	1	0.05	0	0	0	0	0	0	0	0	0
281G	Float	LF#30	1	0	0	0	0	0	0	0	0	0	0	1	<0.01	0
281G	Waterscr	54	12	0	0	0	0	0	0	0	0	0	0	1	0.03	0
281G	Waterscr	55	12	0	0	0	0	0	0	0	0	0	0	18	0.29	0
281G	Waterscr	56	11.5	0	0	0	0	0	0	0	0	0	0	5	0.17	0
281G	Waterscr	57	10.5	0	0	0	0	0	0	0	0	0	0	13	0.28	0
281H	Float	LF#89	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281H	Float	LF#90	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281H	Float	LF#91	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281H	Float	LF#92	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281H	Waterscr	53	12.25	0	0	0	0	0	0	0	0	0	0	4	0.11	0
281H	Waterscr	88	2.5	0	0	0	0	0	0	5	0.27	0	0	0	0	0
281J	Float	LF#57	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281J	Float	LF#58	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281J	Float	LF#59	2.5	0	0	0	0	0	0	0	0	0	0	2	0.03	0
281J	Float	LF#60	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281J	Waterscr	45	13	0	0	0	0	0	0	2	0.06	0	0	0	0	0
281J	Waterscr	48	13	0	0	0	0	0	0	0	0	0	0	1	0.12	0
281K	Float	LF#93	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281K	Float	LF#94	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0

Feature/ Level	Type	Sample	Volume (L)	Quercus sp. Count	Quercus sp. Weight (g)	Castanea sp. Count	Castanea sp. Weight (g)	Carya sp. Count	Carya sp. Weight (g)	Juglans nigra Count	Juglans nigra Weight (g)	Juglandaceae Count	Juglandaceae Weight (g)	Uniden&fied Count	Uniden&fied Weight (g)	Nut meat
281K	Float	LF#95	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
281K	Float	LF#96	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#54	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#55	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#56	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#70	UNK	0	0	0	0	0	0	0	0	0	0	0	0	0
285C	Waterscr	11	15.25	0	0	0	0	0	0	1	0	0	0	6	0	0
285C	Waterscr	37	12	0	0	0	0	0	0	0	0	0	0	2	0.06	0
285C	Waterscr	38	12	0	0	0	0	0	0	0	0	0	0	10	0.24	0
285C	Dry scree	38		0	0	0	0	0	0	1	0.07	0	0	0	0	0
285D	Float	LF#61	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285D	Float	LF#62	2.5	0	0	0	0	0	0	1	0.11	0	0	0	0	0
285D	Float	LF#63	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285D	Float	LF#64	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285D	Float	LF#65	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#42	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#43	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#44	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#45	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#46	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#47	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#48	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#49	2.5	0	0	0	0	0	0	0	0	0	0	1	<0.01	0
285E	Float	LF#51	2	0	0	0	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#52	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285F	Float	LF#66	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285F	Float	LF#67	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285F	Float	LF#68	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285F	Float	LF#69	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0

Feature/ Level	Type	Sample	Volume (L)	Quercus sp. Count	Weight (g)	Castanea sp. Count	Weight (g)	Carya sp. Count	Weight (g)	Juglans nigra Count	Weight (g)	Juglandaceae Count	Weight (g)	Uniden&fied Count	Weight (g)	Nut meat
285F	Waterscr	41	8.5	0	0	0	0	0	0	0	0	0	0	5	0.06	0
285F	Waterscr	89	2.5	0	0	0	0	0	0	0	0	0	0	1	0.01	0
285G	Float	LF#22	2.5	0	0	0	0	1	0.04	0	0	0	0	0	0	0
285G	Float	LF#23	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285G	Float	LF#24	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285G	Float	LF#25	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285G	Waterscr	16	9.5	0	0	0	0	0	0	0	0	1	0.03	0	0	0
285G	Waterscr	30	6	0	0	0	0	0	0	0	0	1	0.01	0	0	0
285H	Float	LF#77	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285H	Float	LF#78	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285H	Float	LF#79	2.5	0	0	0	0	0	0	0	0	1	0.01	0	0	0
285H	Float	LF#80	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#31	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#32	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#33	2.5	0	0	0	0	0	0	0	0	0	0	0	0	
285J	Float	LF#34	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#35	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#36	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#37	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#38	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#39	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#40	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#41	1	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#13	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#14	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#15	3	0	0	0	0	0	0	0	0	0	0	0	0	
285K	Float	LF#16	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#17	2.75	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#18	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#19	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0

Feature/ Level	Type	Sample	Volume (L)	Quercus sp. Count	Quercus sp. Weight (g)	Castanea sp. Count	Castanea sp. Weight (g)	Carya sp. Count	Carya sp. Weight (g)	Juglans nigra Count	Juglans nigra Weight (g)	Juglandaceae Count	Juglandaceae Weight (g)	Uniden&fied Count	Uniden&fied Weight (g)	Nut meat
285K	Float	LF#20	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#21	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#71	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#72	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#73	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#74	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0
				2	0.05	1	0.05	2	0.19	12	0.64	3	0.05	182	5.43	1

Feature/Level	Type	Sample	Volume	Rumex crispus	Rumex sp.	Polygonum sp.	Polgonaceae	Chenopodium sp.	Chenopodiaceae	Portulaca sp.	Portulacaeae
281C	Float	LF#81	2.5	0	0	0	0	1	0	0	0
281C	Float	LF#82	2.5	1	0	0	0	0	0	0	0
281C	Float	LF#83	2.5	0	0	0	0	0	0	0	0
281C	Float	LF#84	2.5	0	0	0	0	0	0	0	0
281C	1/4"HF	82		0	0	0	0	0	0	0	0
281D	Float	LF#5	2.5	0	0	6	0	2	0	0	0
281D	Float	LF#6	2.5	0	0	0	2	0	1	0	1
281D	Float	LF#7	2.5	0	0	0	3	3	0	0	0
281D	Float	LF#8	2.5	0	0	4	0	1	0	0	0
281D	Float	LF#9	2.5	0	0	0	1	2	0	0	0
281D	Float	LF#10	2.5	0	0	0	1	0	0	0	0
281D	Float	LF#11	2.5	0	0	0	5	0	0	0	0
281D	Float	LF#12	2.75	0	0	2	0	1	0	0	0
281E	Float	LF#1	2.5	0	0	1	0	1	0	1	0
281E	Float	LF#2	2.5	0	0	0	2	0	6	1	0
281E	Float	LF#3	2.5	0	0	0	3	2	0	0	0
281E	Float	LF#4	2.5	0	0	0	3	4	0	0	0
281F	Float	LF#85	2.5	0	0	0	3	2	0	0	0
281F	Float	LF#86	2.5	2	0	8	0	0	0	0	0
281F	Float	LF#87	2.5	0	0	0	2	2	0	0	0
281F	Float	LF#88	2.5	0	0	3	0	0	0	2	0
281G	Float	LF#26	2.5	0	0	3	0	1	0	1	0
281G	Float	LF#27	2.5	1	0	4	0	1	0	0	0
281G	Float	LF#28	2.5	0	0	2	0	0	0	3	0
281G	Float	LF#29	2.5	0	0	4	0	2	0	1	0
281G	Float	LF#30	1	0	0	3	0	1	0	0	0
281G	Waterscreen	57	10.5	0	0	0		0	0	0	0
281G	Waterscreen	54	12	0	0	0		0	0	0	0
281H	Float	LF#89	2.5	0	1	7	0	12	0	2	0
281H	Float	LF#90	2.5	0	1	6	0	0	0	0	0
281H	Float	LF#91	2.5	0	2	5	0	0	0	0	0

Feature/Level	Type	Sample	Volume	Rumex crispus	Rumex sp.	Polygonum sp.	Polgonaceae	Chenopodium sp.	Chenopodiaceae	Portulaca sp.	Portulacaeae
281H	Float	LF#92	2.5	0	1	5	0	30	0	4	0
281H	Waterscreen	85	2.5	0	0	0	0	1	0	0	0
281H	Waterscreen	86	2.5	0	0	0	0	0	0	0	0
281H	Waterscreen	87	2.5	0	0	0	0	0	0	0	0
281J	Float	LF#57	2.5	0	0	0	0	2	0	0	0
281J	Float	LF#58	2.5	0	0	1	0	0	0	0	0
281J	Float	LF#59	2.5	0	0	0	0	1	0	0	0
281J	Float	LF#60	2.5	0	0	0	0	1	0	0	0
281K	Float	LF#93	2.5	0	0	0	0	1	0	0	0
281K	Float	LF#94	2.5	0	0	0	0	2	0	0	0
281K	Float	LF#95	2.5	0	0	0	0	0	0	0	0
281K	Float	LF#96	2.5	0	0	0	0	1	0	0	0
281K	Waterscreen	91	3	0	0	0	0	1	0	0	0
281K	1/4"HF	93									
285C	Float	LF#54	2.5	0	0	0	0	4	0	0	0
285C	Float	LF#55	2.5	0	1	0	0	0	0	0	0
285C	Float	LF#56	2.5	0	0	1	0	1	0	0	0
285C	Float	LF#70	UNK	0	0	0	0	0	0	0	0
285C	Waterscreen	38	12	0	0	0	0	0	0	0	0
285C	Waterscreen	39	12	0	0	0	0	0	0	0	0
285D	Float	LF#61	2.5	0	1	1	0	0	0	0	0
285D	Float	LF#62	2.5	0	0	0	0	2	0	0	0
285D	Float	LF#63	2.5	0	0	0	0	3	0	0	
285D	Float	LF#64	2.5	0	0	0	0	0	0	0	0
285D	Float	LF#65	0.75	0	0	0	0	0	0	0	0
285E	Float	LF#42	2.5	0	0	0	0	0	0	0	0
285E	Float	LF#43	2.5	0	0	0	0	1	0	0	0
285E	Float	LF#44	2.5	0	0	0	0	1	0	0	0
285E	Float	LF#45	2.5	0	0	0	0	0	0	0	
285E	Float	LF#46	1.5	0	0	0	0	0	0	0	0

Feature/Level	Type	Sample	Volume	Rumex crispus	Rumex sp.	Polygonum sp.	Polgonaceae	Chenopodium sp.	Chenopodiaceae	Portulaca sp.	Portulacaeae
285E	Float	LF#47	2.5	0	0	0	0	0	0	0	0
285E	Float	LF#48	2.5	0	0	0	0	0	0	1	0
285E	Float	LF#49	2.5	0	0	0	0	0	0	0	0
285E	Float	LF#51	2	0	0	0	0	0	0	0	0
285E	Float	LF#52	2.5	0	0	0	0	0	0	0	0
285E	Waterscreen	12	9.75	0	0	0	0	0	0	0	0
285E	Waterscreen	13	12	0	0	0	0	0	0	0	0
285F	Float	LF#66	2.5	0	0	0	0	0	0	0	0
285F	Float	LF#67	2.5	0	0	0	0	0	0	0	0
285F	Float	LF#68	2.5	0	0	0	0	0	0	0	0
285F	Float	LF#69	2.5	0	0	0	0	0	0	0	0
285F	Waterscreen	41	8.5	0	0	0	0	0	0	0	0
285F	Waterscreen	89	2.5	0	0	0	0	0	0	0	0
285G	Float	LF#22	2.5	0	0	0	0	0	0	0	0
285G	Float	LF#23	2.5	0	0	1	0	0	0	0	0
285G	Float	LF#24	2.5	0	0	0	0	0	0	0	0
285G	Float	LF#25	2.5	0	0	0	0	0	0	0	0
285G	Waterscreen	20	10	0	0	0	0	0	0	0	0
285G	Waterscreen	21	12	0	0	0	0	0	0	0	0
285H	Float	LF#77	2.5	0	0	1	0	0	0	0	0
285H	Float	LF#78	2.5	0	0	0	0	0	0	0	0
285H	Float	LF#79	2.5	0	0	0	0	0	0	0	0
285H	Float	LF#80	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#31	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#32	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#33	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#34	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#35	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#36	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#37	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#38	2.5	0	0	0	0	0	0	0	0

Feature/Level	Type	Sample	Volume	Rumex crispus	Rumex sp.	Polygonum sp.	Polgonaceae	Chenopodium sp.	Chenopodiaceae	Portulaca sp.	Portulacaeae
285J	Float	LF#39	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#40	2.5	0	0	0	0	0	0	0	0
285J	Float	LF#41	1	0	0	0	0	0	0	0	0
285K	Float	LF#13	2.5	0	0	0	0	0	0	0	0
285K	Float	LF#14	2.5	0	0	0	0	0	0	0	0
285K	Float	LF#15	3	0	0	0	0	0	0	0	
285K	Float	LF#16	2.5	0	0	0	0	0	0	0	0
285K	Float	LF#17	2.75	0	0	0	0	0	0	0	0
285K	Float	LF#18	2.5	0	0	0	0	0	0	0	0
285K	Float	LF#19	2.5	0	0	0	0	0	0	0	0
285K	Float	LF#20	2.5	0	0	0	0	1	0	0	0
285K	Float	LF#21	2.5	0	0	0	0	0	0	0	0
285L	Float	LF#71	2.5	0	0	0	0	0	0	0	0
285L	Float	LF#72	2.5	0	0	0	0	0	0	0	0
285L	Float	LF#73	2.5	0	0	0	0	0	0	0	0
285L	Float	LF#74	2.5	0	0	0	0	0	0	0	0
285L	Waterscreen	97	2.5	0	0	0	0	0	0	0	0
				4	7	68	25	91	7	16	1

Feature/Level	Type	Sample	Volume	Oxalis stricta	c.f. Spergula	Caryophyllaceae	c.f. Salvia	Mentha sp.	Datura stramonium	Solanceae	Lathyrus sp.	Trifolium sp.	Fabaceae
281C	Float	LF#81	2.5	1	0	0	0	0	0	0	0	0	0
281C	Float	LF#82	2.5	1	0	0	0	0	0	0	0	0	0
281C	Float	LF#83	2.5	0	0	0	0	0	0	0	0	0	0
281C	Float	LF#84	2.5	0	0	0	0	0	0	0	0	0	0
281C	1/4"HF	82		2	0	0	0	0	0	0	0	0	0
281D	Float	LF#5	2.5	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#6	2.5	1	0	0	0	0	0	0	0	0	1
281D	Float	LF#7	2.5	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#8	2.5	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#9	2.5	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#10	2.5	0	0	0	0	0	0	0	0	0	0
281D	Float	LF#11	2.5	0	0	0	0	0	0	0	0	0	1
281D	Float	LF#12	2.75	0	0	0	0	0	0	0	0	0	0
281E	Float	LF#1	2.5	0	0	0	0	0	0	0	0	0	0
281E	Float	LF#2	2.5	1	0	0	0	0	0	0	0	0	0
281E	Float	LF#3	2.5	0	0	0	0	0	0	0	0	0	0
281E	Float	LF#4	2.5	0	0	0	0	0	0	0	0	0	0
281F	Float	LF#85	2.5	0	0	0	0	0	0	0	0	0	0
281F	Float	LF#86	2.5	0	0	0	1	0	0	0	0	0	0
281F	Float	LF#87	2.5	0	0	0	0	0	0	0	0	0	0
281F	Float	LF#88	2.5	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#26	2.5	1	0	0	0	0	0	0	0	0	0
281G	Float	LF#27	2.5	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#28	2.5	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#29	2.5	0	0	0	0	0	0	0	0	0	0
281G	Float	LF#30	1	0	0	0	0	0	0	0	0	0	0
281G	Waterscreen	57	10.5	0	0	0	0	0	0	0	0	0	0
281G	Waterscreen	54	12	0	0	0	0	0	0	0	0	0	0
281H	Float	LF#89	2.5	0	0	0	0	0	0	1	0	0	0
281H	Float	LF#90	2.5	0	0	0	0	0	0	0	0	0	1
281H	Float	LF#91	2.5	0	0	0	0	0	0	0	0	0	0

Feature/Level	Type	Sample	Volume	Oxalis stricta	c.f. Spergula	Caryophyllaceae	c.f. Salvia	Mentha sp.	Datura stramonium	Solanceae	Lathyrus sp.	Trifolium sp.	Fabaceae
281H	Float	LF#92	2.5	0	1	0	0	1	0	0	0	0	0
281H	Waterscreen	85	2.5	0	0	0	0	0	1	0	0	0	1
281H	Waterscreen	86	2.5	0	0	0	0	0	0	0	0	0	1
281H	Waterscreen	87	2.5	0	0	0	0	0	0	0	0	0	0
281J	Float	LF#57	2.5	0	0	0	0	0	0	0	0	0	0
281J	Float	LF#58	2.5	0	0	0	0	0	0	0	0	0	0
281J	Float	LF#59	2.5	0	0	0	0	0	0	0	0	0	0
281J	Float	LF#60	2.5	0	0	0	0	0	0	0	0	0	0
281K	Float	LF#93	2.5	0	0	0	0	0	0	1	0	0	0
281K	Float	LF#94	2.5	0	0	0	0	0	0	0	0	0	0
281K	Float	LF#95	2.5	0	0	0	0	0	0	0	0	0	0
281K	Float	LF#96	2.5	0	0	0	0	0	0	0	0	0	0
281K	Waterscreen	91	3	0	0	0	0	0	0	0	0	0	0
281K	1/4"HF	93											
285C	Float	LF#54	2.5	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#55	2.5	0	0	0	0	0	0	0	0	0	0
285C	Float	LF#56	2.5	0	0	0	0	0	0	0	0	1	0
285C	Float	LF#70	UNK	0	0	0	0	0	0	0	0	0	0
285C	Waterscreen	38	12	0	0	0	0	0	0	0	0	0	1
285C	Waterscreen	39	12	0	0	0	0	0	0	0	0	0	1
285D	Float	LF#61	2.5	0	0	0	0	0	0	0	0	0	2
285D	Float	LF#62	2.5	0	0	0	0	0	0	0	0	0	0
285D	Float	LF#63	2.5	0	0	0	0	0	0	0	0	0	1
285D	Float	LF#64	2.5	0	0	0	0	0	0	0	1	0	0
285D	Float	LF#65	0.75	0	0	0	0	0	0	0	0	0	1
285E	Float	LF#42	2.5	0	0	0	0	0	0	0	0	0	1
285E	Float	LF#43	2.5	0	0	0	0	0	0	0	0	0	1
285E	Float	LF#44	2.5	0	0	0	0	0	0	0	0	0	1
285E	Float	LF#45	2.5	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#46	1.5	0	0	0	0	0	0	0	0	0	1

Feature/Level	Type	Sample	Volume	Oxalis stricta	c.f. Spergula	Caryophyllaceae	c.f. Salvia	Mentha sp.	Datura stramonium	Solanceae	Lathyrus sp.	Trifolium sp.	Fabaceae
285E	Float	LF#47	2.5	0	0	1	0	0	0	0	0	0	0
285E	Float	LF#48	2.5	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#49	2.5	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#51	2	0	0	0	0	0	0	0	0	0	0
285E	Float	LF#52	2.5	0	0	0	0	0	0	0	0	0	0
285E	Waterscreen	12	9.75	0	0	0	0	0	0	0	0	0	1
285E	Waterscreen	13	12	0	0	0	0	0	0	0	0	0	1
285F	Float	LF#66	2.5	0	0	0	0	0	0	0	0	0	0
285F	Float	LF#67	2.5	0	0	0	0	0	0	0	0	0	2
285F	Float	LF#68	2.5	0	0	0	0	0	0	0	0	0	0
285F	Float	LF#69	2.5	0	0	0	0	0	0	0	0	0	0
285F	Waterscreen	41	8.5	0	0	0	0	0	0	0	0	0	2
285F	Waterscreen	89	2.5	0	0	0	0	0	0	0	0	0	1
285G	Float	LF#22	2.5	0	0	0	0	0	0	0	0	0	0
285G	Float	LF#23	2.5	0	0	0	0	0	0	0	0	0	0
285G	Float	LF#24	2.5	0	0	0	0	0	0	0	0	0	0
285G	Float	LF#25	2.5	0	0	0	0	0	0	0	0	0	0
285G	Waterscreen	20	10	0	0	0	0	0	0	0	0	0	1
285G	Waterscreen	21	12	0	0	0	0	0	0	0	0	0	1
285H	Float	LF#77	2.5	0	0	1	0	0	0	0	0	0	0
285H	Float	LF#78	2.5	0	0	0	0	0	0	0	0	0	0
285H	Float	LF#79	2.5	0	0	0	0	0	0	0	0	0	0
285H	Float	LF#80	2.5	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#31	2.5	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#32	2.5	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#33	2.5	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#34	2.5	0	0	0	0	0	0	0	0	0	1
285J	Float	LF#35	2.5	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#36	2.5	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#37	2.5	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#38	2.5	0	0	0	0	0	0	0	0	0	1

Feature/Level	Type	Sample	Volume	Oxalis stricta	c.f. Spergula	Caryophyllaceae	c.f. Salvia	Mentha sp.	Datura stramonium	Solanceae	Lathyrus sp.	Trifolium sp.	Fabaceae
285J	Float	LF#39	2.5	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#40	2.5	0	0	0	0	0	0	0	0	0	0
285J	Float	LF#41	1	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#13	2.5	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#14	2.5	0	0	0	0	0	0	0	0	0	1
285K	Float	LF#15	3	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#16	2.5	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#17	2.75	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#18	2.5	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#19	2.5	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#20	2.5	0	0	0	0	0	0	0	0	0	0
285K	Float	LF#21	2.5	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#71	2.5	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#72	2.5	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#73	2.5	0	0	0	0	0	0	0	0	0	0
285L	Float	LF#74	2.5	0	0	0	0	0	0	0	0	0	0
285L	Waterscreen	97	2.5	0	0	0	0	0	0	0	0	0	0
				7	1	2	1	1	1	2	1	1	27

Feature/Level	Type	Sample	Volume	Ranunculaceae
281C	Float	LF#81	2.5	0
281C	Float	LF#82	2.5	0
281C	Float	LF#83	2.5	0
281C	Float	LF#84	2.5	0
281C	1/4"HF	82		0
281D	Float	LF#5	2.5	0
281D	Float	LF#6	2.5	0
281D	Float	LF#7	2.5	0
281D	Float	LF#8	2.5	0
281D	Float	LF#9	2.5	0
281D	Float	LF#10	2.5	0
281D	Float	LF#11	2.5	0
281D	Float	LF#12	2.75	0
281E	Float	LF#1	2.5	0
281E	Float	LF#2	2.5	0
281E	Float	LF#3	2.5	0
281E	Float	LF#4	2.5	0
281F	Float	LF#85	2.5	0
281F	Float	LF#86	2.5	0
281F	Float	LF#87	2.5	0
281F	Float	LF#88	2.5	0
281G	Float	LF#26	2.5	1
281G	Float	LF#27	2.5	0
281G	Float	LF#28	2.5	0
281G	Float	LF#29	2.5	0
281G	Float	LF#30	1	0
281G	Waterscreen	57	10.5	0
281G	Waterscreen	54	12	0
281H	Float	LF#89	2.5	0
281H	Float	LF#90	2.5	0
281H	Float	LF#91	2.5	0

Feature/Level	Type	Sample	Volume	Ranunculaceae
281H	Float	LF#92	2.5	0
281H	Waterscreen	85	2.5	0
281H	Waterscreen	86	2.5	0
281H	Waterscreen	87	2.5	0
281J	Float	LF#57	2.5	0
281J	Float	LF#58	2.5	0
281J	Float	LF#59	2.5	0
281J	Float	LF#60	2.5	0
281K	Float	LF#93	2.5	0
281K	Float	LF#94	2.5	0
281K	Float	LF#95	2.5	0
281K	Float	LF#96	2.5	0
281K	Waterscreen	91	3	0
281K	1/4"HF	93		
285C	Float	LF#54	2.5	0
285C	Float	LF#55	2.5	0
285C	Float	LF#56	2.5	0
285C	Float	LF#70	UNK	0
285C	Waterscreen	38	12	0
285C	Waterscreen	39	12	0
285D	Float	LF#61	2.5	0
285D	Float	LF#62	2.5	0
285D	Float	LF#63	2.5	0
285D	Float	LF#64	2.5	0
285D	Float	LF#65	0.75	0
285E	Float	LF#42	2.5	0
285E	Float	LF#43	2.5	0
285E	Float	LF#44	2.5	0
285E	Float	LF#45	2.5	0
285E	Float	LF#46	1.5	0

Feature/Level	Type	Sample	Volume	Ranunculaceae
285E	Float	LF#47	2.5	0
285E	Float	LF#48	2.5	0
285E	Float	LF#49	2.5	0
285E	Float	LF#51	2	0
285E	Float	LF#52	2.5	0
285E	Waterscreen	12	9.75	0
285E	Waterscreen	13	12	0
285F	Float	LF#66	2.5	0
285F	Float	LF#67	2.5	0
285F	Float	LF#68	2.5	0
285F	Float	LF#69	2.5	0
285F	Waterscreen	41	8.5	0
285F	Waterscreen	89	2.5	0
285G	Float	LF#22	2.5	0
285G	Float	LF#23	2.5	0
285G	Float	LF#24	2.5	0
285G	Float	LF#25	2.5	0
285G	Waterscreen	20	10	0
285G	Waterscreen	21	12	0
285H	Float	LF#77	2.5	0
285H	Float	LF#78	2.5	0
285H	Float	LF#79	2.5	0
285H	Float	LF#80	2.5	0
285J	Float	LF#31	2.5	0
285J	Float	LF#32	2.5	0
285J	Float	LF#33	2.5	0
285J	Float	LF#34	2.5	0
285J	Float	LF#35	2.5	0
285J	Float	LF#36	2.5	0
285J	Float	LF#37	2.5	0
285J	Float	LF#38	2.5	0

Feature/Level	Type	Sample	Volume	Ranunculaceae
285J	Float	LF#39	2.5	0
285J	Float	LF#40	2.5	0
285J	Float	LF#41	1	0
285K	Float	LF#13	2.5	0
285K	Float	LF#14	2.5	0
285K	Float	LF#15	3	0
285K	Float	LF#16	2.5	0
285K	Float	LF#17	2.75	0
285K	Float	LF#18	2.5	0
285K	Float	LF#19	2.5	0
285K	Float	LF#20	2.5	0
285K	Float	LF#21	2.5	0
285L	Float	LF#71	2.5	0
285L	Float	LF#72	2.5	0
285L	Float	LF#73	2.5	0
285L	Float	LF#74	2.5	0
285L	Waterscreen	97	2.5	0
				1

Feature/ Level	Type	Sample	Volume	Poaceae wild	Panicoid	Eleusine indica	Panicum miliaceum	Poaceae-indet	Cyperaceae
281C	Float	LF#81	2.5	14	0	0	0	0	0
281C	Float	LF#82	2.5	13	1	0	0	0	0
281C	Float	LF#83	2.5	8	0	0	0	0	0
281C	Float	LF#84	2.5	12	1	0	0	0	0
281C	1/4"HF	82		1	0	0	0	0	0
281D	Float	LF#5	2.5	78	3	0	0	0	0
281D	Float	LF#6	2.5	37	1	0	0	0	0
281D	Float	LF#7	2.5	94	0	0	0	0	0
281D	Float	LF#8	2.5	105	0	0	0	0	0
281D	Float	LF#9	2.5	64	2	0	0	0	0
281D	Float	LF#10	2.5	36	3	0	1	1	0
281D	Float	LF#11	2.5	83	2	0	0	0	0
281D	Float	LF#12	2.75	54	0	0	0	1	0
281E	Float	LF#1	2.5	133	3	0	0	0	0
281E	Float	LF#2	2.5	162	15	0	0	0	0
281E	Float	LF#3	2.5	144	4	0	0	1	0
281E	Float	LF#4	2.5	150	4	0	0	0	0
281F	Float	LF#85	2.5	29	0	0	0	0	0
281F	Float	LF#86	2.5	136	2	0	0	0	0
281F	Float	LF#87	2.5	123	8	0	0	0	0
281F	Float	LF#88	2.5	188	7	0	0	0	0
281G	Float	LF#26	2.5	157	3	0	0	0	0
281G	Float	LF#27	2.5	90	7	0	0	0	1
281G	Float	LF#28	2.5	281	2	0	0	0	0
281G	Float	LF#29	2.5	179	7	0	0	0	1
281G	Float	LF#30	1	62	0	0	0	0	0
281G	Waterscreen	57	10.5	0	0	0	0	0	0
281G	Waterscreen	54	12	1	0	0	0	0	0
281H	Float	LF#89	2.5	244	4	0	0	0	0
281H	Float	LF#90	2.5	67	1	0	0	0	2
281H	Float	LF#91	2.5	59	0	0	0	0	0
281H	Float	LF#92	2.5	363	0	0	0	0	0
281H	Waterscreen	85	2.5	1	0	0	0	0	0
281H	Waterscreen	86	2.5	0	0	0	0	0	0
281H	Waterscreen	87	2.5	3	0	0	0	0	0
281J	Float	LF#57	2.5	58	0	0	0	0	0
281J	Float	LF#58	2.5	19	0	0	0	0	0
281J	Float	LF#59	2.5	28	0	0	0	0	0
281J	Float	LF#60	2.5	38	1	0	0	0	1
281K	Float	LF#93	2.5	5	0	0	0	0	0
281K	Float	LF#94	2.5	3	0	0	0	0	0
281K	Float	LF#95	2.5	2	0	0	0	0	0
281K	Float	LF#96	2.5	3	0	0	0	0	0
281K	Waterscreen	91	3	1	0	0	0	0	0

Feature/ Level	Type	Sample	Volume	Poaceae wild	Panicoid	Eleusine indica	Panicum miliaceum	Poaceae-indet	Cyperaceae
281K	1/4"HF	93		1					
285C	Float	LF#54	2.5	0	0	0	0	0	0
285C	Float	LF#55	2.5	1	0	0	0	0	0
285C	Float	LF#56	2.5	0	0	0	0	0	0
285C	Float	LF#70	UNK	0	0	0	0	0	0
285C	Waterscreen	38	12	0	0	0	0	0	0
285C	Waterscreen	39	12	0	0	0	0	0	0
285D	Float	LF#61	2.5	1	0	1	0	0	0
285D	Float	LF#62	2.5	1	0	0	0	0	0
285D	Float	LF#63	2.5	2	0	0	0	0	0
285D	Float	LF#64	2.5	0	0	1	0	0	0
285D	Float	LF#65	0.75	0	0	0	0	0	0
285E	Float	LF#42	2.5	2	0	0	0	0	0
285E	Float	LF#43	2.5	2	0	0	0	0	0
285E	Float	LF#44	2.5	0	0	0	0	0	0
285E	Float	LF#45	2.5	2	0	0	0	0	0
285E	Float	LF#46	1.5	0	0	0	0	0	0
285E	Float	LF#47	2.5	0	0	0	0	0	0
285E	Float	LF#48	2.5	0	0	0	0	0	0
285E	Float	LF#49	2.5	2	0	0	0	0	0
285E	Float	LF#51	2	0	0	0	0	0	0
285E	Float	LF#52	2.5	0	0	0	0	0	0
285E	Waterscreen	12	9.75	0	0	0	0	0	0
285E	Waterscreen	13	12	0	0	0	0	0	0
285F	Float	LF#66	2.5	0	0	0	0	0	0
285F	Float	LF#67	2.5	0	0	0	0	0	0
285F	Float	LF#68	2.5	0	0	0	0	0	0
285F	Float	LF#69	2.5	0	0	0	0	0	0
285F	Waterscreen	41	8.5	0	0	0	0	0	0
285F	Waterscreen	89	2.5	1	0	0	0	0	0
285G	Float	LF#22	2.5	0	0	0	0	0	0
285G	Float	LF#23	2.5	0	0	0	0	0	0
285G	Float	LF#24	2.5	0	0	0	0	0	0
285G	Float	LF#25	2.5	0	0	0	0	0	0
285G	Waterscreen	20	10	0	0		0	0	0
285G	Waterscreen	21	12	0	0	0	0	0	0
285H	Float	LF#77	2.5	3	0	0	0	0	0
285H	Float	LF#78	2.5	3	0	0	0	0	1
285H	Float	LF#79	2.5	0	0	0	0	0	0
285H	Float	LF#80	2.5	1	0	0	0	0	1
285J	Float	LF#31	2.5	1	0	0	0	0	0
285J	Float	LF#32	2.5	0	0	0	0	0	0
285J	Float	LF#33	2.5	1	0	0	0	0	0
285J	Float	LF#34	2.5	0	0	0	0	0	0

Feature/ Level	Type	Sample	Volume	Poaceae wild	Panicoid	Eleusine indica	Panicum miliaceum	Poaceae-indet	Cyperaceae
285J	Float	LF#35	2.5	0	0	0	0	0	0
285J	Float	LF#36	2.5	0	0	0	0	0	0
285J	Float	LF#37	2.5	0	0	0	0	0	0
285J	Float	LF#38	2.5	0	0	0	0	0	0
285J	Float	LF#39	2.5	0	0	0	0	0	0
285J	Float	LF#40	2.5	0	0	0	0	0	0
285J	Float	LF#41	1	0	0	0	0	0	0
285K	Float	LF#13	2.5	0	0	0	0	0	0
285K	Float	LF#14	2.5	0	0	0	0	0	0
285K	Float	LF#15	3	0	0	0	0	0	0
285K	Float	LF#16	2.5	0	0	0	0	0	0
285K	Float	LF#17	2.75	0	0	0	0	0	0
285K	Float	LF#18	2.5	0	0	0	0	0	0
285K	Float	LF#19	2.5	0	0	0	0	0	0
285K	Float	LF#20	2.5	1	0	0	0	0	0
285K	Float	LF#21	2.5	0	0	0	0	0	0
285L	Float	LF#71	2.5	0	0	0	0	0	0
285L	Float	LF#72	2.5	0	0	0	0	0	0
285L	Float	LF#73	2.5	0	0	0	0	0	0
285L	Float	LF#74	2.5	0	0	0	0	0	0
285L	Waterscreen	97	2.5	1	0	0	0	0	0
Total			336.5	3354	81	2	1	3	7

Feature /Level	Type	Sample	Volume	Uniden7fied	Starchy Material Ct.	Starchy Material Wt.
281C	Float	LF#81	2.5	0	3	0.09
281C	Float	LF#82	2.5	0	6	0.06
281C	Float	LF#83	2.5	0	0	0
281C	Float	LF#84	2.5	1	0	0
281C	1/4"HF	82		0	0	0
281D	Float	LF#5	2.5	0	4	0.07
281D	Float	LF#6	2.5	0	0	0
281D	Float	LF#7	2.5	0	0	0
281D	Float	LF#8	2.5	4	0	0
281D	Float	LF#9	2.5	1	0	0
281D	Float	LF#10	2.5	0	0	0
281D	Float	LF#11	2.5	4	0	0
281D	Float	LF#12	2.75	0	4	UNK
281D	Waterscreen	4		0	1	0.01
281D	Waterscreen	7		0	3	0.04
281E	Float	LF#1	2.5	6	0	0
281E	Float	LF#2	2.5	7	0	0
281E	Float	LF#3	2.5	0	0	0
281E	Float	LF#4	2.5	0	0	0
281E	Waterscreen	17	20	0	4	0.05
281E	Waterscreen	43	12	0	3	0.62
281E	Waterscreen	49	12	0	3	0.04
281E	Waterscreen	50	11	0	1	<0.01
281E	Waterscreen	51	12	0	2	0.04
281F	Float	LF#85	2.5	0	0	0
281F	Float	LF#86	2.5	0	4	UNK
281F	Float	LF#87	2.5	0	3	0.08
281F	Float	LF#88	2.5	0	0	0
281F	Waterscreen	59	13.25	0	2	0.07
281F	Waterscreen	61	13.25	0	9	0.47
281G	Float	LF#26	2.5	0	0	0
281G	Float	LF#27	2.5	0	0	0
281G	Float	LF#28	2.5	1	0	0
281G	Float	LF#29	2.5	0	0	0
281G	Float	LF#30	1	0	0	0
281G	Waterscreen	57	10.5	1	1	0.11
281G	Waterscreen	54	12	0	4	0.02
281H	Float	LF#89	2.5	0	0	0
281H	Float	LF#90	2.5	0	0	0
281H	Float	LF#91	2.5	2	0	0
281H	Float	LF#92	2.5	4	1	0.05
281H	Waterscreen	53	12.25	0	2	0.37
281H	Waterscreen	85	2.5	0	0	0
281H	Waterscreen	86	2.5	0	0	0

Feature /Level	Type	Sample		Volume	Uniden7fied	Starchy Material Ct.	Starchy Material Wt.
281H	Waterscreen		87	2.5	0	0	0
281H	Waterscreen		88	2.5	0	1	0.01
281H	Dry screen				0	1	0.23
281J	Float	LF#57		2.5	0	2	0.04
281J	Float	LF#58		2.5	0	1	0.05
281J	Float	LF#59		2.5	0	0	0
281J	Float	LF#60		2.5	0	0	0
281J	Waterscreen		44	12.5	0	4	0.22
281J	Waterscreen		45	13	0	12	0.23
281J	Waterscreen		46	10	0	15	0.64
281J	Waterscreen		47	10	0	14	0.51
281J	Waterscreen		48	13	0	11	0.15
281J	Waterscreen		64	10.75	0	12	0.18
281J	Waterscreen		65	12	0	10	0.23
281J	Waterscreen		75	2.5	0	9	0.21
281J	Waterscreen		76	2.5	0	12	0.4
281J	Waterscreen		77	2.5	0	7	1.06
281J	Waterscreen		78	2.5	0	4	0.14
281J	Waterscreen		79	2.5	0	1	0.1
281J	Waterscreen		81	2.5	0	10	0.25
281J	Waterscreen		82	2.5	0	9	0.1
281J	Waterscreen		83	2.5	0	9	0.36
281J	Waterscreen		84	2	0	11	0.1
281J	Dry screen				0	15	3.59
281K	Float	LF#93		2.5	0	3	0.15
281K	Float	LF#94		2.5	0	0	0
281K	Float	LF#95		2.5	0	0	0
281K	Float	LF#96		2.5	0	6	0.05
281K	Waterscreen		91	3	0	0	0
281K	1/4"HF		93		0	0	0
285C	Float	LF#54		2.5	0	0	0
285C	Float	LF#55		2.5	0	0	0
285C	Float	LF#56		2.5	0	0	0
285C	Float	LF#70		UNK	0	0	0
285C	Waterscreen		11	15.25	0	6	0.07
285C	Waterscreen		37	12	0	16	0.26
285C	Waterscreen		38	12	0	7	0.13
285C	Waterscreen		39	12	0	7	0.07
285C	Waterscreen		40	10	0	7	0.11
285C	Dry screen		38		0	1	0.14
285D	Float	LF#61		2.5	0	6	0.07
285D	Float	LF#62		2.5	0	1	0.03
285D	Float	LF#63		2.5	0	4	0.15
285D	Float	LF#64		2.5	0	0	0

Feature /Level	Type	Sample	Volume	Uniden7fied	Starchy Material Ct.	Starchy Material Wt.
285D	Float	LF#65	0.75	0	0	0
285E	Float	LF#42	2.5	0	0	0
285E	Float	LF#43	2.5	0	0	0
285E	Float	LF#44	2.5	0	0	0
285E	Float	LF#45	2.5	1	5	0.15
285E	Float	LF#46	1.5	0	6	0.09
285E	Float	LF#47	2.5	1	11	0.11
285E	Float	LF#48	2.5	0	8	0.11
285E	Float	LF#49	2.5	0	4	0.05
285E	Float	LF#51	2	0	9	0.07
285E	Float	LF#52	2.5	0	13	0.21
285E	Waterscreen	12	9.75	0	4	0.12
285E	Waterscreen	13	12	0	6	0.19
285E	Waterscreen	14	7	0	6	0.15
285F	Float	LF#66	2.5	0	0	0
285F	Float	LF#67	2.5	0	3	0.07
285F	Float	LF#68	2.5	0	3	0.04
285F	Float	LF#69	2.5	0	0	0
285F	Waterscreen	41	8.5	0	32	0.48
285F	Waterscreen	89	2.5	0	1	0.01
285F	Waterscreen	90	2.5	0	3	0.02
285F	Dry screen	41	8.5	0	2	0.16
285G	Float	LF#22	2.5	0	2	0.03
285G	Float	LF#23	2.5	0	0	0
285G	Float	LF#24	2.5	0	0	0
285G	Float	LF#25	2.5	0	2	0.05
285G	Waterscreen	20	10	0	0	0
285G	Waterscreen	21	12	0	0	0
285G	Waterscreen	30	6	0	1	0.02
285H	Float	LF#77	2.5	0	0	0
285H	Float	LF#78	2.5	0	1	0.02
285H	Float	LF#79	2.5	0	2	0.06
285H	Float	LF#80	2.5	0	0	0
285J	Float	LF#31	2.5	0	1	0.05
285J	Float	LF#32	2.5	0	0	0
285J	Float	LF#33	2.5	0	0	0
285J	Float	LF#34	2.5	0	0	0
285J	Float	LF#35	2.5	0	0	0
285J	Float	LF#36	2.5	0	0	0
285J	Float	LF#37	2.5	0	0	0
285J	Float	LF#38	2.5	1	0	0
285J	Float	LF#39	2.5	0	1	0.11
285J	Float	LF#40	2.5	0	3	0.06
285J	Float	LF#41	1	0	0	0

Feature /Level	Type	Sample	Volume	Uniden7fied	Starchy Material Ct.	Starchy Material Wt.	
285J	Dry screen				0	8	1.23
285K	Float	LF#13		2.5	0	0	0
285K	Float	LF#14		2.5	0	3	0.02
285K	Float	LF#15		3	0	2	0.02
285K	Float	LF#16		2.5	0	1	<0.01
285K	Float	LF#17		2.75	0	2	0.06
285K	Float	LF#18		2.5	1	0	0
285K	Float	LF#19		2.5	0	0	0
285K	Float	LF#20		2.5	0	0	0
285K	Float	LF#21		2.5	0	0	0
285K	Waterscreen		34	12	0	5	0.08
285K	Waterscreen		35	12	0	9	0.17
285K	Waterscreen		36	10	0	7	0.11
285K	Dry screen		34		0	1	0.03
285K	Dry N 1/2				0	6	2.61
285L	Float	LF#71		2.5	0	1	0.01
285L	Float	LF#72		2.5	0	0	0
285L	Float	LF#73		2.5	0	0	0
285L	Float	LF#74		2.5	0	0	0
285L	Waterscreen		97	2.5	0	0	0
Total					35	468	18.99

			Quercus sp.		Castanea sp.		Carya sp.		Acer sp.		Gymnocladus	
Feature/ Level	Type	Sample	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
281C	Float	81	7	0.07	0	0	0	0	0	0	0	0
281C	Float	83	1	0.02	0	0	0	0	0	0	0	0
281C	Float	84	4	0.13	0	0	0	0	0	0	0	0
281C	Dry Screen		25	3.32	0	0	0	0	0	0	0	0
281D	Float	5	25	1.6	0	0	0	0	0	0	0	0
281D	Float	6	17	0.5	0	0	0	0		0	0	0
281D	Float	7	13	0.2	0	0	0	0	0	0	1	0.01
281D	Float	8	21	0.57	1	0.13	0	0	0	0	0	0
281D	Float	9	13		0	0	1	0.03	0	0	0	0
281D	Float	10	11	0.2	0	0	0	0	0	0	0	0
281D	Float	11	8	0.08	0	0	0	0	0	0	0	0
281D	Float	12	3	0.02	0	0	1	0.06	0	0	3	0.06
281E	Float	1	22	1.41	0	0	0	0	0	0	0	0
281E	Float	2	25	2.06	0	0	0	0	0	0	0	0
281E	Float	3	25	1.91	0	0	0	0	0	0	0	0
281E	Float	4	20	0.49	0	0	0	0	0	0	0	0
281F	Float	85	25	1.43	0	0	0	0	0	0	0	0
281F	Float	86	21	2.95	0	0	0	0	0	0	0	0
281F	Float	87	25	2.56	0	0	0	0	0	0	0	0
281F	Float	88	25	2.21	0	0	0	0	0	0	0	0
281G	Float	26	25	1.09	0	0	0	0	0	0	0	0
281G	Float	27	25	1.41	0	0	0	0	0	0	0	0
281G	Float	28	20	2.19	0	0	0	0	0	0	0	0
281G	Float	29	24	1.73	0	0	0	0	0	0	0	0
281G	Float	30	16	0.4	0	0	0	0	0	0	0	0
281H	Float	89	21	2.11								
281H	Float	90	18	1.1	0	0	0	0	0	0	0	0
281H	Float	91	20	1.85	0	0	0	0	0	0	2	0.06
281H	Float	92	21	1.68	0	0	0	0	0	0	4	0.19
281J	Float	57	6	0.09	0	0	3	0.06	0	0	0	0

Feature/ Level	Type	Sample	Quercus sp. Count	Quercus sp. Weight	Castanea sp. Count	Castanea sp. Weight	Carya sp. Count	Carya sp. Weight	Acer sp. Count	Acer sp. Weight	Gymnocladus Count	Gymnocladus Weight
281J	Float	58	13	0.28	0	0	0	0	0	0	0	0
281J	Float	59	9	0.23	0	0	0	0	0	0	0	0
281J	Float	60	4	0.14	0	0	0	0	0	0	0	0
281K	Float	93	10	0.26	0	0	0	0	0	0	0	0
281K	Float	94	15	0.49	0	0	1	0.06	0	0	0	0
281K	Float	95	21	0.56	0	0	1	0.02	0	0	1	0.05
281K	Float	96	13	0.46	0	0	0	0	1	0.05	0	0
285C	Float	53	23	1.01	0	0	0	0	0	0	0	0
285C	Float	54	16	0.71	0	0	0	0	0	0	0	0
285C	Float	55	19	0.89	0	0	3	0.14	0	0	0	0
285C	Float	56	21	0.55	0	0	0	0	0	0	0	0
285D	Float	61	21	1.56	0	0	0	0	0	0	0	0
285D	Float	62	20	1.24	0	0	2	0.14	0	0	0	0
285D	Float	63	19	1.99	0	0	0	0	0	0	0	0
285D	Float	64	15	1.15	0	0	4	0.21	0	0	0	0
285D	Float	65	13	0.38	0	0	4	0.28	0	0	0	0
285E	Float	42	15	1.51	0	0	0	0	0	0	0	0
285E	Float	43	12	0.85	0	0	1	0.03	0	0	0	0
285E	Float	44	16	0.63	0	0	1	0.03	0	0	1	0.04
285E	Float	45	21	0.74	0	0	0	0	0	0	0	0
285E	Float	46	15	0.5	0	0	1	0.16	0	0	0	0
285E	Float	47	15	0.68	0	0	4	0.18	0	0	0	0
285E	Float	48	17	1.05	0	0	1	0.11	0	0	0	0
285E	Float	49	17	1.48	0	0	1	0.08	0	0	0	0
285E	Float	51	14	0.82	0	0	2	0.18	0	0	0	0
285E	Float	52	19	1.3	0	0	0	0	0	0	0	0
285F	Float	66	19	2.26	0	0	0	0	0	0	1	0.06
285F	Float	67	22	1.18	0	0	0	0	0	0	1	0.05
285F	Float	68	16	1.05	0	0	2	0.59	0	0	0	0

Feature/ Level	Type	Sample	Quercus sp. Count	Quercus sp. Weight	Castanea sp. Count	Castanea sp. Weight	Carya sp. Count	Carya sp. Weight	Acer sp. Count	Acer sp. Weight	Gymnocladus Count	Gymnocladus Weight
285F	Float	69	19	1.68	0	0	1	0.09	0	0	1	0.1
285G	Float	22	6	0.38	0	0	1	0.12	0	0	18	0.7
285G	Float	23	2	0.06	0	0	0	0	2	0.05	13	0.38
285G	Float	24	12	0.35	0	0	1	0.04	0	0	7	0.25
285G	Float	25	14	0.61	0	0	0	0	0	0	8	0.3
285H	Float	78	15	0.64	0	0	3	0.26	1	0.01	5	0.25
285H	Float	79	14	0.87	0	0	0	0	0	0	1	0.05
285H	Float	80	16	0.78	0	0	0	0	0	0	4	0.12
285J	Float	31	15	0.25	0	0	1	0.01	0	0	0	0
285J	Float	32	18	0.52	0	0	0	0	0	0	0	0
285J	Float	33	15	0.49	0	0	0	0	0	0	0	0
285J	Float	34	12	0.39	0	0	0	0	0	0	0	0
285J	Float	35	10	0.27	0	0	1	0.01	1	0.01	0	0
285J	Float	36	15	0.61	0	0	1	0.04	0	0	0	0
285J	Float	37	15	1.01	0	0	7	0.13	0	0	0	0
285J	Float	38	8	0.43	0	0	1	0.02	0	0	0	0
285J	Float	39	19	1.05	0	0	0	0	0	0	0	0
285J	Float	40	17	0.42	0	0	2	0.04	0	0	0	0
285J	Float	41	13	0.23	0	0	0	0	0	0	0	0
285K	Float	13	14	0.27	0	0	0	0	0	0	0	0
285K	Float	14	9	0.32	0	0	3	0.05	0	0	2	0.04
285K	Float	15	14	0.86	0	0	2	0.06	0	0	0	0
285K	Float	16	14	0.8	0	0	1	0.03	0	0	0	0
285K	Float	17	15	0.33	0	0	0	0	0	0	0	0
285K	Float	18	15	0.6	0	0	1	0.05	0	0	0	0
285K	Float	19	10	0.41	0	0	0	0	0	0	0	0
285K	Float	20	15	0.44	0	0	0	0	2	0.02	0	0
285K	Float	21	18	0.4	0	0	1	0.01	0	0	0	0
285L	Float	71	5	0.04	0	0	0	0	0	0	0	0
285L	Float	73	6	0.15	0	0	0	0	0	0	0	0

Feature/ Level	Type	Sample	Quercus sp. Count	Weight	Castanea sp. Count	Weight	Carya sp. Count	Weight	Acer sp. Count	Weight	Gymnocladus Count	Weight
285L	Float	74	3	0.01	0	0	0	0	0	0	0	0
			1395	77	1	0.13	60	3.32	7	0.14	73	2.71

Feature/			Liriodendron		Ring Porous		Diffuse Porous		Hardwood		Monocot Stem		Pinus sp.	
Level	Type	Sample	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
281C	Float	81	0	0	2	0.01	1	0.01	0	0	0	0	0	0
281C	Float	82	0	0	8	0.07	0	0	0	0	0	0	0	0
281C	Float	83	0	0	0	0	0	0	2	0.01	0	0	0	0
281C	Float	84	0	0	3	0.01	0	0	0	0	0	0	0	0
281D	Float	6	0	0	6	0.08	1	0.02	1	0.01	0	0	0	0
281D	Float	7	0	0	8	0.14	3	0.05	0	0	0	0	0	0
281D	Float	8	0	0	3	0.08	0	0	0	0	1	0.02	0	0
281D	Float	9	0	0	0	0	5	0.17	0	0	0	0	0	0
281D	Float	10	0	0	5	0.03	8	0.05	1	0.01	0	0	0	0
281D	Float	11	0	0	8	0.03	6	0.17	3	0.01	0	0	0	0
281D	Float	12	0	0	15	0.12	3	0.07	0	0	0	0	0	0
281E	Float	1	0	0	2	0.04	0	0	0	0	0	0	1	0.01
281E	Float	4	0	0	5	0.12	0	0	0	0	0	0	0	0
281F	Float	86	0	0	3	0.11	1	0.02	0	0	0	0	0	0
281G	Float	26	0	0	0	0		0	0	0	2	0.06	0	0
281G	Float	27	0	0	0	0	0	0	0	0	1	0.32	0	0
281G	Float	28	0	0	5	0.09	0	0	0	0	0	0	0	0
281G	Float	29	0	0	1	0.02	0	0	0	0	4	0.14	0	0
281G	Float	30	0	0	9	0.11	0	0	0	0	3	0.05	0	0
281H	Float	89	0	0	4	0.08	0	0	0	0	0	0	0	0
281H	Float	90	0	0	7	0.09	0	0	0	0	7	0.21	0	0
281H	Float	91	0	0	2	0.08	0	0	1	0.01	2	0.03	0	0
281H	Float	92	0	0	0	0	0	0	0	0	8	0.14	0	0
281H	Waterscreen	53	0	0	0	0	0	0	0	0	48	0.89	0	0
281H	Dry Screen		0	0	0	0	0	0	0	0	7	0.51	0	0
281J	Float	57	0	0	8	0.05	0	0	6	0.01	0	0	0	0
281J	Float	58	0	0	10	0.09	0	0	2	0.01	0	0	0	0
281J	Float	59	0	0	16	0.13	0	0	0	0	0	0	0	0
281J	Float	60	0	0	21	0.17	0	0	0	0	0	0	0	0
281J	Waterscreen	46	0	0	0	0	0	0	0	0	1	0.05	0	0

Feature/ Level	Type	Sample	Liriodendron Count	Liriodendron Weight	Ring Porous Count	Ring Porous Weight	Diffuse Porous Count	Diffuse Porous Weight	Hardwood Count	Hardwood Weight	Monocot Stem Count	Monocot Stem Weight	Pinus sp. Count	Pinus sp. Weight
281J	Waterscreen	47	0	0	0	0	0	0	0	0	1	0.05	0	0
281J	Dry Screen		0	0	0	0	0	0	0	0	5	0.41	0	0
281K	Float	93	0	0	14	0.23	0	0	0	0	0	0	1	0.03
281K	Float	94	0	0	9	0.14	0	0	0	0	0	0	0	0
281K	Float	95	0	0	0	0	0	0	1	0.01	0	0	1	0.01
281K	Float	96	0	0	9	0.11	0	0	0	0	0	0	2	0.04
285C	Float	53	0	0	0	0	2	0.18	0	0	0	0	0	0
285C	Float	54	0	0	8	0.1	1	0.12	0	0	0	0	0	0
285C	Float	55	0	0	3	0.07	0	0	0	0	0	0	0	0
285C	Float	56	0	0	4	0.02	0	0	0	0	0	0	0	0
285D	Float	61	0	0	3	0.16	0	0	0	0	0	0	1	0.04
285D	Float	62	0	0	3	0.11	0	0	0	0	0	0	0	0
285D	Float	63	0	0	6	0.26	0	0	0	0	0	0	0	0
285D	Float	63	0	0	6	0.35	0	0	0	0	0	0	0	0
285D	Float	65	0	0	8	0.25	0	0	0	0	0	0	0	0
285E	Float	42	0	0	10	0.37	0	0	0	0	0	0	0	0
285E	Float	43	0	0	11	0.48	1	0.08	0	0	0	0	0	0
285E	Float	44	0	0	7	0.23	0	0	0	0	0	0	0	0
285E	Float	45	0	0	3	0.05	0	0	0	0	0	0	1	0.03
285E	Float	46	0	0	8	0.41	1	0.02	0	0	0	0	0	0
285E	Float	47	0	0	6	0.13	0	0	0	0	0	0	0	0
285E	Float	48	0	0	7	0.6	0	0	0	0	0	0	0	0
285E	Float	49	0	0	7	0.25	0	0	0	0	0	0	0	0
285E	Float	51	0	0	9	0.33	0	0	0	0	0	0	0	0
285E	Float	52	0	0	6	0.23	0	0	0	0	0	0	0	0
285F	Float	66	0	0	5	0.31	0	0	0	0	0	0	0	0
285F	Float	67	0	0	2	0.11	0	0	0	0	0	0	0	0
285F	Float	68	0	0	7	0.45	0	0	0	0	0	0	0	0
285F	Float	69	0	0	4	0.23	0	0	0	0	0	0	0	0

			Liriodendron		Ring Porous		Diffuse Porous		Hardwood		Monocot Stem		Pinus sp.	
Feature/ Level	Type	Sample	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
285G	Float	23	0	0	8	0.25	0	0	0	0	0	0	0	0
285G	Float	24	0	0	5	0.12	0	0	0	0	0	0	0	0
285G	Float	25	0	0	3	0.08	0	0	0	0	0	0	0	0
285H	Float	78	0	0	0	0	0		0	0	0	0	0	0
285H	Float	79	0	0	8	0.43	0	0	2	0.08	0	0	0	0
285H	Float	80	0	0	2	0.15	0	0	3	0.12	0	0	0	0
285J	Float	31	0	0	9	0.12	0	0	0	0	0	0	0	0
285J	Float	32	0	0	7	0.14	0	0	0	0	0	0	0	0
285J	Float	33	0	0	10	0.08	0	0	0	0	0	0	0	0
285J	Float	34	0	0	13	0.09	0	0	0	0	0	0	0	0
285J	Float	35	0	0	9	0.11	0	0	4	0.08	0	0	0	0
285J	Float	36	0	0	9	0.11	0	0	0	0	0	0	0	0
285J	Float	37	0	0	3	0.05	0	0	0	0	0	0	0	0
285J	Float	38	0	0	16	0.2	0	0	0	0	0	0	0	0
285J	Float	39	0	0	6	0.13	0	0	0	0	0	0	0	0
285J	Float	40	0	0	5	0.1	0	0	0	0	0	0	1	0.01
285J	Float	41	0	0	10	0.13	1	0.01	0	0	0	0	1	0.01
285K	Float	13	0	0	10	0.19	0	0	1	0.02	0	0	0	0
285K	Float	14	0	0	11	0.24	0	0	0	0	0	0	0	0
285K	Float	15	0	0	9	0.17	0	0	0	0	0	0	0	0
285K	Float	16	0	0	10	0.55	0	0	0	0	0	0	0	0
285K	Float	17	0	0	10	0.17	0	0	0	0	0	0	0	0
285K	Float	18	0	0	9	0.13	0	0	0	0	0	0	0	0
285K	Float	19	0	0	12	0.18	0	0	3	0.05	0	0	0	0
285K	Float	20	0	0	8	0.14	0	0	0	0	0	0	0	0
285K	Float	21	1	0.04	4	0.11	0	0	0	0	0	0	0	0
285L	Float	71	0	0	17	0.06	0	0	0	0	0	0	0	0
285L	Float	72	0	0	1	0.01	0	0	4	0.01	0	0	0	0
285L	Float	73	0	0	9	0.09	0	0	1	0.01	0	0	0	0
285L	Float	74	0	0	14	0.05	0	0	2	0.01	0	0	0	0

Feature/ Level	Type	Sample	Liriodendron Count	Liriodendron Weight	Ring Porous Count	Ring Porous Weight	Diffuse Porous Count	Diffuse Porous Weight	Hardwood Count	Hardwood Weight	Monocot Stem Count	Monocot Stem Weight	Pinus sp. Count	Pinus sp. Weight
			1	0.04	41	0.21		0	7	0.03	0	0	0	0

Appendix 5: Final Report on Soil Chemistry Analysis of Wingo's Quarter Site, Bedford County, Virginia *(Andrew Wilkins)*

Final Report on Soil Chemistry Analysis of Wingo's Quarter Site, Bedford County, Virginia.

By

Andrew P. Wilkins, University of Tennessee

Prepared for

Engaging the Piedmont, Transitions in Virginia Slavery 1730-1790

Directed by Dr. Barbara J. Heath, University of Tennessee

July 2013, revised December 2015

Department of Anthropology

University of Tennessee

Knoxville, TN

Table of Contents

1. Introduction 348

2. Site Background 350

3. Methods 354
- **a.** Sampling 354
- **b.** Laboratory Procedures 357
- **c.** Analytical Methods 359

4. Plow zone 361
- **a.** Results 362
- **b.** Interpretations 376

5. Subsoil 381
- **a.** Results 382
- **b.** Discussion 385

6. Conclusions 387

References Cited 391

Appendix A: Data 396

1. Introduction

This report summarizes the findings of chemical analysis performed on soils from Wingo's Quarter site (44BE0298), located in eastern Bedford County, Virginia, approximately 10 miles south-southwest of the city of Lynchburg and the James River (Figure 1). The site was the residence of enslaved African Americans and their overseer, John Wingo, for whom the quarter farm was named during its time as part of Thomas Jefferson's larger Poplar Forest property from 1773 to 1790. This analysis is part of *Engaging the Piedmont, Transitions in Virginia Slavery 1730-1790*, a multi-year, collaborative, interdisciplinary archaeological research project funded by a grant from the National Endowment for the Humanities that compares the material world of quarter sites at the Indian Camp plantation in modern Powhatan County with the Wingo's and North Hill quarters at Poplar Forest in Bedford County.

At Wingo's, questions about the site concerning building orientation, entrance locations, and the layout of activity areas remain due to the lack structural features other than sub-floor pits. Soil chemical distributions have been measured and interpreted on many Mid-Atlantic historic sites (Keeler 1973; Stone et al 1987; Pogue 1988; Neiman et al 2000; Heath and Bennett 2000; Fischer 2001) to address the very kind of site layout and activity areas questions that are now posed for Wingo's. Soil samples taken during excavations at Wingo's were analyzed for phosphorus (P), calcium (Ca), potassium (K), and magnesium (Mg). Spatial and statistical distributions of those elements sampled systematically from plowzone, subsoil, and feature contexts readings can be used to identify the deposition of organic refuse (P), bone (Ca), and ash (K) in order to infer aspects of the site's layout. Enhanced understanding of the spatial patterns of occupation and activity at Wingo's, gained through soil chemical analysis, can be used to augment other analyses of artifacts and ecofacts, as well as address comparative questions about landscape use at Wingo's, the North Hill, and Indian Camp quarter sites.

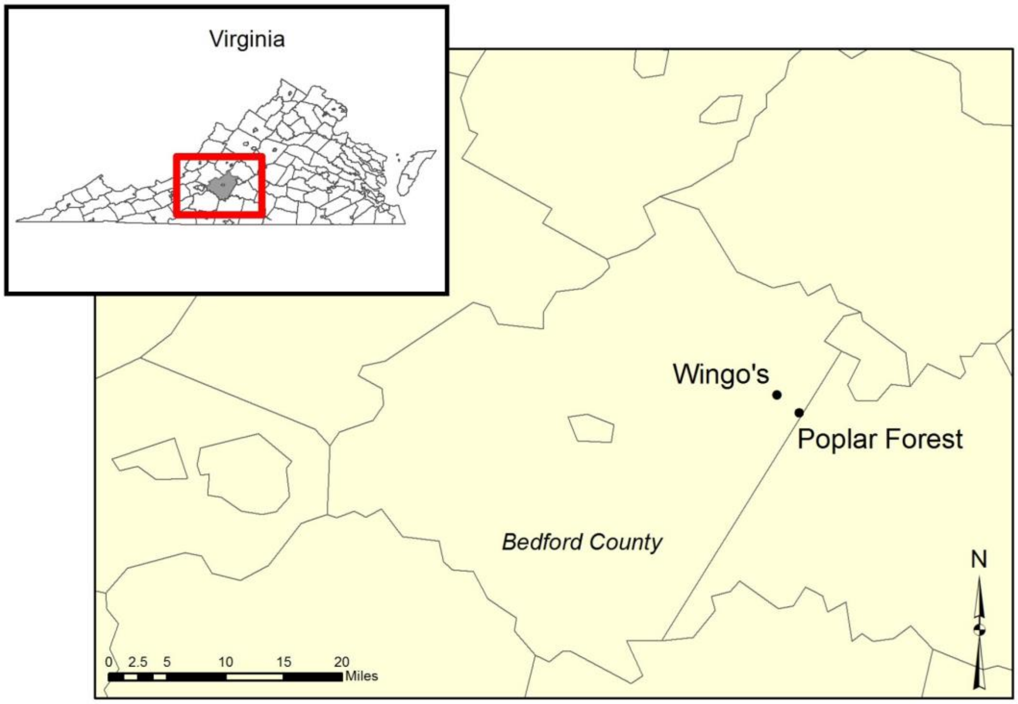


Figure 1: Map showing location of Wingo's site, created by Crystal Ptacek

A preliminary report was created summarizing the soil chemical analyses of 68 samples from plowzone (n = 49) and subsoil (n = 19) contexts taken during excavations in the summers of 2007, 2008, and 2009 (Wilkins 2011). These findings were used in concert with artifact distributions in order to form preliminary interpretations about the use of space in and around the quarter structure as well as to guide continuing excavations conducted in the 2011 and 2012 summer field seasons, during which an additional 118 plowzone and 55 subsoil samples were collected. Forty-three soil samples from feature contexts were also collected during across the 2007, 2009, 2011, and 2012. Fieldwork on the site was completed in the summer of 2012, and the results included in this report are inclusive of all 284 samples taken across five seasons of excavations.

2. Site Background

Thomas Jefferson inherited the tracts of land in Bedford County that would eventually become Poplar Forest and contain the site of Wingo's quarter after the death of his father-in-law in 1773. By1774, 15 enslaved African Americans, 10 adults and five children, were in residence. During his ownership, Jefferson was a mostly absentee owner of Poplar Forest, and a white overseer named John Wingo managed the farm quarter for four years, likely being replaced by another overseer or enslaved "headman" until 1790 when the plantation and slaves were passed to Jefferson's descendants. The property was sold out of the Jefferson family by 1811, though Wingo's may have been abandoned as early as the 1790s (Heath 2012).

With the aid of historic maps, staff from Thomas Jefferson's Poplar Forest undertook short-term survey projects in 2000 and 2001 in the southern portion of a field alongside Wolf

Branch. These surveys located a concentration of wrought nails and a small scatter of domestic artifacts dating to the second half of the 18th century. Beginning in 2007, a field school under the direction of Dr. Barbara Heath from the University of Tennessee, Knoxville conducted research over the course of subsequent summers. Excavation at the site has included a combination of small 2 ft. square quadrats placed at 50, 25 and 12.5 ft. intervals, and larger block excavations consisting of contiguous 5 × 5ft. quadrats. Two subfloor pits separated by a distance of less than five feet were located in the northeastern block excavation. These features are the only structural remains of a cabin with overall dimensions of at least 18 ft. east-west by 10.5 ft. north-south (Heath 2012).

Wingo's is a rare archaeological example of an 18th-century piedmont Virginia quarter farm, with a relatively brief occupation. Its location was likely determined by cultural assumptions of what was needed for high-yield agricultural production and efficiency: proximity to prime land for crop production, ready access to water, and nearby transportation routes (Lukezic 1990; Heath 2012). However, the enslaved people who resided there organized and utilized the domestic outdoor spaces around the cabin (Heath 2012; Wilkins et al. 2012). A close examination of the micro-landscape of the quarter adds to the small but growing body of research into house yards and domestic compounds of enslaved individuals and families that has emerged in the archaeological literature over the last twenty years involving methodological questions of how to understand landscapes characterized by low artifact densities and ephemeral architectural and landscape features, further obscured by post-occupational plowing (Heath and Bennett 2000; Fischer 2001; Wilkins 2009; Bon-Harper and Devlin 2012).

The structure at Wingo's was aligned east-west along the edge of a break in elevation. To the north, east, and west, the ground slopes less than 2%, while to the south, a more pronounced

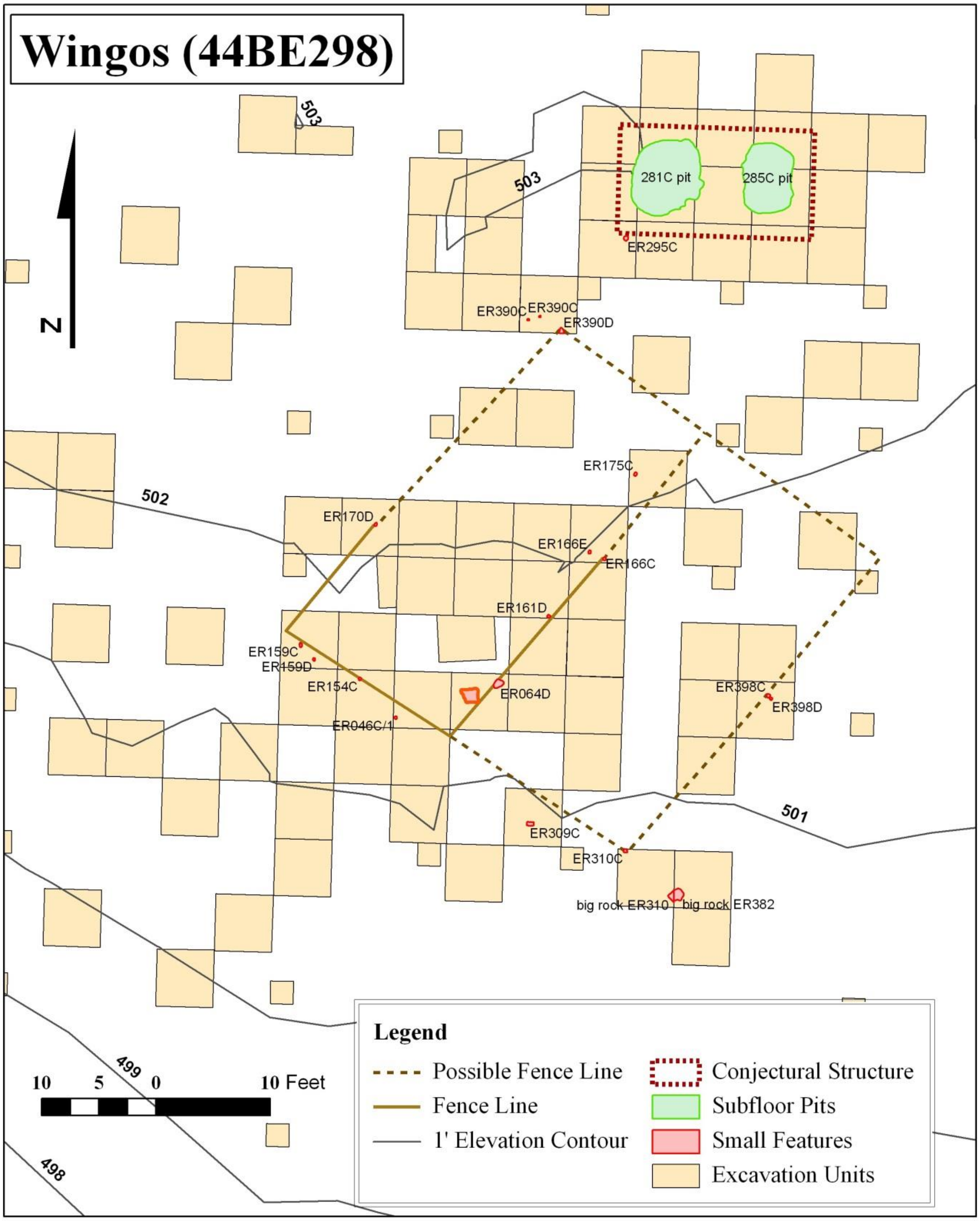


Figure 2: Plan map of Wingo's Site showing location of features and conjectural structures.

5-10% slope leads to the spring at the base of the hill. Extensive testing north of the cabin failed to produce historic artifacts (Heath 2012). In the block excavation south of the cabin, excavations uncovered several small circular stake holes and a larger post-hole that outline an informal enclosure measuring approximately 17 × 36 ft. A small rectangular post-hole and an additional stake holes were found aligned and to the east of the southern line of the enclosure, and may represent an eastern extension of roughly equal size. As indicated in Figure 2, the southern end of the western enclosure is outlined best by observed stake hole features, and the other dimension and conjectural fence lines are the less well-supported, and should be viewed as educated postulation based on a few isolated stake holes, artifacts, and soil chemical distributions discussed below.

Previous research has shown that soil conditions and recent human activities can affect soil chemical levels on archaeological sites (Skinner 1982; Mohler 2000; Holliday and Gartner 2007). The *Soil Survey of Bedford County, Virginia* (McDaniel et al. 1989) provides detailed maps of soil types across the county that shows the entirety of Wingo's in an area characterized as Cullen loam, 2% - 7% slopes (Table 1). This type of soil is a thermic, Typic Hapludult derived from weathered hornblende gneiss sediments and is found on ridge-top fields and woodlands terraces of the Piedmont uplands (McDaniel et al. 1989). Natural organic content is low (1-3%), and Cullen loam exhibits acidic (5-6) pH levels, no flooding, moderate water permeability, and a fairly high amount of clay (25-50%) in surface layers (McDaniel et al. 1989). The soil's taxonomic nomenclature of the Typic Hapludult subgroup classifies a large extent of soils in the southeastern United States that are moderately deep, well drained, with low amounts of organic humus, and have significant agrillic, or clayey, subsurface horizons (United States Department of Agriculture [USDA] 1999). The descriptor 'thermic' describes the annual soil temperature ranges between 15°-22°C, or 59°-72°F (USDA 1999:112). Many studies note that several elements of archaeological interest, notably phosphorus, are stable in all but neutral pH soils, are resistant to leaching in well drained soils, and fix well in all but very sandy soils (Cook and Heizer 1965:13; Sjoberg 1976:448; Holliday and Gartner 2007:305). In short, the Cullen loam matrix of Wingo's should retain at least some anthropogenic soil chemicals, which should, in theory, stand out against the relatively low background levels derived from small amounts of natural organic matter.

Table 1: Typical Profile of Cullen loam 2-7% percent slopes in woodland, Bedford County, Virginia (soil descriptions from McDaniel et al. 1989: 114)

Stratum	Depth	Soil Characteristics
Ap (plowzone)	0 – 5"	reddish brown (5YR 4/4) loam (15-27% clay); moderate to fine granular structure; slightly hard; fine to coarse roots; 10% quartz and hornblende gneiss gravel; strongly acid; abrupt boundary
Bt (subsoils)	5 – 62"	dark red (2.5YR 3/6) clay or clay loam (35-70% clay); medium subangular blocky structure; few roots; 0-5% quartz gravel; 2-45% weathered hornblende gneiss gravel; strongly to moderately acid; gradual boundary
C (substratum)	63"+	strong brown (7.5YR 5/8) saprolite of hornblende gneiss, crushes to clay loam (20-50% clay); 2% quartz gravel; moderately acid

3. Methods

a. Sampling

During the excavation of both 2 × 2 ft. and 5 × 5 ft. quadrats in the 2007, 2008, 2009, 2011, and 2012 field seasons, 235 soil samples were collected in 6 × 8 in. plastic bags using hand tools from plow zone, subsoil, and feature contexts. Most the sampled contexts were located around the core of the site, around the subfloor pits and just to the south (Figure 3). However, 70 samples (35 each from plow zone and subsoil contexts) were taken from 2 × 2 ft. quadrats in 2011 located approximately 80 – 160 ft. north and 120 – 200 ft. east of the main excavations blocks around the structure (Figure 4). These areas were tested in order to determine the spatial extent of the site, though no further concentrations of artifacts of chemicals were found.

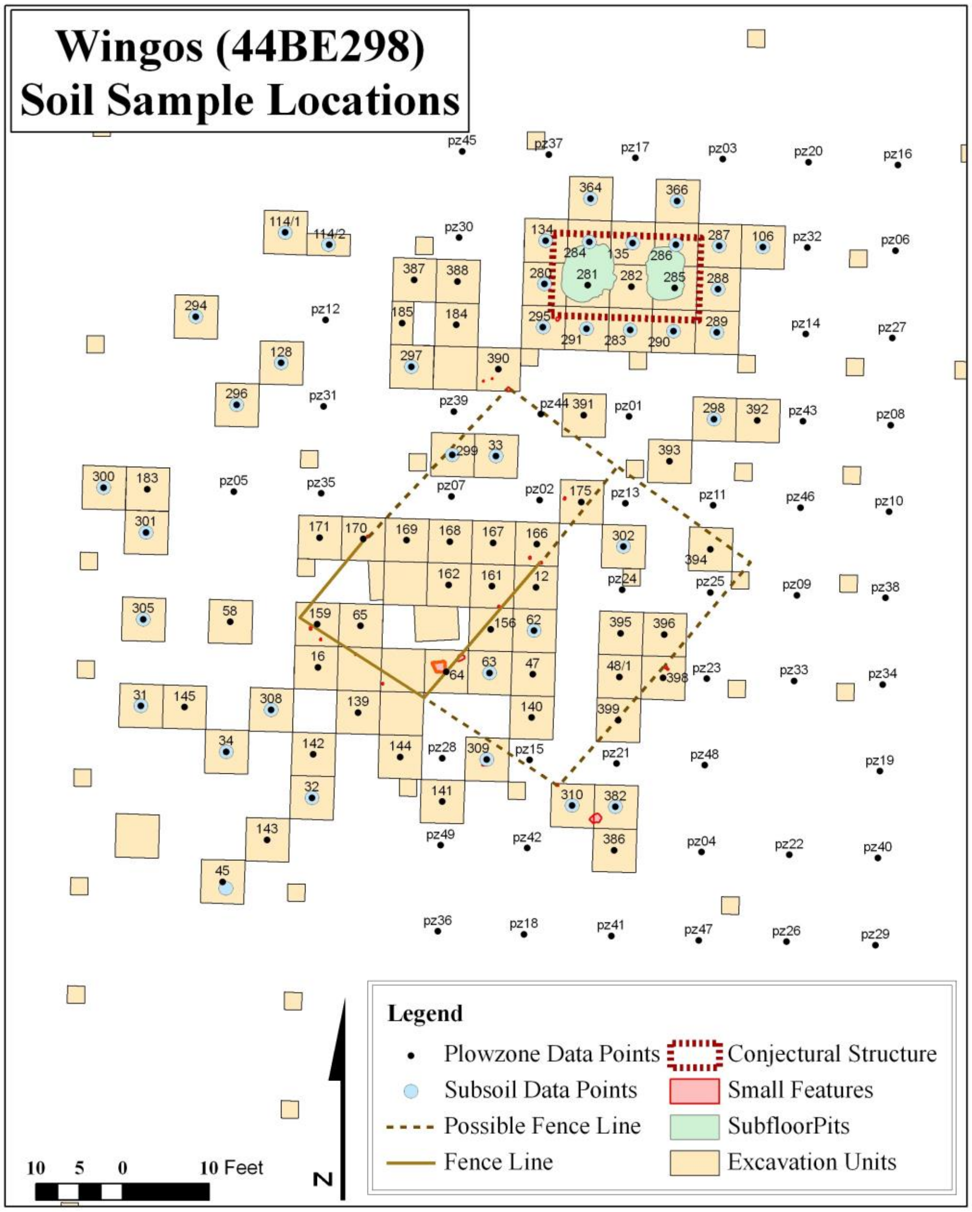


Figure 3: Plan of Wingo's Site showing location of soil samples around the site core.

Additionally, 49 samples were collected using a 1 in. diameter Oakfield-style soil corer from May 17-18, 2012 in order to acquire samples from areas around and away from the contiguous block excavations. This auguring process involved a systematic sampling strategy, placing pin flags at 10 ft. intervals in what would be the center of each sampled 5 × 5 ft. block on the grid (Figure 3). The corer was pushed into the soil, and a trowel was used to separate visually identified grass, topsoil and subsoil matrixes and the remaining column of plow zone was retained for analysis in a 3 × 5 in. cloth soil bag.

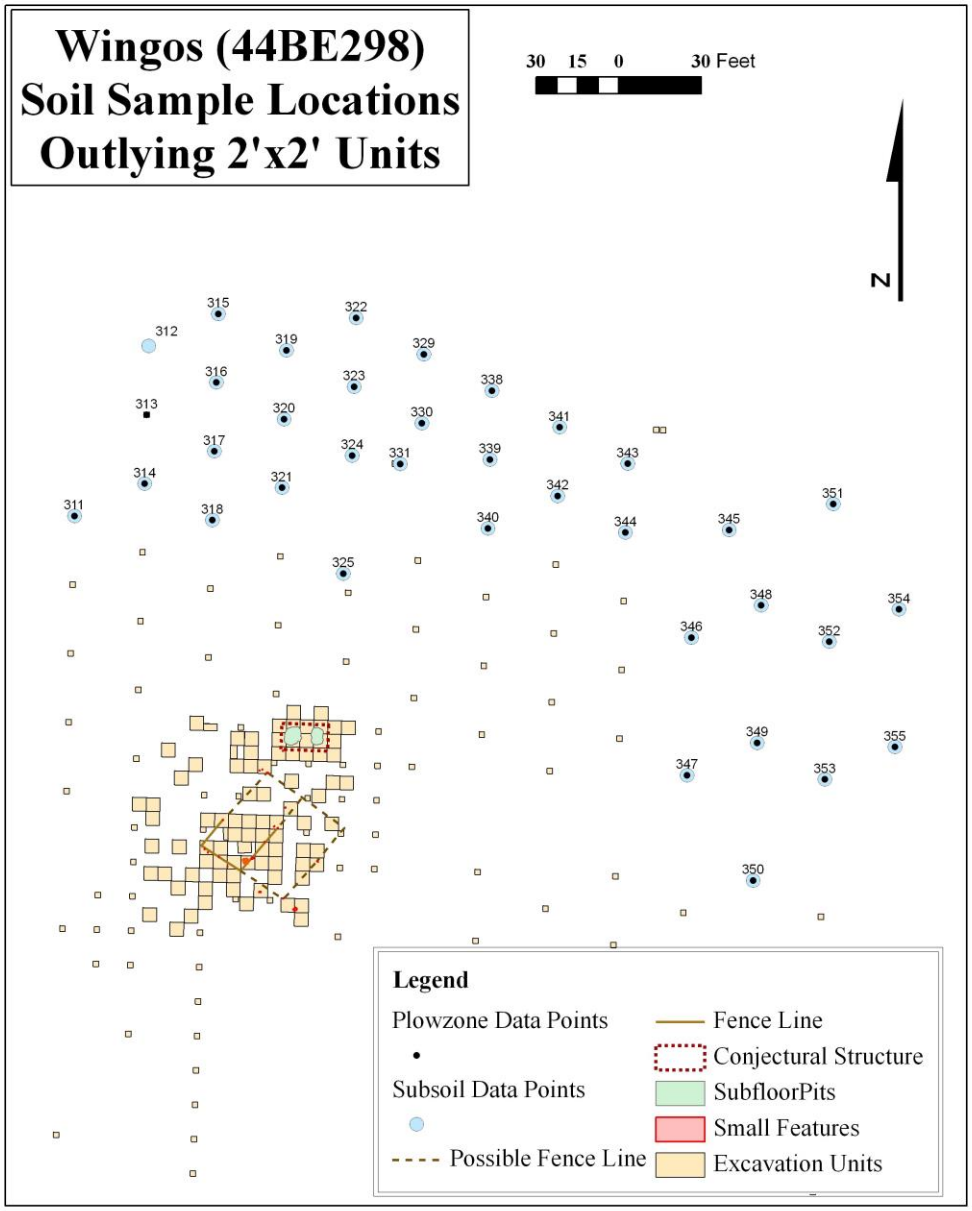


Figure 4: Plan of Wingo's Site showing location of soil samples in outlying areas to the north and east.

b. Laboratory Procedures

All samples were brought to the University of Tennessee's Archaeological Research Laboratory in Knoxville, TN for processing and analysis for phosphorus (P), calcium (Ca), potassium (K), and magnesium (Mg) using portable X-ray fluorescence (pXRF). All samples were screened through 2mm mesh in order to break up large clumps, remove debris, and collect any included artifacts. Approximately 15 grams of soil was then placed into a paper baking cup and dried overnight (16-24 hours) in a 60° C muffle furnace. Drying was found to be an effective preparation technique for pXRF analysis (Wilkins 2009), due to the ability of water to affect X-ray transmission at concentrations above 10% (Swanson and Colsman 2006:4). The soil samples were then packaged in open-ended plastic sample cups with polypropylene thin film windows that facilitate the transmittance of X-rays to bulk samples such as soil.

To the naked eye, the Wingo's soil samples appeared to be thoroughly dry after storage in bags for several months or even years; however, weighing a sub-sample of 67 plow zone and feature context soils before and after their time in the muffle furnace showed an average loss of 1 gram, or 5.23% of the total mass after a single overnight (20 hour) drying period. While all the plow zone contexts subjected to weighing before and after drying revealed water content by mass of between 1.16% and 2.99%, the feature contexts ranged in water content between 1.23% and 22.78%, with 14 samples exhibiting moisture content above 10%, the threshold at which X- ray transmission is supposedly inhibited (Swanson and Colsman 2006:4). This variability suggests that uniformly drying all soil samples prior to pXRF analysis is an important sample preparation. As a check against the appropriateness of using a drying time-period of roughly 20 hours (overnight), 20 of the same samples were left in the muffle furnace for an additional 4 days (90 hours), and over that extended time lost only an additional 0.83% of their mass. These results support the inference that even “air-dried” soil contains a measurable amount of water that can be effectively driven off at low temperature overnight, and that extended drying past about 24 hours yields little additional benefit.

Start	24 hours	% Change	After sampled	90 hours	% Change
18.2g	17.2g	-5.23%	8.3g	8.2g	-0.83%

Readings were made with a Bruker Tracer V-III+ pXRF device using a 15kV voltage and 35 amp setting, a vacuum purge system, and a titanium (Ti) filter in order to isolate the "light" range of elements that includes the elements of interest: Mg, P, K and Ca. Readings were 300 seconds in duration and several trial runs were made on the same sample to assure that these settings were producing consistent readings. The data used for analysis were the heights of the peaks for each element represented in the energy spectrum, measured in units of counts per second. XRF technology identifies and measures the elements present in an object or sample by exposing the target to X-ray energy and measuring the wavelengths of energy that the sample re-emits (Swanson and Colsman 2006:3). Each element on the periodic table emits (fluoresces) energy at a diagnostic wavelength, making it possible for an XRF device to identify the elements present by measuring those wavelengths of energy fluoresced by the target sample (Laing 1981: 27).

Spatial distributions of those chemical plow zone readings can be used to identify the locations of organic refuse (P), bone (Ca), and ash (K) in order to infer aspects of the site’s layout. The use of any kind of XRF analysis in soil chemical analyses is a recent application of the technology, with only a few archaeological cases employing XRF to specifically analyze soils (Cook et al 2005; Marwick 2005; Eliyahu-Behar et al 2008). The author (Wilkins 2009) has recently completely one of the first comparative evaluations of pXRF against older soil chemical techniques routinely used for archaeological analysis, and then employed the pXRF readings for phosphorus to guide and inform the excavation of the Oval Site (ST92), an 18th-century slave quarter site at Stratford Hall Plantation in Westmoreland County, Virginia (Wilkins 2010). Due to the new and experimental nature of pXRF in soil chemistry, 44 plow zone samples from the Wingo's site were also analyzed by traditional wet chemistry analytical methods by the University of Delaware's Soil Testing Program. These samples were selected from the southern block excavation unit samples and the results were used as a control to compare to and evaluate the pXRF readings on the same samples.

Samples that were submitted to the University of Delaware underwent a "Routine Soil Test" that uses a Mehlich 3 extraction (Mehlich 1984) and inductively coupled plasma optical emission spectrometry (ICP-OES) for 11 elements: phosphorus (P), calcium (Ca), potassium (K), magnesium (Mg), manganese (Mn), copper (Cu), zinc (Zn), iron (Fe), boron (B), aluminum (Al), and sulfur (S). The Routine Test package also includes tests for pH, organic matter content, phosphorus saturation ratio (PSR), cation exchange capacity (CEC), and base saturation. The testing program is designed for agricultural uses but the P, Ca, K, and Mg results can be interpreted archaeologically.

c. Analytical Methods

All context proveniences and associated soil data were recorded in Microsoft Excel spreadsheets and from there imported into other programs for statistical and spatial analysis. Artifact counts were also recorded for plow zone and feature contexts and their analysis was used to augment soil chemical data. Basic descriptive statistics, histograms, boxplots, and correlations were performed using Statistics Package for Social Sciences (SPSS) version 22 software. Distribution maps and spatial statistics were produced using ESRI ArcGIS version 9.3 software. In order to produce maps and charts comparable between elements and artifact types that can vary greatly in overall abundance, relative values (Z scores) were calculated. The Z score for each observation is the number of standard deviations above (positive values) or below (negative values) the mean observation for each element. Interpolated distribution maps (splines) of the Z scores for each element are used below to compare the spatial distribution of relatively high, average, and low chemical readings and artifact concentrations across the site.

The statistical index of spatial autocorrelation was also used to assess the degree to dispersion, clustering, or randomness of the distributions (Hodder and Orten 1976:174). The test, known as Moran's I, produces an index value (I), characterizing the nature of the spatial patterning as dispersed, clustered or random. Z scores characterized the extremity of the patterning, and p values to evaluate statistical significance. Figure 5 shows an example of the graphical output of spatial autocorrelation analysis for a highly clustered pattern using ArcGIS version 9.3 software. A clustered pattern can be interpreted as the propensity of a given data point to have similar values as surrounding points, as opposed to a dispersed pattern that would indicate the values of a given point to be surrounded by significantly different values. A random pattern would indicate that value of a given point couldn't reliably be used as predictor of the values of surrounding areas.

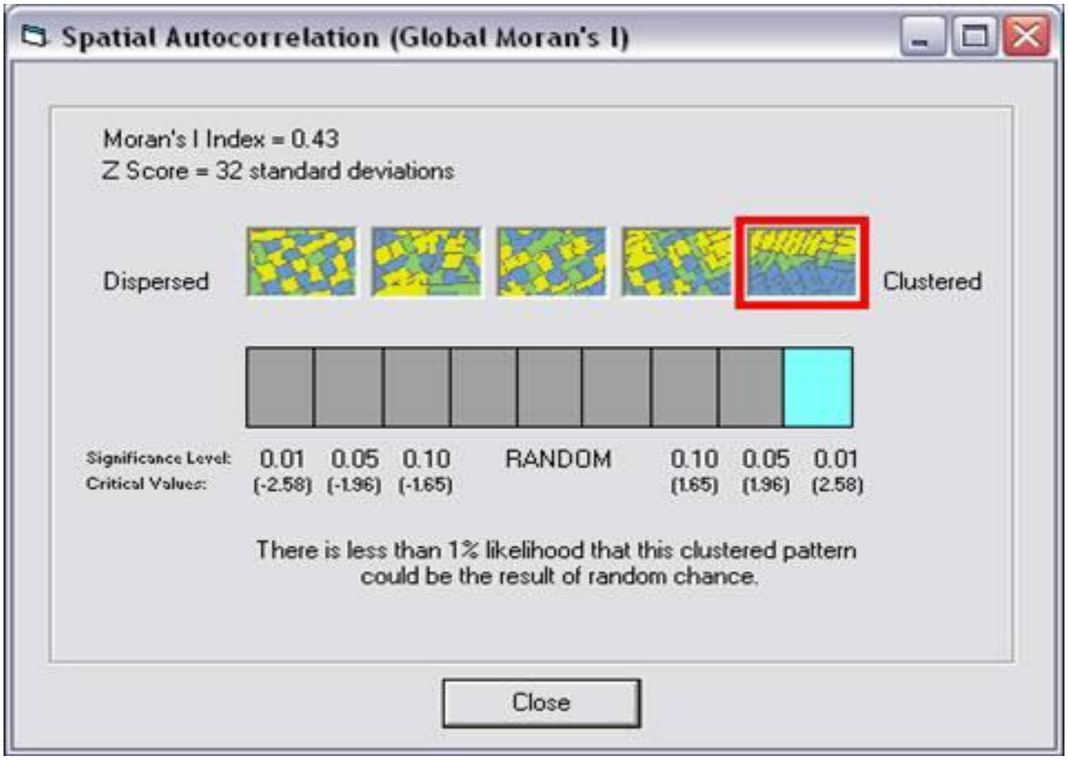


Figure 5: Example of graphic output for spatial autocorrelation in ArcGIS.

4. Plow zone

Concentrations of various soil chemicals in plow zone contexts have been used in past studies to interpret the location of deposition for a variety of materials, mostly related to organic refuse, and the following interpretations are synthesized from a variety of past scholarship (Asher and Fairbanks 1971; Keeler 1973; Stone et al. 1987; Pogue 1988; Woods 1988; Fisher 2001; Fesler 2010). Phosphorus (P) is most often associated with general organic refuse including human and animal waste and linked to kitchen and residential middens as well as gardens and animal pens. Calcium (Ca) is associated with animal bone, shell, and architectural products made with lime such as plaster. Potassium (K) is prevalent within plant tissue and has been linked to hearth areas and the presence ash. Magnesium (Mg) has been associated with areas of intense burning, but scholars disagree on the validity of that assertion any interpretations of Mg distributions are tentative.

a. Results

Plow zone soils were collected in order to assess the horizontal distribution of chemicals across in the site, hopefully providing information on the presence, location, and size of yard activities. According to Moran's I spatial autocorrelation index, the distributions of all soil chemical distributions, including both measurements of pXRF and the Mehlich 3 extraction and ICP-OES from the University of Delaware, show statistically significant clustering and exhibit a less than 1% likelihood of that patterning being due to random chance (Table 3). These results support the interpretation of these distributions as reflections of human activity, and not random geological variation.

Table 3: Spatial autocorrelation (Moran's I) statistics for plow zone soil chemical distributions at Wingo's.

Measure	Element	Moran's I	Z score	P value
pXRF	Phosphorus	0.097 (clustered)	7.682	0.00
pXRF	Potassium	0.091 (clustered)	7.230	0.00
pXRF	Calcium	0.292 (clustered)	22.035	0.00
pXRF	Magnesium	0.123 (clustered)	9.519	0.00
Mehlich 3	Phosphorus	0.426 (clustered)	32.003	0.00
Mehlich 3	Potassium	0.251 (clustered)	19.337	0.00
Mehlich 3	Calcium	0.447 (clustered)	33.494	0.00
Mehlich 3	Magnesium	0.403 (clustered)	30.199	0.00

The distribution of phosphorus (P) in the plowzone at Wingo's (Figure 6) shows moderate to high levels of phosphorus enrichment directly over and north of the subfloor pits in ERs 0135, 0286, and 0287. Phosphorus enrichment representing decayed plant and animal

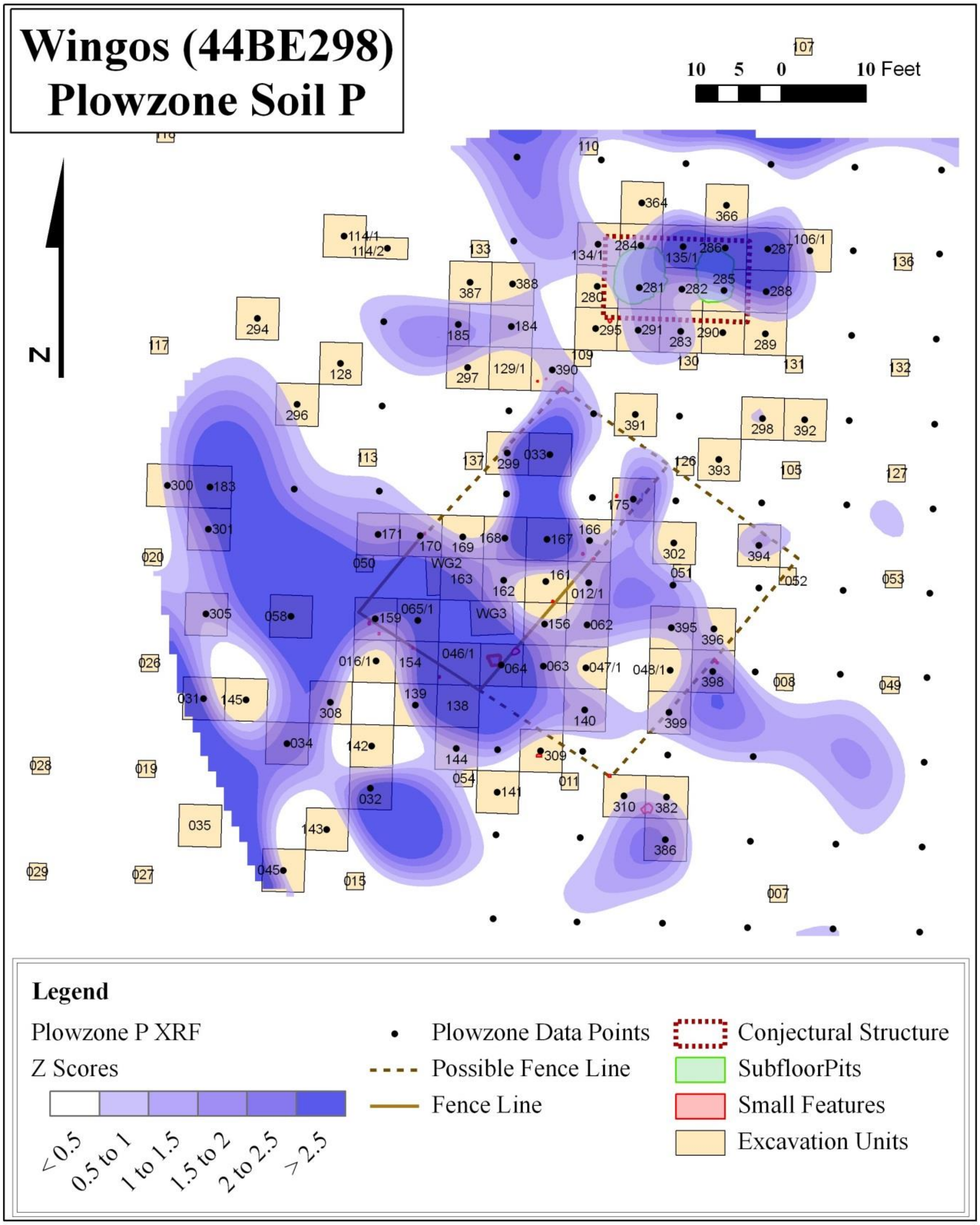


Figure 6: Distribution of plow zone soil phosphorus (pXRF) values at Wingo's.

matter is often found just outside of structures and to one side of doorways, and interpreted as the disposal of general household refuse (Keeler 1973; Pogue 1988; Heath and Bennett 2000; Wilkins 2010). The location of soil phosphorus concentrations on the north side of the subfloor pits indicates the possibility that the structure over the pits may have faced to the north, had its principle entrance on the northern façade, and that a front yard space may exist to the north of the block of quadrats that includes the subfloor pits. However, no other lines of evidence yet support this interpretation. No significant artifact concentrations, soil chemical concentrations, or features have been found to the north of the structure. Perhaps the building's main door did face north on to a clean yard area, but all the outdoor activities that left archaeological traces appear to have happened to the south of the structure.

Approximately 15 ft. south-southwest of the structure within the western enclosure, there is another concentration of high phosphorus values between ERs 033 and 0167. The southern end of the enclosure also exhibits high phosphorus values in a larger area centering on quadrats 046 and 064, and then extending west by northwest out of the enclosure over 058 and 0183. An isolated area of high phosphorus is also present south of the enclosure in the vicinity of 032.

While other isolated areas of moderate enrichment occur surrounding the eastern possible enclosure, the majority of space south-southeast and due west of the structure is not enhanced with phosphorus. Comparison of the pXRF soil phosphorus distributions with the Mehlich 3 measurements show similar spatial patterning (Figure 7) and the two measurement methods are moderately correlated (Table 4), which supports the validity of using pXRF for interpretive soil chemistry in archaeology.

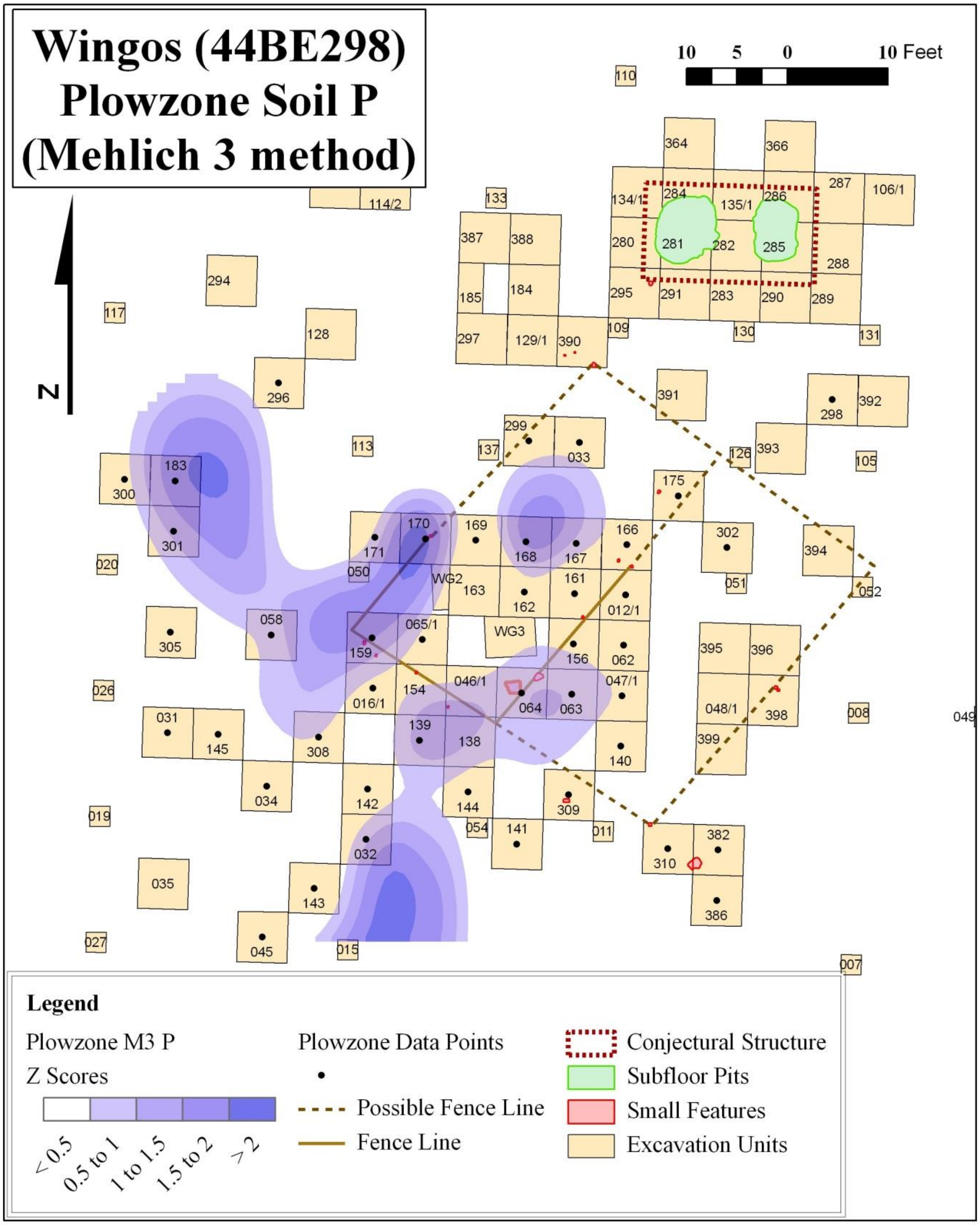


Figure 7: Distribution of plow zone soil phosphorus (M3) at Wingo's.

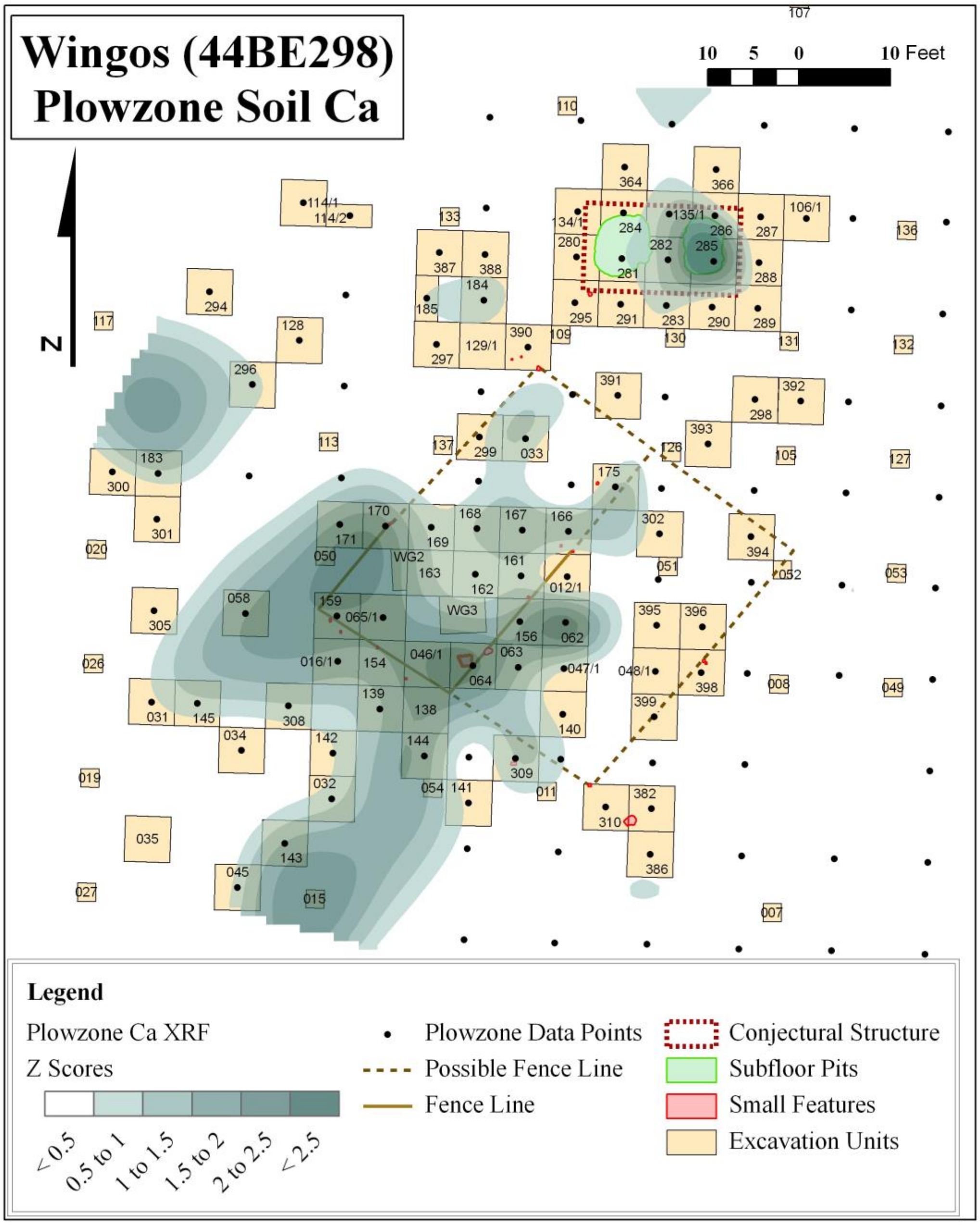


Figure 8: Distribution of plow zone soil calcium (pXRF) at Wingo's.

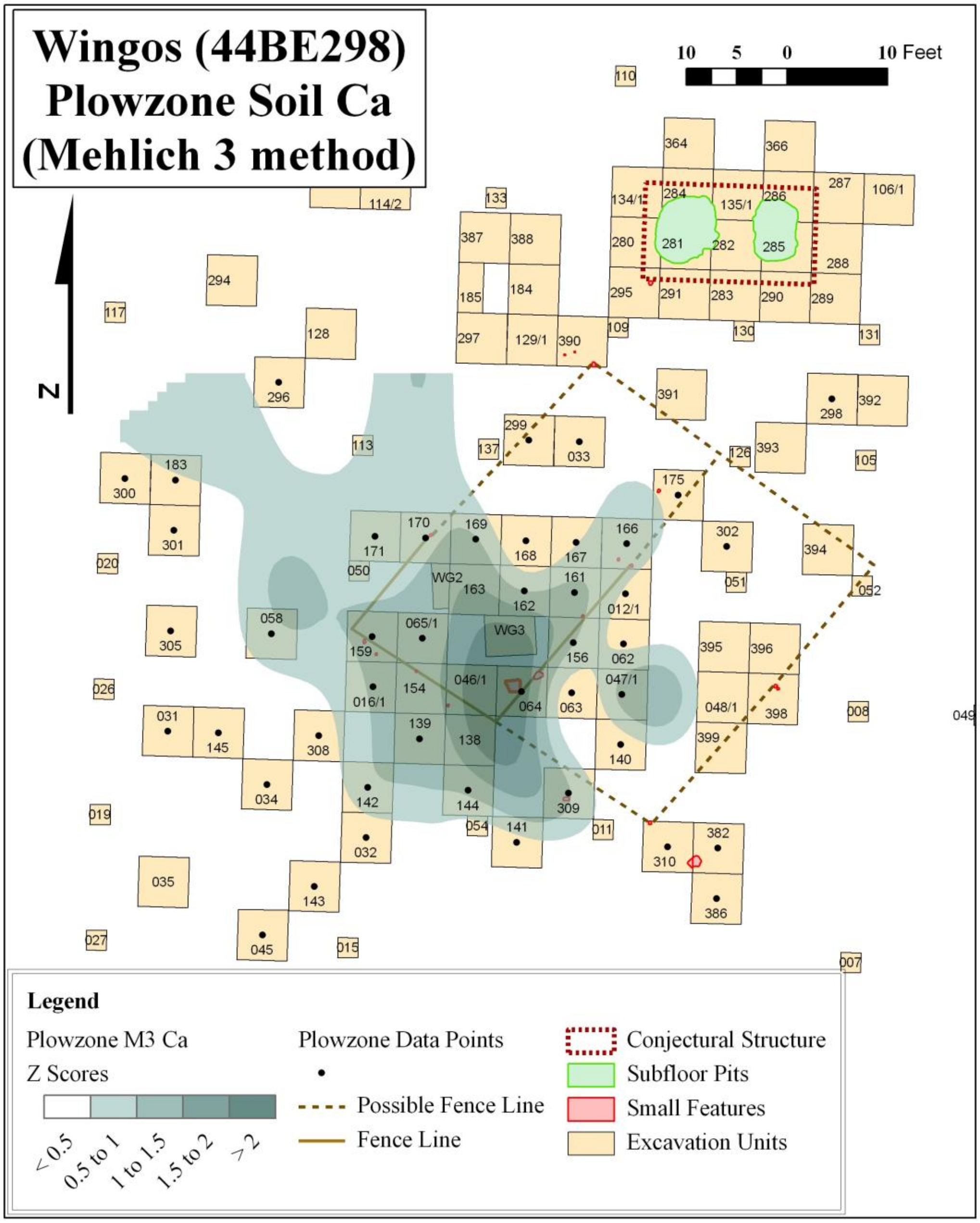


Figure 9: Distribution of plow zone soil calcium (M3) at Wingo's.

The distribution of calcium (Ca) at Wingo's (Figure 8) shows a high concentration of calcium directly over the subfloor pit of ER 0285, likely due to the high amount of bone recovered from in and around the pits. In the western enclosure, the northern area exhibits low to moderate calcium enhancement, and an area of high calcium values is in the shape of a "U" at the southern end of the enclosure running between ERs 0170 and 0171 in the west, continuing south to quadrats 0159 and 065, and then turning east and north to ERs 064, 0156, and 062. Only moderate and isolated calcium enhancements exist in the areas west and south-southeast of the structure. These trends mirror those of the phosphorus concentrations, which is likely due to bone comprising part of the refuse disposed along the possible fence, and bolsters the

interpretations made in the discussion of the phosphorus distributions. Sharing another quality with phosphorus, the Mehlich 3 control results for calcium closely match the pXRF results spatially (Figure 9) and are strongly correlated statistically (Table 4). These comparative results suggest that calcium readings using pXRF are even more similar to traditional methods than phosphorus, and can be considered a viable option for archaeological interpretation.

The distribution of potassium (K) at Wingo's (Figure 10) is somewhat similar to that of phosphorus and calcium, especially in the largest and highest concentration in the southern end of the western enclosure around quadrats 064 and 063. There is also a smaller concentration in the northern end of the enclosure between 033 and 0167 and again south of the enclosure near 032, much like that seen in the phosphorus distribution. Potassium does not extend as far west of the southern enclosure or to the same degree as phosphorus. Potassium values over and around the subfloor pits are average to low, with the exception of ER 0282. The moderately high concentration of potassium there, between the two subfloor pits, may be due to ash deposition from the hearth of the structure likely located west of the subfloor pit in quadrat 0281. Other moderate and more isolated enhancements of potassium exist just west of the structure in 0184, southeast in 0289, and more sporadically in the area east of the eastern possible enclosure.

Unlike calcium and phosphorus, potassium values measured with pXRF do not correlate well with the Mehlich 3 control data either in spatial distribution (Figure 11) or statistical measures (Table 4). Soil nutrients such as phosphorus and potassium exist in the soil in several forms, determined by several compounds these elements form with others. Traditional agronomic soil tests such as the Mehlich 3 extract those forms that are readily “available” to plants as nutrients, while a large majority of the actual elemental concentration is bound more tightly in other forms. XRF devices can measure only elemental concentrations and do not distinguish between available and others not available. Archaeological soil chemistry was originally adapted from agricultural soil science in Europe; and as a result there is a tradition of using partial extractions of available plant nutrient chemicals within soil (Goffer 1980; Bethell and Mate 1989). While measurements of available chemicals have had successful application, Proudfoot (1976) notes that chemicals added by humans to soil enter the same cycles of transformations as "natural" nutrients and can therefore raise levels of all forms and all classifications. Since the 1970s, a small but growing body of research has shown that measurements of available soil chemicals, principally phosphorus, typically capture 10% or less of potential human impact on soil chemical levels (Herz and Garrison 1998). Several other studies note specifically that stronger total or near total measurements tend to be more closely correlated to observed anthropogenic activity than partial measurements (Ahler 1973; Skinner 1982; Neiman et al. 2000; Sullivan and Kealhofer 2004; Wilson et al. 2007; Holliday and Gartner 2007). Thus, while the distributions of potassium made with pXRF are less secure in their interpretive power than those of calcium and phosphorus, the correlation between potassium and those other elements as read by pXRF suggests that pXRF-read potassium is likely reflecting the deposition of ash and plant matter at Wingo’s (Table 4).

The distribution of magnesium (Mg) at Wingo’s (Figure 12) differs slightly from the overall pattern identified in the signatures of P, Ca, and K. Moderately high levels of magnesium are seen on in a large portion of the structure, and even higher levels are found directly over the subfloor pit in quadrat 0281. This concentration could be related to the occasionally noted relationship between Mg and burning, but many scholars have found that comparing artifacts and

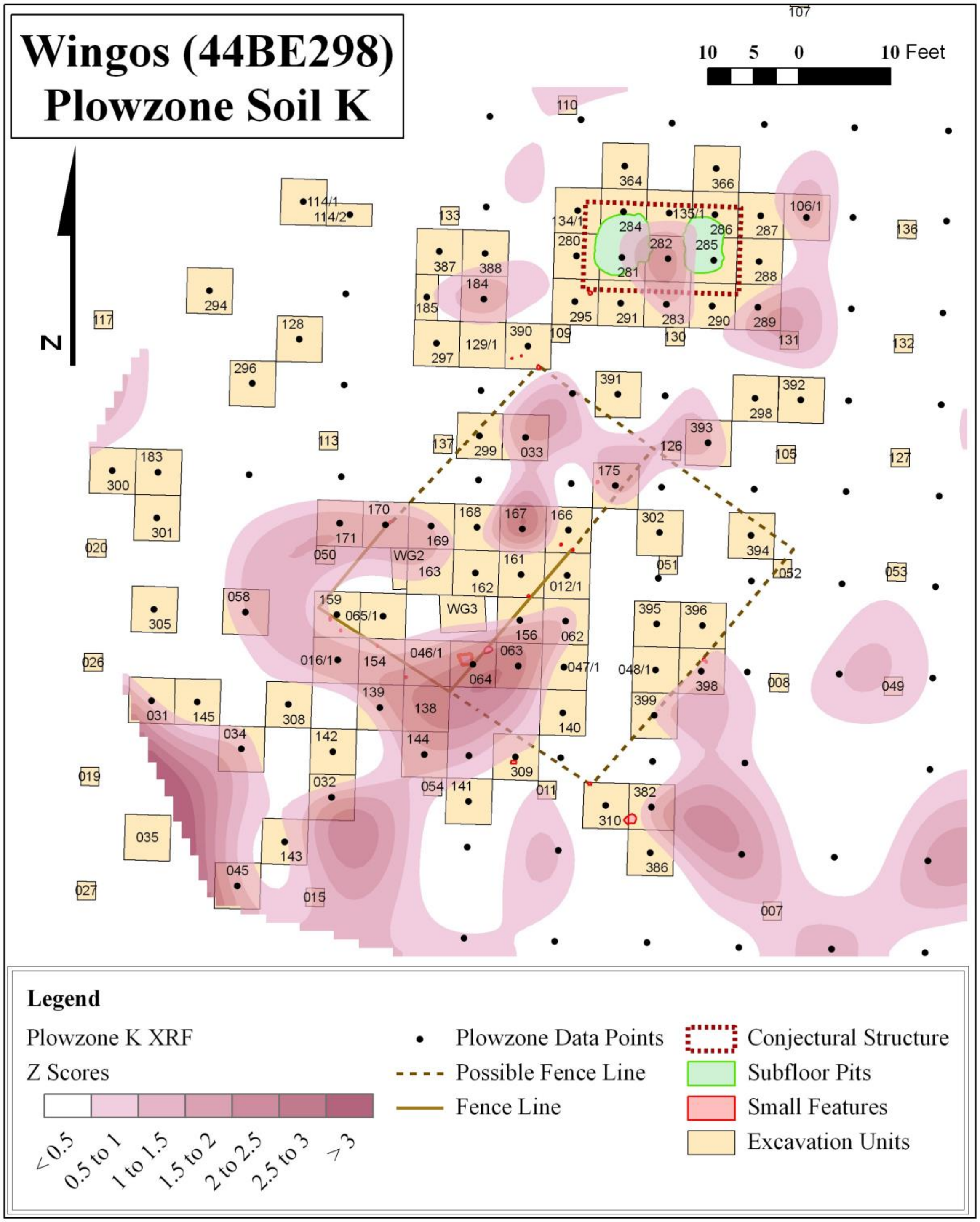


Figure 10: Distribution of plow zone soil potassium (pXRF) at Wingo's.

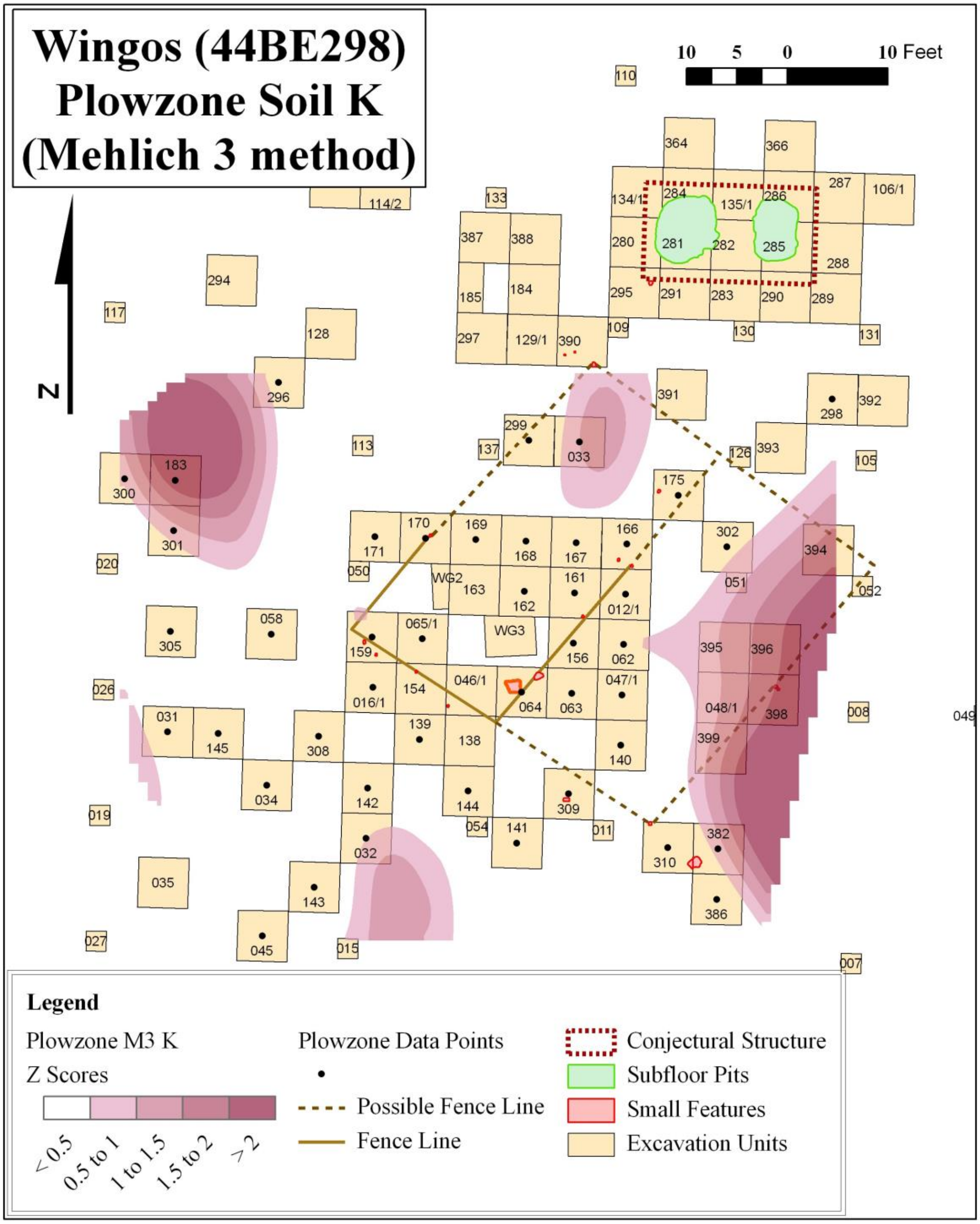


Figure 11: Distribution of plow zone soil potassium (M3) at Wingo's.

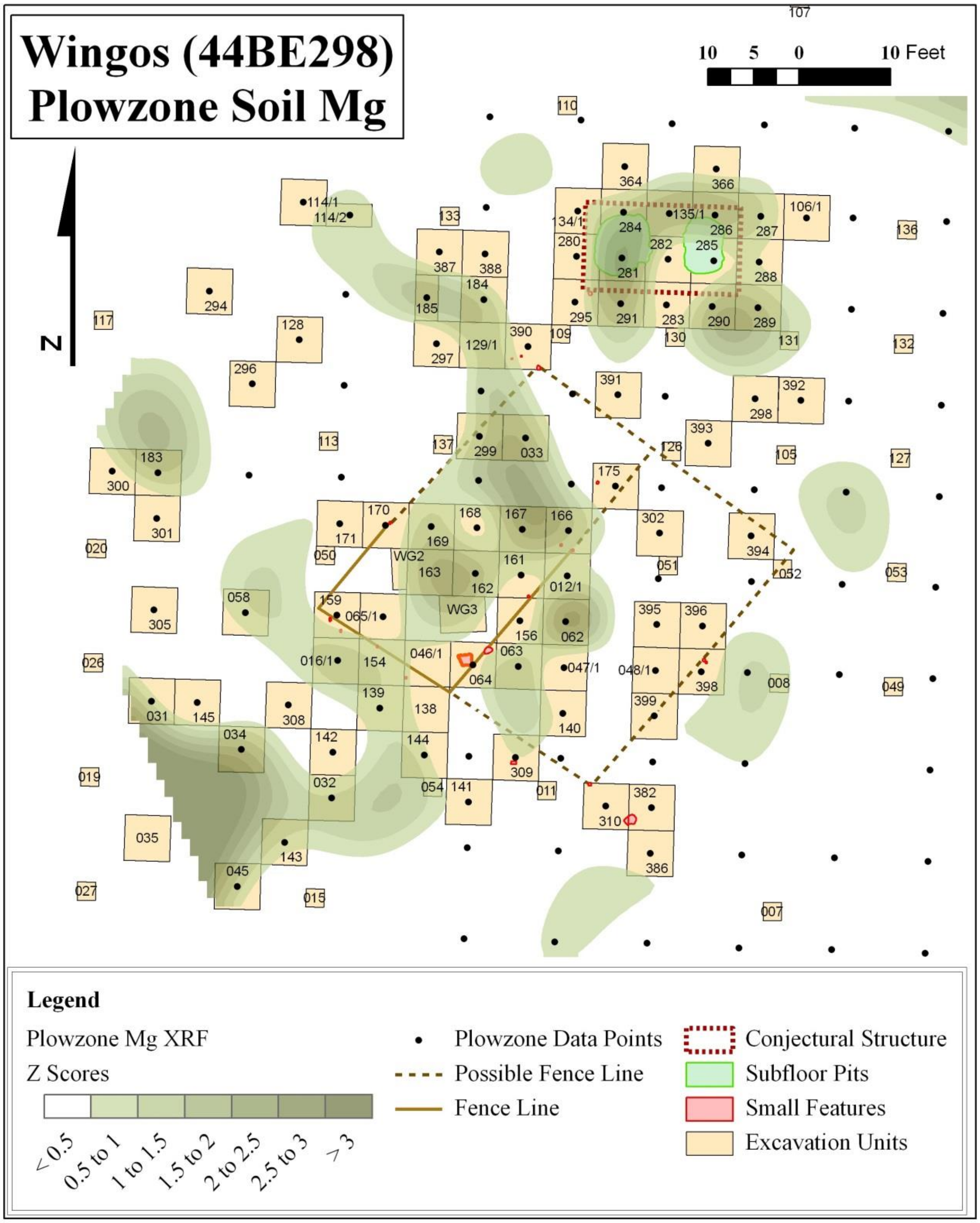


Figure 12: Distribution of plow zone soil magnesium at Wingo's.

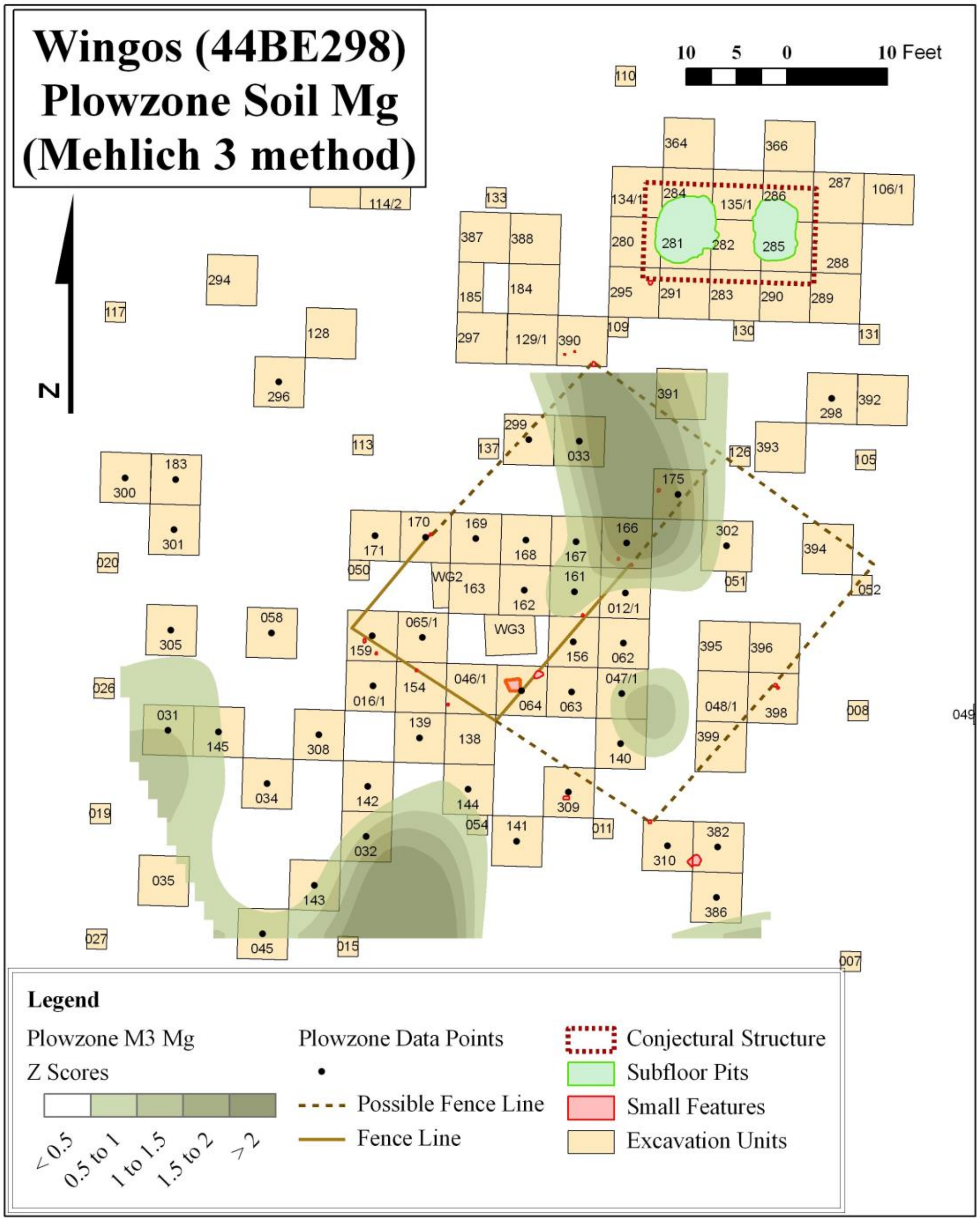


Figure 13: Distribution of plow zone soil magnesium (M3) at Wingo's.

known activities to distributions of magnesium proves very problematic in isolating an interpretable anthropogenic cause of elevated levels of the element in soils (Keeler 1973; Custer et al. 1986; Pogue 1988; Keeler 1973). An area of magnesium concentration appears around ERs 033 and 0167, and is again likely related to the high amounts of P, K, and Ca in that area due to refuse deposition. Like potassium, magnesium levels are moderately elevated in smaller and more isolated pockets to the west of the structure in quadrats 0184 and 0185, and just southeast of the structure in ERs 0289 and 0290. This combination of magnesium and potassium closer to the domestic space may relate not to refuse middens but rather ash-tipping. The magnesium in the western enclosure appears concentrated just to the north of the area of P, Ca, and K enrichment. The northwest corner of the possible eastern enclosure around quadrat 062 also exhibits a smaller and isolated magnesium concentration.

The comparison of Mehlich 3 measured magnesium and pXRF readings shows only moderate spatial association (Figure 13), most notably in the northern portion of the west enclosure and again to the south and southwest of the enclosures. Statistical correlation between the control Mehlich 3 values and pXRF readings for magnesium are present but not as strong as for calcium and phosphorus (Table 4). While the interpretive strength of magnesium has been questioned, distributions at Wingo's do seem spatially similar to potassium, and the link between "burning," ash deposition, and the two elements may reflect the location of ash and charcoal in association with the cleaning of hearth and outdoor fire areas.

Table 4: Correlation table of pXRF and Mehlich 3 soil chemistry at Wingo's.

		xrf_P	xrf_K	xrf_Ca	xrf_Mg	M3_P	M3_K	M3_Ca	M3_Mg
xrf_P	Pearson Correlation	1	.301**	.463**	.381**	.468**	.437**	-.049	.211
	Sig. (2-tailed)		.000	.000	.000	.003	.007	.771	.210
	N	167	167	167	167	37	37	37	37
xrf_K	Pearson Correlation	.301**	1	.412**	.339**	.255	-.074	.273	.128
	Sig. (2-tailed)	.000		.000	.000	.128	.662	.102	.451
	N	167	167	167	167	37	37	37	37
xrf_Ca	Pearson Correlation	.463**	.412**	1	.393**	.439**	-.169	.770**	.174
	Sig. (2-tailed)	.000	.000		.000	.007	.318	.000	.304
	N	167	167	167	167	37	37	37	37
xrf_Mg	Pearson Correlation	.381**	.339**	.393**	1	.083	.137	.308	.411*
	Sig. (2-tailed)	.000	.000	.000		.627	.418	.063	.012
	N	167	167	167	167	37	37	37	37

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

b.

c. Interpretations

The Wingo’s quarter is archaeologically ephemeral, consisting of few features and a fairly small and homogeneous artifact assemblage characterized by high levels of fragmentation (Wilkins et al. 2012). Figure 14 shows the distribution of total artifacts (without daub weights), and the patterning is startling similar to the general pattern of all four soil elements. Immediately south and east of the cabin was an area that residents kept fairly clean, with an arc of deposition moving south and west, skirting the edges of the western enclosure, and moving back to the northwest. Individual and aggregate soil chemical signatures lend support to this pattern. The actual dimensions of the enclosure, and how it was used, remain somewhat unclear; soil chemical evidence suggests that organic waste and calcium were deposited along the southern third in greater than average amounts, while artifacts are less frequent, except along the edges.

The area immediately west of the cabin does contain a small and moderate concentration of artifacts, magnesium and potassium. However, contrary to earlier inferences (Wilkins 2011; Wilkins et al. 2012) the final distributions suggest that this area was not a major trash deposition area. Considering statistical relationships between individual soil chemicals and selected artifact types that exhibited significant correlations to at least one element can aid in clarifying the interpretation of some areas (Table 5). Artifacts that correlate to both magnesium and potassium include nails, bone, green bottle glass, as well as total artifact counts and richness. Richness in this study is an integer count of the number of artifact types in each plow zone unit. Those areas around the structure exhibiting potassium and magnesium concentrations may be due to small-scale household primary refuse deposition, or could even derive from the deconstruction of the building.

Calcium is most strongly correlated with the most types of artifacts, including richness and total counts (Table 5), suggesting that this element may be the best indicator of secondary-refuse deposition in middens. Bone and nails also correlate strongly with calcium (Figure 15), and are spatially concentrated together in the southern end of the western enclosure. That area may be the possible location of a small structure; perhaps indicating that the enclosure contained a henhouse or animal pen. The absence of artifacts and presence of multiple soil chemical concentrations in the northern portion of the western enclosure suggests an activity area.

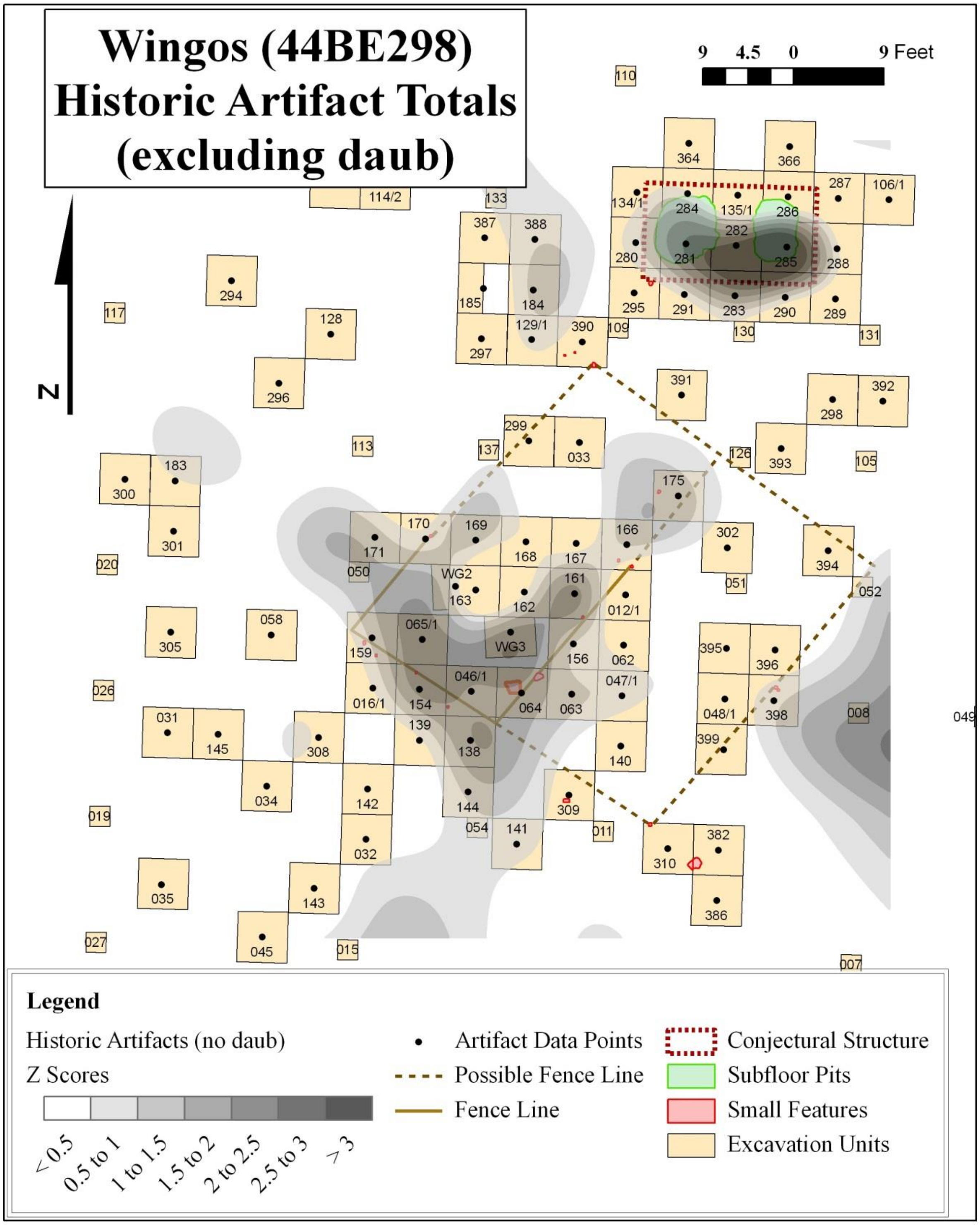


Figure 14: Distribution of total artifact density, excluding daub, at Wingo's.

Table 5: Correlations between soil chemicals and selected artifacts.

		xrf_P	xrf_K	xrf_Ca	xrf_Mg
Total Nails	Pearson Correlation	.350**	.471**	.668**	.332**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	118	118	118	118
Tobacco Pipes	Pearson Correlation	.145	.126	.324**	.152
	Sig. (2-tailed)	.117	.174	.000	.101
	N	118	118	118	118
Redware	Pearson Correlation	.046	.067	.039	.240**
	Sig. (2-tailed)	.619	.474	.672	.009
	N	118	118	118	118
Green Bottle Glass	Pearson Correlation	.362**	.440**	.453**	.235*
	Sig. (2-tailed)	.001	.000	.000	.036
	N	80	80	80	80
Buttons	Pearson Correlation	.240**	.087	.214*	.198*
	Sig. (2-tailed)	.009	.348	.020	.032
	N	118	118	118	118
Charcoal (weights)	Pearson Correlation	.044	.033	.186*	.043
	Sig. (2-tailed)	.634	.720	.044	.644
	N	118	118	118	118
Daub (weights)	Pearson Correlation	-.010	.257*	.044	.219
	Sig. (2-tailed)	.931	.022	.697	.051
	N	80	80	80	80
Mortar (weights)	Pearson Correlation	.129	-.012	.249*	.054
	Sig. (2-tailed)	.254	.915	.026	.633
	N	80	80	80	80
Bone (weights)	Pearson Correlation	.023	.256**	.331**	.109
	Sig. (2-tailed)	.801	.005	.000	.241
	N	118	118	118	118
Richness (count of types)	Pearson Correlation	.390**	.537**	.730**	.489**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	118	118	118	118
Total historic artifacts	Pearson Correlation	.318**	.474**	.609**	.406**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	118	118	118	118

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

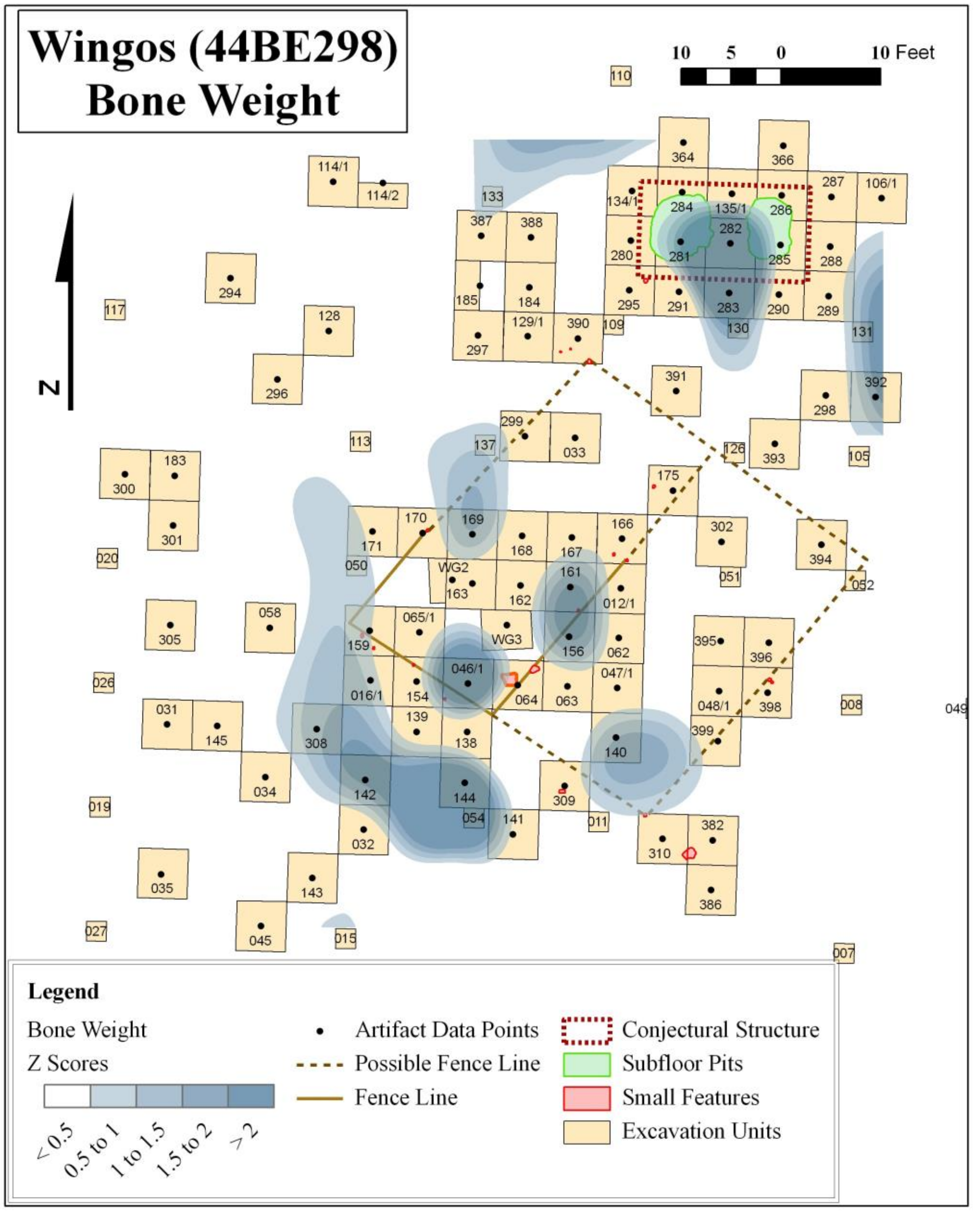


Figure 15: Distribution of relative bone weight at Wingo's.

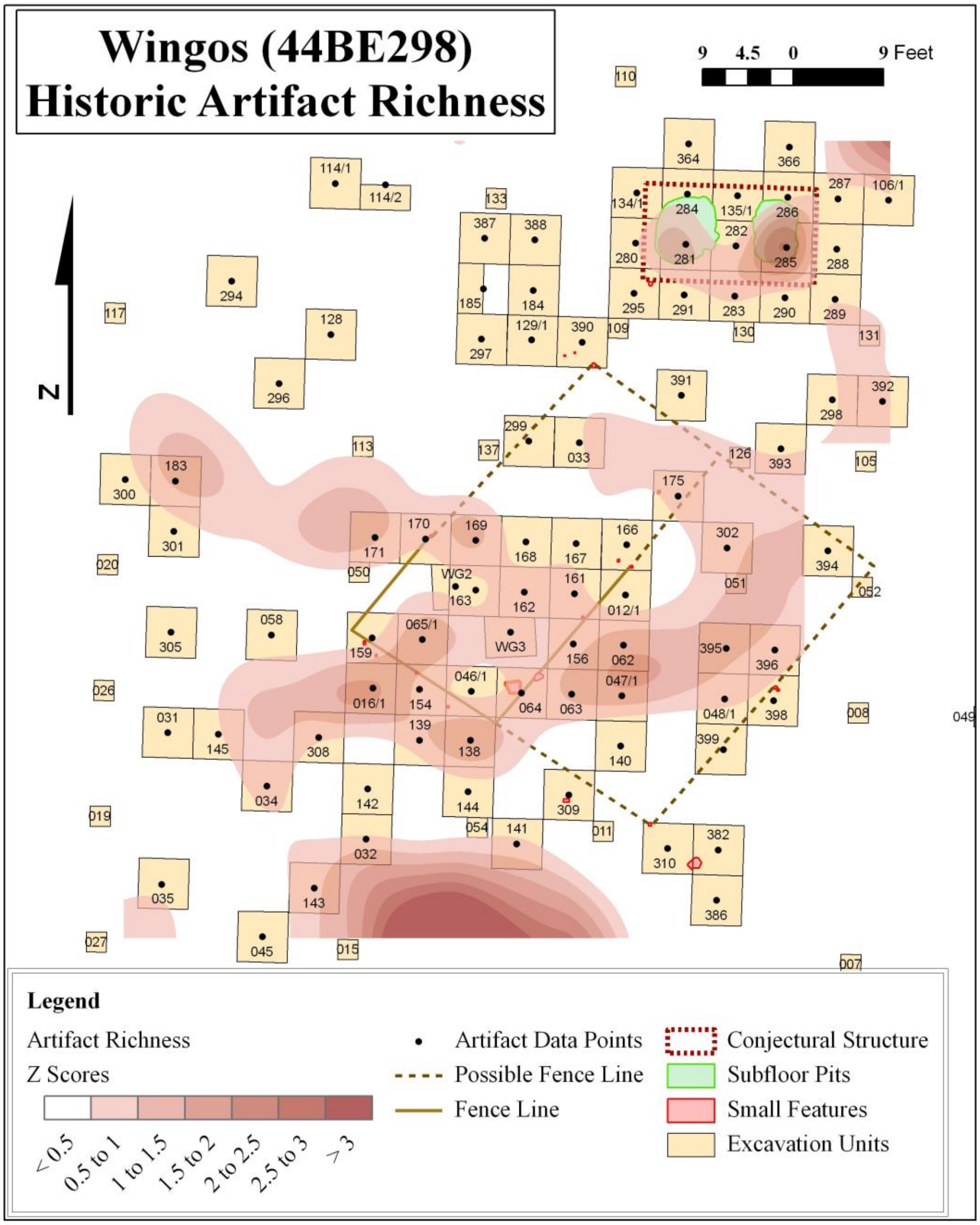


Figure 16: Distribution of historic artifact richness (number of artifact types) at Wingo's.

5. Subsoil

In order to compare the distribution of elements across space at Wingo's in both plowed and unplowed contexts, 74 subsoil samples were taken from both 5 × 5 ft. and 2 × 2 ft. test quadrats. Some elements, such as calcium, may have similar spatial distributions in both the plow zone and subsoil of plowed site. Other elements more resistant to leaching, such as phosphorus, are less likely to undergo vertical transport and patterning in the subsoil of plowed sites may be more reflective of underlying geology than anthropogenic activity. Therefore, evaluations of how the spatial patterning of elements differs between plow zone and underlying strata can add to a small but growing understanding of how and where soil chemistry can be applied to recover meaning from spatial data at plowed sites such as Wingo's. Knowing which methods and elements may or may not yield interpretable results from subsoil could potentially aid in the recovery of information from stripped or looted sites, salvage projects, and sites or areas that underwent plow zone excavation without prior soil chemical sampling.

All subsoil samples were identically stored, processed, prepared, and assayed with pXRF using the same procedures as plow zone and feature samples. Comparative analysis between plow zone and subsoil samples occurred only within the group of 72 units where both contexts were sampled and analyzed. Therefore, the chemical data for plow zone were remapped in addition to subsoil distributions, with only those 72 locations as data points so that the plow zone patterning would not reflect the additional samples from units and areas where subsoil had not also been chemically analyzed.

a. Results

Statistical comparison of subsoil and plow zone contexts for Mg, P, K, and Ca shows that only phosphorus (Pearson's = 0.214, $p = 0.071$) does not exhibit a statistically significant relationship between subsoil and plow zone contexts (Table 6). Both potassium (Pearson's = 0.643, $p < 0.001$) and calcium (Pearson's = 0.557, $p < 0.001$) have strong and statistically significant correlations between subsoil and plow zone. Magnesium's correlation is somewhat less strong but still significant (Pearson's = 0.357, $p = 0.002$). These results suggest that subsoil values for Mg, K, and Ca will likely be similar to plow zone and interpretable as archaeological evidence of anthropogenic activity. The fact that phosphorus does not share that relationship is likely due to the well-known stability and resistance to leaching of P within soil due its capacity to form strong bonds with other abundant soil elements such as iron, aluminum, and calcium (Smeck 1985; Stevenson and Cole 1999). This result also indicates the most studied and widely applied element in archaeological soil chemistry is not a viable option for understanding anthropogenic inputs through subsoil sampling on a plowed site. These results also support Fischer's (2001:95) findings in a similar comparison of the Quarter site at Poplar Forest, another plowed slave quarter site in Piedmont Virginia with similar geological and soil properties.

Spatially, the distributions of magnesium and potassium in the subsoil appear somewhat similar to their respective plow zone distributions (Figure 17). While the exact positioning and intensity of chemical enrichment varies, in general the areas immediately around the domestic structure and within the western enclosure appears to have the most intense chemical enrichment of the subsoil. Calcium varies in subsoil and plow zone slightly, however phosphorus distributions vary significantly (Figure 18). That variation could potentially influence differences in interpretation between analyses of either the plow zone or subsoil contexts alone.

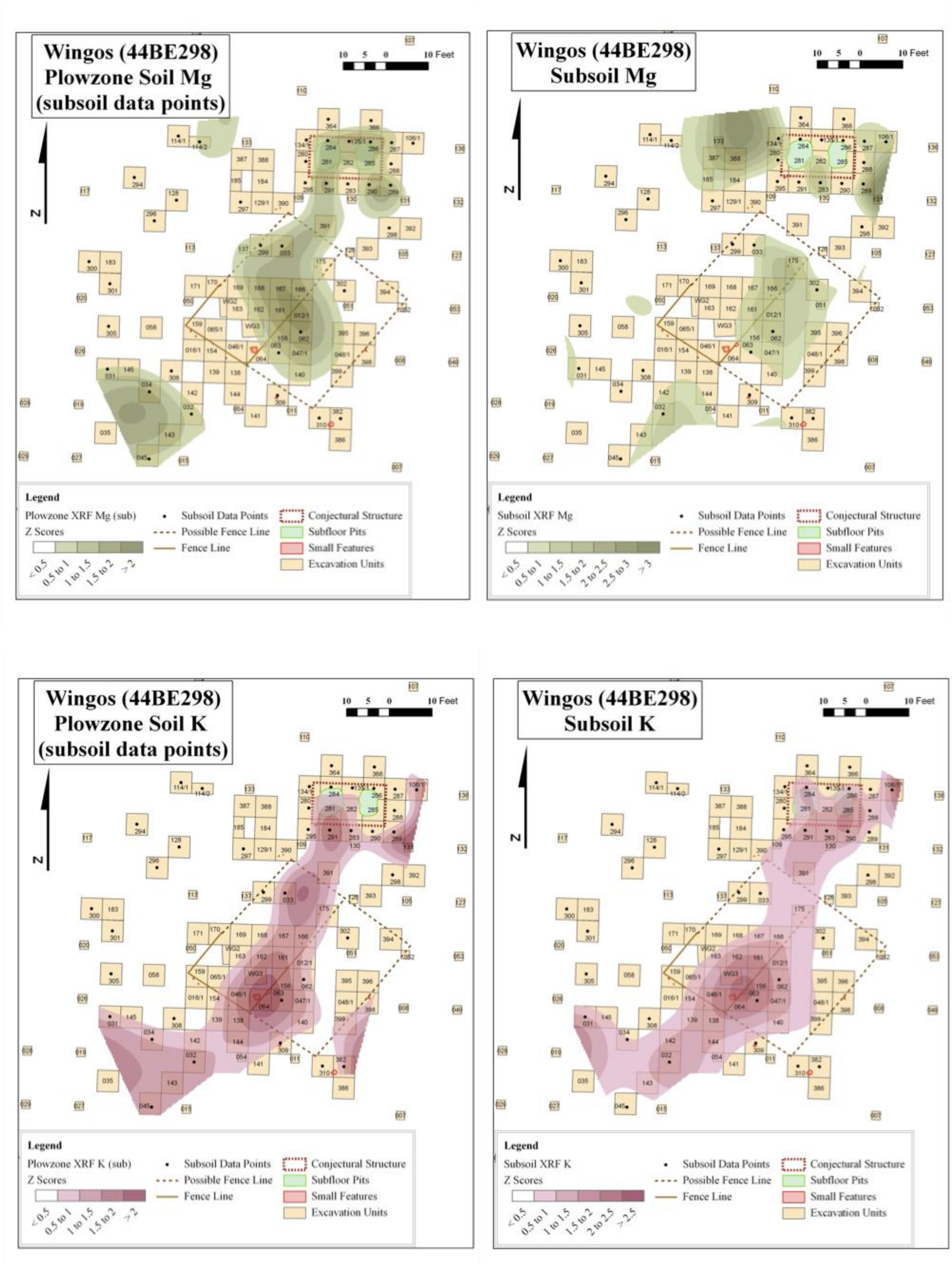


Figure 17: Distributions comparing plowzone (left) and subsoil (right) values of magnesium (top) and potassium (bottom) at Wingo's.

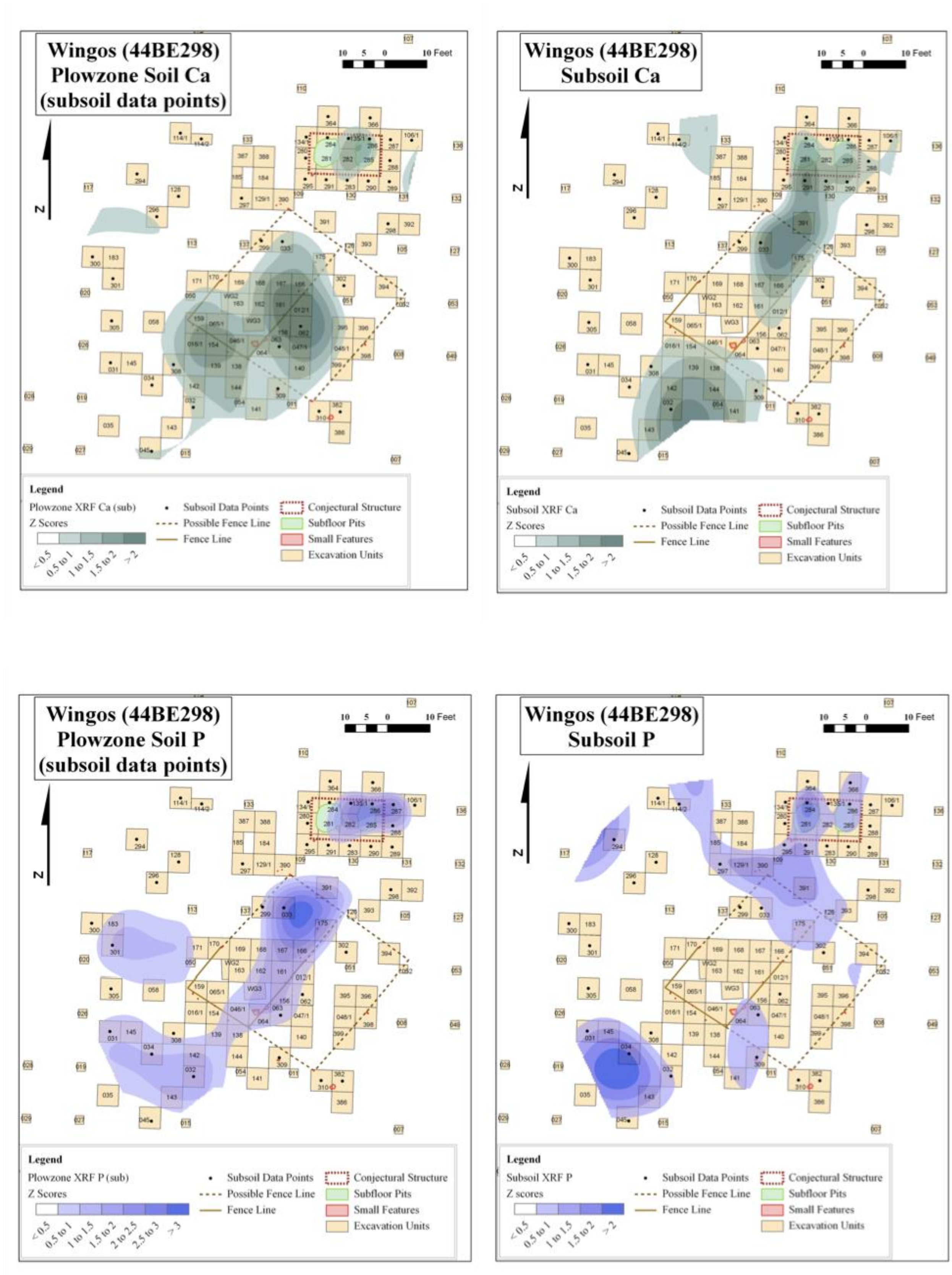


Figure 18: Distributions comparing plow zone (left) and subsoil (right) values of calcium (top) and phosphorus (bottom) at Wingo's.

Table 6: Correlations for subsoil elements versus plow zone elements and artifacts at Wingo's.

		sub_P	sub_K	sub_Ca	sub_Mg
pz P	Pearson Correlation	.214	.392**	.494**	.319**
	Sig. (2-tailed)	.071	.001	.000	.006
	N	72	72	72	72
pz K	Pearson Correlation	.349**	.643**	.654**	.475**
	Sig. (2-tailed)	.003	.000	.000	.000
	N	72	72	72	72
pz Ca	Pearson Correlation	.118	.430**	.557**	.417**
	Sig. (2-tailed)	.323	.000	.000	.000
	N	72	72	72	72
pz Mg	Pearson Correlation	.351**	.463**	.614**	.357**
	Sig. (2-tailed)	.002	.000	.000	.002
	N	72	72	72	72
Bone (count)	Pearson Correlation	.075	.220	.377**	.273*
	Sig. (2-tailed)	.529	.064	.001	.020
	N	72	72	72	72
Nails (count)	Pearson Correlation	.244*	.461**	.736**	.374**
	Sig. (2-tailed)	.039	.000	.000	.001
	N	72	72	72	72
Daub (weights)	Pearson Correlation	.158	.261	.514**	-.057
	Sig. (2-tailed)	.351	.118	.001	.737
	N	37	37	37	37
Tobacco pipes (count)	Pearson Correlation	.101	.226	.165	.324**
	Sig. (2-tailed)	.400	.056	.165	.005
	N	72	72	72	72
Creamware (count)	Pearson Correlation	.036	.163	.339**	.343**
	Sig. (2-tailed)	.763	.171	.004	.003
	N	72	72	72	72
Richness (count of types)	Pearson Correlation	.244*	.548**	.634**	.487**
	Sig. (2-tailed)	.039	.000	.000	.000
	N	72	72	72	72
Total historic artifacts	Pearson Correlation	.234*	.524**	.750**	.399**
	Sig. (2-tailed)	.048	.000	.000	.001
	N	72	72	72	72

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

b. Discussion

The subsoil distributions at Wingo’s, specifically of potassium, calcium, and to a lesser extent magnesium, do appear as generally representative of the overlying plowzone distributions.

Statistical comparisons of these subsoil values against overlying artifact distributions from the plow zone further bolsters these conclusions (Table 6). Subsoil potassium is correlated strongly and significantly to artifact richness (Pearson = .548, $p < .001$) and total counts (Pearson = .524, $p < .001$). Potassium in subsoil also follows nail distributions to a slightly lesser extent (Pearson = .461, $p < .001$), which follows patterns seen in plow zone chemistry and may represent a correlation between ash deposition and the wood construction of the enclosure, possible pen, and domestic structure. This pattern could result both from activities such as cooking within certain areas, ash tipping, or more general refuse deposition.

Calcium appears to be the best general purposive indicator of human activity in subsoil at Wingo's, as it is highly correlated with artifact richness (Pearson = .634, $p < .001$) and total counts (Pearson = .750, $p < .001$). Nails, daub, bone and creamware also correlate spatially with calcium, suggesting its deposition both in association with domestic refuse and possibly specific activities such as butchering and bone deposition. Magnesium also correlates generally to artifact counts (Pearson = .399, $p = .001$) and richness (Pearson = .487, $p < .001$), but to a lesser extent than calcium or potassium, and may be roughly indicative of refuse disposal. Its relatively strong correlations to both potassium and calcium, along with artifacts like nails and bones, could associate it with ash deposition.

Not surprisingly, subsoil phosphorus does not appear in association with specific artifact distributions and is only weakly correlated to artifact richness (Pearson = .244, $p = .039$) and totals (Pearson = .234, $p = .048$). Therefore, this study suggests that phosphorus analysis of subsoil contexts is of little utility on plowed sites, neither being indicative of the locations of general refuse deposition nor specific activity areas. Potassium, calcium, and to a lesser extent magnesium values from subsoil contexts should be viable options for soil chemistry analysis of this kind and these conclusions are further supported by the Moran's I spatial autocorrelation statistics (Table 7) for the subsoil distributions at Wingo's, which show that potassium, calcium, and magnesium do exhibit statistically significant clustering. Phosphorus from the subsoil does not exhibits spatial clustering, and that patterning may likely be due to random chance and not anthropogenic inputs.

Table 7: Spatial autocorrelation (Moran's I) statistics for subsoil element distributions at Wingo's.

Measure	Element	Moran's I	Z score	P value
pXRF	Phosphorus	0.06 (random)	1.38	> 0.10
pXRF	Potassium	0.39 (clustered)	7.87	< 0.01
pXRF	Calcium	0.58 (clustered)	11.49	< 0.01
pXRF	Magnesium	0.17 (clustered)	3.45	< 0.01

6. Conclusions

The preceding report has provided site history, questions, research methods, and results of soil chemistry analysis; which is only one facet of the analyses ongoing at the site. The addition of soil chemistry to historical document research, artifact studies, and other analyses has yielded an increased understanding of the vernacular yard-space and landscape at Wingo's. With the post-depositional process of plowing, few physical remains of the structures and spaces at Wingo's have been preserved. Despite these limitations, a picture of the domestic landscape at Wingo's can be glimpsed through a combination of soil chemistry and artifact distributions. Two initial observations indicate the potential interpretive directions of Wingo's landscape. Many studies of slave quarters since the 1980s have emphasized the importance of spaces

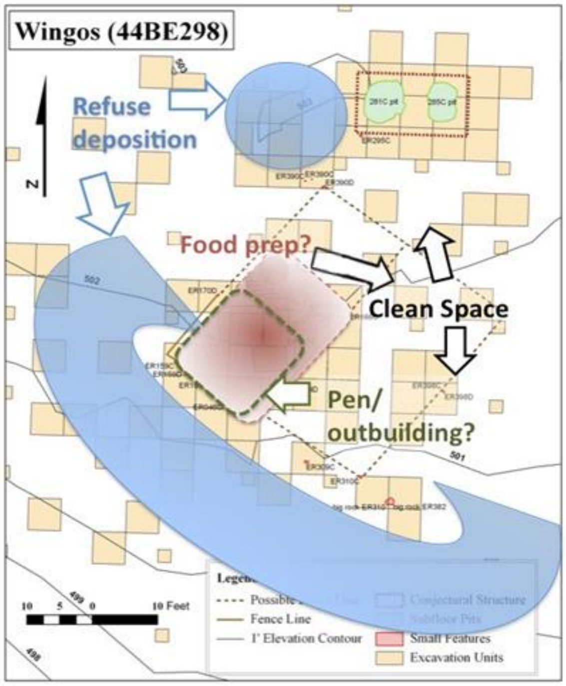


Figure 19: Map of Wingo's showing areas with uses interpreted through artifact and soil chemistry distributions.

outside and around domestic buildings, even suggesting a pattern of African American landscape use that centers on outdoor daily activities and social interactions (Heath and Bennett 2000), whereas those activities in white landscapes were more likely to occur indoors with general refuse disposal clustering near structures (Fesler 2010). Whether based either on West and Central African traditions or reactions to the conditions of North American slavery, or a combination thereof, the artifact and soil chemistry data at Wingo's support the interpretation that outdoor space was organized and utilized for multiple kinds of activities (Figure 19). To the west of the domestic structure and southwest of the enclosure, areas of major refuse deposition, or middens are clearly identifiable in both chemical and artifact distributions. Within the western half of the enclosure are chemical signatures but fewer and more limited artifacts that suggest activities such as gardening, butchering, and or cooking. In the southern portion of the same west half, a concentration of nails suggests the possibility of a small livestock pen or outbuilding. Immediately south of the structure and extending in the eastern half of the enclosure are cleaner spaces, still likely utilized with the occupants of Wingo's, but for less messy activities that could include daily chores, leisure, or activities associated with socializing.

Second, the orientation of the yard spaces at Wingo's are arranged at roughly a 45 degree angle offset from the apparent east-west orientation of the domestic structure as indicated by the two subfloor pits. Fesler (2006; 2010) has argued that spatial arrangements were shaped, used, and perceived by enslaved occupants in different ways than managers and planters may have intended. Drawing on ideas from Lefebrve (1991) and Tilley (1994), this argument is grounded in the idea that multiple participants can culturally construct any given physical location in several different meaningful ways. While a slave-owner may have conceived and imposed the nature and placement of a cabin according to his economic needs and desire for discipline, slaves could mold that space through use that spoke to their own needs when not attending to the demands of managers and owners (Heath 2001). These interpretive avenues are only mentioned briefly in this report as possibilities for the discussions of meaning and significance of the vernacular landscape at Wingo's.

Furthermore, studies of subsoil chemical distributions at Wingo's show that while certain elements such as calcium and potassium exhibit spatial continuity between plow zone and subsoil contexts, phosphorus does not. Thus, the well-known interpretability of soil phosphorus on archaeological sites is limited to the upper strata of a site, in this case the plow zone. This is likely due to the relative immobility of phosphorus in soils, which while making soil phosphorus patterning highly significant due to its longevity, also makes it unable to move vertically down the soil profile. Therefore, in instances where the topsoil or plow zone has been removed without soil sampling, phosphorus can no longer be analyzed as an anthropogenic signature. However, elements such as calcium and potassium do appear vertically mobile and may serve as viable options for interpretive soil chemistry analysis on sites where the topsoil or plow zone has been lost or removed.

References Cited

Ahler, Stanley A.

1973 Chemical Analysis of Deposits at Rogers Shelter, Missouri. *Plains Anthropologist* 18:116-131.

Ascher, Robert and Charles H. Fairbanks

1971 Excavation of a Slave Cabin: Georgia, U.S.A.. *Historical Archaeology* 5: 3-17.

Bear, James A. and Lucia C. Stanton, editors

1997 Jefferson's Memorandum Books: Accounts, with Legal Records and Miscellany, 1767-1826. 2 vols. Princeton University Press, Princeton, NJ.

Bethell, Philip and Ian Máté

1989 The Use of Soil Phosphate Analysis in Archaeology: A Critique". In *Scientific Analysis in Archaeology and its interpretation*, Julian Henderson, editor: pp. 1-29. Oxford University Committee for Archaeology Monograph No. 19, Oxford, UK

Bon-Harper, Sara and Sean Devlin

2012 Spatial Data and the Use of Exterior Domestic Space. Paper presented at the Annual Meeting of the Society for Historical Archaeology, Baltimore, MD.

Cook, S.R., A.S. Clarke and M.G. Fulford

2005 Soil Geochemistry and Detection of Early Roman Precious Metal and Copper Alloy Working at the Roman Town of Calleva Atrebatum (Silchester, Hampshire, UK). *Journal of Archaeological Science* 32 (5): 805-812.

Custer, Jay F., Ellis C. Coleman, Wade P. Catts and Kevin W. Cunningham

1986 Soil Chemistry and Historic Archaeological Site Activity Areas: A Test Case from Northern Delaware. *Historical Archaeology* 20(2): 89-94.

Eliyahu-Behar, Adi, Sana Shilstein, Noa Raban-Gerstel, Yuval Goren, Ayelet Gilboa, Ilan Sharon and Steve Weiner

2008 An Integrated Approach to Reconstructing Primary Activities from Pit Deposits: Iron Smithing and Other Activities at Tel Dor Under Neo-Assyrian Domination. *Journal of Archaeological Science* 35(11): 2895-2908.

Fesler, Garrett

2010 Excavating the Spaces and Interpreting the Places of Enslaved Africans and Their Descendants. In *Cabin, Quarter, Plantation: Architecture and Landscapes of North American Slavery*, Clifton Ellis and Rebecca Ginsburg, editors, pp.27-49. Yale University Press, New Haven, CT.

Fischer, Lisa E.

2001 Recovering Elements in Historical Archaeology: The Use of Soil Chemical Analysis for Overcoming the Effects of Post-depositional Plowing. Master's Thesis: The College of William and Mary.

Goffer, Zvi

1980 *Archaeological Chemistry: A Sourcebook on the Applications of Chemistry to Archaeology*. John Wiley & Sons, New York, NY.

Heath, Barbara J.

2001 Bounded Yards and Fluid Borders: Landscapes of Slavery at Poplar Forest. In *Places of Cultural Memory, African Reflections on the American Landscape*. Conference Proceedings, pp.69-81. US Department of the Interior, National Park Service.

2012 The Domestic Landscape of the Wingos quarter (44BE298), Bedford County. Paper presented at the 42nd Annual Meeting of the Middle Atlantic Archaeological Conference, Virginia Beach, VA.

Heath, Barbara J. and Amber Bennett

2000 "The little Spots allow'd them": The Archaeological Study of African-American Yards. *Historical Archaeology* 43(2): 38-55.

Herz, Norman and Evan G. Garrison

1998 *Geological Methods for Archaeology*. Oxford University Press, New York, NY.

Hodder, Ian and Clive Orton

1976 *Spatial Analysis in Archaeology*. Cambridge University Press, Cambridge, UK.

Jefferson, Thomas

1987 In *Thomas Jefferson's Farm Book with Commentary and Relevant Extracts from other Writings,* edited by Edwin Morris Betts, pp. 1—178. University Press of Virginia, Charlottesville, VA.

Keeler, Robert Winston

1973 The Homelot on the Seventeenth-century Chesapeake Tidewater Frontier. Ph.D. dissertation: University of Oregon, Eugene, OR.

Laing, Michael

1981 An Introduction to the Scope, Potential and Applications of X-ray Analysis. Pamphlet 2: prepared by the Commission on Crystallographic Teaching of the International Union of Crystallography, University College Cardiff Press, Cardiff, Wales.

Lefebvre, H.

1991 *The Production of Space*. Basil Blackwell, Oxford, UK.

Lukezic, Craig

1990 Soils and Settlement Location in 18th Century Colonial Tidewater Virginia. *Historical Archaeology* 24(1):1-17.

Marwick, Ben

2005 Element Concentrations and Magnetic Susceptibility of Anthrosols: Indicators of Prehistoric Human Occupation in the Inland Pilbara, Western Australia. *Journal of Archaeological Science* 32(9): 1357-1368.

Mehlich, A.

1984 Mehlich 3 soil test extractant: a modification of the Mehlich 2 extractant. *Communications in Soil Science and Plant Analysis* 15(2):1409-1416.

Neiman, Fraser, Leslie McFaden and Derek Wheeler

2000 Archaeological Investigation of the Elizabeth Hemings Site (44AB438). Monticello Department of Archaeology Technical Report Series No. 2. Thomas Jefferson Foundation, Charlottesville, VA.

Pogue, Dennis J.

1988 Anthrosols and the Analysis of Archaeological Sites in a Plowed Context: The King's Reach Site. *Northeast Historical Archaeology* 17: 1-14.

Proudfoot, B.

1976 The Analysis and Interpretation of Soil Phosphorus in Archaeological Contexts. In *Geoarchaeology: Earth Science and the Past*, D.A. Davidson and M.L. Shackley, editors, pp. 93-113. Duckworth, London, UK.

Skinner, Shaune M.

1982 An Examination of the Potential Use of Phosphorous Analysis of Soils as an Archaeological Survey Tool. Master's Thesis: Kent State University, Kent, OH.

Smeck, Neil E.

1985 Phosphorus Dynamics in Soils and Landscapes. *Geoderma* 36:185-199.

Stevenson, F. J. and M. A. Cole

1999 *Cycles of Soil: Carbon, Nitrogen, Phosphorus, Sulfur, and Micronutrients*. 2nd edition, Wiley, New York, NY.

Stone, Gary Wheeler, Henry M. Miller, Alexander H. Morrison II and Emily Kutler

1987 *The Clocker's Fancy Site (18 ST1-65) on St. Andrew's Freehold: An Archaeological Survey*. St. Mary's City Research Series No. 4: Historic St. Mary's City, MD.

Sullivan, K.A., and L. Kealhofer

2004 Identifying activity areas in archaeological soils from a colonial Virginia houselot using phytolith analysis and soil chemistry. *Journal of Archaeological Science* 31(12):1659- 1673.

Swanson, Greg and Mark Colsman

2006 XRF Technologies for Measuring Trace Elements in Soil and Sediment: Xcalibur ElvaX XRF Analyzer. An Innovative Technology Verification Report prepared for the U.S. Environmental Protection Agency (EPA) Superfund Innovative Technology Evaluation Program under Contract No. 68-C-00-181 by Tetra Tech EM Inc. Cincinnati, OH.

Tilley, Christopher Y.

1994 *A Phenomenology of Landscape: Places, Paths, and Monuments*. Berg, Providence, RI.

Wilkins, Andrew P.

2009 Identifying 18th century Hidden Landscapes at Stratford Hall Plantation Using Portable X-Ray Fluorescence Phosphorus Readings on Plowzone Samples. MA thesis, University of Massachusetts, Boston.

2010 Elements of a Landscape: Soil Chemistry at Stratford Hall Plantation. *Journal of Middle Atlantic Archaeology* 26: 155-164.

2011 *Soil Chemistry Analysis of Wingo's Quarter Site, Bedford County, Virginia*. A preliminary report prepared for "Engaging the Piedmont: Transitions in Virginia Slavery 1730-1790", manuscript on file at Department of Anthropology, University of Tennessee, Knoxville, TN.

Wilkins, Andrew P., Crystal Ptacek, and Barbara Heath

2012 Where's What at Wingo's? Artifact and Soil Chemical Distributions at Wingo's Quarter Site, Bedford Co., Virginia. Paper presented at the 77th Annual Meeting of the Society for American Archaeology, April 18-22: Memphis, TN.

Wilson, Clare A., Donald A. Davidson and Malcolm S. Cresser

2007 Multi-element soil analysis: an assessment of its potential as an aid to archaeological interpretation. *Journal of Archaeological Science* 35(2): 412-424.

Woods, William I.

1988 *Soil Chemical Investigations at Five Historic Sites in Illinois*. Illinois Cultural Resources Study No.4, Illinois Historic Preservation Agency Springfield, IL.

Appendix A: Data

Note: All pXRF data is recorded in counts per second, and all Mehlich 3 control method data is in pounds per acres.

ER #	Context	xrf Mg	xrf P	xrf K	xrf Ca	M3 P	M3 K	M3 Ca	M3 Mg
012B/1	Plowzone	18	23	185	319	7.35	50.34	1514.78	209.60
016B/1	Plowzone	21	19	242	447	8.13	42.27	1677.65	182.98
031B	Plowzone	19	26	223	353	7.22	91.98	1249.56	225.08
032B	Plowzone	20	29	240	382	10.09	123.36	1447.14	228.29
033B	Plowzone	24	35	246	393	7.29	160.48	1361.70	240.57
034B	Plowzone	25	27	230	305	5.49	47.16	1177.47	195.36
045B	Plowzone	21	21	239	377				
047B/1	Plowzone	13	20	202	369				
048B/1	Plowzone	14	19	163	274				
058B	Plowzone	19	35	232	458				
062B	Plowzone	28	24	229	512				
063B	Plowzone	21	26	270	435				
064B	Plowzone	16	34	269	502				
065B/1	Plowzone	15	29	199	476				
106B/1	Plowzone	12	21	237	315				
114/1B	Plowzone	15	17	169	233				
114/2B	Plowzone	19	14	173	275				
128B	Plowzone	13	17	153	304				
134B/1	Plowzone	16	22	205	320				
135B/1	Plowzone	24	31	205	409				
139B	Plowzone	19	25	238	424	11.04	35.02	1708.80	204.43
140B	Plowzone	15	24	193	342	5.90	57.26	1452.48	211.73
141B	Plowzone	15	17	203	354	5.40	39.78	1472.06	204.52
142B	Plowzone	13	13	160	360	6.69	51.82	1622.47	191.71
143B	Plowzone	19	15	215	429	5.11	42.64	1350.13	213.16
144B	Plowzone	18	23	243	446	7.61	34.16	1691.00	211.64
145B	Plowzone	11	17	192	385	6.56	34.42	1302.07	214.67
156B	Plowzone	14	22	224	453	8.10	63.37	1669.64	201.76
159B	Plowzone	15	27	213	489	12.26	110.66	1682.10	186.81
161B	Plowzone	17	18	176	384	5.71	54.26	1695.45	220.19
162B	Plowzone	24	23	187	368	7.46	109.34	1659.85	205.15
166B	Plowzone	23	23	196	410	7.32	82.73	1610.01	261.30
167B	Plowzone	26	36	277	424	9.94	92.69	1524.57	217.43
168B	Plowzone	16	26	209	399	12.51	114.79	1366.15	208.88
169B	Plowzone	21	21	232	384	6.36	79.26	1673.20	204.34
170B	Plowzone	13	25	240	470	14.27	48.42	1624.25	185.83
171B	Plowzone	15	25	243	468	9.38	48.18	1611.79	186.28
175B	Plowzone	14	27	241	399	3.67	57.88	1467.61	249.11
183B	Plowzone	22	30	186	388	13.11	252.82	1511.22	191.80
184B	Plowzone	21	23	243	382				
185B	Plowzone	24	25	212	364				

ER #	Context	Mg	P	xrf K	Ca	M3 P	M3 K	M3 Ca	M3 Mg
280B	Plowzone	13	20	206	327				
281B	Plowzone	28	24	219	359				
282B	Plowzone	15	23	255	422				
283B	Plowzone	15	23	231	377				
284B	Plowzone	22	23	200	340				
285B	Plowzone	15	24	184	536				
286B	Plowzone	24	31	205	409				
287B	Plowzone	20	32	201	277				
288B	Plowzone	17	28	177	331				
289B	Plowzone	23	19	235	326				
290B	Plowzone	23	18	205	314				
291B	Plowzone	25	23	266	336				
294B	Plowzone	11	19	181	288				
295B	Plowzone	14	18	204	294				
296B	Plowzone	9	20	153	370	6.00	98.85	1465.83	210.31
297B	Plowzone	12	20	167	309				
298B	Plowzone	13	21	174	233	3.08	73.80	1027.95	204.17
299B	Plowzone	21	25	185	350	6.89	42.20	1216.63	200.61
300B	Plowzone	15	22	196	342	7.98	135.34	1415.99	194.29
301B	Plowzone	11	27	159	281	10.88	146.41	1322.54	193.75
302B	Plowzone	15	17	171	330	5.12	108.61	1250.45	208.79
305B	Plowzone	9	23	154	311	6.75	69.77	1302.07	208.26
308B	Plowzone	14	24	196	391	8.63	30.54	1448.03	164.27
309B	Plowzone	17	18	216	395	7.15	75.14	1674.09	199.09
310B	Plowzone	10	21	178	311	7.45	36.63	1148.10	162.43
311B	Plowzone	9	20	172	296				
313B	Plowzone	19	17	194	259				
314B	Plowzone	19	22	206	255				
315B	Plowzone	10	20	180	277				
316B	Plowzone	11	19	170	237				
317B	Plowzone	12	15	163	246				
318B	Plowzone	15	16	179	277				
319B	Plowzone	9	21	148	489				
320B	Plowzone	8	17	151	256				
321B	Plowzone	17	20	204	197				
322B	Plowzone	13	19	161	292				
323B	Plowzone	11	17	158	276				
324B	Plowzone	12	22	160	233				
325B	Plowzone	9	26	219	305				
329B	Plowzone	10	19	176	257				
330B	Plowzone	23	21	194	241				
331B	Plowzone	16	17	170	272				
338B	Plowzone	8	28	195	232				
339B	Plowzone	17	18	206	234				
340B	Plowzone	15	21	165	253				
341B	Plowzone	9	10	188	199				
342B	Plowzone	12	15	175	261				

ER #	Context	Mg	P	xrf K	Ca	M3 P	M3 K	M3 Ca	M3 Mg
343B	Plowzone	16	14	210	224				
344B	Plowzone	15	25	144	237				
345B	Plowzone	12	18	159	217				
346B	Plowzone	12	18	195	236				
347B	Plowzone	11	21	198	227				
348B	Plowzone	17	20	166	248				
349B	Plowzone	9	22	180	220				
350B	Plowzone	13	14	177	249				
351B	Plowzone	13	16	182	288				
352B	Plowzone	13	18	155	212				
353B	Plowzone	12	15	196	227				
354B	Plowzone	8	19	148	256				
355B	Plowzone	14	20	131	278				
364B	Plowzone	11	16	163	315				
366B	Plowzone	15	14	151	291				
382B	Plowzone	7	21	232	232	7.69	142.58	1059.10	161.71
386B	Plowzone	14	26	198	324	7.61	60.05	1250.45	192.33
387B	Plowzone	12	17	183	293				
388B	Plowzone	10	20	205	321				
390B	Plowzone	14	22	190	312				
391B	Plowzone	14	18	160	293				
392B	Plowzone	12	18	188	322				
393B	Plowzone	11	18	235	285				
394B	Plowzone	11	23	195	301				
395B	Plowzone	7	23	144	297				
396B	Plowzone	13	21	207	302				
398B	Plowzone	15	26	224	285				
399B	Plowzone	16	23	218	267				
PZ01	Plowzone	9	14	204	342				
PZ02	Plowzone	18	13	203	290				
PZ03	Plowzone	13	22	177	260				
PZ04	Plowzone	16	10	260	314				
PZ05	Plowzone	12	25	181	312				
PZ06	Plowzone	10	20	176	249				
PZ07	Plowzone	23	22	150	356				
PZ08	Plowzone	10	16	208	265				
PZ09	Plowzone	16	13	198	360				
PZ10	Plowzone	9	19	206	262				
PZ11	Plowzone	14	17	196	315				
PZ12	Plowzone	16	23	150	255				
PZ13	Plowzone	16	19	198	322				
PZ14	Plowzone	14	17	201	258				
PZ15	Plowzone	12	18	209	366				
PZ16	Plowzone	18	20	176	254				
PZ17	Plowzone	9	18	163	364				
PZ18	Plowzone	18	20	209	315				
PZ19	Plowzone	10	17	211	259				

ER #	Context	Mg	P	xrf K	Ca	M3 P	M3 K	M3 Ca	M3 Mg
PZ20	Plowzone	14	18	196	309				
PZ21	Plowzone	14	19	182	279				
PZ22	Plowzone	6	19	195	293				
PZ23	Plowzone	20	19	213	317				
PZ24	Plowzone	11	24	209	321				
PZ25	Plowzone	11	12	165	275				
PZ26	Plowzone	7	21	239	278				
PZ27	Plowzone	11	18	179	308				
PZ28	Plowzone	11	24	237	345				
PZ29	Plowzone	12	9	198	279				
PZ30	Plowzone	14	22	204	268				
PZ31	Plowzone	8	16	162	345				
PZ32	Plowzone	8	18	197	287				
PZ33	Plowzone	10	17	231	312				
PZ34	Plowzone	14	9	215	265				
PZ35	Plowzone	14	22	185	368				
PZ36	Plowzone	8	13	219	265				
PZ37	Plowzone	11	18	208	265				
PZ38	Plowzone	12	17	204	297				
PZ39	Plowzone	21	13	164	307				
PZ40	Plowzone	9	13	249	249				
PZ41	Plowzone	11	15	209	299				
PZ42	Plowzone	14	18	232	289				
PZ43	Plowzone	11	18	189	319				
PZ44	Plowzone	11	22	231	347				
PZ45	Plowzone	13	27	191	308				
PZ46	Plowzone	20	20	179	310				
PZ47	Plowzone	10	18	211	267				
PZ48	Plowzone	17	22	223	251				
PZ49	Plowzone	10	19	191	339				
031Su	Subsoil	21	26	220	283				
032Su	Subsoil	26	24	232	397				
033Su	Subsoil	22	23	189	381				
034Su	Subsoil	10	35	200	300				
045Su	Subsoil	20	22	183	301				
062Su	Subsoil	27	20	230	314				
063Su	Subsoil	22	24	251	309				
106Su/1	Subsoil	26	16	243	311				
114/1C	Subsoil	12	20	116	262				
114/2C	Subsoil	19	24	143	314				
128C	Subsoil	13	11	146	256				
134Su/1	Subsoil	28	14	175	268				
135Su/1	Subsoil	15	23	182	291				
280Su	Subsoil	24	18	169	267				
283Su	Subsoil	29	21	227	352				
284Su	Subsoil	17	32	219	339				
286Su	Subsoil	18	26	209	312				

ER #	Context	Mg	P	xrf K	Ca	M3 P	M3 K	M3 Ca	M3 Mg
287Su	Subsoil	24	20	190	269				
288Su	Subsoil	21	20	212	324				
289Su	Subsoil	29	16	198	309				
290Su	Subsoil	14	20	237	346				
291Su	Subsoil	16	27	224	408				
294C	Subsoil	13	28	90	244				
295D	Subsoil	14	25	195	271				
296C	Subsoil	10	13	141	264				
297C	Subsoil	19	26	168	288				
298C	Subsoil	10	19	151	266				
299C	Subsoil	11	18	158	255				
300C	Subsoil	11	17	123	274				
301C	Subsoil	20	20	159	284				
302C	Subsoil	24	23	193	249				
305C	Subsoil	20	18	139	275				
308C	Subsoil	13	18	186	319				
309D	Subsoil	16	24	194	327				
310Su	Subsoil	20	21	174	264				
311C	Subsoil	15	23	150	184				
312C	Subsoil	14	23	219	300				
314C	Subsoil	18	17	146	216				
315C	Subsoil	9	17	181	269				
316C	Subsoil	14	18	210	250				
317B/2	Subsoil	16	19	151	224				
318C	Subsoil	11	11	134	217				
319C	Subsoil	16	16	161	194				
320C	Subsoil	10	13	123	194				
321C	Subsoil	12	24	142	216				
322C	Subsoil	13	23	121	237				
323C	Subsoil	13	20	161	239				
324C	Subsoil	13	14	188	227				
325C	Subsoil	20	14	194	270				
329C	Subsoil	12	20	142	222				
330C	Subsoil	19	20	171	275				
331C	Subsoil	16	11	168	203				
338C	Subsoil	17	25	185	229				
339C	Subsoil	15	23	154	247				
340C	Subsoil	18	23	198	288				
341C	Subsoil	16	18	146	221				
342C	Subsoil	11	19	194	240				
343C	Subsoil	14	27	210	239				
344C	Subsoil	11	17	143	223				
345C	Subsoil	11	14	166	224				
346C	Subsoil	22	26	167	213				
347C	Subsoil	11	12	163	225				
348C	Subsoil	14	18	155	244				
349C	Subsoil	9	19	168	198				

ER #	Context	Mg	P	xrf K	Ca	M3 P	M3 K	M3 Ca	M3 Mg
350C	Subsoil	18	17	179	216				
351C	Subsoil	13	15	131	197				
352C	Subsoil	20	22	148	210				
353C	Subsoil	10	21	153	237				
354C	Subsoil	11	25	164	217				
355C	Subsoil	10	15	135	212				
363C	Subsoil	24	17	171	203				
364C	Subsoil	10	19	160	263				
366C	Subsoil	15	25	155	233				
382C	Subsoil	12	22	179	276				

Appendix 7: pXRF results for colonoware, daub, and pipes, Wingo's

Name	Material	Si	K	Ca	Ti	Mn	Fe
W-C 047B	colono	9756	1037	4628	11078	1364	72042
W-C 0281G	colono	13789	4297	5643	5464	1481	54088
W-C 0285K N1/2	colono	10934	1486	5122	15927	1319	59532
W-C 0289B	colono	4804	770	3505	13188	1125	74821
W-C 0285B	colono	13397	4951	4250	5608	1916	58488
W-C 0285C	colono	13216	3944	6218	5270	2043	54953
W-C 0382B	colono	15812	4011	4904	5351	1975	50409
W-C 050B	colono	13961	3323	4150	5438	1920	58175
W-C 062B	colono	13900	3676	4803	5315	1666	58612
W-C 0154B	colono	13988	3123	4275	4819	2017	59208
W-C 063B	colono	8468	780	2288	11732	1792	76399
W-C 0113A	colono	4616	949	4822	10858	1282	85625
W-C 382E	colono	10636	2549	1680	8287	1393	77463
W-D 0281F W1/2	brick/daub	7046	1288	1736	9581	2614	92046
W-D 0281G-1	brick/daub	5935	1078	1775	7828	4587	90832
W-D 0281G-2	brick/daub	6973	1173	3051	9339	7902	71832
W-D 0281H-1	brick/daub	6743	1387	3200	11264	5867	80484
W-D 0281H-2	brick/daub	5027	1289	7724	6620	4303	92941
W-P 0281B	pipe	440	81	150	228	120	2436
W-P 065B	pipe	8532	1912	4153	12163	2225	80854
W-P 0169A	pipe	6659	644	3142	4866	1799	82582
W-S 03A	unknown	1793	422	851	3837	40992	59361
W-S 0167B	unknown	2207	315	500	4873	26950	60737

Name	Material	Zn	Rb	Sr	Zr	Ru	Rh
W-C 047B	colono	1211	1345	1594	2910	2781	2453
W-C 0281G	colono	1586	2037	3427	3813	3530	3469
W-C 0285K N1/2	colono	1127	1413	1762	5228	3068	2686
W-C 0289B	colono	796	1199	1107	2385	1950	1815
W-C 0285B	colono	1452	1944	2747	3544	3545	3190
W-C 0285C	colono	1440	1859	2994	4062	3379	3208
W-C 0382B	colono	1463	2062	3188	3934	3997	3414
W-C 050B	colono	1513	1883	2581	3586	3712	3180
W-C 062B	colono	1475	1861	2960	3126	3600	3160
W-C 0154B	colono	1394	1851	2664	3637	3836	3274
W-C 063B	colono	967	1281	1284	3821	2176	2029
W-C 0113A	colono	1089	1265	1261	1878	1853	1912
W-C 382E	colono	1313	1647	1402	3384	2850	2707
W-D 0281F W1/2	brick/daub	1079	1373	1086	4867	1945	2079
W-D 0281G-1	brick/daub	1108	1384	1057	4144	1964	1971
W-D 0281G-2	brick/daub	1041	1336	1276	5335	2147	2130
W-D 0281H-1	brick/daub	1338	1434	1565	5980	2379	2680
W-D 0281H-2	brick/daub	968	1513	1121	2484	1821	1980
W-P 0281B	pipe	172	284	158	137	212	228
W-P 065B	pipe	1437	1420	1537	2740	2318	2364
W-P 0169A	pipe	1122	1314	1220	1575	2119	1847
W-S 03A	unknown	487	647	518	796	599	748
W-S 0167B	unknown	445	730	393	952	750	860

Z-Scores, Wingos xRF samples

Name	Material	Z Si	Z K	Z Ca	Z Ti	Z Mn	Z Fe
W-C 0281G	colono	1.28558	1.41798	1.4706	-0.27973	-0.3577	-0.98245
W-C 0285K N1/2	colono	0.53718	-0.55716	1.16975	2.67888	-0.37854	-0.65963
W-C 0289B	colono	-1.0697	-1.06025	0.23604	1.90438	-0.4035	0.24701
W-C 047B	colono	0.22839	-0.87265	0.8845	1.30773	-0.37275	0.08221
W-C 0154B	colono	1.33774	0.59307	0.68067	-0.46212	-0.28875	-0.67884
W-C 0285B	colono	1.18282	1.87751	0.66623	-0.23901	-0.30174	-0.72153
W-C 0285C	colono	1.13537	1.16995	1.80262	-0.33459	-0.2854	-0.93116
W-C 0382B	colono	1.81587	1.21703	1.04387	-0.31168	-0.29415	-1.20062
W-C 050B	colono	1.33066	0.7336	0.60849	-0.28708	-0.30122	-0.7401
W-C 062B	colono	1.31467	0.98164	0.98555	-0.32186	-0.3339	-0.71418
W-C 0113A	colono	-1.11899	-0.93448	0.99652	1.24552	-0.3833	0.88768
W-C 0382E	colono	0.45907	0.18975	-0.81778	0.51853	-0.36902	0.40368
W-C 063B	colono	-0.10924	-1.05323	-0.4667	1.49266	-0.31769	0.34058
W-D 0281F W1/2	brick/daub	-0.482	-0.69628	-0.78545	0.88443	-0.21194	1.26845
W-D 0281G	brick/daub	-0.77323	-0.84384	-0.76293	0.38873	0.04188	1.19646
W-D 0281G	brick/daub	-0.50113	-0.77709	-0.02612	0.816	0.46836	0.06976
W-D 0281H	brick/daub	-1.01125	-0.69558	2.67224	0.04715	0.00535	1.32152
W-D 0281H	brick/daub	-0.56142	-0.62672	0.05992	1.36033	0.20656	0.58282
W-P 0281B	pipe	-2.21366	-1.54438	-1.70126	-1.76031	-0.5328	-4.04541
W-P 065B	pipe	-0.09247	-0.25783	0.61022	1.61454	-0.26199	0.60476
W-P 0169A	pipe	-0.58344	-1.14879	0.02643	-0.44883	-0.31679	0.70723
W-S 0167B	unknown	-1.75047	-1.37996	-1.49916	-0.44685	2.91889	-0.58817
W-S 03A	unknown	-1.85899	-1.30478	-1.29648	-0.7398	4.72539	-0.66977

Name	Material	Z Zn	Z Rb	Z Sr	Z Zr	Z Ru	Z Rh
W-C 0281G	colono	1.35554	1.15545	2.19031	0.68638	1.03909	1.39458
W-C 0285K N1/2	colono	-0.06703	-0.33334	0.11364	1.72846	0.53979	0.38303
W-C 0289B	colono	-1.09289	-0.84392	-0.70331	-0.36528	-0.66849	-0.74221
W-C 047B	colono	0.19331	-0.49558	-0.0959	0.02136	0.22961	0.08202
W-C 0154B	colono	0.76047	0.71167	1.23866	0.55676	1.3698	1.14266
W-C 0285B	colono	0.94023	0.93356	1.34218	0.48827	1.0553	1.03414
W-C 0285C	colono	0.90304	0.73076	1.65026	0.86975	0.8759	1.0574
W-C 0382B	colono	0.97432	1.21509	1.89222	0.77549	1.5438	1.32353
W-C 050B	colono	1.12929	0.78802	1.13514	0.5192	1.23579	1.02122
W-C 062B	colono	1.01152	0.73553	1.60785	0.18043	1.11475	0.99539
W-C 0113A	colono	-0.18481	-0.68645	-0.51123	-0.73867	-0.77332	-0.6169
W-C 0382E	colono	0.50943	0.22495	-0.33537	0.37044	0.30418	0.41016
W-C 063B	colono	-0.56292	-0.64828	-0.48254	0.69227	-0.42424	-0.46575
W-D 0281F W1/2	brick/daub	-0.2158	-0.42878	-0.7295	1.4626	-0.67389	-0.40115
W-D 0281G	brick/daub	-0.12592	-0.40253	-0.76567	0.93014	-0.65336	-0.54068
W-D 0281G	brick/daub	-0.33357	-0.51705	-0.49252	1.80726	-0.45558	-0.33527
W-D 0281H	brick/daub	-0.55982	-0.09475	-0.68585	-0.29237	-0.80791	-0.52905
W-D 0281H	brick/daub	0.58691	-0.28324	-0.13207	2.28228	-0.20485	0.37528
W-P 0281B	pipe	-3.02684	-3.027	-1.88695	-2.02084	-2.54683	-2.79245
W-P 065B	pipe	0.89374	-0.31664	-0.16699	-0.10384	-0.27077	-0.03296
W-P 0169A	pipe	-0.08253	-0.56954	-0.56237	-0.96181	-0.48584	-0.70087
W-S 0167B	unknown	-2.18074	-1.9629	-1.59384	-1.42062	-1.96539	-1.97597
W-S 03A	unknown	-2.05057	-2.16092	-1.43794	-1.53551	-2.12858	-2.12066

Appendix 6: pXRF results for daub, colonoware vessels and pipes, Wingo’s

Appendix 6: pXRF results, Wingo's

Name	Material	Si	K	Ca	Ti	Mn	Fe
W-C 047B	colono	9756	1037	4628	11078	1364	72042
W-C 0281G	colono	13789	4297	5643	5464	1481	54088
W-C 0285K N1/2	colono	10934	1486	5122	15927	1319	59532
W-C 0289B	colono	4804	770	3505	13188	1125	74821
W-C 0285B	colono	13397	4951	4250	5608	1916	58488
W-C 0285C	colono	13216	3944	6218	5270	2043	54953
W-C 0382B	colono	15812	4011	4904	5351	1975	50409
W-C 050B	colono	13961	3323	4150	5438	1920	58175
W-C 062B	colono	13900	3676	4803	5315	1666	58612
W-C 0154B	colono	13988	3123	4275	4819	2017	59208
W-C 063B	colono	8468	780	2288	11732	1792	76399
W-C 0113A	colono	4616	949	4822	10858	1282	85625
W-C 382E	colono	10636	2549	1680	8287	1393	77463
W-D 0281F W1/2	brick/daub	7046	1288	1736	9581	2614	92046
W-D 0281G-1	brick/daub	5935	1078	1775	7828	4587	90832
W-D 0281G-2	brick/daub	6973	1173	3051	9339	7902	71832
W-D 0281H-1	brick/daub	6743	1387	3200	11264	5867	80484
W-D 0281H-2	brick/daub	5027	1289	7724	6620	4303	92941
W-P 0281B	pipe	440	81	150	228	120	2436
W-P 065B	pipe	8532	1912	4153	12163	2225	80854
W-P 0169A	pipe	6659	644	3142	4866	1799	82582
W-S 03A	unknown	1793	422	851	3837	40992	59361
W-S 0167B	unknown	2207	315	500	4873	26950	60737

Name	Material	Zn	Rb	Sr	Zr	Ru	Rh
W-C 047B	colono	1211	1345	1594	2910	2781	2453
W-C 0281G	colono	1586	2037	3427	3813	3530	3469
W-C 0285K N1/2	colono	1127	1413	1762	5228	3068	2686
W-C 0289B	colono	796	1199	1107	2385	1950	1815
W-C 0285B	colono	1452	1944	2747	3544	3545	3190
W-C 0285C	colono	1440	1859	2994	4062	3379	3208
W-C 0382B	colono	1463	2062	3188	3934	3997	3414
W-C 050B	colono	1513	1883	2581	3586	3712	3180
W-C 062B	colono	1475	1861	2960	3126	3600	3160
W-C 0154B	colono	1394	1851	2664	3637	3836	3274
W-C 063B	colono	967	1281	1284	3821	2176	2029
W-C 0113A	colono	1089	1265	1261	1878	1853	1912
W-C 382E	colono	1313	1647	1402	3384	2850	2707
W-D 0281F W1/2	brick/daub	1079	1373	1086	4867	1945	2079
W-D 0281G-1	brick/daub	1108	1384	1057	4144	1964	1971
W-D 0281G-2	brick/daub	1041	1336	1276	5335	2147	2130
W-D 0281H-1	brick/daub	1338	1434	1565	5980	2379	2680
W-D 0281H-2	brick/daub	968	1513	1121	2484	1821	1980
W-P 0281B	pipe	172	284	158	137	212	228
W-P 065B	pipe	1437	1420	1537	2740	2318	2364
W-P 0169A	pipe	1122	1314	1220	1575	2119	1847
W-S 03A	unknown	487	647	518	796	599	748
W-S 0167B	unknown	445	730	393	952	750	860

Z-Scores, Wingos xRF samples

Name	Material	Z Si	Z K	Z Ca	Z Ti	Z Mn	Z Fe
W-C 0281G	colono	1.28558	1.41798	1.4706	-0.27973	-0.3577	-0.98245
W-C 0285K N1/2	colono	0.53718	-0.55716	1.16975	2.67888	-0.37854	-0.65963
W-C 0289B	colono	-1.0697	-1.06025	0.23604	1.90438	-0.4035	0.24701
W-C 047B	colono	0.22839	-0.87265	0.8845	1.30773	-0.37275	0.08221
W-C 0154B	colono	1.33774	0.59307	0.68067	-0.46212	-0.28875	-0.67884
W-C 0285B	colono	1.18282	1.87751	0.66623	-0.23901	-0.30174	-0.72153
W-C 0285C	colono	1.13537	1.16995	1.80262	-0.33459	-0.2854	-0.93116
W-C 0382B	colono	1.81587	1.21703	1.04387	-0.31168	-0.29415	-1.20062
W-C 050B	colono	1.33066	0.7336	0.60849	-0.28708	-0.30122	-0.7401
W-C 062B	colono	1.31467	0.98164	0.98555	-0.32186	-0.3339	-0.71418
W-C 0113A	colono	-1.11899	-0.93448	0.99652	1.24552	-0.3833	0.88768
W-C 0382E	colono	0.45907	0.18975	-0.81778	0.51853	-0.36902	0.40368
W-C 063B	colono	-0.10924	-1.05323	-0.4667	1.49266	-0.31769	0.34058
W-D 0281F W1/2	brick/daub	-0.482	-0.69628	-0.78545	0.88443	-0.21194	1.26845
W-D 0281G	brick/daub	-0.77323	-0.84384	-0.76293	0.38873	0.04188	1.19646
W-D 0281G	brick/daub	-0.50113	-0.77709	-0.02612	0.816	0.46836	0.06976
W-D 0281H	brick/daub	-1.01125	-0.69558	2.67224	0.04715	0.00535	1.32152
W-D 0281H	brick/daub	-0.56142	-0.62672	0.05992	1.36033	0.20656	0.58282
W-P 0281B	pipe	-2.21366	-1.54438	-1.70126	-1.76031	-0.5328	-4.04541
W-P 065B	pipe	-0.09247	-0.25783	0.61022	1.61454	-0.26199	0.60476
W-P 0169A	pipe	-0.58344	-1.14879	0.02643	-0.44883	-0.31679	0.70723
W-S 0167B	unknown	-1.75047	-1.37996	-1.49916	-0.44685	2.91889	-0.58817
W-S 03A	unknown	-1.85899	-1.30478	-1.29648	-0.7398	4.72539	-0.66977

Name	Material	Z Zn	Z Rb	Z Sr	Z Zr	Z Ru	Z Rh
W-C 0281G	colono	1.35554	1.15545	2.19031	0.68638	1.03909	1.39458
W-C 0285K N1/2	colono	-0.06703	-0.33334	0.11364	1.72846	0.53979	0.38303
W-C 0289B	colono	-1.09289	-0.84392	-0.70331	-0.36528	-0.66849	-0.74221
W-C 047B	colono	0.19331	-0.49558	-0.0959	0.02136	0.22961	0.08202
W-C 0154B	colono	0.76047	0.71167	1.23866	0.55676	1.3698	1.14266
W-C 0285B	colono	0.94023	0.93356	1.34218	0.48827	1.0553	1.03414
W-C 0285C	colono	0.90304	0.73076	1.65026	0.86975	0.8759	1.0574
W-C 0382B	colono	0.97432	1.21509	1.89222	0.77549	1.5438	1.32353
W-C 050B	colono	1.12929	0.78802	1.13514	0.5192	1.23579	1.02122
W-C 062B	colono	1.01152	0.73553	1.60785	0.18043	1.11475	0.99539
W-C 0113A	colono	-0.18481	-0.68645	-0.51123	-0.73867	-0.77332	-0.6169
W-C 0382E	colono	0.50943	0.22495	-0.33537	0.37044	0.30418	0.41016
W-C 063B	colono	-0.56292	-0.64828	-0.48254	0.69227	-0.42424	-0.46575
W-D 0281F W1/2	brick/daub	-0.2158	-0.42878	-0.7295	1.4626	-0.67389	-0.40115
W-D 0281G	brick/daub	-0.12592	-0.40253	-0.76567	0.93014	-0.65336	-0.54068
W-D 0281G	brick/daub	-0.33357	-0.51705	-0.49252	1.80726	-0.45558	-0.33527
W-D 0281H	brick/daub	-0.55982	-0.09475	-0.68585	-0.29237	-0.80791	-0.52905
W-D 0281H	brick/daub	0.58691	-0.28324	-0.13207	2.28228	-0.20485	0.37528
W-P 0281B	pipe	-3.02684	-3.027	-1.88695	-2.02084	-2.54683	-2.79245
W-P 065B	pipe	0.89374	-0.31664	-0.16699	-0.10384	-0.27077	-0.03296
W-P 0169A	pipe	-0.08253	-0.56954	-0.56237	-0.96181	-0.48584	-0.70087
W-S 0167B	unknown	-2.18074	-1.9629	-1.59384	-1.42062	-1.96539	-1.97597
W-S 03A	unknown	-2.05057	-2.16092	-1.43794	-1.53551	-2.12858	-2.12066