

# Monticello's Park Cemetery



*by* Sara Bon-Harper  
Fraser Neiman and Derek Wheeler

August 2003



MONTICELLO DEPARTMENT OF ARCHAEOLOGY TECHNICAL REPORT SERIES  
NUMBER 5

---

## **Abstract**

This report describes recent archaeological research conducted at Thomas Jefferson's Monticello Plantation in Albemarle County, Virginia. In 2000 and 2001 the Thomas Jefferson Foundation's Department of Archaeology undertook a series of field research initiatives to confirm the presence of a cemetery used by enslaved African Americans at Monticello. In 2002 the Department conducted another round of fieldwork aimed at refining detection techniques for unmarked cemeteries of this nature. Fieldwork conducted between 2000 and 2002 included several campaigns of remote sensing, using several geophysical methods, and test excavations, using five-foot quadrats. The burial ground is situated in the present-day Visitors Parking Lot, in a semi-wooded island surrounded on four sides by pavement. It is likely that this cemetery was one of several used by this community during Thomas Jefferson's tenure at Monticello, but is the only one on the property that the Foundation has located to date. In Jefferson's day, the area where the cemetery is located was called "the Park." Based on this historical association and the likelihood that slaves were buried elsewhere at Monticello, in this report we adopt the name Park Cemetery for this African-American burial ground. The cemetery measures approximately 75 feet north-south by 65 feet east-west, and appears to have been completely preserved during the building of the parking lot. Approximately two dozen depressions were visible prior to any fieldwork; these were suspected burials. Twenty burials, some corresponding to depressions and some in areas without depressions, were identified in archaeological excavations. The burials were identified by excavating the top several inches of ground surface to expose the outlines of the grave shafts. Excavation ceased at the level where grave shafts would be identified (the top of subsoil). None of the graves was disturbed in the course of excavation. It is estimated that well over forty individuals were buried at the site.

# Table of Contents

<b>Abstract</b> .....	i
<b>List of Figures</b> .....	iii
<b>Acknowledgments</b> .....	iv
<b>Introduction</b> .....	1
<b>Setting and Documentary Evidence</b> .....	2
<b>Oral History</b> .....	9
<b>Surface Evidence</b> .....	9
<b>Previous Archaeology</b> .....	11
Remote Sensing and Surface Mapping: 1990.....	11
Surface Mapping: 2000.....	11
<b>Geophysical Research: 2000</b> .....	11
<b>Excavation</b> .....	13
Table 1. Summary of Excavation Findings.....	13
<b>Estimating Total Burial Numbers</b> .....	17
<b>Dating the Cemetery</b> .....	18
<b>Development of Geophysical Methods, 2001</b> .....	18
<b>Conclusions</b> .....	19
<b>References</b> .....	20
<b>List of Appendices</b> .....	21
<b>Appendix A</b> .....	22
<b>Estimating the Total Number of Burials</b> .....	22
<b>Living Population Size</b> .....	24
<b>References</b> .....	25
<b>Appendix B</b> .....	27
<b>Artifact List from Shovel Testing, Winter 2000</b> .....	27
<b>Appendix C</b> .....	30
<b>Artifact List from Quadrat Excavation and Metal Detection, Winter 2001</b> .....	30
<b>Appendix D</b> .....	33
<b>List of Maps Relevant to the Park Cemetery</b> .....	33

## List of Figures

Figure 1. Map of Monticello Mountain, showing locations of Park Cemetery, slaves' dwellings, and Jefferson Family Cemetery.....	3
Figure 2. N-131, Anderson Bryan survey, 1776-8. ....	4
Figure 3. N-522-2, Jefferson survey, July 1796. ....	6
Figure 4. N-223-2, Jefferson survey, undated. ....	7
Figure 5. N-521-9, Jefferson survey, undated. ....	7
Figure 6. Composite map, early and late Park locations.....	8
Figure 7. Results of surface mapping, 1990. ....	10
Figure 8. Excavated quadrats with depressions and grave shaft outlines. ....	12
Figure 9. End of excavation, April 2001. ....	14
Figure 10. Surface depressions and excavation unit boundaries (detail). ....	15
Figure 11. Grave shaft outlines and excavation unit boundaries (detail). ....	15
Figure 12. Sediment profiles of selected excavation units.....	16

## **Acknowledgments**

The authors are grateful to Barbara Heath and Michael Strutt for allowing the citation of their unpublished report. They would also like to thank the Monticello Department of Archaeology Plantation Survey field crews from the winters of 2000 and 2001, and the summer field crew of 2000. The following people comprised those crews and contributed the invaluable field research that allowed us to make the conclusions presented here: Cheri Botic, Amanda Campbell, Donald Gaylord, Jade Gibson, Heather Johnson, Kevin Jones, Matthew LaBarge, Steve Lenik, Jennie McLamb, Heather McMahon, Allison Manfra, Jenny Poore, Jennifer Rakos, Jesse Sawyer, Jonathan Scholnick, Emilie Smith, and Amy Sobierajski. Thanks are also due to Meg Watters and to Lew Somers, who lent their geophysical expertise in addressing a challenging research problem. We are grateful to Bill Beiswanger, who contributed from his extensive knowledge of Jefferson's ornamental landscape and helped sharpen our interpretations.

## Introduction

Monticello, in Albemarle County, Virginia, was a 5,000 acre plantation owned by Thomas Jefferson. Monticello was also home to a large community of enslaved African Americans, whose numbers reached a cumulative total of nearly 400 during Jefferson's lifetime. At any given point, the enslaved population at Monticello was around 150 individuals, including field hands, wagon drivers, seamstresses, lady's maids, butlers, joiners, blacksmiths, and children working as babysitters, weavers, and nail-makers.

Over the past 20 years slavery has been a central focus of historical and archaeological research at Monticello. During the 1980s archaeological excavations along Mulberry Row, the 1,000-foot long street of slave houses, shops, and outbuildings adjacent to Jefferson's mansion shed important new light on the material lives of enslaved artisans and house servants (Kelso 1997). Since 1997 the Monticello Plantation Archaeological Survey has begun to document the lives of slaves who worked in the plantation's agricultural fields. The Plantation Survey is an ongoing research project that as of this writing has identified 20 Jefferson-era archaeological sites that were once the homes and workplaces of slaves and overseers. The survey is also providing new insights into shifting patterns of agricultural land use at Monticello. Archaeology is providing an unprecedented understanding of the physical fabric of the plantation landscape and how it changed during Jefferson's lifetime.

However, until the fieldwork reported here, a significant piece of the Monticello landscape puzzle was missing: the location of the cemetery or cemeteries where Monticello's enslaved laborers and their families were buried. Filling this gap in our knowledge of the Monticello landscape has been a significant goal. Throughout human history, cemeteries have been important sites of social, religious, and political expression (*e.g.* Buikstra and Charles 1999), and there is no doubt that they functioned in this capacity for enslaved Africans and their descendants in the eighteenth and early-nineteenth century

Chesapeake. For example, ordinances regulating large gatherings of slaves at funerals were conspicuous among the slave laws passed in the Virginia Colony during the transition to slavery at the close of the seventeenth century (Morgan 1998:640). Such legislation attests that Virginia slave owners were well aware of the ritual importance attached to death and the fact that cemeteries represented an arena in which enslaved people may have experienced more autonomy than in their daily work lives. Slave cemeteries are important physical traces of these vanished community dynamics.

Finding the cemetery was an important goal for more immediate reasons as well. Because Thomas Jefferson is buried there, the Jefferson family cemetery at the west end of Mulberry Row is an often visited part of the modern Monticello landscape. But its very conspicuousness provokes for many visitors an obvious question: "Where were the slaves buried?" Until our recent research, the unsatisfying answer has been "We don't know."

This report documents a series of recent field research campaigns which have provided a more satisfying answer. They were aimed at determining whether a location in the Visitors Parking Lot, long suspected of being the site of a Monticello slave cemetery, actually was one. We describe the fieldwork as it unfolded. An early round of geophysical survey was undertaken in 1990 and we summarize its results. The suspected cemetery was mapped at that time. In 2000 we initiated a second round of geophysical survey in hopes that improvements in geophysical technology would yield firmer conclusions. This was combined with digital surface mapping to record our observations on a digital topographic map of the mountain. Unfortunately, the 2000 geophysical results were as ambiguous as those of the previous decade. In 2001 we conducted a program of test excavations designed to reveal the tops of grave shafts, if they existed. This work was successful and has allowed us to use statistical methods to estimate the number of individuals interred in the cemetery. It has also allowed us to make some inferences

about the length of time the cemetery was in use and the size of the living population contributing to it. Finally, we describe the results of a post-excavation geophysical survey, designed to elucidate the interactions between Monticello's geology and survey methods that rendered earlier geophysical work unproductive.

A second line of the research reported here focused on the documentary record, especially Jefferson's surveys and maps of the Monticello Plantation. This evidence is used to understand how the cemetery fit into the larger plantation landscape. We summarize the results of this work in the next section. Then we turn to the results of fieldwork initiatives.

## Setting and Documentary Evidence

The Park Cemetery is located on the southern flanks of Monticello Mountain (**Fig. 1**). Documents indicate that this area was known to Jefferson as the "Park." The Park, with the adjacent Park Field, combined ornamental and productive features. The African-American burial ground located in the Park added ritual and community elements to that landscape. The site is 2,000 feet south of Monticello mansion, 1,600 feet from Mulberry Row, and 1,500 feet from the Jefferson family cemetery. The nearest known quarters for field hands are located even further away, at distances of over 2,500 feet. The latter figure may be a result of incomplete coverage of the ongoing Plantation Archaeological Survey. The Survey has not yet covered the south slopes of Monticello Mountain, and when it does, that work may reveal other quarters nearer to the cemetery. However, as discussed below, testing in the immediate environs of the cemetery in the modern Visitors Parking Lot revealed no evidence of Jefferson-period housing. This will likely remain unchanged, even with further testing. It is this separation from domestic space and disassociation with any one particular slave house that stands as a marker of the cemetery's communal significance.

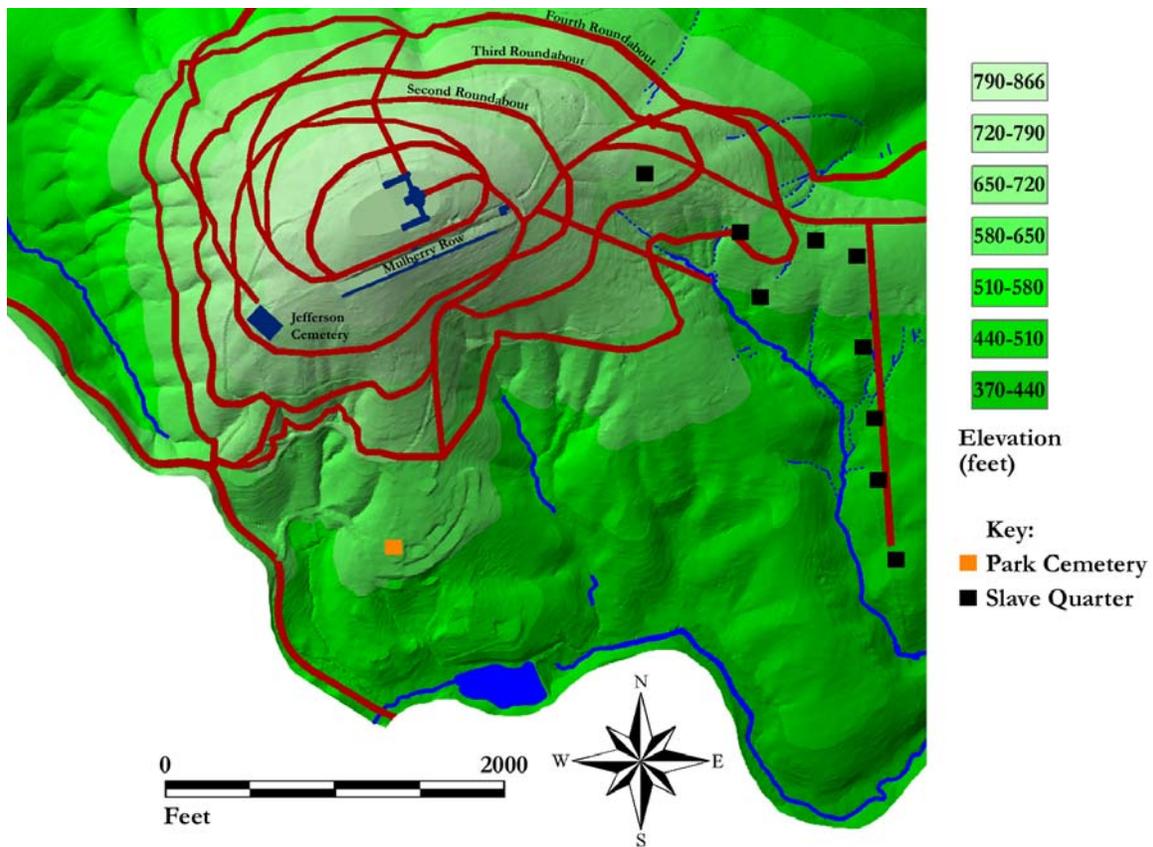
The documentary evidence indicates that the cemetery's location in the Park was

Jefferson's own choice, although slaves may have had some role in both the selection of the exact site as well as its layout and use. The meaning of the site in terms of community and ritual surely developed with its use and came from the enslaved population. The construction of the social landscape within the physical context allowed by the planter has been recognized elsewhere (Vlach 1993:1-2), and was surely a way that enslaved African-Americans defined their own sense of place within the plantation world.

The Park itself was a dynamic entity that evolved from an imagined ornamental feature on the north slopes of Monticello Mountain in the late 1760s to a mixed ornamental, agricultural, and industrial area on the south slopes in the early 1800s. Understanding the setting of the cemetery and its relation to this changing Monticello landscape requires tracing the history of the Park.

It is clear from documents that Jefferson initially planned to establish a park on the north slopes of the mountain. These early plans were largely unrealized, but they are worth brief exploration because they are evidence of Jefferson's thinking on the subject of burial sites for his family and for slaves at Monticello. And they show that a cemetery in the Park was an early feature of Jefferson's thinking.

The first appearance of a park in the documentary record is a September 20, 1769 Memorandum Book entry. It reveals that at this early date Jefferson had planned to put a park on the north slopes of Monticello Mountain. Jefferson stated that "My park on North side of mountain is in circumference 1850 yds." (Bear and Stanton 1997:149). If we imagine that the Park described by Jefferson had a circular plan, the circumference of 1850 yards corresponds to an area of 56.3 acres (2,451,185 square feet). If the Park were a square, it would have an area of 44.2 acres (1,925,156 square feet), with 1387.5 feet per side. The revelation provided by these figures is that this is a discrete and relatively small unit which, as discussed below, was restricted to an area on the north slopes that also contained the North Spring. Although this entry indicates that Jefferson had a defined



**Figure 1.** Map of Monticello Mountain, showing locations of Park Cemetery, slaves’ dwellings, and Jefferson Family Cemetery.

area in mind for his park, there is only a suggestion that the idea was manifested on the ground. An entry only days later ordering fencing materials does not indicate whether these chestnut rails were for the park rather than another purpose, but the proximity of the entries raises the possibility that this might be the case (Bear and Stanton 1997:149; Betts 1944:17).

In Jefferson’s initial conception, the park on the north side of Monticello Mountain was to contain a cemetery for use by members of his own family as well as enslaved people and others who might die on the plantation. In 1771 Jefferson noted in his Memorandum Book to “Chuse out for a Burying place some unfrequented vale in the park” (Bear and Stanton 1997:245-246; also Betts 1944:25). Jefferson describes the “antient and venerable oaks” and “...gloomy evergreens” that would inhabit “the area

circular abt. 60. f. diameter encircled with an untrimmed hedge of cedar or of stone wall with a holly hedge on it...” (Bear and Stanton 1997:246). The exit of this hedge or wall was to “look on a small and distant part of the blue mountains” (Bear and Stanton 1997:247), a characteristic that includes many possible locations on the northern and northwestern slopes of Monticello Mountain. This burying place was intended to receive a Gothic temple, and Jefferson gave the specifications to “Appropriate one half to the use of my own family; the other of strangers, servants” (Bear and Stanton 1997:246), an unusual practice for the day.

The Park containing the cemetery was to have a waterfall arising from a spring and flowing across a series of terraces. The description of the second cascade over “another terrace at the Northern or lower side” (Bear and Stanton 1997:247) places it on

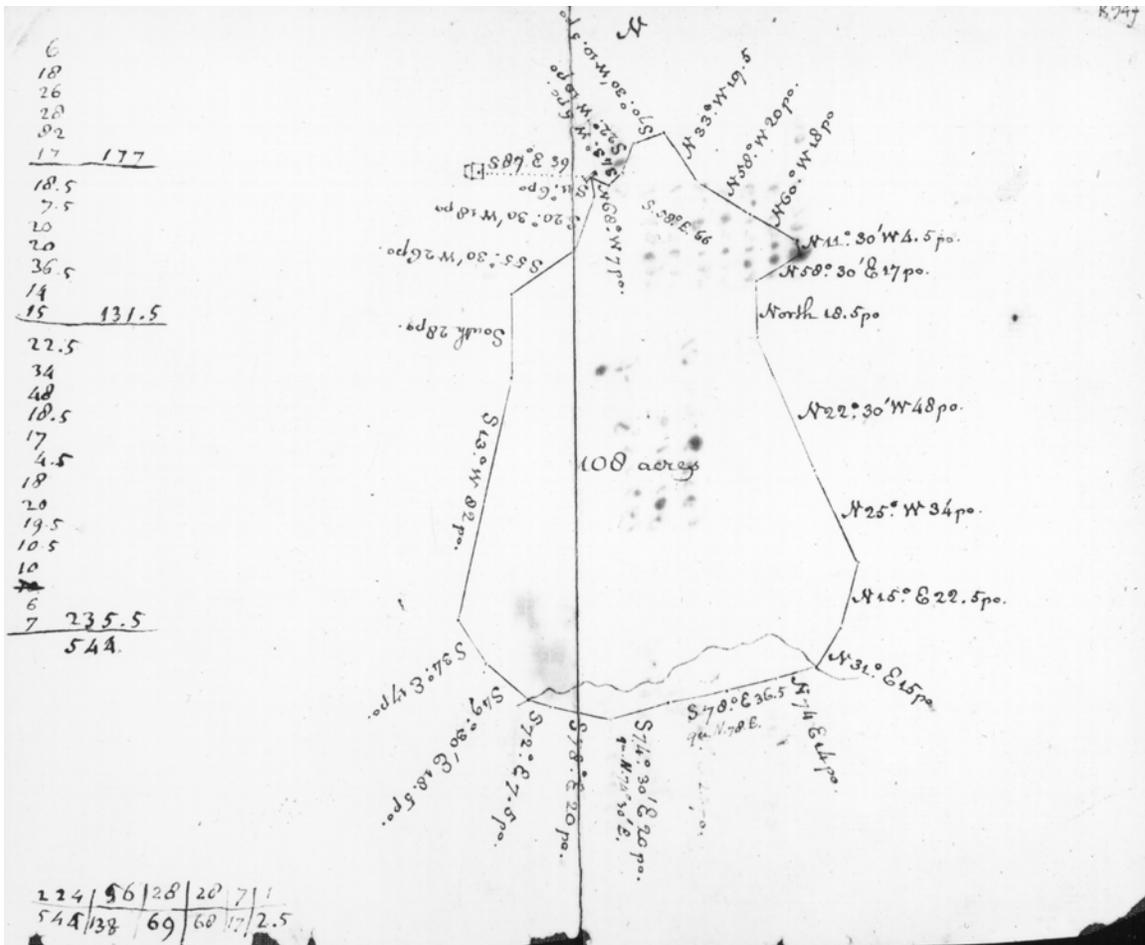


Figure 2. N-131, Anderson Bryan survey, 1776-8.

the northern slopes of the mountain, where the spring must be the North or Stone Spring.

This is the first record to establish Jefferson's intention of a cemetery within a park and suggests that Jefferson may have been instrumental in choosing the eventual location of the Park Cemetery used by African Americans. However, sometime between the 1771 Memorandum Book entry describing a cemetery in the park on the north slopes and the May 1773 death of Dabney Carr, Jefferson changed his mind and established the family cemetery near the west end of Mulberry Row. Carr, Jefferson's closest friend since childhood and brother-in-law by his marriage to Jefferson's sister Martha, was the first to be buried at the Monticello family cemetery. This supposedly fulfilled the friends' pact that the pair's surviving member would bury the first to die at the foot of a favorite oak tree on Monticello Mountain (Betts 1944:41). With

the establishment of the family cemetery Jefferson also evidently abandoned the idea of burying slaves in the same plot as his white family members.

The 1771 writings establish the two concepts of an ornamental park at Monticello and of placing a cemetery within a park setting. Our research confirms that the Park that was established on Monticello's south slopes did indeed contain a cemetery, but neither the cemetery itself nor the surrounding Park were as Jefferson imagined them in this early text, with gothic temple, cistern, and waterfalls.

After the 1771 notes, there is no evidence that a park was created on the north slopes of the mountain, although the idea resurfaces as one of Jefferson's intentions for his property in the early 1800s. (see discussion of post-1800 changes, p. 9 below). Instead, Jefferson actually established the Park on the

south slopes. The Park was surely established there by 1776, when Jefferson was stocking it with deer (Betts 1944:69), which in 1782 were eating out of Jefferson's hand (Betts 1944:96). In 1772 the area was fenced at least in part (Betts 1944:34; but see also TJ to John Hawkins, 11 Mar. 1805, MHi).

The first survey indicating the presence of the Park was ca. 1776-8 by Anderson Bryan (N-131, N-132, N-221, **Fig. 2, N-131**). This survey starts at Monticello mansion and proceeds east-southeast to the South Spring. From there it completes a circuit bounded on the south by the Meadow Branch, and on the west by a straight line that may very likely represent the Colle Road.<sup>1</sup> The survey encompasses an area of 108 acres. This plot contains a steep drainage that contains Bailey's Spring, which drains into the Meadow Branch to the south. This layout of the Park appears to remain in existence throughout the 1790s.

By the early 1790s the area in or around the Park included a brickyard and a stone quarry (for the quarry, see TJ memorandum for Mr. Clarkson, 23 Sept. 1792, ViU) as well as agricultural fields (TMR to TJ, 26 Feb. 1798, ViU; FB Facsimile p. 58; Betts 1987:171). During this time the Park seems to have been a reserve juxtaposed with cultivated fields and other utilitarian spaces. Both the deer park and industrial uses of the site continued into the early nineteenth century, evidenced by Jefferson's June 1814 note that a buck and a doe he purchased were "put into the Paddock inclosing the brick yard" (Betts 1944:525), suggesting that this industrial feature was within a greater area enclosed by the fencing of the deer park.

In 1793 Jefferson initiated a campaign to survey his plantation. Surveys from November 10 and 11, 1794 indicate that the Park was fenced, and that there were former fences and a gate that may have been out of

use by that time. In these survey notes Jefferson refers to a point "where the Park gate was antiently" and documents the "antient park fence (to wit when Bryan surveyed...)" (N- 522-4 notes). This wording may be interpreted several ways, but it seems most plausible that these were relict features. In this case the point refers to where the Park gate was *formerly*, and that his survey crossed the *former* Park fence, and that neither the gate nor the fence was still there.<sup>2</sup> One of the plats executed from the same survey campaign shows the Park labeled as such, with the same outline as in the Bryan survey of the 1770s. It is bordered on the east and south by agricultural fields, labeled as Slatefield and Longfield (N-522-2, July 3, 1796, **Fig. 3, N-522-2**). Jefferson developed new ideas for the plantation landscape while he inventoried his lands. On a drawing postdating his return from France, Jefferson depicted the Park in conjunction with his vision of a *ferme ornée* at Monticello (N-129, post ca. 1794, although elsewhere dated erroneously to ca. 1808 Betts 1944:Plate XXVII).

In March 1794 Jefferson recorded the planting of weeping willows "along the road leading by the side of the Park to Colle" (Betts 1944:209). This notation indicates that the Colle Road was indeed the edge of the Park, as suggested by the Bryan survey, N-131 (Fig. 2). Although it is clear from Jefferson's notes at the time that the wood from the lopped (coppiced) willows would presumably yield a usable quantity of wood, it also evokes the planting of willows at the family cemetery, where Jefferson requested a willow hedge (Betts 1944:44, 635).

Jefferson maps indicate that the transformation of the ornamental Park into agricultural use began in the early nineteenth century. Until that time, the Park appeared as an undivided whole set apart from the surrounding agricultural fields. Two undated

---

<sup>1</sup> This road led to Colle, southeast of Monticello, where the Italian agricultural experimentalist and would-be vintner Filippo Mazzei lived for some years on land given to him by Jefferson (Bear and Stanton 1997:344, 352). It is likely that the Colle Road dates at least as far back as Jefferson's purchase of the property in 1773.

---

<sup>2</sup> Other possible interpretations include either that these features were "antient" or old, in 1794, or that they were old to Bryan in the 1770s. The latter would hinge on the fence preceding the Park, and on at least the Slate Field side, there is no mention of the Slate Field earlier than 11 Nov. 1794 (522-4 notes).



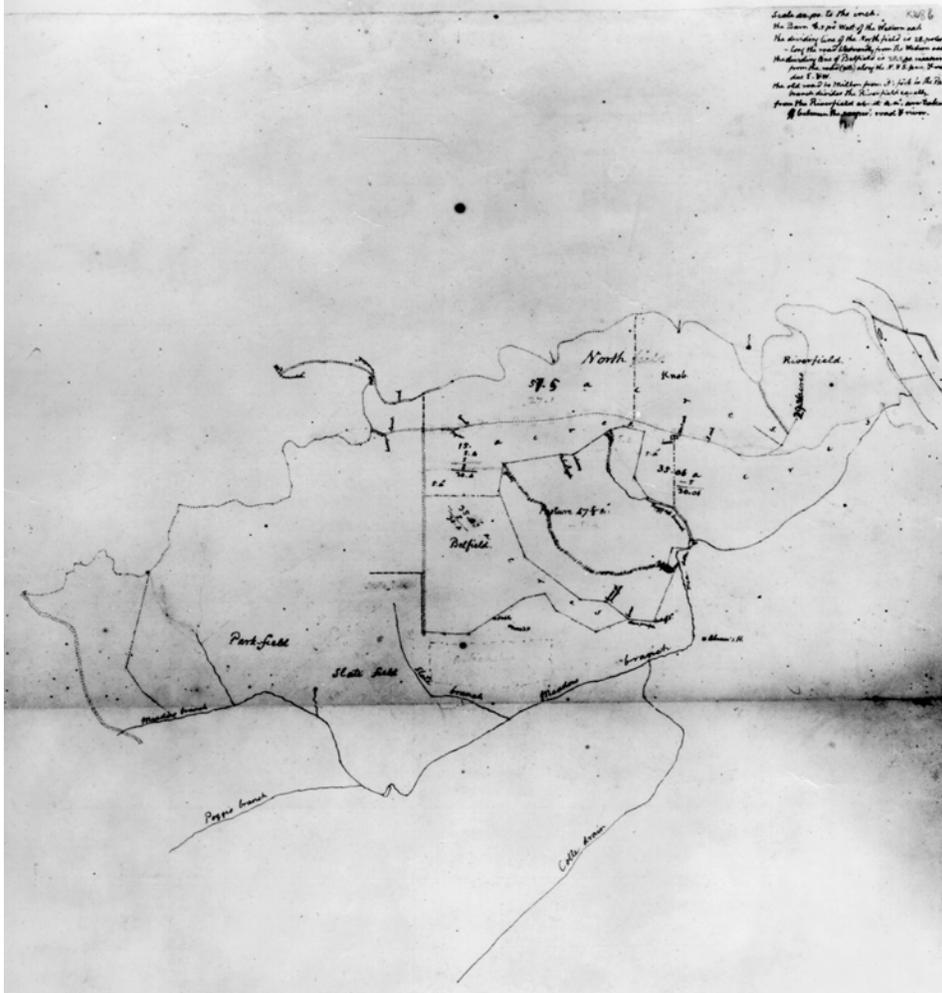


Figure 4. N-223-2, Jefferson survey, undated.

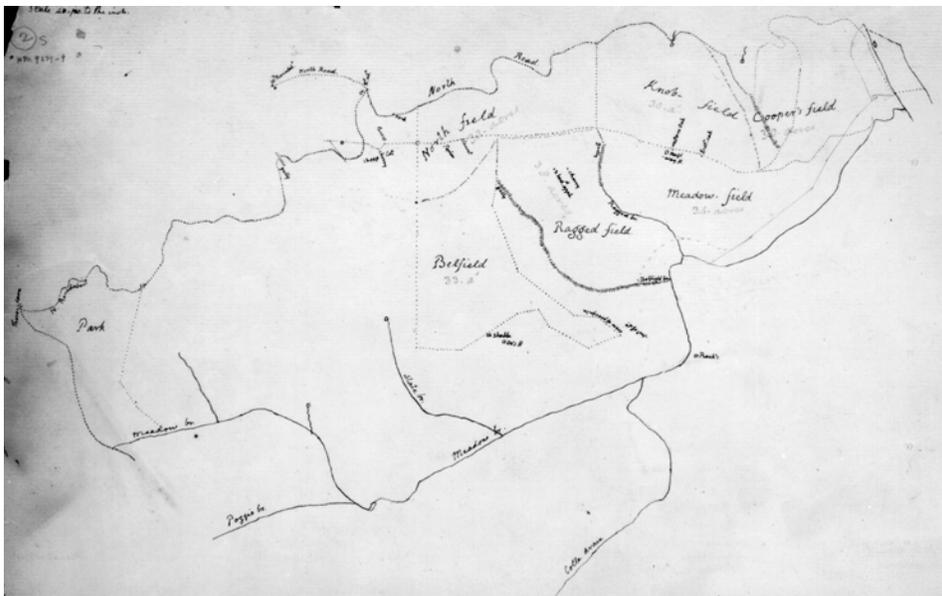
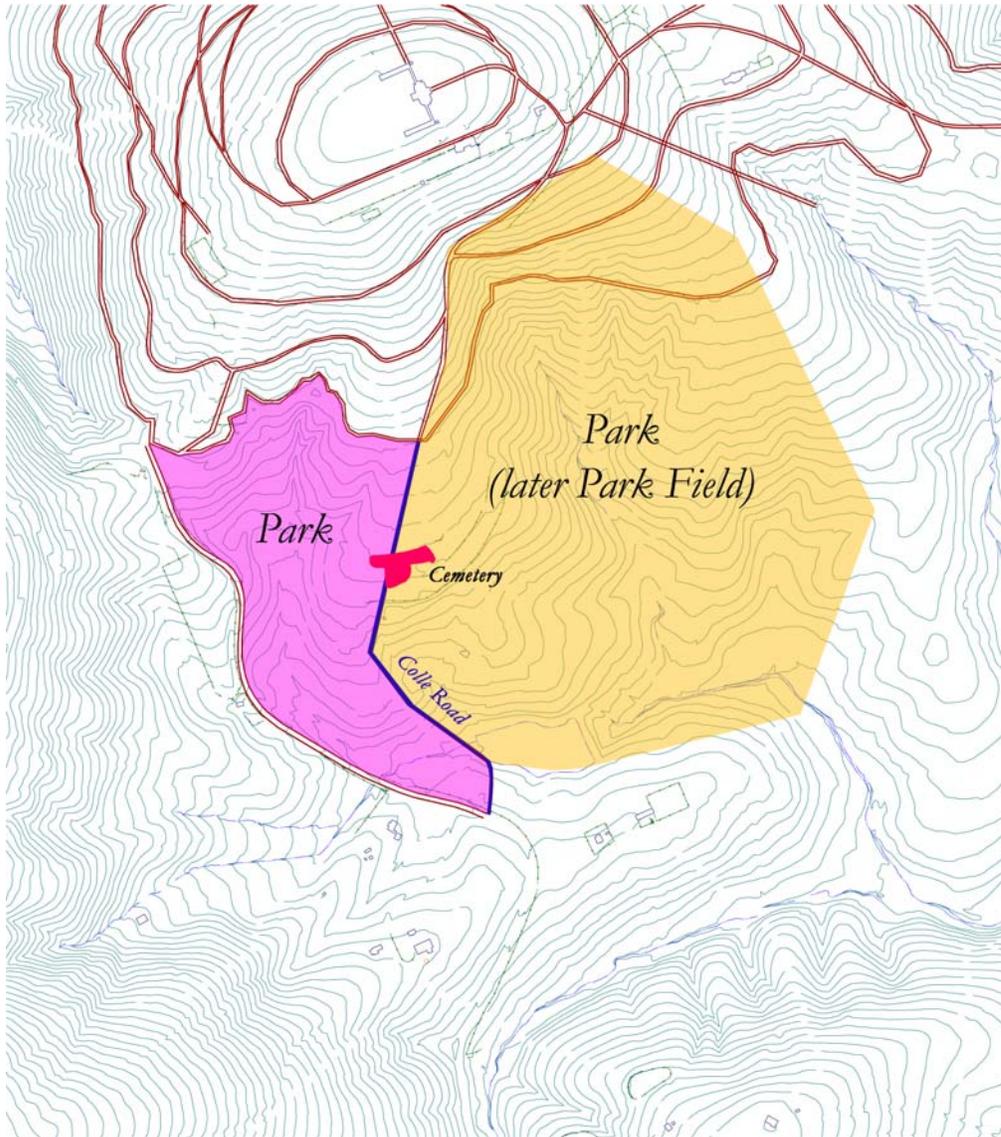


Figure 5. N-521-9, Jefferson survey, undated.



**Figure 6.** Composite map, early and late Park locations.

same map, this is difficult to state with absolute certainty.

The location of the Colle Road on today's topography is ambiguous. The best estimate using Jefferson's survey data and modern topographic feature places the road just to the west of the Park Cemetery (**Fig. 6**). Today, evidence on the ground is scarce; there is one linear terrace along the drainage south of the cemetery that would be suitable for or perhaps created by a road, but that terrace is short and only suggestive.

This sequence of maps showing that the area earlier defined as the Park had

become the Park Field is mirrored by written documents, which suggest a slightly earlier start for the process of land-use change. According to plantation writings, this may have been as early as 1798, when the Park [Field?] was used for 30,000 tobacco [seedlings] before they were set into their eventual fields (TMR to TJ, 26 Feb. 1798, ViU), or 1799 when the Park [Field] was listed as producing six [acres] of tobacco (FB Facsimile p. 58). The change had most likely already taken place by 1800 when a 20-acre portion of the Park Field was leased to tenant John Craven (Betts 1987:168-171). The set of

land-use changes traced by the Jefferson maps and written documents reflects a shifting use of the Monticello landscape. These changes affected the plantation as a whole, in the acreage under plow, placement of slaves' dwellings, and specific crop choices. As a part of this evolution, Jefferson's ornamental Park was moved and restricted in response to increasing needs for tillable land. It is possible that his renewed discussion of a park on the north slopes around 1804-1807 was related to this series of changes as well as Jefferson's evolving definition of a park as a landscape feature.<sup>5</sup>

It appears that there were no Jefferson-period dwellings in the immediate vicinity of the cemetery. Over 130 shovel test pits excavated in the unpaved areas of the visitors' parking lot by the Monticello Department of Archaeology during the Spring of 2000 indicate that the cemetery was independent of any domestic settlement, as no traces of Jefferson-period occupation debris were found in the area. Shovel test pits produced twentieth-century artifacts (see Appendix B), which may have been associated with tenant houses south of the current ticket office (Monticello Department of Archaeology map files, 1974). Known habitation sites of enslaved field hands are scattered across the eastern slopes of Monticello Mountain in addition to the Mulberry Row housing for enslaved artisans and house servants (cf. Fig. 1). This mimics the central locations of slaves' cemeteries at other Virginia plantations, including Kingsmill

---

<sup>5</sup> In *General ideas for the improvement of Monticello* Jefferson returned to the concept of a park on the north slopes. He called for "a level round-about from the Thoroughfare to circumscribe the garden grounds. the North side of Monticello below the Thoroughfare roundabout quite down to the river, and all Montalto above the thoroughfare to be converted into park & riding grounds, connected at the Thoroughfare by a bridge, open, under which the public road may be made to pass so as not to cut off the communication between the lower & upper park grounds" (N-171-1, Jefferson 1804-1807). This may represent an evolution from the earlier concept of park, later referring to a less discrete parcel and a greater overall area, integrated in the scheme of garden, park and riding.

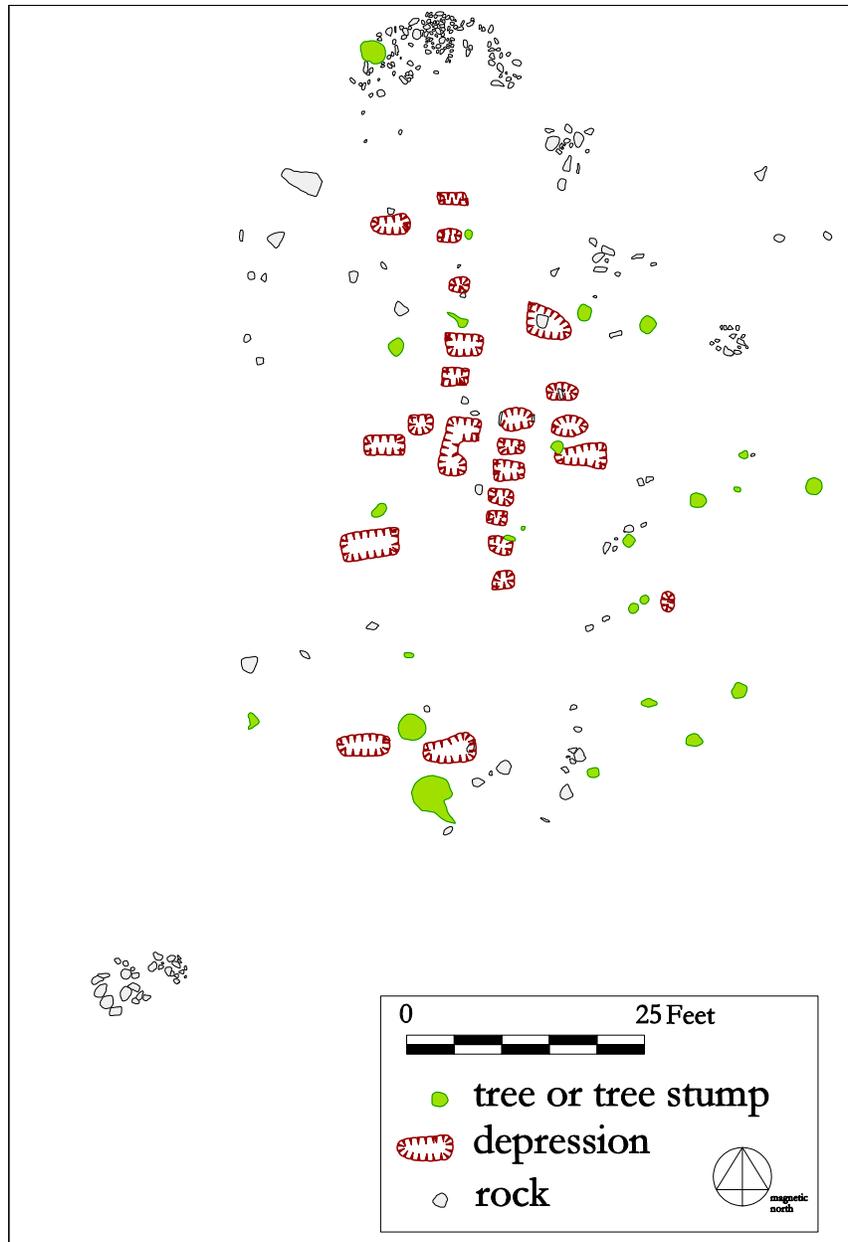
(Fesler 2000), and Mount Vernon (Mount Vernon 1985; Mount Vernon Press Room), where African-American cemeteries are found in the core plantation, but not associated with slaves' dwellings.

## Oral History

Prior to archaeological testing in 2001, it was suspected that the site was a burial ground based on multiple lines of evidence. The longest-standing of these was oral tradition. In conjunction with 2001 archaeological excavation, Monticello historians Dianne Swann-Wright and Cinder Stanton recorded an oral tradition about the site. Randolph Crawford recounted his knowledge of the site to Swann-Wright and Stanton in March 2001. Mr. Crawford was a groundsman at Monticello for over two decades, beginning in the 1950s. During that time Mr. Crawford lived in a house in the vicinity of the burial ground where the current ticket office now stands. In his account Mr. Crawford told of asking Lillie Carr about stone markers and a circle of fieldstones evident at the site at that time. Mrs. Carr, a Monticello housekeeper who lived in the African-American community at Rose Hill on property adjacent to Monticello, confirmed the use of the area as a burial ground and said that "her people used to build a circle of stone..." when someone died, and that part of the ritual was to build a fire in the circle and tell remembrances of the deceased while sitting around the fire (Getting Word Project File, Interview 26 Mar. 2001).

## Surface Evidence

Physical evidence of the burial ground included north-south rows of linear depressions, each depression oriented east-west, consistent with burial practices in post-contact North America. There were also scatters of unmodified field stones, and in several places tabular field stones protruding from the ground in association with depressions. These elements were all noted by Mr. Crawford and had long inspired speculation about the site as a cemetery.



**Figure 7.** Results of surface mapping, 1990.

Combined, the physical evidence and oral history of the site were convincing enough to support a hypothesis that the site was a historic-period cemetery.

Independently, the preservation of the oddly-shaped island in an otherwise built-up environment, and the absence of plowing as attested by the preservation of surface depressions, imply that the land was set aside for a reason such as a cemetery, and that its presence had not been completely forgotten.

That the cemetery was not paved during the construction of the parking lot and associated service buildings speaks for prior knowledge of the need to preserve the area. Maps made in 1970 and 1974 in preparation for building and expanding the visitors' parking area both mark the site as "old graveyard," providing further evidence that the site was recognized at this time (Monticello Department of Archaeology map files). However, no contemporary records were known –or are

known-- for the site, so questions remained about the dates of the burials, whether they were Jefferson-period or even antebellum, the limits of the cemetery, and numbers of graves. It also remained to irrefutably demonstrate that the site was indeed a cemetery.

## Previous Archaeology

### *Remote Sensing and Surface Mapping: 1990*

Questions about the site prompted a 1990 campaign of geophysical and core testing and surface mapping of the area. Magnetometry was conducted on an area seventy feet north-south by sixty feet east-west at a grid interval of two feet. The surveys revealed “several areas of magnetic highs and lows, which appear to mark anomalies disturbing the natural magnetic alignment of both soil and stones” (Heath and Strutt 1991). It was concluded at the time that these areas might contain burials, because the patterns identified by magnetometry were like those that would be expected from anthropogenic disturbances the size and shape of burials. Research in 2002 by Somers (see below) suggested that magnetometry in Monticello’s soil conditions more likely detects greenstone cobbles than burial shafts, as the magnetic signal of greenstone is far greater than that of anthropogenic features the size of human burials.

During the 1990 research campaign, 12 core samples were taken with a one-inch soil corer in and around five depressions and compared with two control samples outside the site area. Coring resulted in a clear distinction between redeposited sediment in the depressions and undisturbed soil adjacent to them. These results are consistent with the expected characteristics of a burial ground.

Surface mapping was carried out independently of geophysical testing. Surface depressions, stones, and trees were recorded (**Fig. 7**). “A total of twenty four depressions, believed to represent twenty five graves, were mapped. The depressions aligned east-west in four rows, roughly equidistant, with two outliers” (Heath and Strutt 1991). Possible head and foot stones were observed on one depression. Six other depressions “...contained either visible stones within

them or stones immediately adjacent to their edges” (Heath and Strutt 1991).

The results of these inquiries supported the site’s oral history. The strength of this campaign of research is in the combined methods that all point to characteristics of a historic period burial ground. With combined data from geophysical and core testing and from surface mapping, the authors concluded that there was indeed strong evidence for graves in the defined site area (Heath and Strutt 1991).

### *Surface Mapping: 2000*

Prior to a new campaign of geophysical testing (see discussion below), the site was cleared of undergrowth and leaf fall. At that point, The Monticello Department of Archaeology re-mapped the entire area to record digitally elements on the ground surface, including depressions, rocks, trees, and tree stumps (**Fig. 8**). Twenty-nine depressions meet our *post hoc* criteria for a likely grave. These criteria are an orientation on an east-west axis and area larger than 2.4 square feet. This minimum size is drawn from the smallest excavated depression that did correspond to a burial.

The presence of field stones in relative abundance, especially on the northern perimeter of the site, may indicate the accumulation of stones from the surrounding fields. As the site was an unplowed area, its perimeter may have been a convenient location to dump stones that hindered plowing in the adjacent fields. As discussed below, later excavation indicated that four of the visible field stones were in fact grave markers. Only the tabular upright, or nearly upright, stones corresponded to burials.

## Geophysical Research: 2000

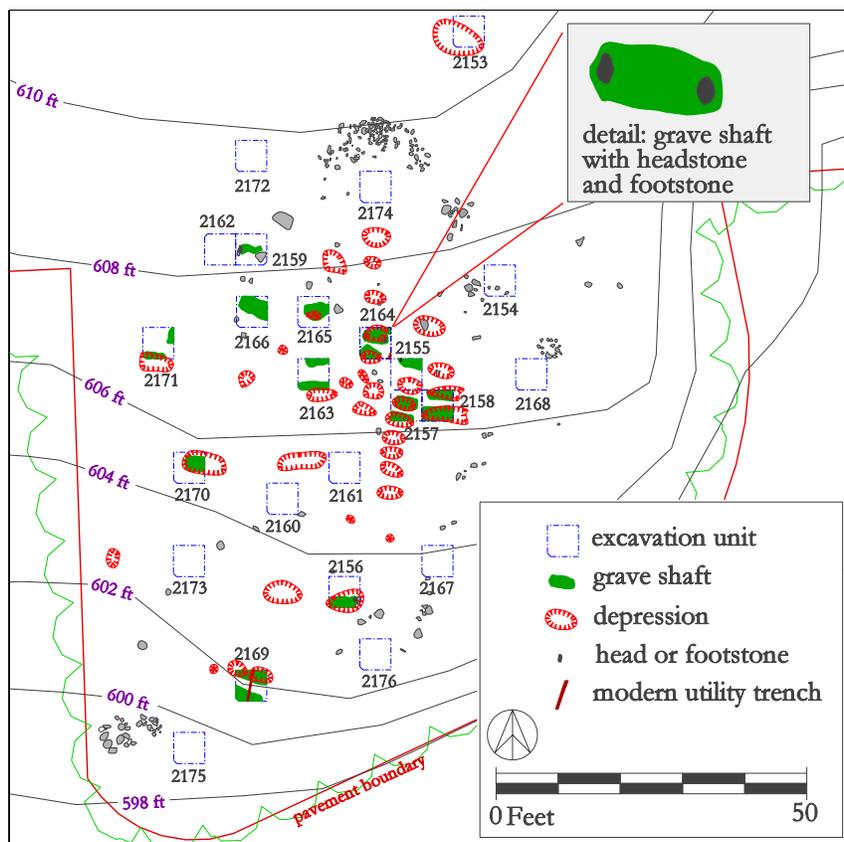
In order to take advantage of the advances in geophysical methods during the ten year hiatus, another campaign of geophysical testing was undertaken in March 2000. Resistivity, magnetometry and ground penetrating radar (GPR) were all used on the site. These methods revealed subsurface anomalies, with the most promising results from magnetics (Watters 2000).

Magnetics presented some clustering of anomalies in areas with surface depressions, and some in areas without depressions (Watters 2000:15-25). Later excavation revealed that graves were present in areas with *and* areas without depressions, verifying that both types of magnetic anomalies could indicate burials, and that some of the areas of interest indicated by magnetic surveys were in fact burials. Several linear magnetic features also appear in the magnetics results (Watters 2000: fig. 14). In one case a north-south linear feature is intersected by four mapped depressions, two of which were proven in excavation to correspond to burials. Other linear features, however, do not correspond to surface depressions and/or run dramatically counter to the east-west grave alignment. None of these was proven to correspond to a burial, although that might change if further excavation were conducted.

GPR survey revealed 284 anomalies, not including those of depths less than one foot, which would be attributable to natural or modern features. Of the 284 anomalies, 94 could be attributed to a pipe or pipes running across the northern end of the survey area (Watters 2000:35). This large number of anomalies remaining indicates that there is a level of noise in the data that precludes a clear interpretation of these data, even though some of the anomalies do correspond to graves, as revealed in excavation the following year.

Resistivity was the least effective method on the site. This was largely due to limited depth scanned, as the probe spacing utilized, 0.5 m, achieved a depth of about 0.5 m (Watters 2000:26), allowing readings from roots and rocks, and too shallow for burials.

Although the geophysical methods used here did detect anomalies worthy of further investigation, they failed to identify



**Figure 8.** Excavated quadrats with depressions and grave shaft outlines.

characteristic anomaly readings corresponding to burials. Ideally, combined methods would be able to provide cross-validating data to identify a characteristic sets of signals that might consistently be interpreted as burials. The limited findings of this campaign of geophysical testing may be largely attributed to the difficulty of conducting standard geophysical methods in the local environment. Monticello's clay soils are particularly challenging for methods that provide reasonable results elsewhere.

## Excavation

Due to the inconclusiveness of the 2000 geophysical investigations, the Monticello Department of Archaeology conducted limited excavations in the area of the suspected Park Cemetery during February and March 2001. The scope of the project was to determine the presence or absence of graves by excavating five-by-five foot units only deep

enough to reveal the outline of grave shafts or to reach undisturbed subsoil. Twenty four units were excavated, and twenty grave shafts encountered (**Fig. 8**). Of these, ten were adults, eight children, and two were insufficiently exposed to make determinations. The assessment of adult/child status was made solely according to size of the grave shaft.

The placement of the excavation units was designed to test a range of surface conditions, including combinations of depressions/no depressions with the presence or absence of possible headstones or footstones. We tested different sizes and shapes of depressions. An understanding of the surface signatures of burials on the site emerged from this work. The most notable observation is that regular (oblong-oval), east-west oriented depressions consistently

**Table 1. Summary of Excavation Findings**

Unit	Depress.	Burials	Demogr.	Stones	Notes
2153	0	0			tree disturbance (depression irregular)
2154	0	0			surface stones, not vertical
2155	1	2	children	4	head and footstones for both, only one set visible prior to exc.
2156	1	1	adult	1	footstone (head of grave beyond unit)
2157	2	2	children		
2158	2	2	adults		
2159	0	1	child	1	headstone
2160	0	0			
2161	0	0			
2162	0	0			
2163	1	2	adults		
2164	2	3	2 children, 1 ? 2		one of burials partially visible in unit; one set head/footstones
2165	1	1	child		very slight depression previously not noted
2166	0	1	adult		
2167	0	0			
2168	0	0			
2169	1	2	2 adults		
2170	1	1	adult		
2171	1	2	1 adult, 1 ?		
2172	0	0			
2173	0	0			
2174	0	0			
2175	0	0			
2176	0	0			
totals:	13	20		8	10 adults, 8 children, 2 undetermined

corresponded to burials. The one depression that did not correspond to a burial was excavated in unit 2153 at the extreme north of the area investigated. It was a very large (approximately 35 square foot) depression that on the basis of its size and irregular shape was determined to be a tree hole.

Significantly, seven graves were encountered without surface depressions, indicating that some graves have no visible surface indicators. Thirteen graves were found corresponding to depressions. One of the 13 had only a very slight depression, not previously noted or mapped.

The units were excavated to depths of up to one foot below surface, with most reaching undisturbed subsoil or clear grave outlines and therefore stopping at less than a foot below ground surface. This depth was sufficient to expose subsoil and reveal the differences in soil texture and color between subsoil and grave shaft fill. The fill of the

grave shafts was generally less homogenous in color and more loosely packed than the red clay subsoil. Subsoil tends to be red clay or silty clay.

The more variable grave shaft fill may include multiple colors and textures, including red clay loam, red or dark red clay or silty clay with degrading greenstone, or yellowish red clay loam, and may be described as crumbly, signifying its looser compaction in comparison with the intact subsoil that surrounds it. The soil profiles we encountered appear to be the result of soil horizon formation, without the deposition or removal of sediment through erosion. Unlike other archaeological sites on the mountain, the soil profiles revealed by excavation provided no evidence of plowing in the burial ground, although a plow blade was recovered at the very northern edge of the site, indicating that



**Figure 9.** End of excavation, April 2001.

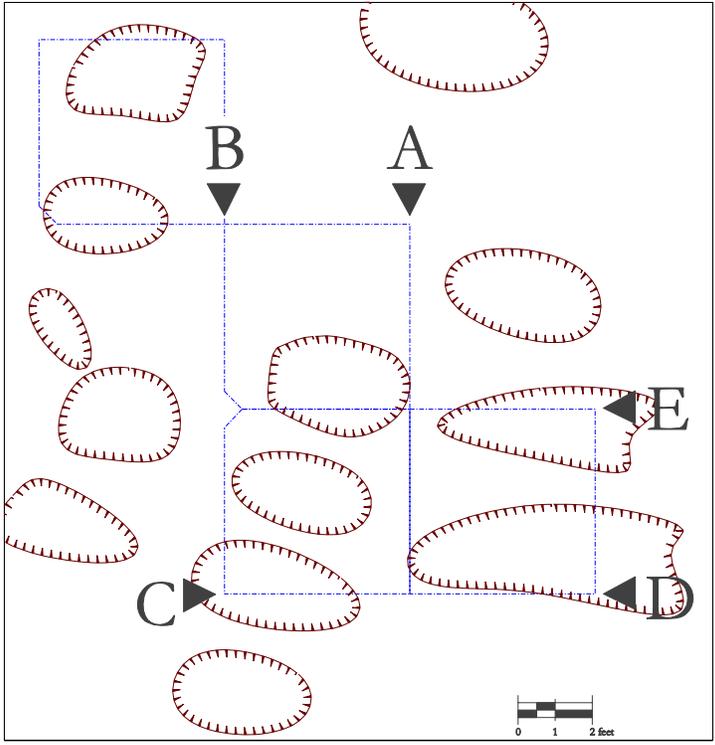


Figure 10. Surface depressions and excavation unit boundaries (detail).

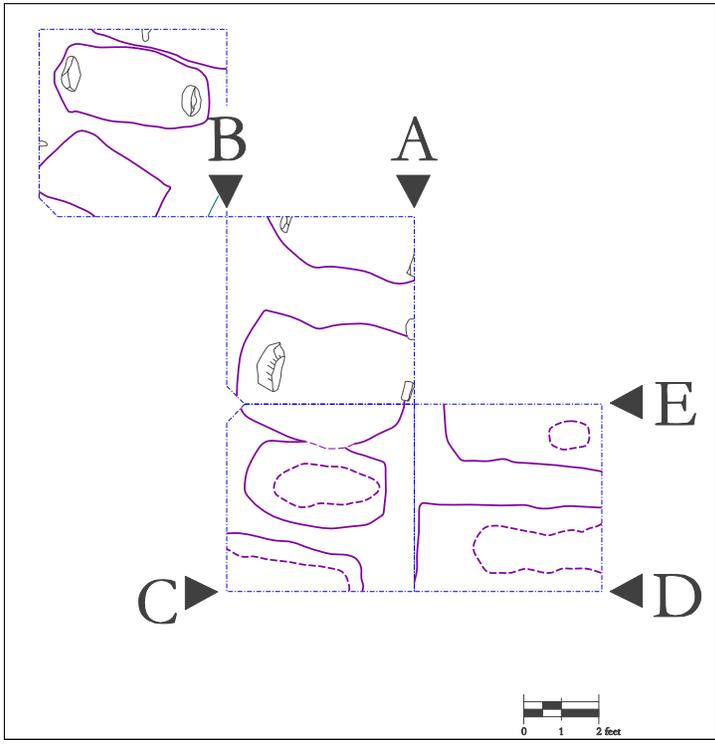
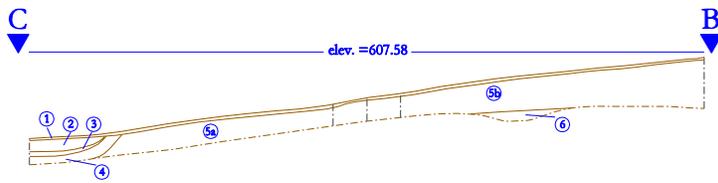
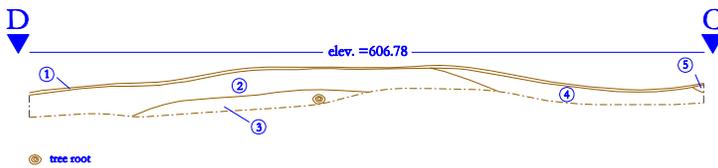


Figure 11. Grave shaft outlines and excavation unit boundaries (detail).



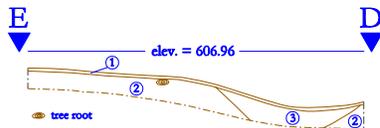
**1. West Profile of Units 2155 and 2157 (C-B)**

1. dark reddish brown [5YR 3/2] silt loam
2. red [10R 4/6] silty clay loam
3. reddish brown [5YR 4/3] silt
4. reddish brown [2.5YR 4/4] silt
- 5a. red [2.5YR 4/6] silty clay loam
- 5b. reddish brown [5YR 4/4] silty clay
6. dark reddish brown [2.5YR 3/4] silty clay



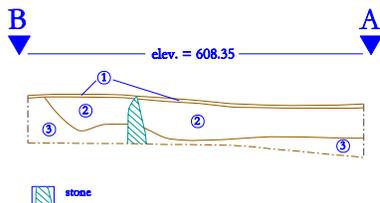
**2. South Profile of Units 2157 and 2158 (D-C)**

1. dark reddish brown [5YR 3/2] silt loam
2. red [2.5YR 4/6] silty clay loam
3. reddish brown [5YR 4/4] silt loam
4. reddish brown [2.5YR 4/4] silt
5. red [10R 4/6] silty clay loam



**3. East Profile of Unit 2158 (E-D)**

1. dark reddish brown [5YR 3/2] silt loam
2. red [2.5YR 4/6] silty clay loam
3. reddish brown [5YR 4/3] silty clay loam



**4. North Profile Unit 2155 (B-A)**

1. dark reddish brown [5YR 3/2] silt loam
2. red [2.5YR 4/6] silty clay
3. reddish brown [5YR 4/4] silty clay

**Figure 12.** Sediment profiles of selected excavation units.

agricultural activity likely occurred around the preserved cemetery.

All excavated sediment was screened through quarter-inch mesh, and artifacts were recovered and recorded. The most diagnostic of the artifacts were handmade (wrought) and machine made (cut) nails, indicating that some activity on the site occurred during the late eighteenth and the nineteenth centuries. However, since the graves themselves were not excavated, the artifacts cannot be positively associated with the burials. A total of eight uninscribed, tabular fieldstone grave markers were confirmed on five graves (see Table 1). Three of the burials were marked with headstones and footstones. Another had a headstone only. One more had a footstone, and we were unable to make a determination about a headstone, as the head of the grave shaft was outside the limits of excavation. These grave markers were flat field stones, placed vertically in the ends of the grave shafts. Some of the markers had settled so that they were not visible prior to excavation. Other stones on the ground surface were mapped during the 1990 field campaign. It became clear during the course of excavation that the only stones that were actual grave markers were vertical and tabular, and that the round non-vertical stones on the site did not mark burials. Piles of unworked rounded and sub-angular stones on the ground surface are certainly of human origin, but probably not related to the use of the site as a burial ground. They may have resulted from the clearance of plowed fields in the vicinity, providing further evidence for the intact boundaries of the cemetery.

In some parts of the site, the density of burials was high. Detailed plan views of four five-by-five foot excavation units (**Figs. 10 and 11**) show that in these units, seven surface depressions fell partially or totally within the excavated areas. All of these corresponded to burials. One of the seven depressions corresponded to two contiguous burials. One additional burial was discovered not associated with a surface depression. The profiles of these excavation units reveal the surface depressions over the graves and the sediment that accumulated in them (**Fig. 12**).

## Estimating Total Burial Numbers

What is the total number of individuals interred in the Park Cemetery? We pursued two approaches to answer this question. The first approach yields a minimum and a maximum number of burials. We can establish the minimum by adding the number of confirmed graves (20) to the number of unexcavated oblong-oval depressions (17). This yields a minimum estimate of 37 burials. It is a minimum estimate because, as we have seen, there are burials that do not correspond to depressions.

We computed the estimated maximum by multiplying an estimate of the total area of the cemetery by the mean density of burials known from excavation. The area can be calculated as the smallest convex polygon that can be drawn around the known depressions. This polygon can be divided into 101 5-by-5-foot quadrats. Fifteen of the 101 quadrats within the polygon contained burials, for a total of 20 burials. Hence the mean burial density is 1.33 burials/quadrat (20/15). The maximum estimate of the number of burials is the number of known burials plus the total number of quadrats, minus the quadrats already counted in the known burials, times the density (20 + ((101-15) × 1.33))=134. This should be regarded as a maximum because the density estimate used in its derivation is known to be too high—it is biased in a statistical sense (for more on this, see *Appendix A*). We conclude that the actual total number of burials lies somewhere between these high and low figures of 37 and 134.

A second approach to estimating the number of burials relies more explicitly on statistical reasoning and bootstrap methods. The technical details are outlined in *Appendix A*. We report only the conclusions here. Our statistical analysis indicates that the most likely number of burials in the cemetery is 71. The 90% confidence limits on this estimate are 42 and 100. In other words, we can be 90% confident that this interval contains the true number of burials. Because of the statistical methods used, this second set of estimates is more accurate than the first. The fact that

both sets of estimates are so similar provides additional support for the results.

It is possible to use our estimates of the total number of burials to estimate the possible total size of the living population and duration of cemetery use. Again the technical details can be found in *Appendix A*. If the cemetery was used for the roughly 60-year tenure of Jefferson's slaves at Monticello, then the living population averaged 57 individuals. If the cemetery was used for 100 years, then the living population averaged about 34 individuals.

These estimates have two important implications. First, they make it clear that Jefferson's slaves comprised the only population at Monticello that was large enough to have generated this many burials. While there were enslaved people on the Monticello tract during the post-Jefferson years, their numbers were much smaller than the African-American community of the late-eighteenth and early-nineteenth centuries.

Second, our estimates indicate that the cemetery is probably too small to contain all the enslaved individuals who died on Monticello Plantation during Jefferson's lifetime. In other words, there are almost certainly other slave cemeteries at Monticello.

## Dating the Cemetery

We have encountered three independent lines of evidence that the Park Cemetery is a Jefferson-era feature of the Monticello landscape. We recapitulate them here. The first two link the cemetery to Jefferson via its association with known landscape features from his time. The cemetery is within Jefferson's Park, a setting that he initially intended for a burying place for his family and his slaves. Second, map evidence indicates that the Park Cemetery was located along the South Road, also called the Road to Colle. This road no longer exists, but its association with the cemetery further supports our interpretation of the cemetery as a Jefferson-period site. Finally, as we have just seen, the estimated number of burials offers another compelling piece of evidence tying the Jefferson-era enslaved community with this burial ground.

## Development of Geophysical Methods, 2001

The repeated inconclusiveness of geophysical testing on the cemetery site led to considerations of methodology, and whether any geophysical testing would be appropriate at this and similar sites on the mountain given the challenges of local geology. As a result of these questions, another set of geophysical testing was undertaken in the winter of 2002. The goal of this campaign was to refine our understanding of the successes and failures of remote sensing, by using burial location information gained from excavation the previous year. It was hoped that the combination of newly collected data with subsurface knowledge gained from excavation would lead to the development of refined geophysical protocols with optimized results in the local conditions. This campaign, conducted by Geoscan Research (USA), included a trial of multiple methods on excavated and unexcavated areas on the Monticello property, including the Park Cemetery. Comparing the results of these geophysical tests and the 2001 excavations helps evaluate the usefulness of these methods with the goal of building methodology for future research.

The conclusions of this research as applied to the Park Cemetery are summarized from the specialist report as follows (Somers 2002:3):

1. The Park Cemetery site suffers from magnetic "clutter" in the form of randomly distributed highly magnetic rock, which obscures the weak magnetic anomalies associated with grave shaft features in these soils. Unless the magnetic rock is culturally associated with the graves *per se*, magnetic survey at the site is of little value.
2. Irrigation of recently planted ground cover in a drought context created high contrast resistivity variations, cluttering the resistivity survey and compromising the detection and recognition of low contrast grave shaft features. Nevertheless, there is

- some positive correlation between the high resistivity features and suspected burials. There are also a number of false positives and false negatives, perhaps around 50%.
3. GPR and soil compaction survey offer some promise, however they are both about 50% reliable, suffering from false positive and false negative results.
  4. Contemporary geophysical survey methods are probably capable of discovering the location and extent of a cemetery but are not capable of reliably mapping the location, number, size, integrity or density of graves or grave shafts.
  5. At present traditional archaeological methods (e.g. subsurface testing, excavation) must be used for detailed location, number, size, density and integrity determination.
  6. There is need for and opportunity to develop cost-effective geophysical survey methods capable of providing much-improved grave shaft detection and detailed mapping.
  7. Magnetic susceptibility (magnetic testing of sediment samples *ex situ*) results in marginal performance at great cost and effort and is not a useful field method in this case.

These points reveal the particularly challenging conditions of geophysical survey at Monticello. The combination of clay soils, highly magnetic basalt rock, and differential soil moisture and compaction due to planting and irrigation contribute to failures or only marginal successes in all the established geophysical survey methods in detailed work such as site definition and mapping. However, resistivity, GPR, and soil compaction do hold some promise in the less-detailed work of site detection. The intensity of geophysical survey however, require that the general location of a site such as a burial ground be predetermined by other methods such as historical research or traditional archaeological investigation.

## Conclusions

After two largely inconclusive campaigns of geophysical testing, minimally invasive archaeological excavation in the Spring of 2001 was able to confirm the presence of an African-American burial ground on Monticello property. Further geophysical study in 2002 builds from the known locations of burials to test methods that might be used to identify and map unmarked graves present in the same soil conditions on the Monticello property. The Park Cemetery excavations identified 20 burials representing a fraction of the graves that are likely present on the site. Although the graves were not excavated to a depth sufficient to identify burial remains, they are interpreted as belonging to enslaved African Americans from the Jefferson-era period of occupation at Monticello. The cemetery's setting within the Park had long been a landscape design of Jefferson's since his first discussions of establishing a park on his property. It is highly likely that there were other cemeteries used by enslaved African-Americans on Monticello property. One grave dating to the *post-bellum* nineteenth century has been positively identified in the Ancient Field, at a distance of about 3,000 feet from the Park Cemetery (Monticello Department of Archaeology Context Records, 1982). While it is possible that burials in the Ancient Field during the late nineteenth century were a continuation from an earlier period, no graves from the Jefferson period have been identified there. Identification of other burials in the vicinity is a current topic of research in the Monticello Department of Archaeology. Proposed research includes the application of revised geophysical protocols intended for this and other potential areas on the property.

## References

- Bear, James A. Jr. and Lucia C. Stanton  
1997 *Jefferson's Memorandum Books: Accounts, with Legal Records and Miscellany, 1767-1826* (2 vols.). Princeton University Press, Princeton, New Jersey.
- Betts, Edwin Morris  
1944 *Thomas Jefferson's Garden Book, 1766-1824*. The American Philosophical Society, Philadelphia.  
1987 *Thomas Jefferson's Farm Book*. The University Press of Virginia, Charlottesville, Virginia.
- Bowman, Rebecca  
1997 "Thomas Jefferson and Philip Mazzei"  
<http://www.monticello.org/resources/people/mazzei.html>
- Buikstra, Jane E. and Douglas K. Charles  
1999 Centering the Ancestors: Cemeteries, Mounds and Sacred Landscapes on the Ancient North American Midcontinent. In *Archaeologies of Landscape*, edited by Wendy Ashmore and A. Bernard Knapp, pp. 201-227. Blackwell, Oxford.
- Fesler, Garrett  
2000 "Preliminary Archaeological Findings from the Pettus Burial Ground" Paper presented at the November 2000 Jamestown Conference.
- Getting Word Project File  
2001 March 26 Interview with John Randolph Crawford. International Center for Jefferson Studies.
- Heath, Barbara J. and Michael Strutt  
1991 "Applications for Remote Sensing: Testing a Cemetery at Monticello" Paper presented at the annual meetings of the Society for Historical Archaeology, Richmond, Virginia.
- Jefferson, Thomas  
1804-1807 Monticello: notebook of improvements, page 1 of 14. N171; K161 and K162 [electronic edition]. *Thomas Jefferson Papers: An Electronic Archive*. Boston, Mass.: Massachusetts Historical Society, 2003.  
<http://www.thomasjeffersonpapers.org/>
- Monticello Department of Archaeology Context Records  
1982 "ER 522, Graveyard Site." March 18-April 8.
- Monticello Department of Archaeology Map Files  
1974 Topographic Survey of a Portion of Monticello, Albemarle County, Virginia. Photo Science, Inc., Gaithersburg, Maryland.  
1970 Parking Area P Lot Plan. Baliou and Justice, Architects and Engineers, Richmond, Virginia.
- Morgan, Philip  
1998 *Slave Counterpoint: Black Culture in the Eighteenth-century Chesapeake and Low Country*. University of North Carolina Press, Chapel Hill, North Carolina.
- Mount Vernon  
1985 Mount Vernon: A Handbook. Mount Vernon Ladies' Association, Mount Vernon, Virginia.
- Mount Vernon Press Room  
2000 <http://www.mountvernon.org/press/2001slaveryfact.asp>
- Somers, Lewis  
2002 "Discovery and Mapping of Unmarked Graves at Monticello: A Geophysical Survey Protocol

Development Program”  
Berkeley, California: Geoscan  
Research (report on file in the  
Monticello Department of  
Archaeology).

Watters, Meg  
2000 “Geophysical Survey at the  
Thomas Jefferson Memorial  
Foundation at the Site of  
Monticello, Charlottesville, VA,  
March 14-16, 2000” Geophysical  
Survey Systems, Inc.

Vlach, John Michael  
1993 *Back of the Big House: The  
Architecture of Plantation Slavery.*  
University of North Carolina  
Press, Chapel Hill, North  
Carolina.

## List of Appendices

Appendix A: Estimating the Total Number of Burials

Appendix B: Artifact List from Shovel Testing, Winter 2000

Appendix C: Artifact List from Quadrat Excavation and Metal Detection, Winter 2001

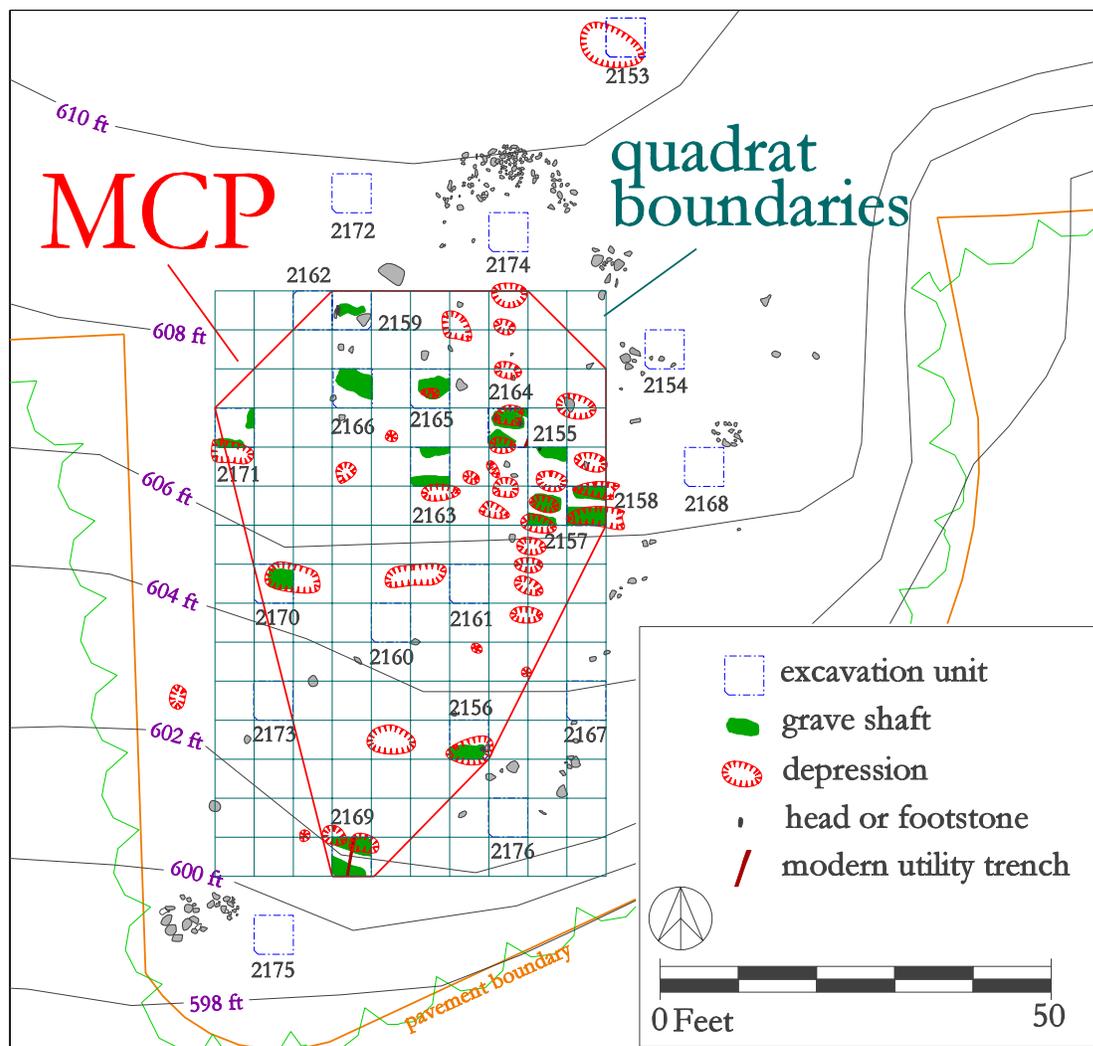
Appendix D: List of Maps Relevant to Park Cemetery

## Appendix A

### Estimating the Total Number of Burials

There are several possible approaches to estimating the total number of burials in the Park Cemetery. We describe and evaluate two of them here. Pursuing them requires an estimate of the total size of the cemetery. The estimate that we use here is based on the area of the smallest polygon, with convex corners, that encompasses quadrats containing either depressions likely to correspond to burials or burials whose existence was confirmed by excavation (Fig. 1). We considered a

depression likely to correspond to a burial if it was larger than 2.4 square feet and its major axis was oriented approximately east-west. This size characterizes the smallest depression that our excavations confirmed was a burial (in quadrat 2165), and includes the regularly-shaped depressions that conform loosely to the alignment of burials on the site. There are twenty-nine depressions fitting these criteria, twelve of which have been excavated in ten quadrats. The resulting minimum convex polygon (MCP) encompasses 101 five-by-five foot quadrats. It is important to note that this is a conservative estimate of cemetery size, since the perimeter is defined by the known burials, and it is possible that there are



Appendix A, Figure 1. Minimum convex polygon (MCP) and quadrat boundaries on the site.

unknown burials that would expand the MCP drawn around the perimeter of the cemetery.

As we have seen (see page 18), a simple estimate of the maximum number of burials in the cemetery can be had by multiplying the mean number of burials per excavated quadrat within the MCP by the number of unexcavated quadrats in the MCP. Fifteen excavated quadrats containing 20 burials fall within the MCP. Nine excavated quadrats fall outside the MCP and are not considered here. Hence the mean number of burials/quadrat is 1.33. The corresponding estimate of the maximum number of burials is  $(20 + ((101-20) \times 1.33)) = 128$ . The problem with this number, and the reason it is a maximum estimate, is that it is based on an estimate of the number of burials/quadrat that is biased, in the statistical sense. It is biased because quadrats were not randomly placed on the site. The initial research design for the project was aimed at determining if depressions marked burial locations. Hence many quadrats with depressions were excavated, and those quadrats were more likely to have burials than excavated quadrats without depressions. As a result the estimate of 1.33 for the mean number burials/quadrat is certainly much higher than the actual figure for the unexcavated portion of the MCP.

A better (unbiased) estimate requires that we divide the excavated and unexcavated quadrats within the MCP into two groups, those that have depressions associated with them and those that do not. This task is complicated by the fact that in many cases depressions crossed quadrat boundaries. For purposes of this argument, each depression could only be assigned to one five-by-five foot quadrat. If a depression was intersected by an excavated quadrat, we assigned the

depression to the excavated quadrat. On the other hand, if a depression was not intersected by an excavated quadrat, we assigned the depression to the quadrat that contained most of the depression. This allows us to associate each depression with only one quadrat, a necessary assumption for what is to come. The results are shown in **Table 1**. The table shows the correlation, mentioned above, between excavated quadrats and depressions, a bias created by the emphasis in our research design of investigating visible depressions to determine whether they corresponded to burials. A random placement of excavation quadrats—one that is independent of the presence or absence of depressions—would be expected to produce no correlation between excavated quadrats and depressions.

We then computed two separate estimates of the mean number of burials/quadrat, one for quadrats with depressions ( $\bar{x}_d = 18/10 = 1.8$ ), and one for quadrats without them  $\bar{x}_n = 2/5 = 0.4$ . The data from which these estimates are shown in Table 2. These two estimates allow us to project the expected number of burials associated with unexcavated quadrats with and without depressions as follows:  
 $n_d = 1.8 \times 12 = 21.6$  and  
 $n_n = .4 \times 74 = 29.6$ . Recall that our fifteen excavated quadrats within the MCP contain a total of twenty burials. Hence our final estimate of the total number of burials is  $n_{total} = (20 + n_d + n_n) = 20 + 21.6 + 29.6 = 71.2$ .

QUADRATS			
	Excavated	Unexcavated	Total
With Depression	10	12	22
Without Depression	5	74	79
Total	15	86	101

**Appendix A, Table 1.** Cross tabulation of quadrats within the MCP showing presence/absence of depressions and excavation status.

Quadrat ID	Depressions	Burials
2162	0	0
2159	0	1
2166	0	1
2160	0	0
2161	0	0
2171	1	2
2170	1	1
2169	1	2
2165	1	1
2163	1	2
2156	1	1
2155	1	2
2164	2	3
2157	2	2
2158	2	2
<b>Total</b>	<b>13</b>	<b>20</b>

**Appendix A, Table 2.** Number of depressions and confirmed burials associated with excavated quadrats within the MCP.

The small number of excavated quadrats produces considerable statistical uncertainty associated with this estimate. To model the statistical uncertainty we use bootstrap methods (Manley 1997). Both estimates of the number of burials/ excavated quadrat ( $\bar{x}_d$  and  $\bar{x}_n$ ) have sampling error associated with them. To estimate this error, the bootstrap method resamples (with replacement) observations from the two groups of quadrats. For each sample, we compute a new estimate of the mean number of burials/ quadrat ( $\hat{x}_d$  and  $\hat{x}_n$ ). We then multiply each estimate by the appropriate number of unexcavated quadrats (12 and 74, respectively) to obtain bootstrap estimates of the number of burials ( $\hat{n}_d$  and  $\hat{n}_n$ ). A bootstrap estimate of the total number of burials can then be computed as  $\hat{n}_{total} = 20 + \hat{n}_d + \hat{n}_n$ . Table 3 summarizes the results of this analysis. The 90% confidence limits on the estimate of the total number of burials are given by the 5th and 95th percentiles of the bootstrap distribution of  $\hat{n}_{total}$ : 100 and 42. This means we can be 90% confident that the

true number of burials lies somewhere in this interval. Notice that most of the uncertainty here comes from the small number of excavated quadrats that are not associated with depressions. There were only 5 of these within the MCP. As a result, the standard deviation of the distribution of  $\hat{n}_n$  is very large. This implies that obtaining more precise estimates of the total number of burials depends on increasing the number of excavated quadrats not associated with

Statistic	$\hat{n}_n$	$\hat{n}_d$	$\hat{n}_{total}$
Mean	29.5	21.6	70.7
Std. Dev.	16.4	2.3	16.3
95th percentile	59.2	25.2	100
5th percentile	0	18	42

**Appendix A, Table 3.** Summary statistics for bootstrap estimates of the number of burials in the MCP.

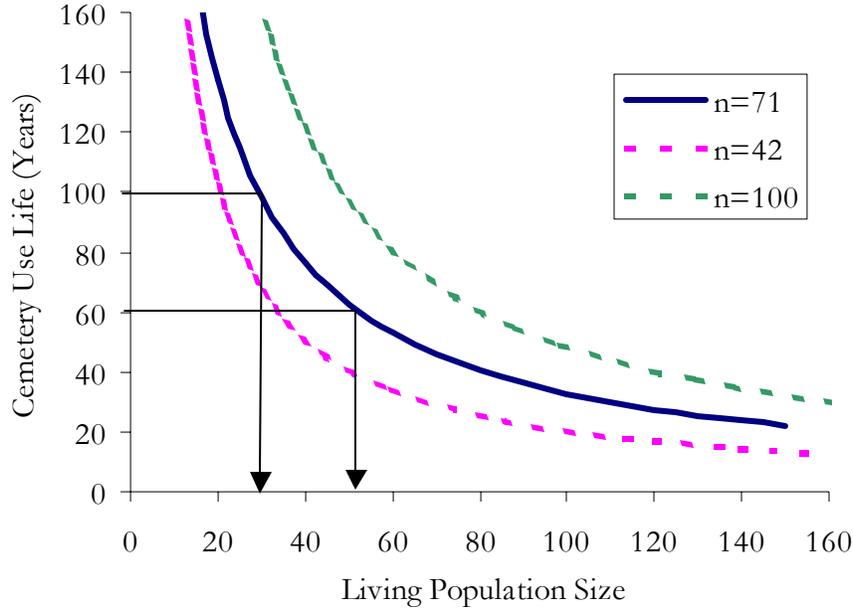
depressions. Hence if further excavation is conducted at the site, excavation of randomly chosen quadrats not associated with depressions should be the first priority.

### Living Population Size

What is the size of the living population ( $N$ ) responsible for the burials? The answer to this question depends on two additional quantities: the mortality rate ( $m$ ) and the number of years ( $y$ ) over which the cemetery was in use. These quantities are related as follows:  $n_{total} = Nmy$ , which implies that

$$N = \frac{n_{total}}{my}.$$

The research necessary to estimate the mortality rate for slaves at Monticello is still in progress. In the absence of a Monticello estimate, we use an estimate made by Richard Dunn (1977) for a roughly contemporary slave population, living at the Tayloe's Mount Airy Plantation, on the north shore of the Rappahannock River. The Mount Airy mortality rate for the period 1809-1828 was .02064 deaths/person/year. We have no independent estimate for the use life of the cemetery. So the best we can do is compute



**Appendix A, Figure 2.** Estimates of the size of the living population responsible for the number of burials in the Park Cemetery for different cemetery use-life values. Total living population estimates are shown for the mean number of burials and its 90% confidence limits.

estimates of living population size for a range of use-life values. The results are shown in **Figure 2**.

The analysis summarized in Figure 2 implies that under any reasonable use-life scenario, the size of the living population was large, so large that it must have included Jefferson’s slaves, but not large enough to have included all slaves at Monticello. If cemetery use was confined to the roughly 60-year tenure of Jefferson’s slaves at Monticello (c. 1770-1830), then the living population most likely consisted of 57 individuals, with a 90% chance it lay between 34 and 81. Historical research suggests that the number of slaves at Monticello Plantation fluctuated around 120 during Jefferson’s lifetime (Stanton 2000).

If cemetery use-life was confined to the roughly 100 years that elapsed between Jefferson’s death and the acquisition of the Monticello tract by The Thomas Jefferson Memorial Foundation in 1923, then the most likely living population size is 34, with 90%

confidence limits at 20 and 48. We know that during the ante-bellum period, the Levy family owned only 20 slaves. Hence even if Levy slaves and their descendants consistently buried family members at Monticello, it is unlikely that their numbers were large enough to account for the number of burials inferred for the Park cemetery. We therefore conclude from this analysis that the Park Cemetery is a Jefferson-era cemetery, although its use may well have continued into the Levy era. In addition, it is very likely that there are additional Jefferson-era slave cemeteries at Monticello that await discovery.

**References**

Dunn, Richard S.  
 1977 A Tale of Two Plantations: Slave Life at Mesopotamia in Jamaica and Mount Airy in Virginia, 1799 to 1828. *William and Mary Quarterly* 34(1):32-65.

Manly, Bryan F.J.

1997 *Randomization, Bootstrap, and Monte Carlo Methods in Biology*. 2<sup>nd</sup> ed.  
Chapman Hall/CRTC, Boca  
Raton, Florida.

Stanton, Lucia

2000 *Free Some Day: The African American Families of Monticello*.  
Monticello Monograph Series,  
Thomas Jefferson Foundation,  
Charlottesville, Virginia.

## Appendix B

### Artifact List from Shovel Testing, Winter 2000

Site	Context	Material	Form	Color
Shuttle St	STP 057	Slate	Architectural	
Shuttle St	STP 057	Slate	Architectural	
Shuttle St	STP 057	Slate	Architectural	
Shuttle St	STP 111	Copper Alloy	Coin, American	
Shuttle St	STP 065	Glass	Container, unidentified	Brown
Shuttle St	STP 004	Glass	Container, unidentified	Clrless non-lead
Shuttle St	STP 053	Glass	Container, unidentified	Clrless non-lead
Shuttle St	STP 053	Glass	Container, unidentified	Clrless non-lead
Shuttle St	STP 053	Glass	Container, unidentified	Clrless non-lead
Shuttle St	STP 065	Glass	Container, unidentified	Clrless non-lead
Shuttle St	STP 065	Glass	Container, unidentified	Mang solarized
Shuttle St	STP 061	Quartz	Debitage	
Shuttle St	Surface	Pearlware	Flat form	
Shuttle St	STP 060	Porcellaneous	Flat form	
Shuttle St	STP 053	Glass	Free blown, Table, unidentified	Clrless lead
Shuttle St	STP 060	Glass	Free blown, Table, unidentified	Clrless lead
Shuttle St	STP 065	Amer Stoneware	Hollow form	
Shuttle St	STP 057	Black-glazed Redware	Hollow form	
Shuttle St	Surface	Coarse Earthen	Hollow form	
Shuttle St	Surface	Coarse Earthen	Hollow form	
Shuttle St	Surface	Coarse Earthen	Hollow form	
Shuttle St	STP 030	Porcellaneous	Hollow form	
Shuttle St	STP 053	Porcellaneous	Hollow form	
Shuttle St	STP 053	Porcellaneous	Hollow form	
Shuttle St	STP 053	Porcellaneous	Hollow form	
Shuttle St	STP 060	Porcellaneous	Hollow form	
Shuttle St	Surface	Whiteware	Hollow form	
Shuttle St	STP 060	Glass	Lamp chimney, clrless non-ld	
Shuttle St	STP 060	Glass	Lamp chimney, clrless non-ld	
Shuttle St	STP 057	Glass	Machine made, beer/pop bottle	Pale aqua/green
Shuttle St	STP 099	Glass	Machine made, beer/pop bottle	Pale aqua/green
Shuttle St	STP 099	Glass	Machine made, beer/pop bottle	Pale aqua/green
Shuttle St	STP 099	Glass	Machine made, beer/pop bottle	Pale aqua/green
Shuttle St	STP 099	Glass	Machine made, beer/pop bottle	Pale aqua/green
Shuttle St	STP 099	Glass	Machine made, beer/pop bottle	Pale aqua/green
Shuttle St	STP 110	Glass	Machine made, beer/pop bottle	Pale aqua/green
Shuttle St	STP 123	Glass	Machine made, beer/pop bottle	Pale aqua/green
Shuttle St	STP 033	Glass	Machine made, bottle	Brown
Shuttle St	STP 033	Glass	Machine made, bottle	Brown
Shuttle St	STP 033	Glass	Machine made, bottle	Brown
Shuttle St	STP 068	Glass	Machine made, bottle	Clrless non-lead
Shuttle St	STP 057	Glass	Machine made, Container, unidentified	Aqua

Shuttle St	STP 023	Glass	Machine made, Container, unidentified	Brown
Shuttle St	STP 039	Glass	Machine made, Container, unidentified	Clrless non-lead
Shuttle St	STP 057	Glass	Machine made, Container, unidentified	Clrless non-lead
Shuttle St	STP 057	Glass	Machine made, Container, unidentified	Clrless non-lead
Shuttle St	STP 057	Glass	Machine made, Container, unidentified	Clrless non-lead
Shuttle St	STP 058	Glass	Machine made, Container, unidentified	Clrless non-lead
Shuttle St	STP 060	Glass	Machine made, Container, unidentified	Clrless non-lead
Shuttle St	STP 060	Glass	Machine made, Container, unidentified	Clrless non-lead
Shuttle St	STP 075	Glass	Machine made, Container, unidentified	Clrless non-lead
Shuttle St	STP 013	Glass	Machine made, unidentified	Pale aqua/green
Shuttle St	STP 057	Bone	Medium mammal	
Shuttle St	STP 057	Bone	Medium mammal	
Shuttle St	STP 057	Bone	Medium mammal	
Shuttle St	STP 057	Bone	Medium mammal	
Shuttle St	Surface	Iron	Nail, machine cut	
Shuttle St	STP 057	Iron	Nail, wire	
Shuttle St	Surface	Pearlware	Plate	
Shuttle St	STP 057	Whiteware	Plate	
Shuttle St	STP 009	Glass	Table, stemmed	Mang solarized
Shuttle St	STP 009	Glass	Table, stemmed	Mang solarized
Shuttle St	STP 009	Glass	Table, stemmed	Mang solarized
Shuttle St	STP 009	Glass	Table, stemmed	Mang solarized
Shuttle St	STP 009	Glass	Table, stemmed	Mang solarized
Shuttle St	STP 060	Porcellaneous	Unidentified	
Shuttle St	STP 030	Yellow ware	Unidentified	
Shuttle St	Surface	Iron	Hardware, unidentified	
Shuttle St	STP 115	Aluminum	Unidentified	
Shuttle St	Surface	Bone	Unidentified	
Shuttle St	STP 058	Glass	Window glass	
Shuttle St	STP 065	Glass	Window glass	
Shuttle St	STP 111	Glass	Wine bottle	
Shuttle St	Surface	Glass	Wine bottle	
Shuttle St	Surface	Glass	Wine bottle	
Shuttle St	Surface	Glass	Wine bottle	
Shuttle St	Surface	Glass	Wine bottle	
Shuttle St	Surface	Glass	Wine bottle	
Shuttle St	STP 111	Iron	Wire	
Shuttle St	STP 065	Glass		Clrless non-lead
Shuttle St	STP 057	Brick frag		
Shuttle St	STP 058	Brick frag		
Shuttle St	STP 132	Brick frag		
Shuttle St	STP 055	Cement		
Shuttle St	STP 053	Charcoal		
Shuttle St	STP 136	Charcoal		
Shuttle St	STP 004	Coal		
Shuttle St	STP 039	Coal		

Shuttle St	STP 053	Coal
Shuttle St	STP 057	Coal
Shuttle St	STP 058	Coal
Shuttle St	STP 065	Coal
Shuttle St	STP 072	Coal
Shuttle St	STP 110	Coal
Shuttle St	STP 112	Coal
Shuttle St	STP 053	Glass
Shuttle St	STP 044	Slag/Clinker

## Appendix C

### Artifact List from Quadrat Excavation and Metal Detection, Winter 2001

Site	Context	Material	Form	Color
Shuttle St	2154A	Quartz	Flake	
Shuttle St	2154A	Quartz	Flake	
Shuttle St	2154A	Quartz	Flake	
Shuttle St	2154A	Quartz	Flake	
Shuttle St	2154A	Quartz	Shatter	
Shuttle St	2154B	Charcoal	Charcoal	
Shuttle St	2154B	Quartz	Flake	
Shuttle St	2154B	Quartz	Flake	
Shuttle St	2154B	Quartz	Flake	
Shuttle St	2154B	Quartz	Point, side notched	
Shuttle St	2154B	Quartz	Shatter	
Shuttle St	2155A	Iron	Nail, Drawn/wire	
Shuttle St	2155B	Quartz	Flake	
Shuttle St	2155B	Quartz	Flake	
Shuttle St	2155B	Quartz	Flake	
Shuttle St	2155B	Quartz	Shatter	
Shuttle St	2156A	Copper Alloy	Shotgun Shell	
Shuttle St	2156A	Paper	Shotgun Shell	
Shuttle St	2158A	Iron	Nail, Machine Cut, indeter	
Shuttle St	2158A	Porcellaneous/Engl Hard Paste	Unid: Teaware	
Shuttle St	2159A	glass	Unidentifiable	Colorless
Shuttle St	2159A	Quartz	Flake	
Shuttle St	2161A	Brick/Daub	Brick/Daub Fragment	
Shuttle St	2161A	Quartz	Flake	
Shuttle St	2161B	Quartzite	Point, unidentified	
Shuttle St	2162A	Iron	Nail, Machine Cut, late	
Shuttle St	2162A	Quartz	Flake	
Shuttle St	2162A	Quartz	Flake	
Shuttle St	2162A	Quartz	Shatter	
Shuttle St	2163A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2163A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2163A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2163A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2163A	Iron	Nail, Machine Cut, indeter	
Shuttle St	2163A	Quartz	Flake	
Shuttle St	2164A	Gum	Unidentifiable	
Shuttle St	2164A	Iron	Nail, Indeterminate	

Shuttle St	2164A	Iron	Nail, Machine Cut, indeter	
Shuttle St	2164A	Iron	Nail, Machine Cut, indeter	
Shuttle St	2165A	Charcoal	Charcoal	
Shuttle St	2165A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2165A	Iron	Unidentifiable	
Shuttle St	2166A	Quartz	Flake	
Shuttle St	2169A	Brick/Daub	Brick/Daub Fragment	
Shuttle St	2169A	Iron	Nail, Cut	
Shuttle St	2169A	Stone, unidentified	Flake	
Shuttle St	2169A	Unidentifiable	Unidentifiable	
Shuttle St	2171A	Aluminum	Pull Tab	
Shuttle St	2171A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2171A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2171A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2171A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2171A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2171A	Iron	Bottle Cap	
Shuttle St	2171A	Iron	Bottle Cap	
Shuttle St	2171A	Plastic	Bottle Cap	
Shuttle St	2172A	Copper Alloy	Coin, American	
Shuttle St	2172A	Copper Alloy	Shotgun Shell	
Shuttle St	2172A	Iron	Nail, Indeterminate	
Shuttle St	2172A	Iron	Nail, Machine Cut, indeter	
Shuttle St	2172A	Paper	Shotgun Shell	
Shuttle St	2172A	Quartz	Shatter	
Shuttle St	2174A	Chert	Flake	
Shuttle St	2174A	glass	Machine Made Cover/Lid	Light Green
Shuttle St	2174A	glass	Machine Made Tableware, unidentifiable	White
Shuttle St	2174A	Iron	Nail, Indeterminate	
Shuttle St	2174A	Iron	Nail, Machine Cut, indeter	
Shuttle St	2174A	Iron	Nail, Machine Cut, late	
Shuttle St	2174A	Quartz	Shatter	
Shuttle St	2175A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2175A	glass	Machine Made Bottle, Unidentifiable	Colorless
Shuttle St	2175A	glass	Machine Made, Unidentifiable	Colorless
Shuttle St	2176A	Quartz	Flake	
Shuttle St	MH <sup>6</sup> -1	Iron	Wood	
Shuttle St	MH-1	Wood	Wood	
Shuttle St	MH-2	Iron	Unidentifiable	
Shuttle St	MH-3	Iron	Nail, Wrought/forged	
Shuttle St	MH-4	Iron	Corrosion/Rust	

---

<sup>6</sup> MH=Metal Detector Hit

Shuttle St	MH-4	Iron
Shuttle St	MH-4	Iron
Shuttle St	MH-5	Iron
Shuttle St	MH-6	Iron

Nail, Machine Cut, indeter
Unidentifiable
Machinery, unid
Nail, Machine Cut, indeter
Wire

## **Appendix D**

### **List of Maps Relevant to the Park Cemetery**

N-221 “Bryan’s survey of the park on a scale of 40 po. to the inch.” (Old park) c. 1776-1778

N-131 identified as Anderson Bryan’s survey, c. 1776-1778 (outline with angles and distances)

N-132 identified as Anderson Bryan’s survey, c. 1776-1778 (Park outline)

N-129 Plat of ferme ornée showing the park enclosure, post c. 1794

N-197 Plat of ferme ornée with broom labyrinth (ties in with Bryan surveys and N-129)

N-130 Plotted survey points for N-197

N-209 Plat of Monticello and Tufton; depicts Colle Road and outline of later Park, c. 1807

N-215 Survey of third roundabout, reference to the “old park fence” along South Road, July-August 1809

N-223-2 Plat of eastern agricultural fields of Monticello, including Park Field, c. 1808

N-521-9 Plat of agricultural fields of Monticello, later Park labeled, post-c. 1808

N-522-2 Plat, July 3, 1796, generated from survey notes including N-522-4