

# Searching for the 1780 Siege of Charleston: History, Archaeology and Remote Sensing



Carl P. Borick  
*The Charleston Museum*  
Jon Bernard Marcoux  
*Clemson University*  
Martha A. Zierden  
*The Charleston Museum*  
Ronald W. Anthony  
*The Charleston Museum*  
Katherine Saunders Pemberton  
*Historic Charleston Foundation*

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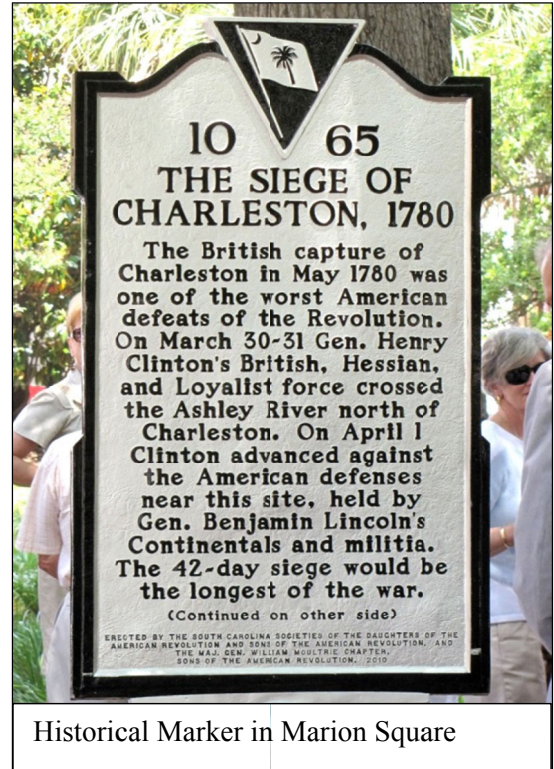
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## Chapter I

### Introduction and Background

The British siege of Charleston in 1780 during the American Revolution was a pivotal event in the city's history. Yet, a small section of tabby fortification in Marion Square is the only visible remnant of the dramatic alteration of the peninsular landscape during that event. Following publication of his 2003 monograph *A Gallant Defense*, Carl Borick has worked for decades to fit historic maps of the American defenses and British siege lines onto the modern landscape. In the past decade, archaeologists from The Charleston Museum visited and monitored construction projects between Calhoun and Line Streets, while the Museum and Historic Charleston Foundation sponsored small remote sensing projects in Wragg Mall, Wragg Square, and the Aiken-Rhett yard beginning in 2012 and continuing through 2016. Targeted archaeology was the next step to verify the location of these features.



Jon Marcoux's remote sensing survey of a portion of the Aiken-Rhett rear yard in June 2016 revealed several anomalies, including a large trench feature east of the garden folly. The location, depth, and characteristics of this feature suggested that it may be a portion of the British approach trench during the 1780 siege of Charleston. Based on this discovery, Historic Charleston Foundation and The Charleston Museum discussed an excavation project to verify this feature, record its physical attributes, and recover artifacts sufficient to date the deposits. The 2017 College of Charleston archaeological field school presented such an opportunity. The three institutions agreed on a volunteer project. Expertise was provided by Museum archaeologists, labor by archaeology students at the College of Charleston and numerous volunteers, and management and publicity by Historic Charleston Foundation.

Fieldwork commenced on June 12 and continued through June 30. Six students worked with three archaeologists to excavate seven units in the vicinity of the feature. Historic Charleston Foundation (HCF) arranged for on-site docents to speak to site visitors during the excavation process. In addition, HCF offered free dig tours each Thursday morning. Numerous colleagues and professionals from other disciplines visited the project. Local media provided ongoing coverage, and national news outlets carried the story.



“Investiture of Charleston 1780”

Following the archaeological verification of a trench transecting a portion of the Aiken-Rhett rear yard, Jon Marcoux returned to the Aiken Rhett yard, the area outside of the property, and adjoining Wragg Mall for additional remote sensing. This survey revealed a continuation of the trench feature beyond the walls of the Aiken-Rhett house and appropriately positioned anomalies in Wragg Mall.

Summary reports were produced for each of these projects. The present document gathers these into a single document, organized as individual chapters and presents a summary of the present state of research on the Siege of Charleston.

## The Siege of Charleston

South Carolina prospered under English rule during the 18<sup>th</sup> century. After the Seven Years War in 1763, relations between the colonies, including South Carolina, and the mother country worsened. Financial woes caused Britain to demand a greater share of revenue from the colonies. To secure collection of these monies, Parliament sought to tighten the administration of the Navigation Acts. Royal placemen arrived in South Carolina to take over the lucrative and important positions previously filled by some of the most respected men in the colonial community (Rogers 1980:41; Calhoun 1986). The British government also imposed several direct and indirect taxes upon the American colonists. Armed conflict broke out between them in April 1775, and on July 4, 1776 the American colonists proclaimed their independence from the British empire.

The first attempt to conquer South Carolina came in 1776 when the Royal Navy attacked Fort Sullivan, later Fort Moultrie. After a second unsuccessful foray in 1779, military operations ceased. British troops languished on nearby sea islands, as the onset of warm weather made the lowcountry unhealthy and oppressive.

The British forces returned to the attack in 1780. General Sir Henry Clinton moved part of his forces overland from Savannah to Charleston; the majority came by sea to the southern end of Johns Island and then over to James Island at Hamilton's Landing. By February 25 the British main force occupied James Island and began to deploy towards the city. General Clinton launched his attack of Charleston from the land, down from the neck of the peninsula, while Admiral Marriot Arbuthnot and the Royal Navy closed in the city by sea. American General Lincoln, badly outnumbered and outmaneuvered, was forced to surrender the city on May 12, 1780. The British occupation of Charleston was to last until December 14, 1782 (Borick 2003).



## Previous Research

Prior to 2012, four small archaeological projects were conducted in the vicinity of the siege lines. Some revealed evidence of the siege. In 1986 archaeologists from The Charleston Museum conducted test excavations in the center of Wragg Mall, in advance of installation of a fountain. The dig was designed to ascertain the historic presence of a fountain in that location. The small dig exposed the footprint of the fountain foundation and piping to service it. The excavations were likewise shallow, and terminated at the base of the fountain features. No evidence of the siege lines was encountered, but we didn't know to look, either.

The Charleston Museum also conducted two archaeological projects at the Aiken Rhett House. The first, in 1985, occurred during ownership of the house by The Charleston Museum. Archaeologists tested the yard to amend the National Register of Historic Places listing to include the archaeological component. Museum archaeologists returned to the property in 2001. At this point the property was owned and operated by Historic Charleston Foundation, engaged in a Historic Structures Analysis. (Zierden 1985; Zierden 2003). Two units, excavated during separate field projects, revealed deep features that may, in hindsight, be associated with the trench. These are described in more detail in Chapter VI.

The supposed footprint of the right bastion of the Hornwork was revealed Marion Square, the block surrounded by King, Calhoun, Meeting, and Hutson streets. Natalie Adams of New South Associates tested the grounds of Marion Square 1998 in anticipation of landscaping upgrades (Adams and Joseph 1998).

Adams' work, in turn, built on results from a survey by Eric Poplin of Brockington and Associates in 1997, that investigated an area near the corner of Calhoun and Meeting streets for the Holocaust Memorial. Poplin's work revealed modern topsoil followed by a red clay-sand later that Poplin associated with construction of the Citadel and an associated parade ground in 1842. Beneath the reddish layer was a layer of late 18<sup>th</sup>-early 19<sup>th</sup> century midden, possibly filled and leveled with the parade ground was constructed.

Adams noted this distinctive clay layer in her own survey that entailed excavation of nine trenches and two blocks, or a total of 342 linear feet of soil. Adams encountered the tabby horn work buried between 1.0 and 1.5 feet below surface, extending to at least 6.9' below the present ground surface. The tabby wall was 2' wide above ground (in the preserved section) and about 4.5' thick near the base, flaring slightly on the exterior. She also mapped numerous subsurface 33' wide, located outside of the tabby feature.



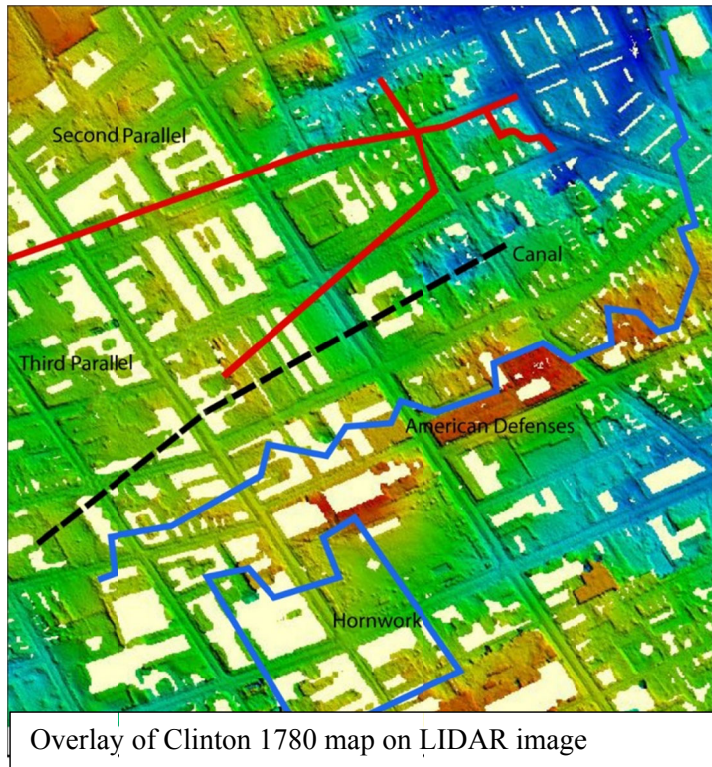
Tabby fortification remnant in Marion Square

Individual artifacts related to the Siege have been discovered on appropriately located construction projects and in back yards throughout the city. Among them are a piece of grapeshot, a four pound cannon ball and an unexploded shell. The grapeshot came from the rear yard of the Aiken Rhett House during a Museum led archaeological dig in 2001.

Found in the probable environs of the British third parallel, this anti-personnel projectile was most likely fired at the besieging forces from the American defenses just a few hundred yards to the south. The four pound cannon ball was found by archaeologist Carl Steen under a house on Vanderhorst Street, which is just south of the approximate site of the west end of the American defense line. Construction crews uncovered the shell during the renovation of the Gaillard Center, an area that would have been just south of the American lines, so a definite overshoot by British artillerymen. Following our 2017 dig, a property owner on Warren Street shared his discovery of a musket ball from his garden. The grape shot and cannon ball are in the Museum's collections while the shell belongs to the City of Charleston.

### Searching for the Siege Lines

Two decades of research on the siege by Carl Borick reveals particular aspects of the siege operations. Based on period maps and firsthand descriptions, he developed a fairly solid estimation of the location of American defenses and British parallels. The American defenses consisted of a line of redoubts and batteries connected by a parapet, stretching across the peninsula from the Cooper River to the marshes of the Ashley. In front of this line, armed with over 200 cannon, engineers created a canal, or moat. Behind the main defense line stood the substantial Hornwork (two bastions connected by a curtain wall), made of tabby. The British constructed their redoubts and parallels across the peninsula just below present-day Spring Street. The second parallel likewise spanned the peninsula. The final push to construct the third parallel brought the British to the vicinity of Judith and Mary Streets.



Based on maps and current elevations, part of the American defense line clearly ran through present-day Wragg Square, between Charlotte Street and Ashmead Place. Part of the nearby British third parallel may have crossed Wragg Mall and the Aiken-Rhett property. Ground topography just to the north of Mary Street seems to match the presence of eighteenth century tidal creeks in the area. These public properties are also among the few areas of open space in this portion of Charleston, currently experiencing explosive growth.

Searches for the British siege parallels include small remote sensing studies, cataloging of key artifact discoveries, and monitoring of construction projects. In 2012, Jon Marcoux of Salve Regina University

surveyed Wragg Mall and Wragg Square using magnetic gradiometry. At the same time, Inna Burns of Brockington and Associates attempted ground penetrating radar (GPR) at Wragg Mall. Both exercises were inconclusive; interference from buried water and electric lines, as well as nearby automobiles, limited the effectiveness of the magnetometry, while the ground penetrating radar study covered only a small area. Still, the exercise in Wragg Square suggested undisturbed ground and some intact features.

In 2015, the City of Charleston planned renovation of Wragg Square, to include enlarging the steps leading to the elevated park at Meeting Street. Two trenches were excavated by backhoe on either side of the existing stairs, exposing the profiles. The south profile immediately demonstrated that the elevation of Wragg Square is natural and not the product of fill as some have suggested. The north profile, in contrast, revealed a massive trench with six bands of fill, including a distinct band of dark soil. While tantalizing the Wragg Square discovery could not be firmly associated with the Revolutionary War.

Based on careful measurements of period maps and superimposition of these maps on current aerial photos, Carl Borick is certain that the third parallel crossed the Aiken-Rhett property. Where exactly was unknown. The 2016 GPR survey results suggested a likely candidate for a trench, of approximately the correct dimensions in approximately the correct location. Since the Aiken-Rhett site is the property of Historic Charleston Foundation and a protected site, excavations were planned that would minimize impact to the archaeological resources, yet large enough to define the feature and determine its date and function.



Excavations at the Aiken-Rhett House, 2017

The 2017 excavation of a 10x15' block was successful in exposing a trench feature of appropriate dimensions and location. Based on these findings, an additional remote sensing survey followed in 2018. This last survey traced the encountered trench across the Aiken Rhett rear yard and beyond its boundaries. A complete GPR survey of Wragg Mall likewise revealed anomalies consistent with the location and dimensions of features shown on historic maps and described in journals.

The survival of remnants of the American defenses and British approaches in lands set aside for public parks in 1801 suggests that the locations may be more than coincidental. The landscape relief shown on 18<sup>th</sup> and 19<sup>th</sup> century maps and plats has been filled, leveled, and developed in the last 200 years. Yet the many projects described here demonstrate that portions of these historic features survive as archaeological features. It is fortunate that the Wragg family inadvertently – or perhaps deliberately – preserved portions of the city's history.



Remote sensing in Wragg Mall, 2018

## Chapter II

### The Siege of Charleston, 1780

Carl P. Borick

The patriot garrison of Charleston, South Carolina surrendered to the British on May 12, 1780 after a siege of six weeks, making it the longest siege of the American Revolutionary War and the largest battle fought in South Carolina during the conflict. South Carolina prospered under English rule during the 18<sup>th</sup> century, but relations between all the colonies and Great Britain worsened after the conclusion of the Seven Years War in 1763. Financial woes caused the Crown to demand a greater share of revenue from the colonies. To secure collection of these monies, Parliament sought to tighten the administration of the Navigation Acts. Royal placemen arrived in South Carolina to take over the lucrative and important positions previously filled by some of the most respected men in the colonial community (Rogers 1980:41; Calhoun 1986). The British government also imposed several direct and indirect taxes upon the American colonists.

Soon the people of the colonies found a rallying cry in the idea of “no taxation without representation.” The struggle that began in an effort to alleviate Britain’s national debt evolved into a political quarrel predicated upon principals implied in the Magna Carta (Calhoun 1986). Armed conflict erupted on April 19, 1775, and on July 4, 1776 the American colonists proclaimed their independence from the British empire. The first attempt to conquer South Carolina came in 1776 when the Royal Navy attacked an unnamed fort on Sullivan’s Island, later named Fort Moultrie.

The entrance of France into the war on the side of the Americans in 1778 completely changed the nature of the war for the Crown. No longer simply trying to subdue a colonial rebellion, they now faced their ancient enemy in a variety of places around the globe. Consequently, they had fewer resources to apply to the war in America. King George III and his ministers, however, still wished to retain North America. Former royal officials from the southern colonies had convinced the British leadership that large numbers of loyalists were ready and waiting in the South, and that if the patriots were defeated by British forces they were ready to reassume control in their respective provinces. Accordingly, after 1778, the British began to place greater emphasis on operations in the South.

They captured Savannah in December 1778, made significant progress in securing Georgia throughout 1779, and fended off a Franco-American force at the Siege of Savannah in September-October 1779. Their major push, however, came in the spring of 1780 with an effort against Charleston. Not only would this provide a springboard into the South Carolina interior, but it would also cut off the profitable trade which passed through Charleston’s harbor.

A fleet of over 100 warships and transports, commanded by Admiral Marriot Arbuthnot, departed the British base at New York in December 1779. Aboard were 7,000 troops, led by General Sir Henry Clinton, commander of the British army in North America. The fleet was decimated by severe winter storms but most ships reached the rendezvous at Savannah by late



patriot light infantry under Lieutenant Colonel John Laurens engaged them as they approached but could not stop their advance.

### The Siege of Charleston

Some of the defensive works on the outskirts of Charleston had existed before the war, and patriots had made considerable efforts to improve them since the outbreak of hostilities. The Continental Congress had dispatched two French engineers, Laumoy and de Cambray, to assist in this effort. Period maps, modern maps and lidar imaging provide evidence concerning the locations of the American defense lines and the British siege parallels, including the 1780 *Plan* prepared by Henry Clinton and the contemporary *Plan of the Siege and Surrender* prepared by Charles Blaskowitz. The map by Blaskowitz, one of the chief surveyors for the British army during the American Revolutionary War, (hereafter referred to as the Blaskowitz map) is the most critical and accurate of the period maps. Rectifying the 1780s maps with the present landscape is challenging because Charleston neck was rural at that time, lacking most of the current roadways (King Street, or the Great Path, the notable exception). A few plats of the area as it developed in the early 19<sup>th</sup> century show remnants of the features along with newly established city streets. These, plus the configuration, and subsequent alteration, of wetlands help place the siege lines on the modern map.



A Plan of Charles Town by Charles Blaskowitz

On the neck, the American defensive works consisted of a parapet, lined with batteries, redans and redoubts along its length. The lines ran east from roughly present day Smith Street, just below Vanderhorst Street, along Hutson Street, across Wragg Square before turning northeast and ending east of Alexander Street below Judith Street. In front of the parapet was a double-picketed ditch, approximately 5-6' deep. The Americans had created a moat, known as the canal, by trenching from a significant tidal creek on the Cooper River side of the peninsula. The canal ran across the peninsula to the "Advanced Work," a fortification employed to protect the west end of the canal. Patriots controlled the depth of water in the canal, via sluices, that probably employed the same technology as that used in dikes on area rice plantations. In between the canal and main defense line, the Americans had created an abatis of felled trees and had dug a series of pits, known as wolf traps.

Behind the main defense line was the hornwork, a substantial fortification of tabby that served as the American command post. Consisting of two bastions connected by a curtain wall, the hornwork was enclosed with a rear earthen wall during the siege. Survey work performed by Natalie Adams of New South Associates identified the right bastion the hornwork in Marion Square in 1998. The left bastion is most likely in the churchyard of St. Mathews on the west side of King Street. The rear wall was just north of Boundary Street (present day Calhoun Street).



The Investiture of Charles Town 1780 (Faden, LOC)

Eighteenth century siege tactics dictated the digging of siege parallels or trenches, with their own fortifications along their length that roughly "paralleled" the works of the besieged city or fortress. Approach trenches were pushed forward from these parallels to the next parallel, and artillery was moved forward to bombard the enemy. Generally, three parallels were constructed in a siege.

Under Major James Moncrief, their chief engineer, the British opened their first parallel on the night of April 1, roughly 1,000 yards from the American defenses. They dug

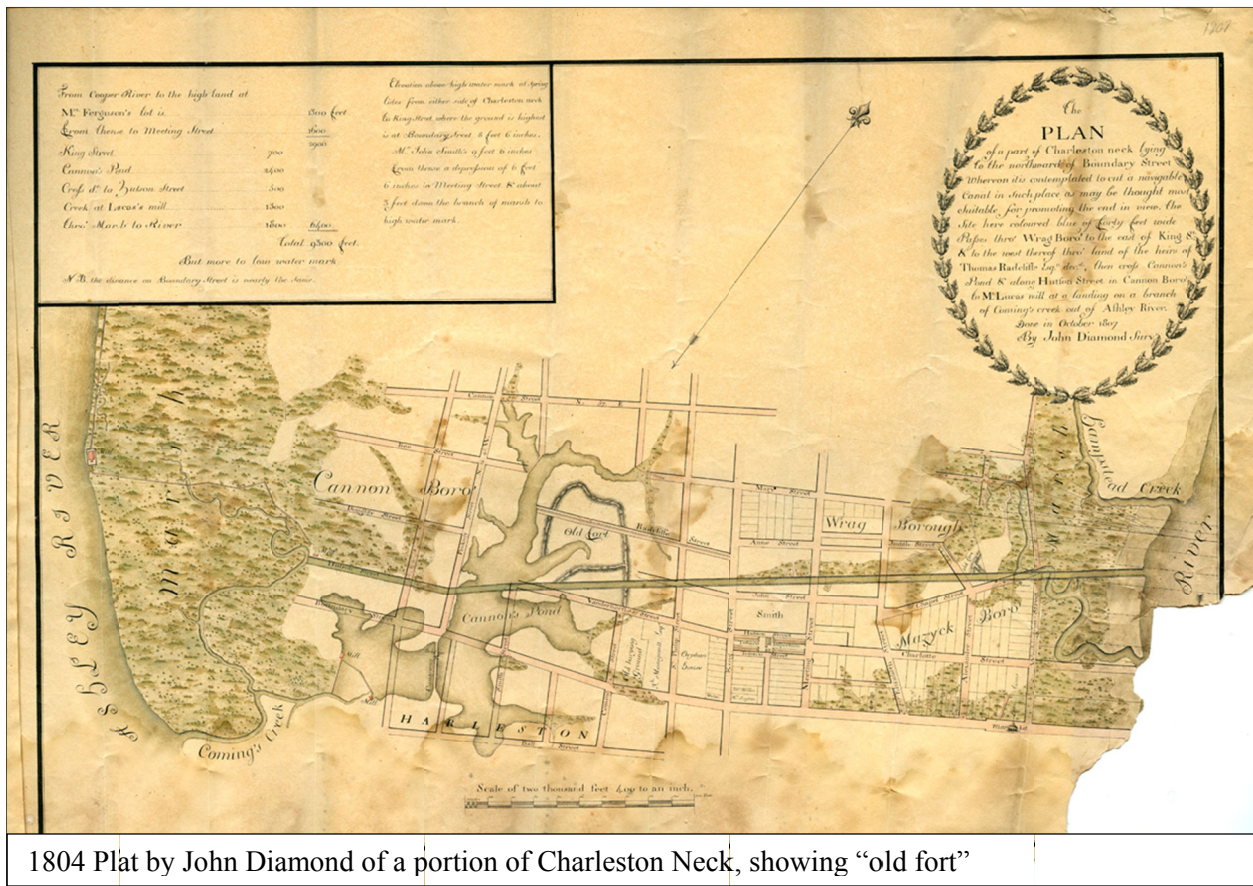
an east/west trench that contained three redoubts. This ran roughly along Spring Street before moving northeast between Spring and Columbus Streets. One redoubt was most likely at the intersection of King and Spring Streets. A few days later they pushed the parallel toward "Hampstead Hill" an eminence overlooking Charleston on the Cooper River side of the peninsula that would have been much more apparent in 1780. They constructed a battery there,



likely in the environs of the intersection of Drake and Columbus Streets. On the west side of the neck, their right, they extended the parallel southwest and constructed two other redoubts; a part of this section of the parallel ran along Cannon Street.

The British dug approach trenches on their left and right. These were constructed directly toward the American works rather than in the zigzag pattern common in many eighteenth century sieges. The approach, or sap, on the left was begun April 11, and was probably between present day Nassau and Hanover Streets. They constructed a battery at approximately Amherst Street, then pushed the approach south until they reached the point where they began the second parallel on April 13. The second parallel east of King Street was approximately half a block north of Mary Street. It was then extended southwest, crossing Mary and bisecting the block between Morris and Radcliffe Streets. The far west end of the parallel seems to have run along or just south of Radcliffe Street, between St. Philips and Pitt Streets. The second parallel was completed by April 19 and the approach trench on the left was pushed forward toward a third parallel.

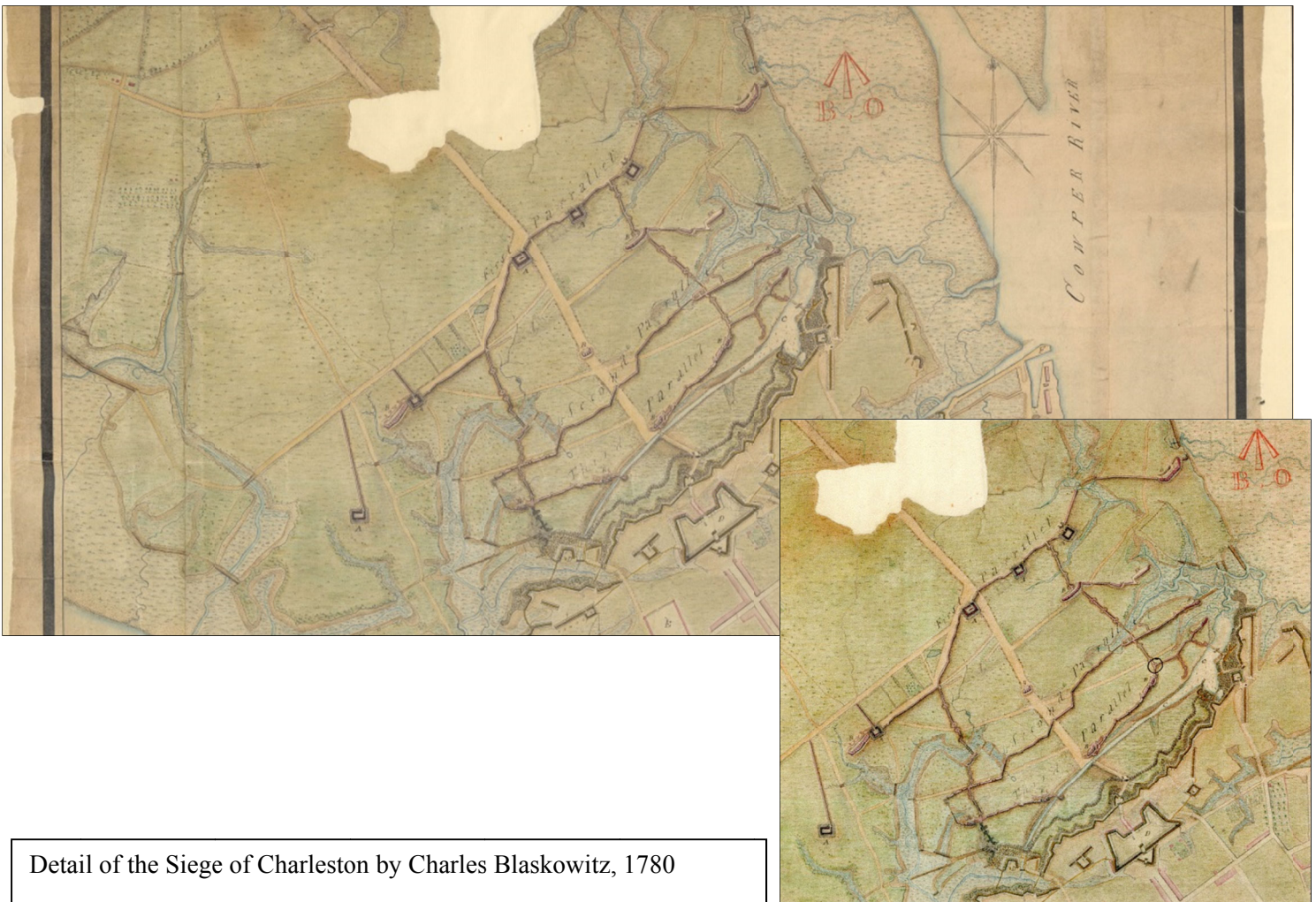
The approach on the British right was directed toward the American advanced work. Beginning near Cannon Street, it ran south just west of Coming Street, ending near the advanced work. This fortification was just west of Pitt Street between Vanderhorst and Duncan Streets. The British started this approach on April 16 and began the right section of the third parallel by April 22.



1804 Plat by John Diamond of a portion of Charleston Neck, showing "old fort"

The British constructed the third parallel in two separate sections, from each of their approach trenches. The section on their right ran roughly along Warren Street between Pitt and St. Philip's Streets, angling southeast until it reached the American canal, probably near the intersection of St. Philip's and Vanderhorst Streets.

The section on the British left, that most germane to this report, was more complex. Pushing forward their approach trench from the second parallel, the besiegers started the left section on April 21 at the point on the Blaskowitz map with the distinct "Y" shape (circled on insert). From here, they dug westerly and toward the town gate on King Street and the canal. By April 24, both sections of the third parallel had been extended to the canal. On April 25, the British began to dig easterly from the left section to seize control of the dam, which regulated the depth of water in the canal. By April 30, they reached the dam and began draining the canal the following day.



Detail of the Siege of Charleston by Charles Blaskowitz, 1780

As the British moved their parallels forward they constructed batteries and positioned cannon in them. American artillery fire began almost immediately after the construction of the first parallel and continued throughout the siege. British batteries did not open fire on Charleston until April 13. In the early weeks, casualties and damage to fortifications was minimal due to the

distances between the two sides. After the completion of the second parallel and approach trenches pushed forward to the third, however, grapeshot and rifle fire began to take their toll on soldiers working in and manning the trenches. American riflemen and Hessian jagers were particularly effective in picking off artillerymen servicing the guns. American forces made a sortie from the advance work against British and Hessian troops stationed in the right section of the third parallel on April 24, inflicting some casualties and taking prisoners, but this was the only such attempt made during the siege. The British suffered significantly greater casualties the following evening when soldiers working in the third parallel believed another enemy sortie was being made against them, panicked and began running to the rear. Hearing men running toward them, the men in the second parallel opened fire, killing and wounding a number of comrades retreating toward them.

Events outside of Charleston eventually sealed its fate. British cavalry and light infantry surprised the superior American cavalry on April 13 at Moncks Corner. The British force under Lieutenant Colonel Banastre Tarleton captured 98 dragoon horses, giving them a superiority in cavalry after the action. It also enabled a force of 2,300 men under Lieutenant General Charles Earl Cornwallis to move into Mt. Pleasant, which made it difficult to bring reinforcements and supplies into Charleston or to escape from the city. Tarleton again ambushed the American cavalry at Lenud's Ferry on May 6. Fearing attack, the American force at Lempriere's Point (current Hobcaw at the confluence of the Wando and Cooper Rivers) abandoned the post, making supply or escape even more problematic. The following day Royal Marines captured Fort Moultrie without firing a shot.

With the canal drained, British troops entrenched just outside the American fortifications, the Royal Navy in the harbor, and British troops on James Island and in Mt. Pleasant, Sir Henry Clinton summoned the garrison on May 8 (he had initially offered Lincoln the chance to surrender on April 10). A ceasefire took place to discuss the surrender of the town but negotiations broke down over the status of the American militia. Lincoln wished that they be allowed to return home while Clinton insisted they could do so only as prisoners of war on parole. Artillery fired resumed on May 9, with the heaviest cannonade by both sides during the siege.

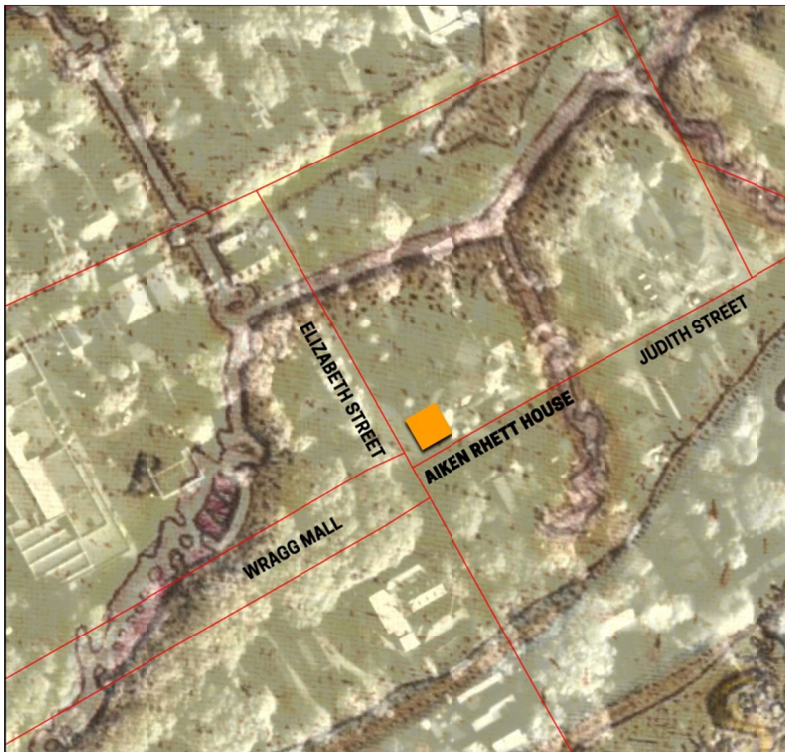
The following day, patriot militia in the garrison petitioned Lincoln informing him that they were satisfied with being prisoners of war on parole and Lincoln again asked for these terms which were granted. The Continental troops marched out of the gate of the hornwork on May 12 and laid down their arms in the environs of Warren and King Streets. The militia turned over their arms inside the defenses. Lincoln surrendered 6,000 men to Clinton, the largest defeat of the Revolutionary War. The British occupation of Charleston was to last until December 14, 1782 (Borick 2003).

### Development of Charleston Neck after the Siege

As noted above, rectifying the 1780s maps with the present landscape is challenging because the Charleston neck was rural at that time, lacking all by the major roads (King Street, or the Great Path, the notable exception). A few plats of the area as it developed in the early 19<sup>th</sup> century

show remnants of the features along with newly established city streets. Our archaeology at the Aiken Rhett yard suggests Charlestonians moving into the Neck encountered remnants of the siege lines. The British approaches lay in the section of the Neck that, in the early 19<sup>th</sup> century, was developed as a series of suburbs, then designated as City Wards 5 through 8. This same section of Charleston is undergoing rapid development, with large, multi-story hotels and office complexes covering the likely location of the British approaches.

As the eighteenth century advanced, Charles Towne expanded in size, economic importance, and the relative affluence of its citizens. White per capita income was among the



Overlay of the Blaskowitz map on satellite image

13 highest in the colonies (Weir 1983). Still, the city limits remained at Beaufain Street until 1783, the year the city was incorporated and renamed Charleston. The limit then moved four blocks north to Boundary Street (now Calhoun). Within these confines, a growing population was accommodated by subdividing lots and expanding into the center of blocks. Like other eighteenth-century cities, Charleston was a pedestrian town. Merchants needed to be near the waterfront for the sake of convenience as well as for economy of transportation. Hence, the area known as Charleston Neck, north of the city proper, was slow to develop (Rosengarten et al. 1987: Ch. II).

Throughout the colonial era, the peninsula above Beaufain Street was countryside, occupied by plantations and small farms. Many large landholdings were subsequently divided among heirs. As the city spread northward, these tracts were subdivided and developed. The land above Beaufain Street (the limits of the Grand Model) was originally granted in parallel parcels, each extending from the Ashley to the Cooper River. The parcel between present day Calhoun and Line streets was originally granted to Richard Cole, but in 1677 was re-granted to Richard and Rebecca Batten. The Cole-Batten land was subdivided among various persons, and in the 1730s Joseph Wragg acquired a large portion.

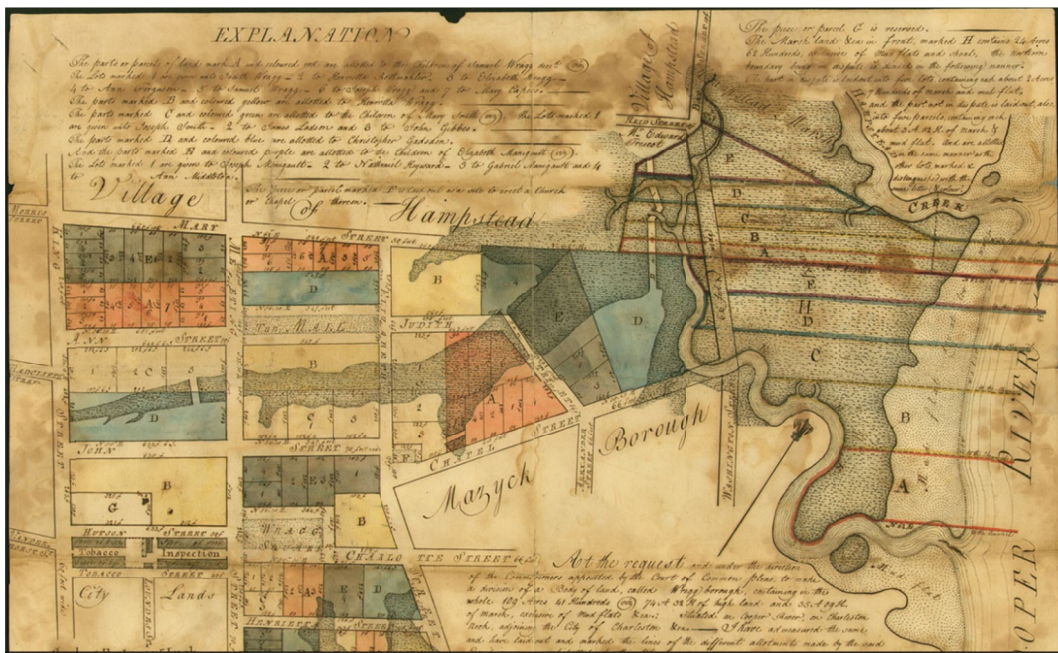
Similar acreages went to Daniel Cannon, Alexander Mazyck, the Elliott family, Henry Laurens, and others (Stockton 1985). As the colonial period came to an end, landowners turned an investor's eye toward the growing city. The lands between Beaufain and Boundary had already been developed as discrete communities, such as Middlesex, Laurens Square, and Ansonborough. Wealthy merchants with large holdings on the east side of Charleston Neck followed the same pattern in designing Hampstead, Wraggsborough, and Mazyckborough.

First to be laid out was the Village of Hampstead. Prominent merchant and slave broker Henry Laurens deliberately assembled 90 acres to subdivide and sell. Laurens touted his property in glowing terms, emphasizing its high elevation, its proximity to deep water creeks and future wharves, thus describing in 1769 the terrain the British would use to their advantage in 1780. Laurens noted:

“...the Land is much higher than Charlestown, being from ten to twelve feet above high water mark by an exact level lately taken, and is therefore apparently out of all danger from Hurricane floods....On the north side runs a bold creek capable of admitting vessels of ten feet draught of water in common high tides...Firewood, bricks, timber, and every other article may be landed on ..Causeways or wharfs as conveniently as on the wharfs in Charlestown and free from wharfage to the purchasers of the Lots for twelve months...”(General Gazette, November 27, 1769 quoted in Rogers et al. 1979).

Hampstead attracted a close-knit colony of Georgetown rice planters in the early nineteenth century. Other lot owners included enterprising free persons of color.

Mazyckborough was developed next. Alexander Mazyck, heir of the original grantee Isaac Mazyck, subdivided the property in 1786. The roads laid out in this suburb were exceptionally wide, 60 to 70 feet. Most likely this was a deliberate improvement, reflecting lessons learned in the lower city where narrow streets inhibited fire control and freight passage. The Mazyckborough thoroughfares, though, stopped at the boundary of the borough, resulting in numerous dead ends that defeated these well-laid plans (Stoney 1976:13)



1801 Plat of Wraggsboro by Joseph Purcell

Wraggsborough was part of the extensive holding originally granted to Joseph and Samuel Wragg. Following Joseph's death in 1751, his property was divided among his children (Rogers 1980:59). John Wragg, who inherited 79 acres east of the Broad Path, created the neighborhood of Wraggsborough. He set aside a park and mall for public use and named six streets for his children. John Wragg died intestate in 1796, leaving his heirs to settle his estate among themselves. To facilitate this distribution, Joseph Purcell surveyed the area in 1801. The Wragg family laid out the property for mixed use, with commercial locations at a premium. Joseph Manigault, and heir by marriage, noted in 1806, "...the difference between the value of lands on King Street and other parts of Wraggsborough is very great."

Since the colonial period King Street had been the major route into the city, following the ridge of highest land and dodging creeks up the center of the center of the peninsula. Beyond the main gate of the small walled city the street was called the Broad Path. Down this road came wagons and trailed livestock from the interior, carrying plantation produce and returning with imported goods, cloth, and provisions. To cater to the backcountry trade, merchants built stores and wagon yards along the Broad Path. By the 1770s some 3,000 wagons came annually to Charleston (Earle and Hoffman 1977:36). As footmen, pack-horses, and wagon traffic widened the thoroughfare, the Broad Path lost some, but not all, of its twistings and turnings. Samuel Gaillard Stoney commented in 1939, "Today an automobilist who loses his way in the aberrations of the Charleston streets may have no one to blame so much as a colonist who was trying to keep his boots dry on the way into the city" (Stoney 1939:18).

While the wagon trade continued, the character of King Street changed dramatically in the nineteenth century. By the 1850s, the improvement was striking; Charles Fraser described King Street as "so attractive, with its gorgeous windows and dazzling display of goods, inviting (the ladies) to a daily promenade" (Fraser 1854:12-13).

Aside from the wagon yard on King Street, the homes of prominent families were among the first structures built in the Neck. The Joseph Manigault house on John Street, the William Aiken House on King Street, Pres Quile on Amherst Street, six houses built by John Robinson, including the Aiken Rhett mansion, all were built before 1820. By 1822 many



Plan of the City Neck of Charleston, 1844

more streets were populated and the households and businesses listed in the City Directory had jumped from 45 to 330. Ward 5, that included Mazyckborough and Wraggsborough were the most densely occupied.

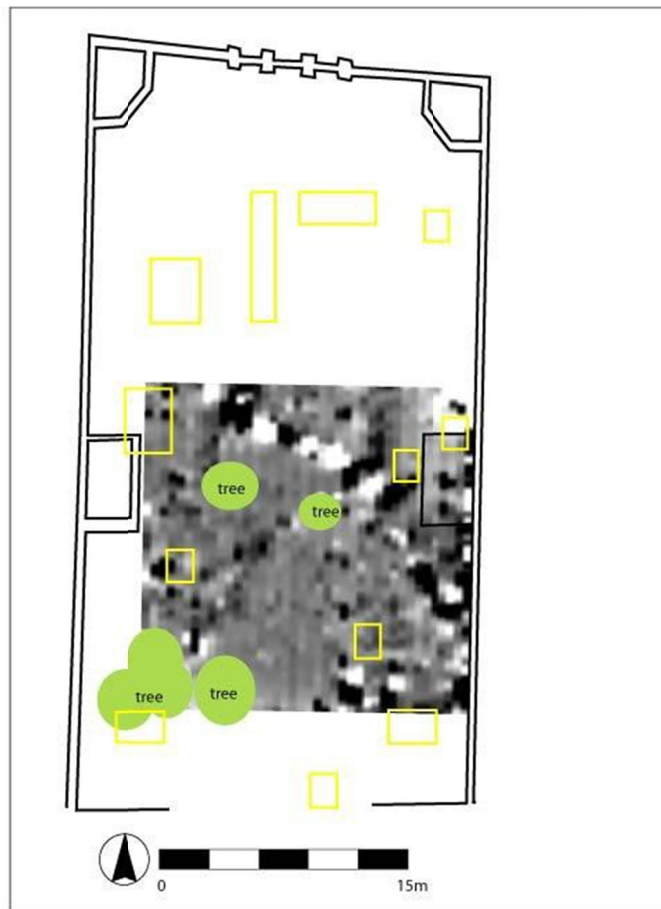
These trends continued through the 1830s and 1840s. More southerly streets remained more densely occupied, with King and Meeting street addresses dominating the City Directory entries. Streets in Ward 7 experienced a building boom following displacement of people by the fire of 1838 that ravaged Ansonborough, destroying 50 or more homes “of small value” (Pease and Pease 1978:283). Lots on the Neck, still outside of the city limits, were larger and less costly; people who wanted to build inexpensively and with less regulation moved across Boundary Street. By the eve of the Civil War, population distribution between Wards 5 and 7 became more even. Growth in these areas can be attributed partly to the process of land filling, which created new real estate.





Chapter III  
A Geophysical Survey of Portions of Wragg Mall,  
Wragg Square, and the Aiken-Rhett House

Jon Bernard Marcoux  
July 2012



## **INTRODUCTION**

This report summarizes the results of a geophysical survey conducted between March 12 and March 14, 2012. The survey, which was performed by Dr. Jon Bernard Marcoux of Auburn University Montgomery and Inna Burns Moore and Dave Baluha of Brockington and Associates, Inc., covered portions of three study areas in downtown Charleston, SC – Wragg Mall, Wragg Square, and the back lot of the Aiken-Rhett house (Figure 1). Investigators employed both ground penetrating radar (GPR) and magnetic gradiometry in the survey of Wragg Mall and the back lot of the Aiken-Rhett house. This report does not discuss the results of the GPR survey of the Aiken-Rhett house back lot, the data from which are still being analyzed by Inna Burns Moore. The survey of Wragg Square was conducted solely using a magnetic gradiometer. There were two main goals for the survey: 1) to determine whether the three study areas contain any remaining archaeological traces of British trenches (Second and Third Parallels) associated with the 1780 Siege of Charleston (Borick 2003); and 2) to identify any anomalies in the Aiken-Rhett house back lot that might aid in cultural and historic interpretation. The results of both GPR and magnetic gradiometer survey determined that, despite the hope that it was relatively undisturbed, Wragg Mall had indeed been significantly affected by the installation of two large metal pipes that run the entire length of the mall. No anomalies matching the size and/or orientation of the British Third Parallel were identified by the magnetic gradiometer. However, an anomaly matching the size and orientation of a military trench was detected by the GPR survey in the northeast corner of the survey area. At Wragg Square, the surveyed portion again did not detect any linear anomalies as would be expected for siege trenches; however, a number of point anomalies were identified. Given the location of a cemetery to the east of the study area, I recommend that these anomalies be investigated prior to any ground disturbing activities. We identified a number of anomalies in the back lot of Aiken-Rhett house. These include metal pipes, buried metal fragments, small ditch features, a fence line, and numerous features that may be the remnants of garden plantings. None of these anomalies can be associated with the British trenches.

## **SURVEY METHODS**

This survey employed techniques and methods falling under the subfield of archaeological geophysics (AG). Archaeological geophysics is a field of study that utilizes precise measurements of certain physical properties of soil in order to identify and define buried archaeological features (e.g., storage pits, trash-filled pits, burials, house posts). The most obvious benefit of AG is that it provides the archaeologist with a "picture" of sorts of what lies beneath the surface of the ground. This image can be used as map to direct excavations to specific features within an archaeological site - greatly reducing the amount of time spent searching for these features using traditional field methods. Archaeological geophysics has been in existence since the 1940s; however, only within the last decade have major advances in computing power and increases in the sensitivity of measuring instruments made AG a practical and cost-effective research tool (Ernenwein and Hargrave 2009; Gaffney and Gater 2003; Johnson 2006).

While still at a nascent stage, AG is growing in popularity among archaeologists in the southeastern U.S. Recently, AG techniques were used to define the size and structure of manmade "shell rings" along the coast of Georgia (Thompson et al. 2004) and to identify buried trash-filled pits and house structures at the Crystal River Mound site in western Florida (Pluckhahn et al. 2009). Despite this recent growth,

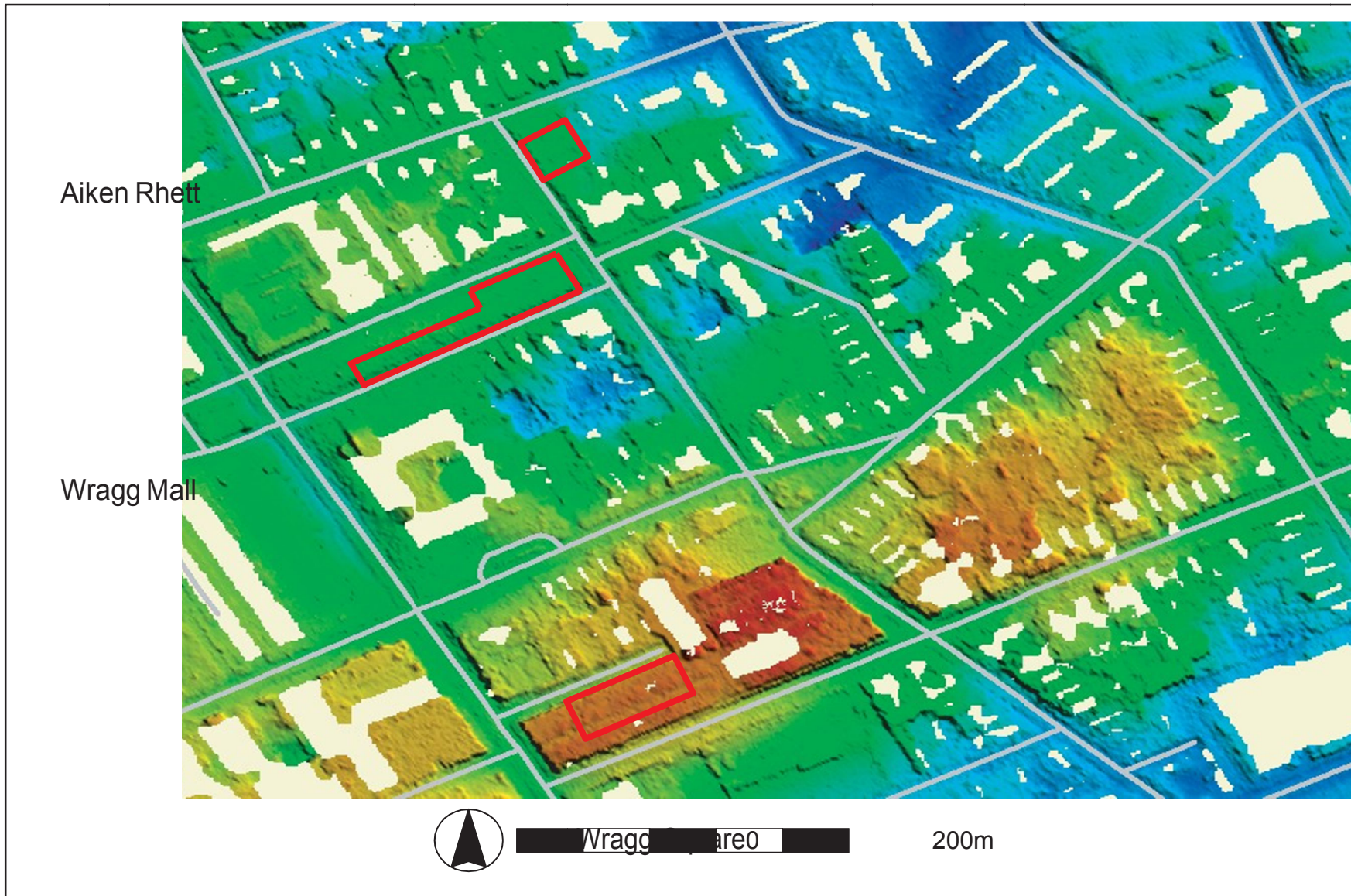


Figure 1. Map depicting the three survey areas (outlined in red) on a LIDAR-based elevation map.

however, AG remains largely limited to projects conducted by researchers at large universities (Johnson 2006).

Archaeological geophysics includes a number of different techniques, each of which focuses on a different physical property of soil. Ground penetrating radar (GPR) and magnetometry are the two most popular techniques because they are cost effective and time efficient (Conyers 2006; Aspinall et al. 2008; Kvamme 2006) Each technique requires a different piece of equipment and has different costs and time requirements. GPR accurately maps objects (like metal pipes) and archaeological features by sending radar wave pulses through the soil and measuring the time it takes for each wave to be reflected back to an antenna at the surface. Differences in soil, such as would be expected between the subsoil and a filled-in military trench, or the presence of subsurface objects are detected as changes in the velocity of the radar wave. The benefit of GPR is that it results in a three-dimensional picture of subsurface features, where the analyst can record the horizontal positions of features as well as their depths.

As the name implies, magnetometry identifies buried archaeological features by measuring magnetic fields below the surface of an archaeological site. These measurements are taken using a piece of equipment called a magnetic gradiometer. The gradiometer records changes in magnetic fields up to 1.5 meters deep. The goal is to identify localized anomalies that represent changes in the strength (called the gradient) of the earth's magnetic field. These anomalies are usually caused by stark differences in the composition of the soil, which would occur in a trash-filled pit or a burial, or by thermal alteration, such as in a hearth or the remains of a burned house (Ernenwein and Hargrave 2009).

For the magnetic gradiometer survey, we established a grid of 18 10-x-10m blocks for Wragg Mall, three 20-x-20m blocks for Wragg Square and a single 20-x-20m block for the Aiken-Rhett house back lot. Permission to survey Wragg Mall and Wragg Square was granted by the City of Charleston and by the Historic Charleston Foundation for the Aiken-Rhett house back lot. The sampling density for all areas was established at 12.5cm (eight readings per meter) on transects spaced 50 cm apart. This provides 1600 data points for a 10-x-10m block and 6400 data points for a 20-x-20m, block. Ropes spaced one meter apart were used as transect guides for Dr. Marcoux, who covered each grid by pacing in a zigzag pattern (Figure 2). The results of the magnetic gradiometer survey were processed by Dr. Marcoux using *Archaeofusion* software generously provided by the University of Arkansas Center for Advanced Spatial Technologies.

For the GPR survey of Wragg Mall, we used the same grids as that established for the magnetic gradiometer survey (Figure 3). The wave pulses provide essentially continuous readings along transects. The transects were spaced two feet apart. The data recovered from the survey were processed by Inna Burns Moore using *GPR Slice* software.

## **SURVEY RESULTS**

### *Wragg Mall*

As with all three study areas, Wragg Mall was chosen by Carl Borick, Director of the Charleston Museum, because it is located in the vicinity of where a British trench should have been placed during th



Figure 2. Jon Marcoux walking transects with the magnetic gradiometer at Wragg Mall.



Figure 3. Dave Baluha walking transects with the GPR unit at Wragg Mall.

Siege of Charleston in 1780 (Figure 4). Additionally, this area was believed to be relatively undisturbed by construction and utilities since the siege. Figure 4 is a map presenting a roughly geo-referenced sketch map, known as the Sir Henry Clinton Map, obtained by Carl Borick from the William L. Clements Library at the University of Michigan. The sketch map was tied to modern-day points along Judith Street, where the angle of a British tidal creek crossing on the map matches the modern orientation of Judith Street. The other anchor point is the southwestern corner of the northeastern projection of American Horn Work, which can be found as a monument today in Marion Square. The sketch map is laid over a Light Detection and Ranging (LIDAR) elevation raster graphic of Charleston obtained from the National Oceanic and Atmospheric Administration Coastal Services Center. While only a schematic, the figure shows a significant correlation between the topography and tidal creeks, on the LIDAR map, and the earthworks and creek crossings on the Sir Henry Clinton Map.

Because of time constraints, we concentrated our survey on the eastern portion of the mall, where Borick's cartographic research suggested the trench would cross. Additionally, the northern section of the mall was obstructed by construction fences. The results of the magnetic gradiometer survey are depicted in Figure 5. The colors on the map represent the divergence of magnetic gradients (measured in nanoteslas) from a baseline value established for an undisturbed piece of ground. The darker areas have values of greater magnetism while lighter areas have values of lesser magnetism. The map is dominated by linear anomalies running parallel to the mall. The southern anomaly alternates between black and white - extreme values whose pattern represents a *dipolar* anomaly. In magnetometry, a dipolar anomaly is a tell-tale sign of a highly magnetic material like iron or an iron alloy, a material that has its own magnetic field. Fired bricks made with iron-rich clays can also be detected as dipolar anomalies. The patterning in both northern and southern areas represents large metal pipes. Other dipolar anomalies are located along the borders of the survey area, where cars are parked. The total effect of these large metal objects can be seen in the "shadow" they cast across the survey area, essentially drowning out any weaker anomalies that may be present. In sum, the magnetic gradiometer, an extremely sensitive measuring device, was simply overwhelmed by the presence of large, highly magnetic objects.

The results of the GPR survey are depicted in Figure 6 and Figure 7. A smaller area was covered in this survey because Ms. Moore and Mr. Baluha had less time to volunteer than Dr. Marcoux. The colors in the GPR results correspond to reflectivity, with blue-green-yellow-red representing increasing amounts of reflectivity. Figure 6 shows the presence of a highly reflective linear object running parallel to the mall between 60 and 75 cm beneath the surface. The position of these anomalies in both the northern and southern portions of the mall matches the anomalies detected in the magnetic gradiometer survey. This confirms the presence of pipes running the length of the mall. Figure 7 depicts an anomaly of high reflectivity that is located deeper than the pipe disturbance (80 – 175 cm). In the northern portion of the mall, the anomaly is oriented from northeast to southwest, which roughly matches the orientation of the British Third Parallel in the Sir Henry Clinton Map 310. The anomaly is present at the same depth in the southern portion of the mall, although here it is much more amorphous.

### *Wragg Square*

In Figure 4, one can see the correspondence between the modern-day location of Wragg Square and the

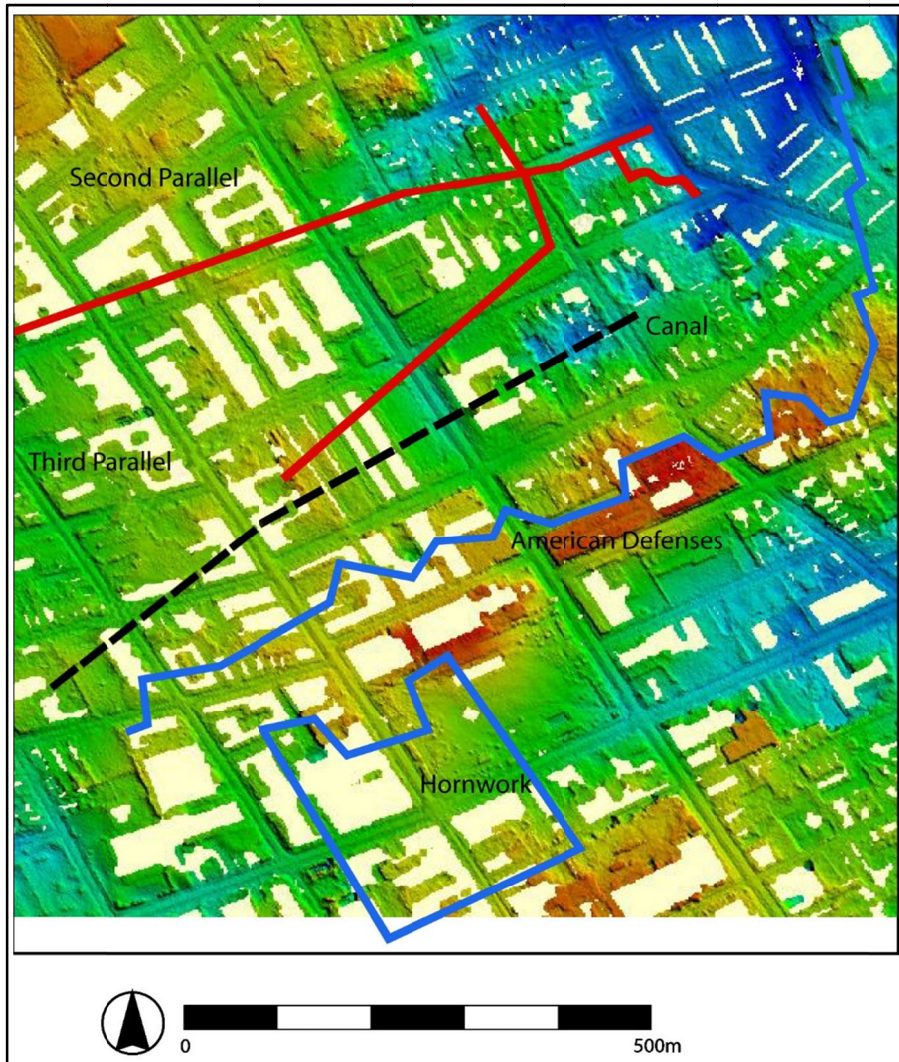


Figure 4. A schematic depicting a portion of the 1780 Henry Clinton Map superimposed over a LIDAR elevation map of the study areas.

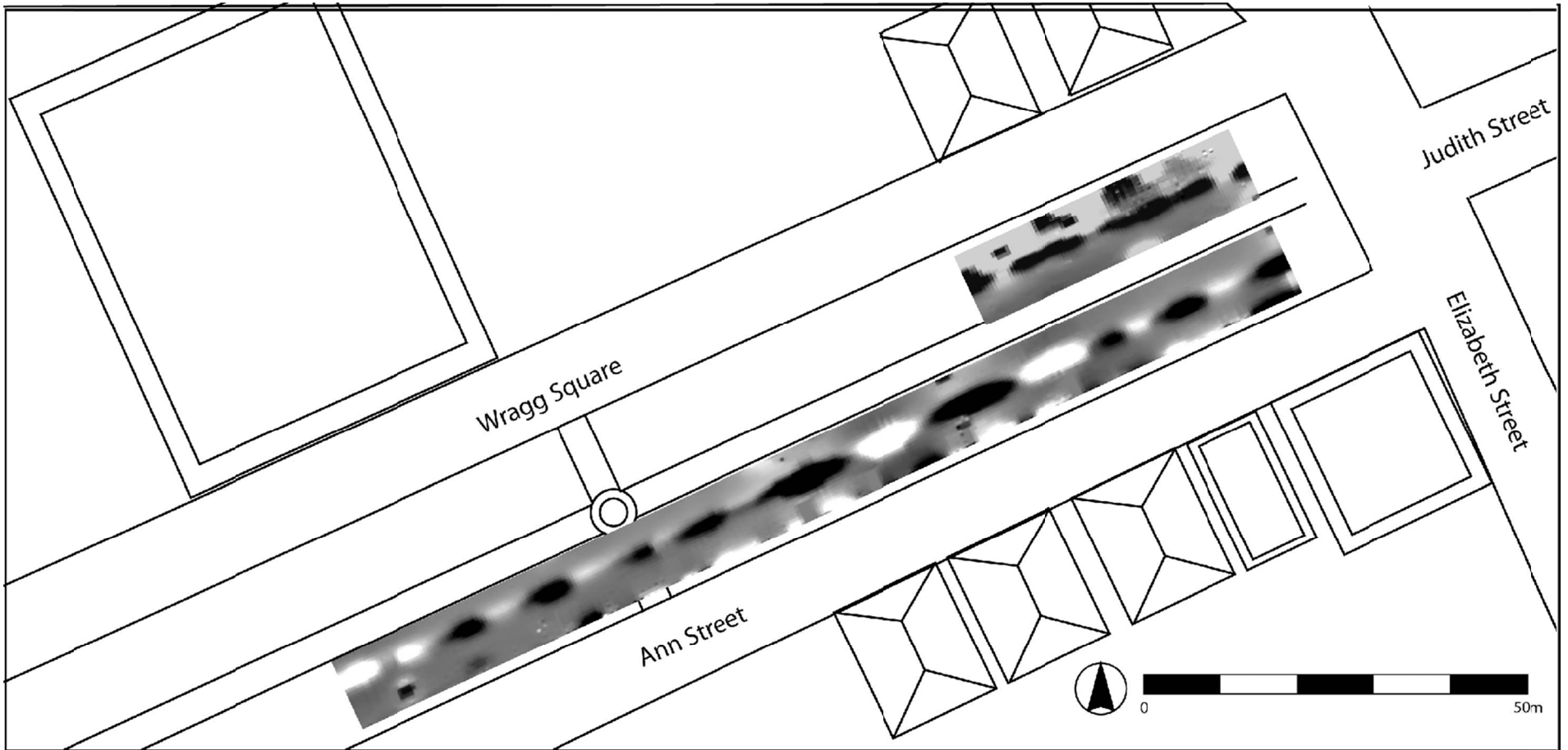


Figure 5. Results of the magnetic gradiometer survey of Wragg Mall.



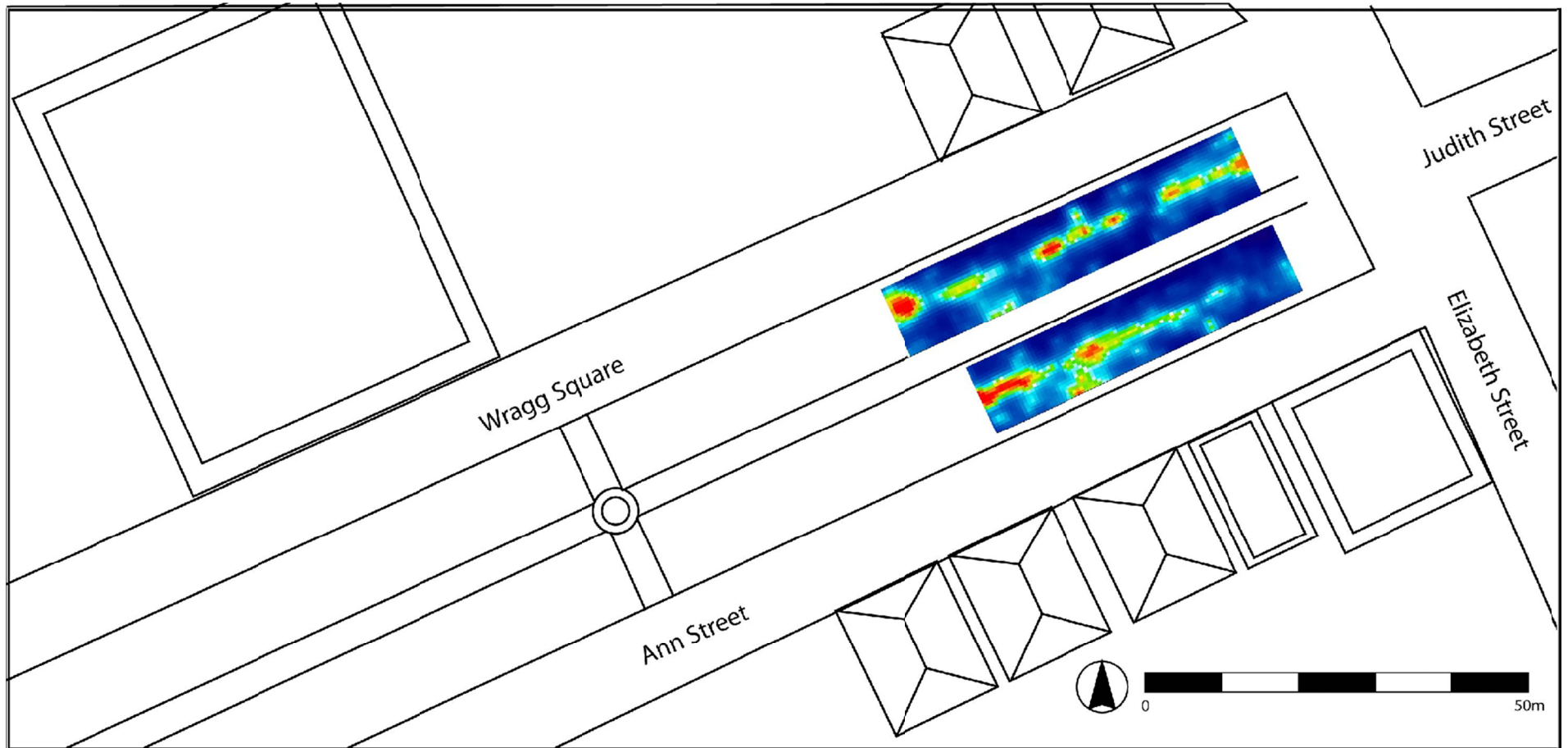


Figure 6. Results of the GPR survey of Wragg Mall at 60-75 cm below surface.

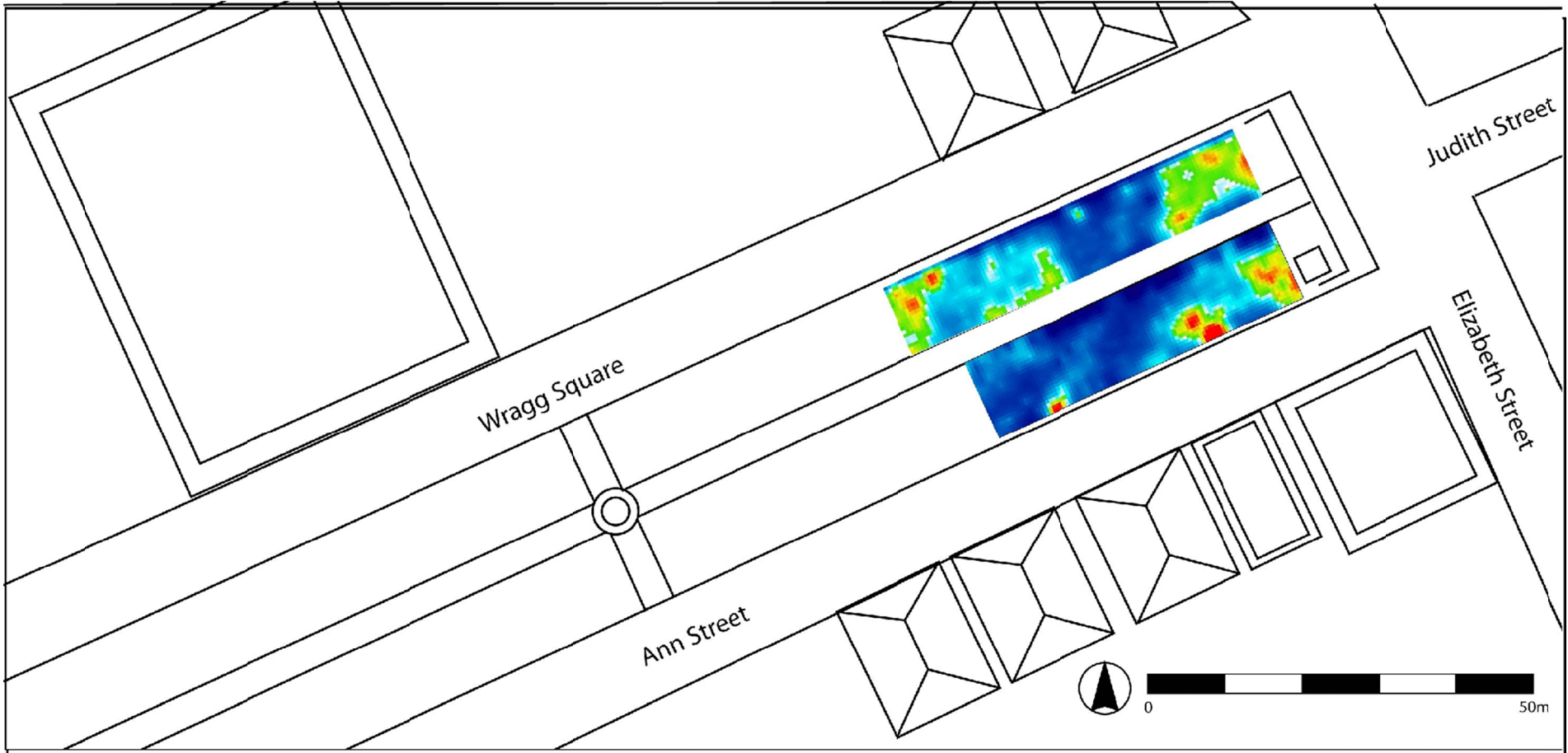


Figure 7. Results of the GPR survey of Wragg Mall at 80-175 cm below surface.

American defensive earthworks depicted in the Sir Henry Clinton Map 310. Due to time constraints, we concentrated our efforts on a 60-by-20m area along the northern portion of the square, where we had the highest likelihood of intersecting the earthwork. Figure 8 depicts the results of the magnetic gradiometer survey of this area. The figure shows that much of the area is magnetically “quiet.” This is a good indication that despite its suspicious prominence, the area is indeed natural high ground and not artificially raised. The major disturbance is a metal pipe running just under the cinder footpath of the square along the southern edge of the survey area. This pipe doubtless carries electricity to light posts along the walk. Three large regularly spaced anomalies are likely former positions of light posts that are still electrified. Three additional areas of significantly lesser magnetism (colored white in the figure) occur at the eastern end of the area, running perpendicular to the walk. These are also likely associated with electricity, as this force significantly alters magnetic fields and thus creates large anomalies in gradient surveys.

No linear anomalies, as would be expected for a defensive earthwork, were identified. A number of point anomalies were detected (circled in red in Figure 8). These are all areas of higher magnetism that may be the result of human activity. Typically, anomalies such as these represent subterranean refuse-filled pit features, such as wells, privies, pits for building piers, or the results of thermoremanent magnetism from bricks or hearths. The regular spacing of the anomalies within the large circle is provocative – perhaps suggesting the pattern of structural piers and a chimney. Alternatively, while highly speculative, these anomalies may be burials associated with the cemetery on the east side of the Second Presbyterian Church. These anomalies should be tested archaeologically with limited and targeted excavation in order to confirm their existence and determine their function.

#### *Aiken-Rhett House Back Lot*

This study area is the open lot behind the Aiken Rhett house. As shown in Figure 4, the lot was chosen because it might contain remnants of the British Second Parallel. In addition to testing for the presence of this military feature, the magnetic gradiometer survey was conducted to identify near surface archaeological features that might be used to aid in the interpretation of the historical use of the back lot. This area was previously the focus of excavations by Martha Zierden (2003) of the Charleston Museum. Given time constraints, we chose a single 20-x20m block to survey. We placed the block in an area that appeared to have the least metal disturbance during a preliminary magnetometer scan of the area (in scan mode, the magnetometer functions like a metal detector). As stated in the introduction of this report, a GPR survey was conducted in the courtyard between the stable and kitchen buildings in an area where Martha Zierden (2003) uncovered very complex deposition events; however, these results are still being analyzed by Ms. Moore of Brockington and Associates, Inc.

Figure 9 depicts the results of the survey. The yellow rectangles mark the approximate locations of Zierden’s 2001-2002 excavation units. Compared to the other study areas, these results identify a number of anomalies. Figure 10 highlights and classifies the various anomalies in order to make interpretation easier. Generally, the magnetic gradient values are quite variable across the surveyed area (outlined in purple in Figure 10). This is most likely caused by a combination of three factors. First, it is probable that the back lot was leveled by adding fill soil, and this heterogeneous fill is detected by the magnetometer. As shown in Figure 4, there is an abrupt increase in elevation at the edge of the

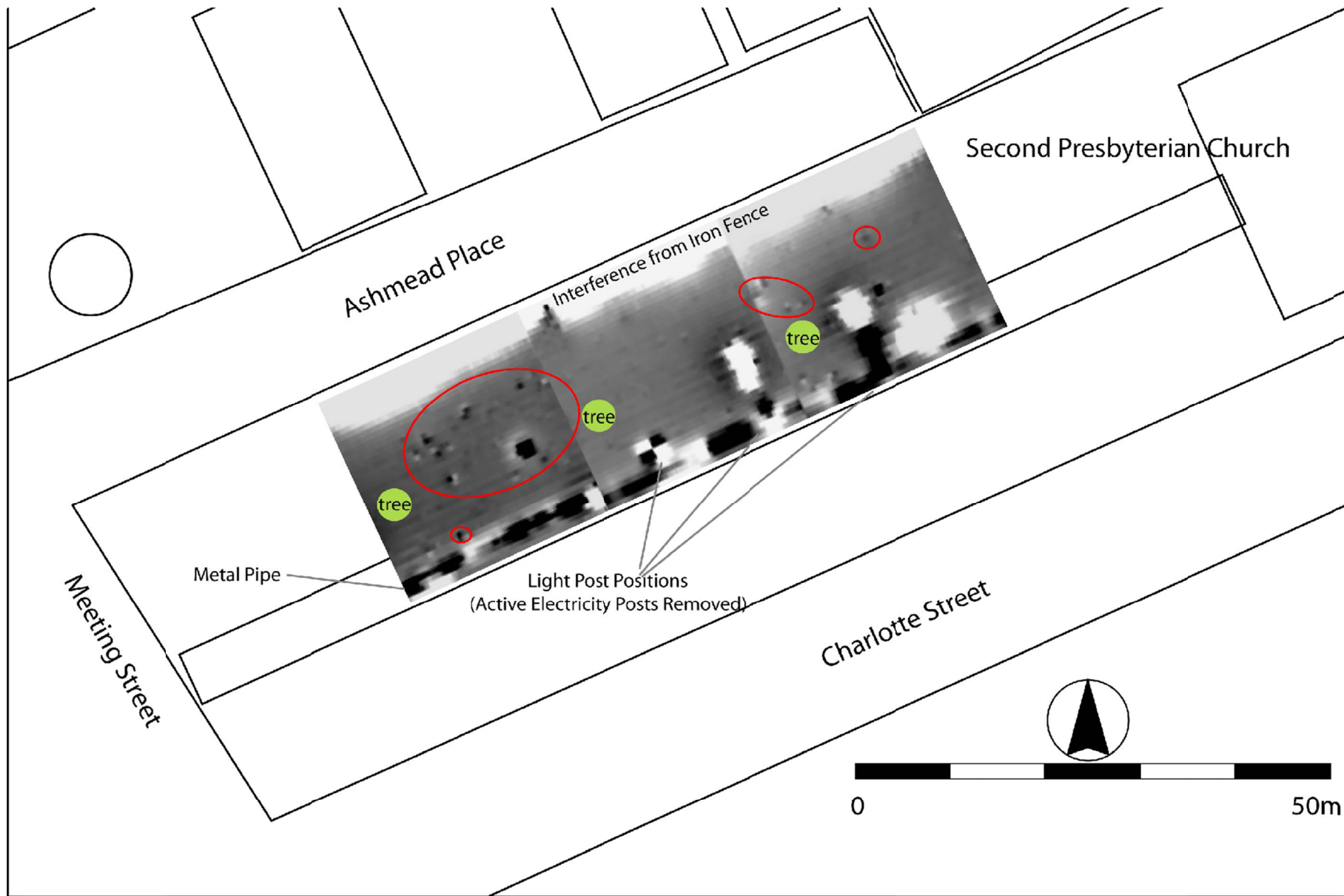


Figure 8. Results of magnetic gradiometer survey of Wragg Square.



Figure 9. Results of the magnetic gradiometer survey of the Aiken-Rhett house back lot.



Figure 10. Interpretation of results of the magnetic gradiometer survey of the Aiken-Rhett house back lot.

Aiken-Rhett lot- an increase that doubtless is the result of adding fill to a once low marsh area. Second, these areas have been heavily trafficked by livestock. Zierden (2003) argues that the western portion of the lot was used for cows in the early twentieth century. Continual trampling and the addition of manure by livestock would also contribute to the variability seen in magnetic gradient values. Third, small pieces of metal refuse, such as nail fragments, soft drink can tabs, etc. can also affect the instrument's measurements. As can be seen in Figure 9, the central portion of the study area exhibits much less variability in gradient values. This homogeneity is most likely the result of this area being used as an avenue, which was kept clear of metal and refuse, and as argued by Zierden (2003), was at times also separated from the rest of the back lot by fences (See below).

Other anomalies include metal objects, possible ditches, fence posts, and garden plantings. Two metal pipes were identified, one running northwest-southeast across the center of the survey area and one running north-south along the western wall of the back lot. The first pipe is the same water pipe uncovered by Zierden (2003) in her excavations. Five large amorphous dipolar anomalies suggest metal-rich deposits. One such anomaly is located in the southwestern portion of the survey area. There are three additional dipolar anomalies- one located in the northeast corner of the survey area, one along the east edge of the survey area, and one to the southeast of the diagonal metal pipe in the center of the survey area. These anomalies are more than likely pits that contain ferrous metal objects. Zierden (2003) uncovered one such pit, filled with enameled tin pots, in her excavations. A large U-shaped anomaly was also detected in the southeastern portion of the survey area. This dipolar anomaly may be caused by metal objects; however it may also be the result of bricks. The shape and orientation of the anomalies match the slate-capped brick-lined drain Zierden excavated in 2001-2002. Three linear anomalies of increased magnetism were identified in the eastern portion of the survey area. The north- south orientation of these features matches the above-mentioned excavated drain feature, and as such may be additional drainage features.

Twenty four point anomalies of increased magnetism were recorded across the survey area. While some of these anomalies may represent refuse-filled pits, the lack of metal in these features along with Zierden's (2003) previous work, suggest two alternative interpretations. Five of the anomalies are evenly-spaced along a north-south axis in the east-central portion of the survey area. The line created by these features is aligned with the edge of the kitchen structure and gate on the north side of the lot. It is likely that these are post features that represent a fence that lined a central avenue (colored gray in Figure 10). Based on location and alignment, I tentatively identify three features to the west as posts as well. The remainder of the features is interpreted as possible garden plantings (colored green in Figure 10). These small areas of increased magnetism match what would be expected for small pits filled with organically rich topsoil typically used for gardening.

## **CONCLUSIONS**

In addition to the possible identification of a segment of the British Third Parallel in Wragg Mall, we can draw a number of conclusions from the results of this survey. First, magnetometry can be an ill-suited survey method for urban study areas. Magnetometry employs very sensitive equipment that is easily affected by ferrous metal and electricity, which are both quite common in a downtown setting. This weakness can be seen in the results from Wragg Mall and Wragg Square, where iron fences and

automobiles significantly influenced the results. GPR is unaffected by magnetic forces, and thus presents a good complement and/or alternative. Second, despite suspicions to the contrary, Wragg Mall has indeed been the site of municipal utilities projects, as evidenced by the pipes identified in both magnetic gradiometer and GPR surveys. Third, Wragg Square appears to be a natural piece of high ground rather than an artificial prominence. Fourth, the magnetic gradiometer survey identified a number of anomalies in the survey area of Wragg Square that will require future work. Fifth, as demonstrated at the Aiken Rhett house, magnetometry is a low cost, non-invasive technique that provides archaeologists with information on feature locations that can be used to focus future excavations and greatly reduce the time and money they spend in the field.



## Chapter IV

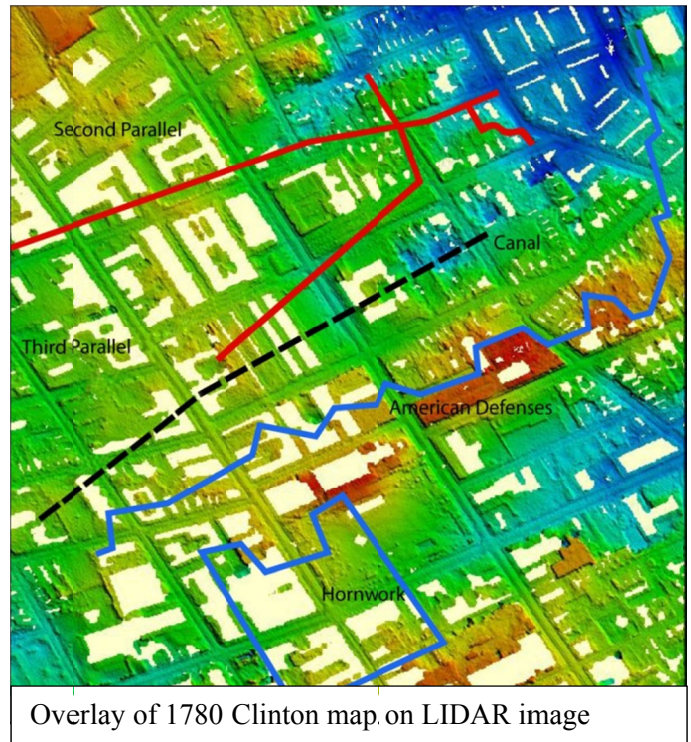
### Archaeological Monitoring at Wragg Square

Martha Zierden and Ronald Anthony

January 22-25, 2016

Based on information provided by Martha Zierden and Carl Borick, Jon Marcoux surveyed both Wragg Mall and Wragg Square using magnetic gradiometry in 2012. The magnetic gradiometer identifies buried archaeological features by measuring magnetic fields below the surface of the site. Based on period maps and current elevations, clearly part of the American defense line ran through present day Wragg Square, bordered by Ashmead Place, Meeting Street and Charlotte Street. Period maps seem to indicate, meanwhile, that part of the British third parallel may have crossed part of Wragg Mall, just north of the Museum. LIDAR imagery of the city clearly shows Wragg Mall as high ground, likely natural high ground (see area shaded red).

Three years later, the City of Charleston put forth plans for updates to Wragg Square and Museum staff was invited to attend stakeholder meetings. Zierden suggested that the Museum could perform archaeological monitoring of any digging related to construction and City staff welcomed this idea. The first major step in the renovation process was replacement of the stairs leading from Meeting Street into the park. This promised to provide an excellent opportunity to view a profile of this “ridge,” where part of the defense line seems to have been located. During a cold, rainy week in January 2016, a construction crew broke up the old steps and part of the associated brick wall, exposing significant soil below the present ground surface. Zierden and Museum Archaeologist Ron Anthony monitored the work.



In anticipation of excavation along the steps at Meeting Street, archaeologist Martha Zierden monitored the site daily January 11-22. Removal of the iron fence, old brick stairs, and a section of brick wall along the Meeting Street entrance commenced on January 20. On January 21, a backhoe excavated an area approximately 28' wide and 14' deep, to allow new steps that are both wider and shallower. After phone calls from Reid at AOS construction, archeologists observed the backhoe work during the course of the day. At the end of their work day, archaeologists began to clean and examine the excavations. We were allowed to work Friday, Saturday, and Sunday, with construction resuming on Monday morning.



Excavation of the footprint for new stairs at Wragg Mall entrance on Meeting Street

The rain associated with Winter Storm Jonah began early Friday morning. We worked from 8:30 until approximately 10:30, when the rain became too steady to work. At this time, all profiles were cleaned and photos taken. Work resumed around 3:10, when there was a break in the rain. Profiles were mapped at this time. Time and weather constraints led to rather rapid mapping of Feature 2, with only major bands of soil drawn. The crew returned to the site early Monday morning, to excavate Feature 1, record the east profile of the northern trench, and screen some of the back dirt pile for diagnostic artifacts.

The excavated area consisted of two trenches running east/west, approximately 5.2' deep. These trenches were on either side of the cut, and were approximately 5' across. Soils in the center of the 28' area remained, and were sloped from the base of the Meeting Street sidewalk on the west to the top of the ground on the east. Our efforts focused on recording soil features in the north and south profiles, and retrieving artifacts sufficient to date the soil layers.



Archaeologists examining the north profile of stair excavation

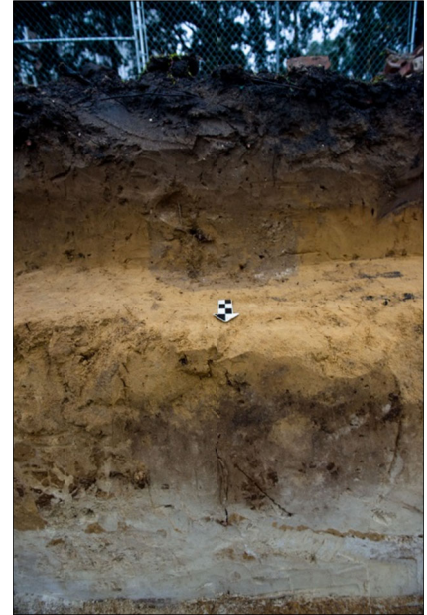
The south profile immediately demonstrated that the elevation of Wragg Square is entirely natural, and not the product of filling. The 5' soil profile featured a dark grey brown (10yr3/2) sandy topsoil (labeled Zone 1), followed by a brown-grey sand typical of 19<sup>th</sup> century deposits in Charleston (Zone 2 – 10yr4/3). The zone 2 sand contained shell fragments, relatively sparse. The shell averaged dime-size and smaller.



South profile of the Wragg Square excavation

Beneath the dark zones was sands typically interpreted as sterile subsoil. Here a wide band of orange to yellowish-brown sand (10yr5/8) was over 2' deep, with small nodules of hard dark sand. This was followed by a white to light grey sand (10yr7/2), 1.7 feet thick. All of the soils, from top to bottom, were soft, friable sand.

One feature was noted in the south profile: A well-defined pit or large post initiated at the base of zone 2 and intruded into the "shelf" of sterile yellow-brown sand. This was designated Feature 1. Approximately 1' of the feature was visible in the cut profile. The feature exhibited straight sides and was roughly square with rounded corners. Soils were mottled medium grey, light grey, and yellowish-brown sands. An area .6' wide presented in planview at the top of the "shelf" and so was available for excavation and screening. The feature continued an additional 1.7' below the top of the shelf; thus the complete profile of feature 1 was 2.5' deep. Fill included small shell fragments, two nails, one glass, and three ceramic fragments, including blue hand painted and annular wares.



Close-up, post hole in south profile



Oblique view of south profile excavation

The upper depositions, zone 1 and zone 2, continued across the excavation block, and were present in uninterrupted form in the north profile, as well. Below zone 2, similar bands of yellow-brown sandy sterile and light grey sterile were noted in western section of the profile. The principal feature of the northern profile was a large pit, or trench, that sloped from west to east.



Photographing the north profile

The edge of the feature initiated in the western edge of the profile, .2' below the base of zone 2, sloping along the 14' face of the profile to a depth of 5' below surface. As this was the base of the excavation, it is possible that the large pit or trench continues beyond that depth. The profile featured 6 bands of fill. These include a light grey sand that actually formed a separate pit in the northeast corner, a mottled yellow and grey sand, a distinct band of mottled dark brown-grey sand, a layer of grey sand, a mottled white-to grey sand, and a band of yellowish sand. The large pit of light gray sand interrupted the distinct band of dark soil.



North profile of Wragg Square excavations



Oblique view of north profile

Because of the possible significance of this deposit, we also cleaned and recorded the eastern soil profile in this northern cut. Here the soil bands were similar, though the distinctive dark band presented at a sharper angle, suggesting a hill or parapet. The entire deposit was designated Feature 2. Because of time and weather constraints, only the major bands of soil were mapped.

Following photographing and mapping, portions of the profile were screened. No artifacts were retrieved from the dark soil band.

Soil samples were collected from each of the deposits in the south profile. Feature 1 was excavated and a soil sample retained. All materials in the screen were retained. Some of the dirt pile excavated by the back hoe was screened for artifacts. A few late 18<sup>th</sup>-early 19<sup>th</sup> century materials were recovered. Overall the artifacts were very sparse, as would be expected on a site without any domestic occupation.

The brick wall along Meeting Street was examined by Katherine Pemberton and April Wood of Historic Charleston Foundation when they visited on Friday morning. They noted the interior brick was bright red, and the lime mortar soft. The mortar oozed out of the back of the wall, and no builder's trench was evident. This suggests the wall was laid against the shaped hill. Dark purple Charleston bricks formed the front face of the wall, and these may be a later addition. Alternately, the red brick could have been used as the interior, and the harder brick used as the visible face.



Excavating Post Hole 1	
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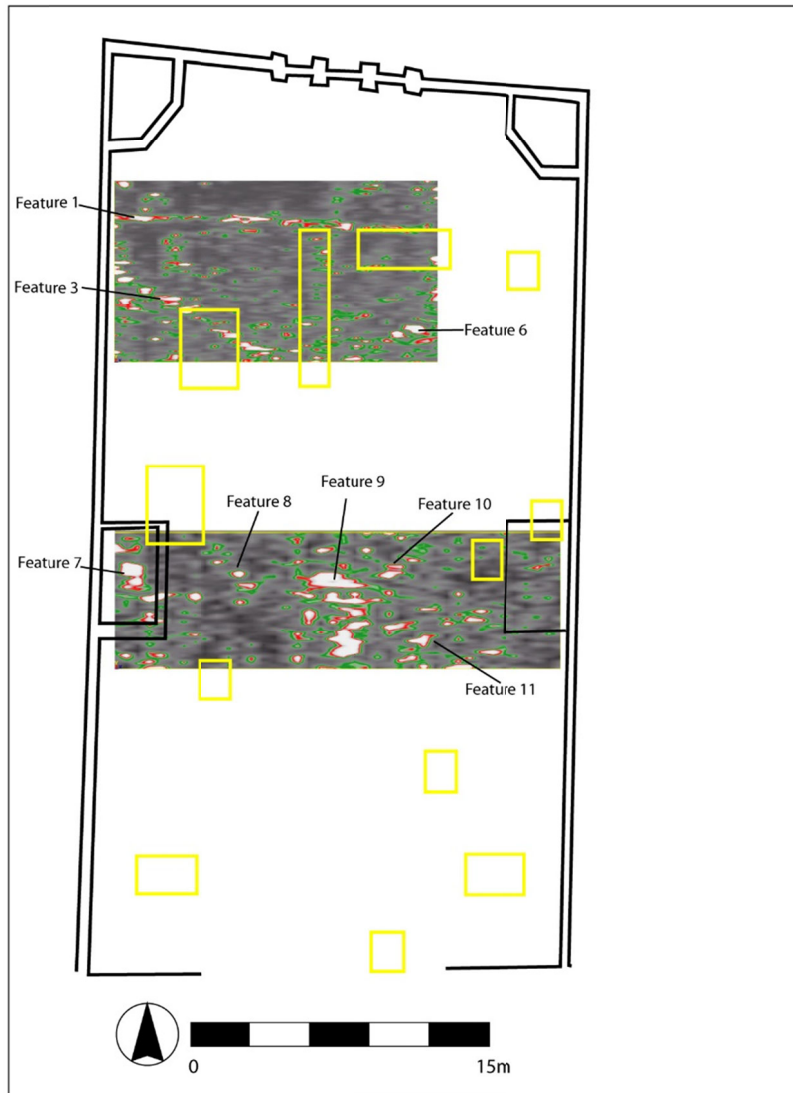
Though brief, the archaeological monitoring of the Meeting Street excavations at Wragg Square were successful on two fronts. First the south profile clearly demonstrated that Wragg is original high land, one of the highest ridges on the peninsula. Two shallow cultural zones top a mound of sterile orange to white sand. The content of zones 1 and 2 are consistent with the known history of the property, one outside the city limits, then donated as a public park. The sparse artifact content supports the public, non-residential use, while the few artifacts recovered from zone 2 and the underlying feature 1 reflect the early 19<sup>th</sup> century date of development.

Though interpretation is more challenging, the large pit or trench filled with multiple soil layers suggest some sort of large excavation occurred on the property. The lack of artifacts in these soils does not necessarily support a late 18<sup>th</sup> century date, but it does not refute it, either. The relatively small, and angled, view of the pit made it impossible to determine the size and trajectory of the excavated trench. Once again, the ability to trace large fortification or siege events in the city was compromised by the limited ground surface and the depth and complexity of overlying deposits. The feature does suggest that there are intact archaeological deposits in the park, possibly associated with the Siege of Charleston. Additional excavation or remote sensing is warranted.

# Chapter V

## A Ground Penetrating Radar Survey of Portions of The Aiken-Rhett House

Jon B. Marcoux, Ph.D.  
August 2016



## **INTRODUCTION**

This report summarizes the results of a ground penetrating radar (GPR) survey conducted on June 20, 2016 at the Aiken Rhett House for the Historic Charleston Foundation. The survey was performed by Dr. Jon Bernard Marcoux of Salve Regina University, assisted by Aarti Arora of Boston University. The areas in the survey included two non- contiguous survey blocks (Grids 1 and 2) located in the yard behind the house. Grid 1 is a 16 meter – by – 9 meter block located in the northern portion of the yard, and Grid 2 is a 19 meter – by – 6 meter block located in the central portion of the yard (Figure 1).

There were three main goals for the survey: 1) to determine whether the survey area contains any intact archaeological deposits associated with the property's extensive history; 2) to identify any patterned anomalies that might aid cultural and historic interpretation of the landscape associated with the property, especially garden features; and 3) to provide the property owner with location data of possible cultural features that can be used to guide future archaeological explorations and aid in managing cultural resources on the property.

The results of the survey demonstrate that the property likely contains a number of intact cultural features. The investigation identified three features associated with pipes, one probable back-filled archaeological excavation unit, two possible paths, a central buried surface that was likely a central cart path or driveway, two filled pits, and a large trench feature. This last feature may be associated with the Revolutionary War battle known as the Siege of Charleston, which was fought in 1780. Table 1 provides a summary of these features along with relevant characteristics.

## **SURVEY METHODS**

The survey employed techniques and methods that fall under the subfield of archaeological geophysics (AG). Archaeological geophysics is a field of study that utilizes precise measurements of certain physical properties of soil in order to identify and define buried archaeological features (e.g., storage pits, trash-filled pits, burials, house posts). The most obvious benefit of AG is that it provides the archaeologist with a "picture" of sorts of what lies beneath the surface of the ground. This image can be used as map to direct excavations to specific features within an archaeological site - greatly reducing the amount of time spent searching for these features using traditional field methods. Archaeological geophysics has been in existence since the 1940s; however, only within the last decade have major advances in computing power and increases in the sensitivity of measuring instruments made AG a practical and cost-effective research tool (Ernenwein and Hargrave 2009; Gaffney and Gater 2003; Johnson 2006). While still at a nascent stage, AG is growing in popularity among archaeologists in the southeastern U.S. Recently, AG techniques were used to define the size and structure of manmade "shell rings" along the coast of Georgia (Thompson et al. 2004) and to identify buried trash-filled pits and house structures at the Crystal River Mound site in western Florida (Pluckhahn et al. 2009). Despite this recent growth, however, AG remains largely limited to projects conducted by researchers at large universities (Johnson 2006).



Archaeological geophysics includes a number of different techniques, each of which focuses on a different physical property of soil. Ground penetrating radar (GPR) is the most popular technique because it is cost effective and time efficient (Conyers 2006; Aspinall et al. 2008; Kvamme 2006) GPR accurately maps objects (like metal pipes) and archaeological features by sending radar wave pulses through the soil and measuring the time it takes for each wave to be reflected back to an antenna at the surface. Differences in soil, such as would be expected between the subsoil and a filled-in pit or the presence of subsurface objects are detected as changes in the velocity of the radar wave. The benefit of GPR is that it results in a three-dimensional picture of subsurface features, where the analyst can record the horizontal positions of features as well as their depths.

For the GPR survey, survey blocks were placed in two areas of the Aiken-Rhett yard (Figure 1). The goal of the survey block placement was to maximize coverage of the property while avoiding obstacles, primarily trees. Grid 1 is a 16 meter – by – 9 meter block located in the northern portion of the yard, and Grid 2 is a 19 meter – by – 6 meter block located in the central portion of the yard. The geophysical survey instrument parameters were set to collect the maximum amount of data within reasonable time and data storage limits. The GPR instrument is capable of relatively dense data point collection. The GPR instrument was set to record 50 scans per meter with 512 individual radar pulses per scan on transects spaced 50 cm apart. This resulted in 25,600 radar pulses per meter, which for example would equate to 20,992,000 individual pulses for a 20 m-x-20m area. Pin flags were used to mark transects for Dr. Marcoux, who covered each grid by pacing in a zigzag pattern. The data recovered from the GPR survey were processed by Dr. Marcoux using RADAN software by GSSI, Inc.

## **SURVEY RESULTS**

Figures 1 and 2 depict the results of the GPR survey across the entire property at depths of 25 centimeters below the surface (cmbs) (Figure 1) and 55 cmbs (Figure 2). These figures show the amplitude of radar reflections recorded by the GPR instrument. The amplitude, or strength, of the reflection is color-coded from dark low (gray) to high (white). Green and red are used to mark particularly strong contrasts, aiding the analyst in the identification of possible features. As stated above, one of the benefits of GPR is the ability to explore subsurface features in three dimensions. Each transect in the survey captures a vertical profile of the soil to a depth of approximately 1 meter. *Appendix A* contains representative profiles of each type of feature. The features are shown as high amplitude reflections that represent significant differences in the soil encountered by the radar waves. Hyperbolas - the upside-down, U-shaped reflections- suggest a round object like a pipe or root. Flat or undulating planar reflections represent flat objects or surfaces such as brick drains or floors. The profiles of features with multiple high amplitude point-source reflection hyperbolas and planar reflections typically indicate a filled subsurface pit.

The profiles from each survey block are combined to create a three-dimensional subsurface model. All of the plan-view map figures in this report represent horizontal “slices” taken at a

particular depth below surface. Table 1 presents summary data for each of the features. The features in the table are described with respect to amplitude (strength of reflection), source (a point, line, or plane), depth, and possible interpretation.

Figure 1 depicts features identified at 25 cmbs. Features 1, 3, 6, and 11 all appear to be pipes, or in the case of Feature 11, perhaps a tree root. This interpretation is based on the fact that all of these features are linear, present high amplitude reflections, and are relatively shallow. Feature 7 is located inside of the brick structure along the west side of Grid 2. The high amplitude planar reflection indicates a flat surface, and the feature profile suggests that this surface is covering a pit. Features 8, 9, and 10 all present high amplitude planar surfaces. The size and orientation of Features 8 and 9 suggest that they may be pathways created of brick, shell, or compacted earth that lead to the central feature (Feature 9). The large size and shape of Feature 9 indicates that it is most likely a central pathway or driveway. It is interesting that this feature does not appear to extend northward into Grid 1.

Figure 2 depicts features identified at 55 cmbs. In Grid 1, Features 2, 4, and 5 are very similar in both plan and profile. The features are linear with relatively well-defined edges in plan view, and they extend in depth from 20 to 100 cm. Also in profile view, all three are comprised of high amplitude planar reflections indicative of disturbed soil – the result of some sort of fill episode. Feature 5 lines up very closely to the position of a trench excavated by Marth Zierden as part of field work in 2001-2002. Features 2 and 4 are not the result of archaeology, so their function remains to be seen. Indeed, based on similarities in depth and location, Feature 4 may be a section of the same feature identified in Grid 2 as Feature 12. Feature 12 is a large linear feature oriented NW-SE that extends across the western half of Grid 2. In profile, the feature consists of two areas of high amplitude planar reflection separated by a U-shaped “dip.” This profile is consistent with a filled ditch. It is significant to note that a ditch of similar dimensions and orientation is supposed to have been located near the property during the Siege of Charleston in 1780.

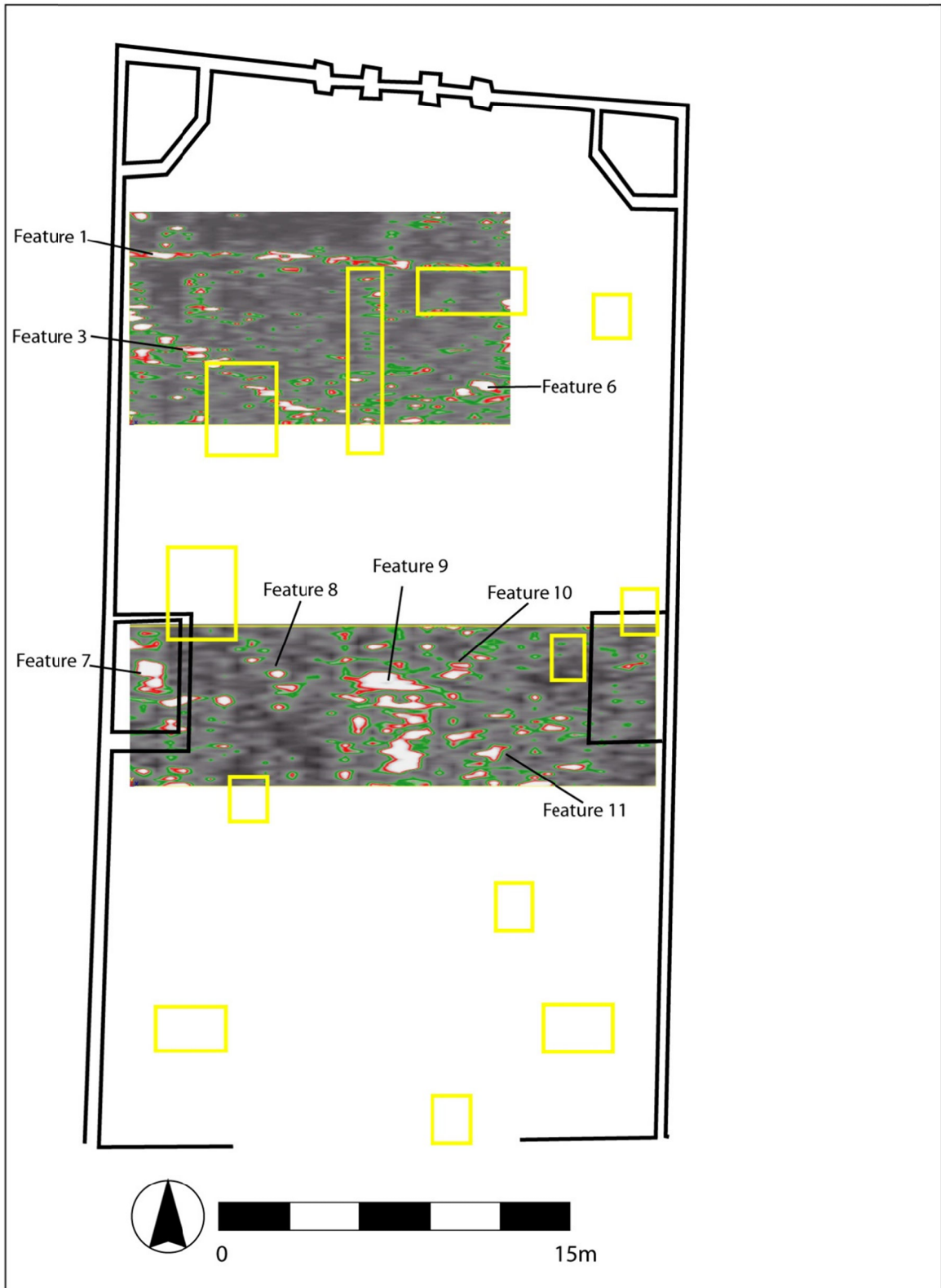


Figure 1. Results of the GPR survey at 25 cmbs.

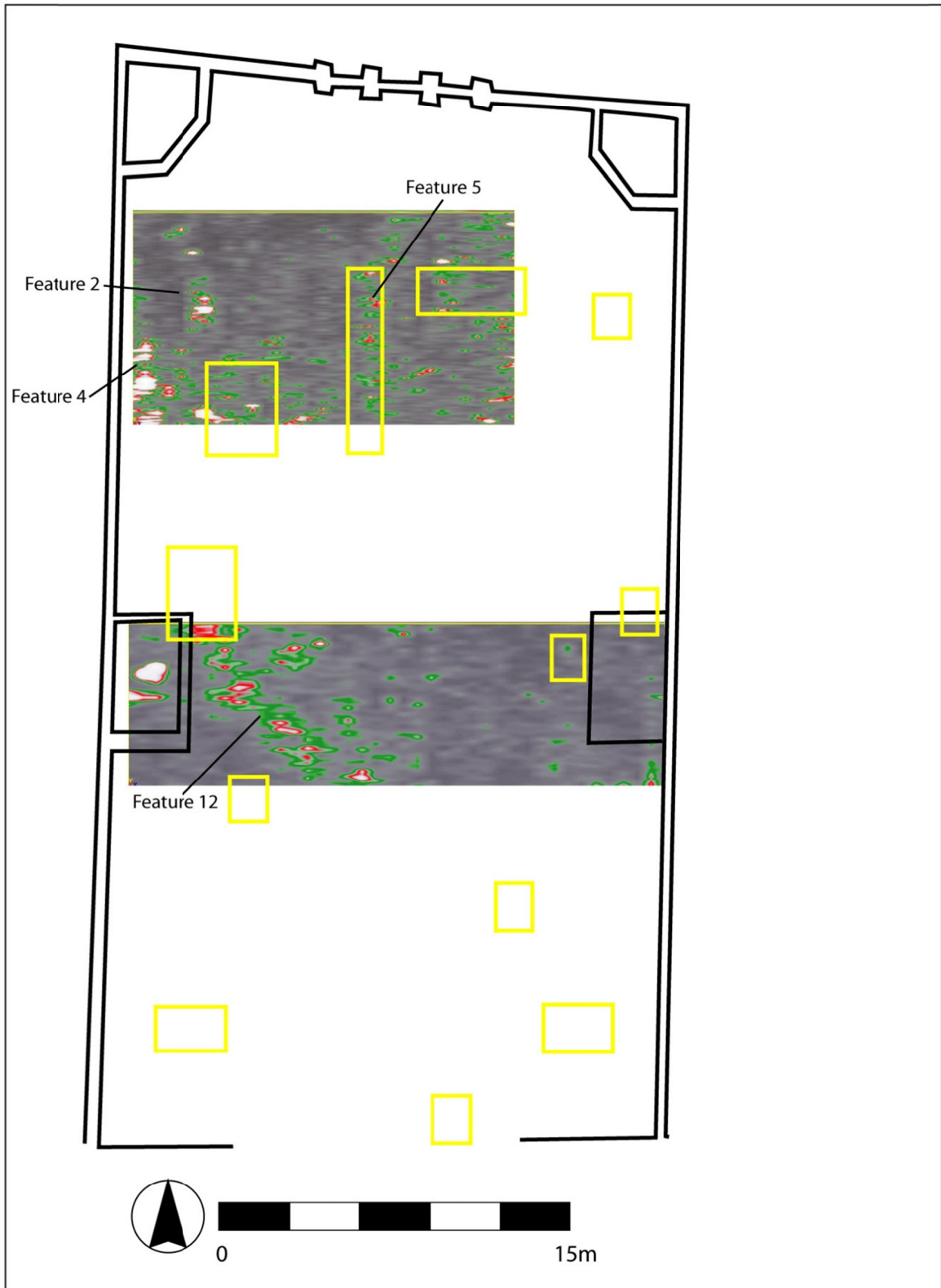
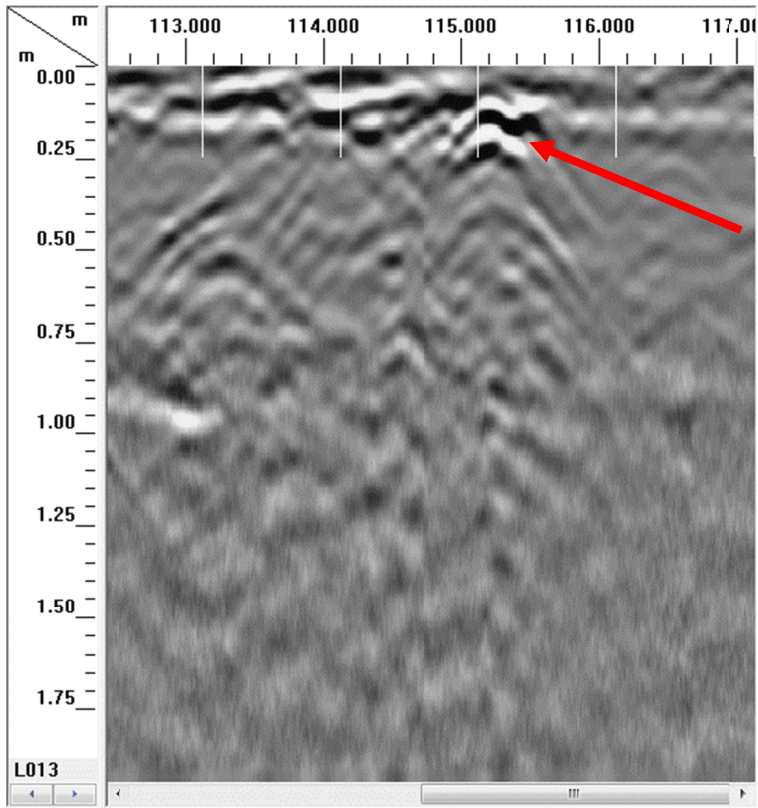
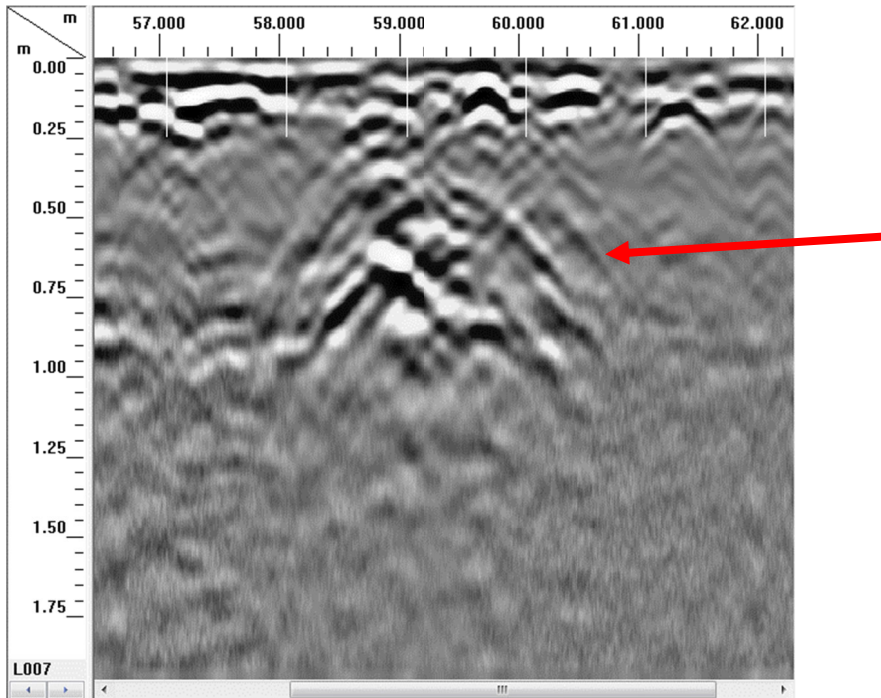


Figure 2. Results of the GPR survey at 55 cmbs.

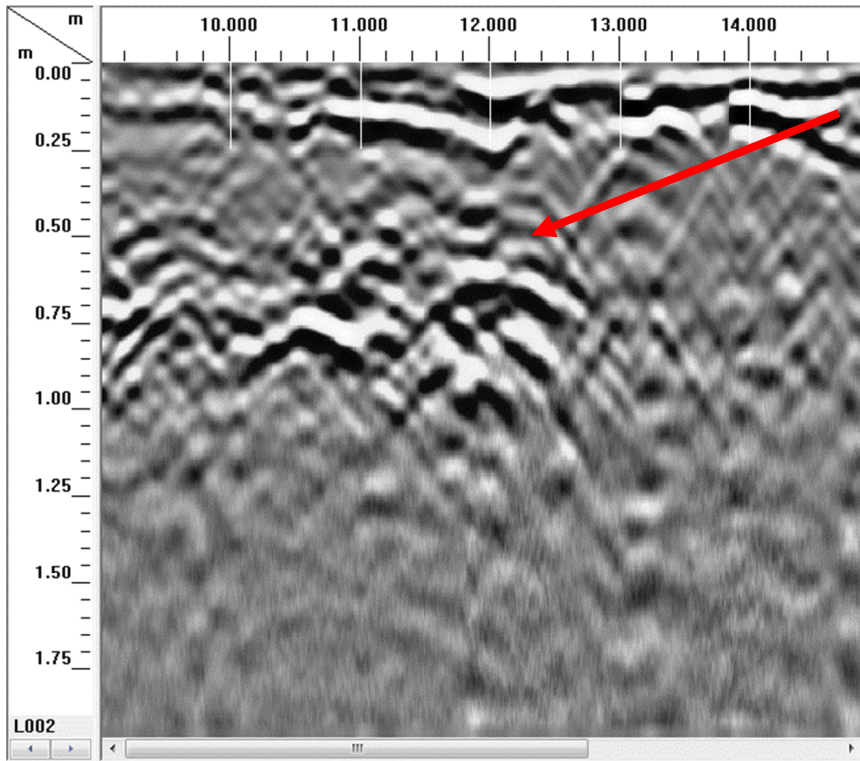
# APPENDIX A



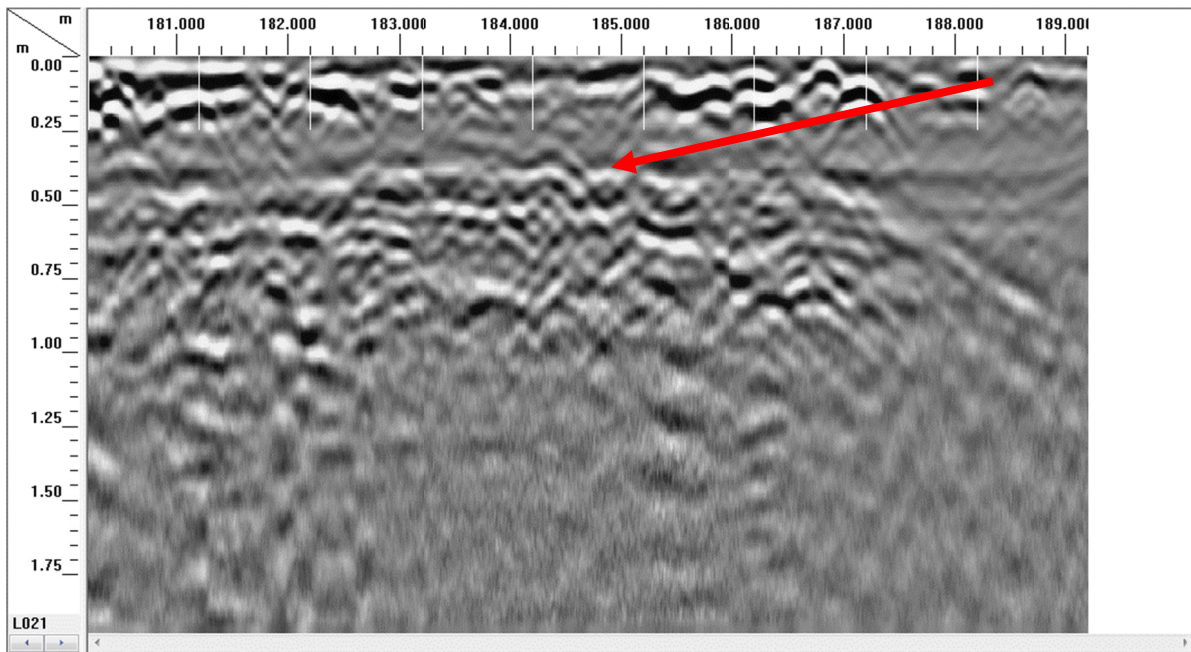
Feature 1



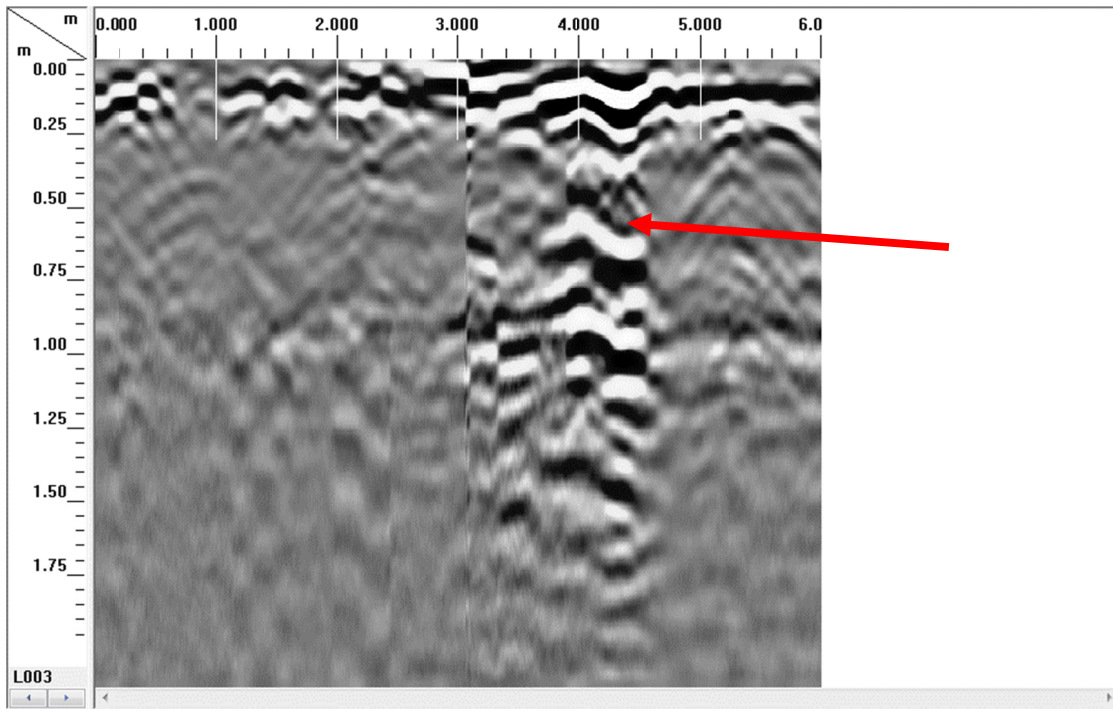
Feature 2



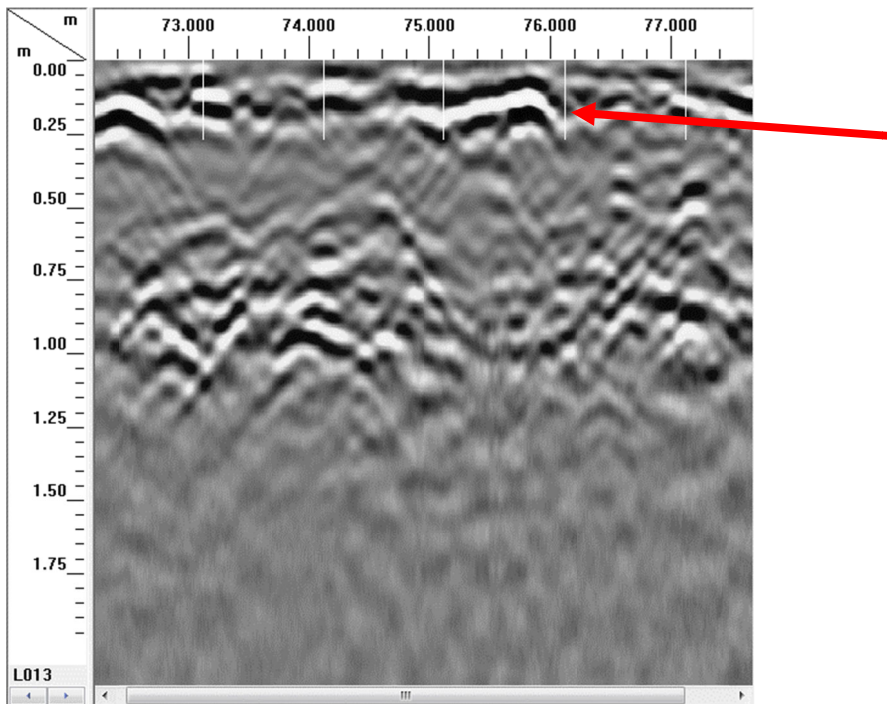
Feature 4



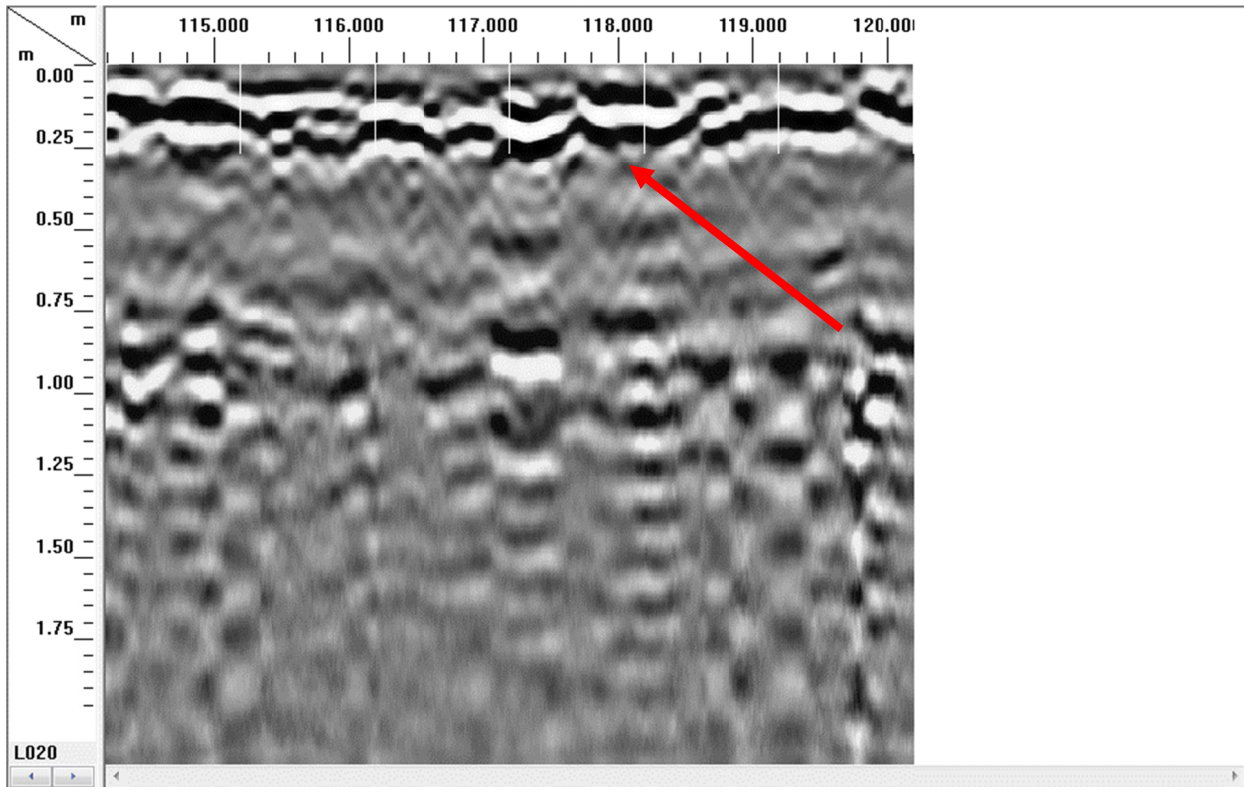
Feature 5



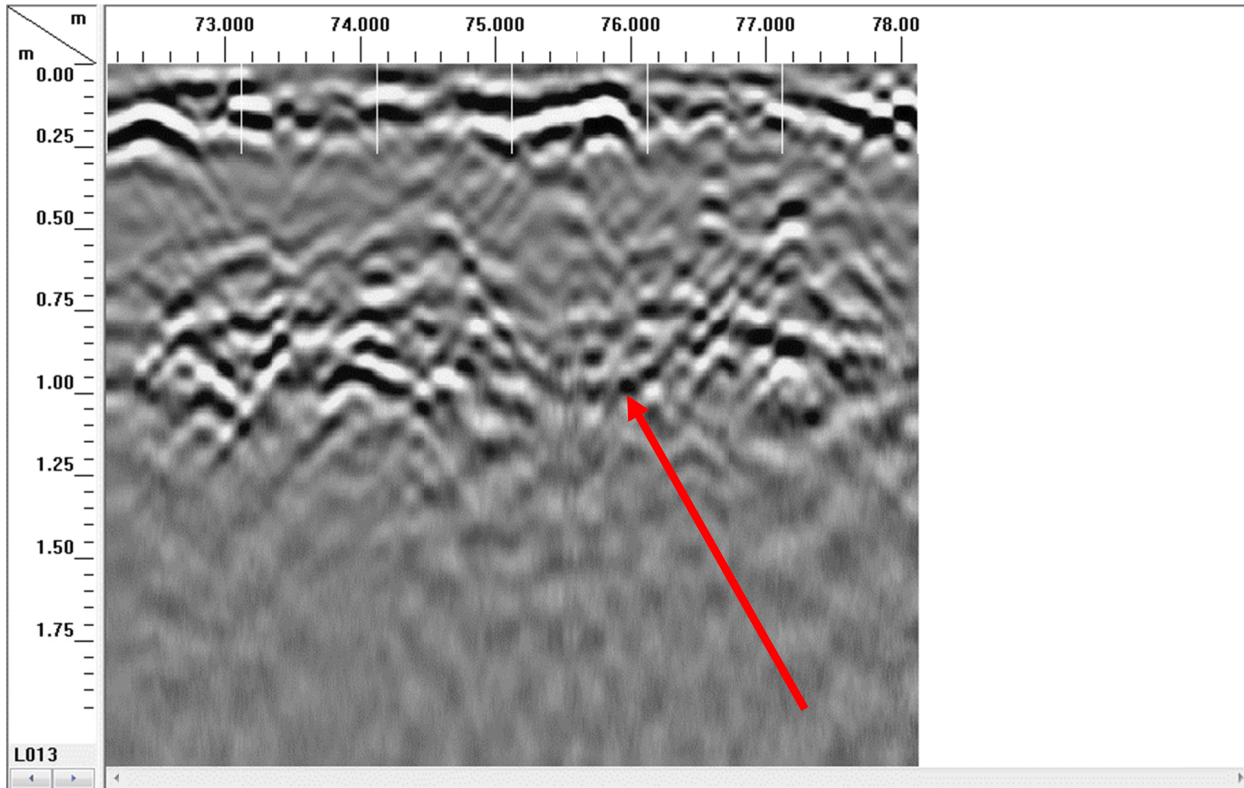
Feature 7



Feature 8



Feature 9



Feature 12

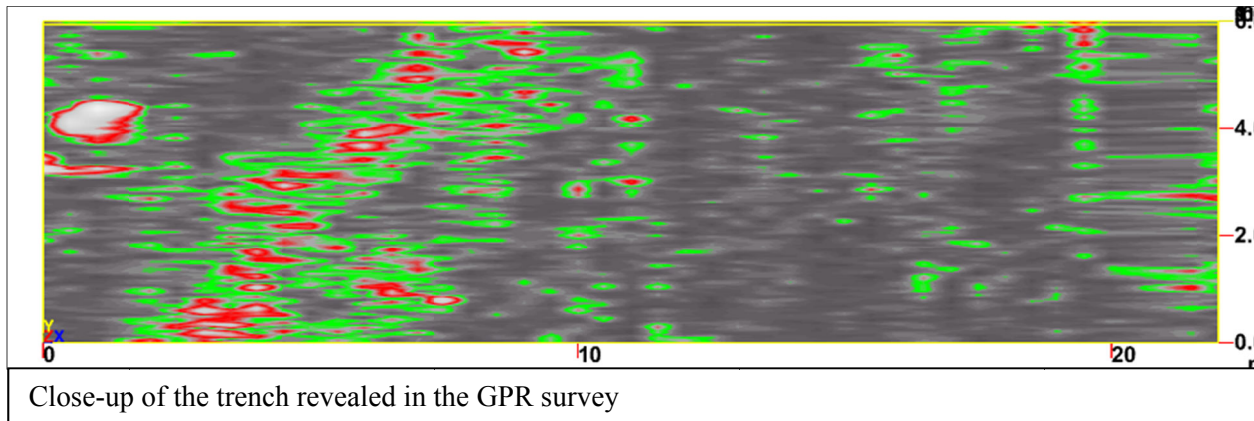


## Chapter VI Testing the Aiken-Rhett Yard

Martha Zierden and Ronald Anthony  
August 2017

### Research at the Aiken-Rhett House

Two lines of evidence led the Museum to excavations in the Aiken-Rhett yard in the summer of 2017: a remote sensing survey and large features exposed in two earlier phases of excavation. In June of 2016, Dr. Jon Marcoux returned to the Aiken-Rhett yard, this time with ground-penetrating radar equipment. Dr. Marcoux surveyed two blocks in the rear yard. Grid 1 was a 19 by 6 meter block in the northwest quadrant of the rear yard. Grid 2 measured 19 meters by 6 meters, stretching between the garden follies. The survey revealed a number of intact cultural features, ranging from 20<sup>th</sup> century water pipes to backfilled excavation units to a central path. There were two filled pits, and, most pertinent, a large trench feature. Feature 12 is a large linear feature oriented northeast to southwest that extends across the western half of Grid 2. In profile, the feature appears as two areas of high planar reflection separated by a U-shaped dip. Marcoux suggested this profile is consistent with a filled ditch. Given the location and dimensions, it is possible that this is a portion of the third parallel (Marcoux 2016; Chapter V).





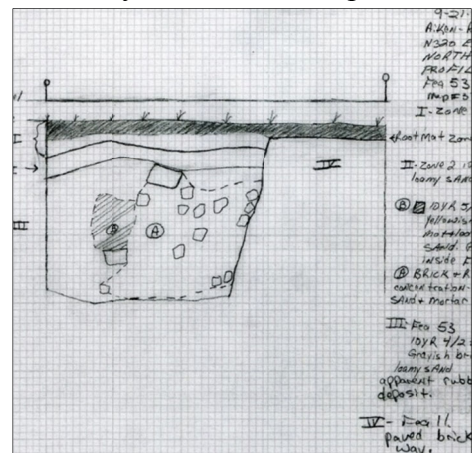
East profile of Feature 12, in 1985

Two units, excavated during separate field projects, revealed deep features that may, in hindsight, be associated with the trench. The first archaeological testing of the Aiken-Rhett yard occurred in 1985, funded by a Survey and Planning grant administered by the South Carolina Department of Archives and History. The project was designed to assess the nature, extent, and integrity of the archaeological component of the property and to amend the National Register nomination to include the archaeological resources. Testing consisted of 6 units dispersed across the rear yard. These units revealed that the northwest quadrant of the yard was shallow, with planting features. The southeast quadrant was deeper and more stratigraphically complex. The unit most relevant to the present study was in the southeastern quadrant. N295 E90 was located at the rear of the carriage house. Zones 1 and 2 were followed by a brick walk or drive laid in running bond and dating to the 20<sup>th</sup> century. Feature 12, initiated at the base of zone 2, was a deep pit containing artifacts from the late 18<sup>th</sup>-early 19<sup>th</sup> centuries. Building rubble filled the top of the feature, from 1.0' to 2.5'

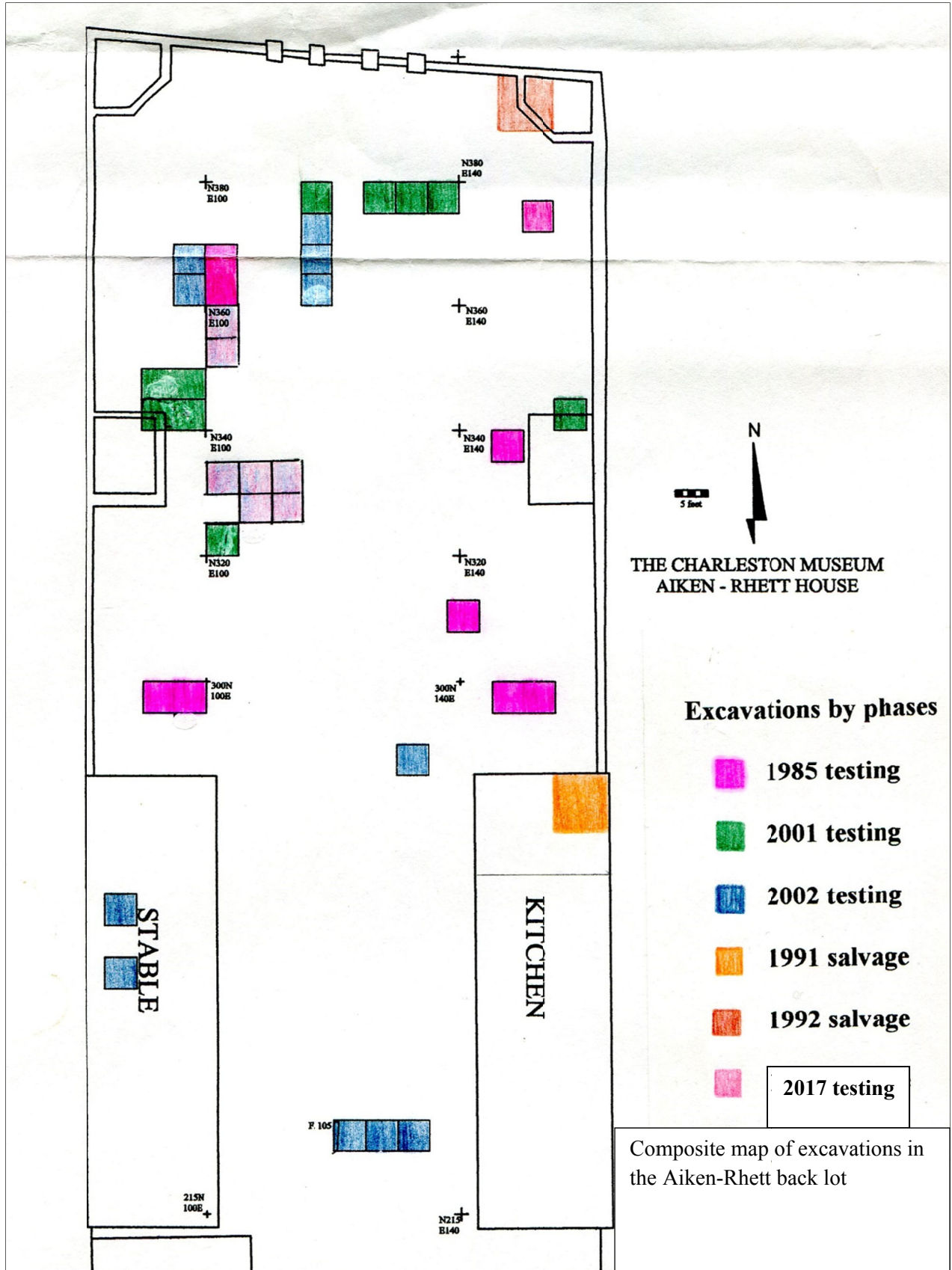
below surface, followed by layers of sand to 3.4' below surface. The feature was the earliest encountered during the 1985 excavation, and was associated with the first (1820) occupation of the lot (Zierden, Calhoun and Hacker 1986).

The Charleston Museum returned to the property in 2001 and 2002, in concert with a Historic Structures Analysis conducted by Willie Graham, Orlando Ridout, and Carl Lounsbury. The architectural historians suggested the privies and side buildings implied garden features, and units were located to test these features and search for other evidence of a garden. New units in the northern portion of the yard revealed additional plant stains spanning the 19<sup>th</sup> century and evidence of a fence or pergola defining the central drive from the rear gate to the work yard. Units adjacent to the western garden folly revealed plant stains and continuous reworking of the structure from the 1830s onward. Excavations on the east side of the yard revealed deep fill deposits and produced a grapeshot from the Revolutionary period.

A 5x5' square at N320 E100 held similar features. The brick paving defined as Feature 11 was encountered just below ground surface, in zone 1. An underlying zone 2 (10yr4/2) was deep and uneven, complicated by the presence of several large roots. Beneath zone 2 was a large pit filled with heavy brick and mortar rubble. This was Feature 53, and we noted that it was similar to feature 12. The brick rubble was difficult to remove in a small area, and excavation was halted at the base of the brick, 2.3' below surface. It is likely that the sandy layers of trench fill continued below the brick (Zierden 2003).



Profile of Feature 53 in 2001



## Development of the Aiken-Rhett Property

The city of Charleston was settled on the peninsula formed by the confluence of the Ashley and Cooper Rivers in 1680. The earliest town was settled along the Cooper between Water and Cumberland streets. Until 1783, the city was bounded to the north by Beaufain Street; upon incorporation, the city limits was moved four blocks north to Boundary (now Calhoun) street. The area north of Calhoun, known as Charleston Neck, was slow to develop.

Throughout the colonial period, the Neck was countryside, occupied by small plantations and farms. King Street ran through the center of the peninsula and served as the backcountry's artery to Charleston. Wagon yards were a common site in this area, where land was primarily undeveloped.

As the city spread northward after the Revolution, family-owned tracts were subdivided, forming the neighborhoods of Mazyckborough, Wraggborough, and Hampstead. The earliest residents were planters who preferred spacious lots. Large townhouses such as the Aiken-Rhett house were among the first built in the Neck. The Wragg descendants released the lot at 48 Elizabeth Street for sale in 1804. John Robinson purchased two lots at Elizabeth and Judith streets in 1817, and built houses on them; the two houses were completed by 1822 and Robinson resided in the house at 10 Judith Street.

In the 1820s, Robinson experienced financial difficulties, and sold the lot and house at 48 Elizabeth Street, which was acquired by wealthy cotton merchant William Aiken. Upon Aiken's death in a carriage accident in 1831, his widow and son divided his holdings. William Aiken, Jr. and his bride Harriet Lowndes made the house at 48 Elizabeth Street their home and embarked on an ambitious renovation and expansion of the house. They enlarged the house, modernized its layout, and updated interior finishes. The 1830s renovations also included the service buildings, which were enlarged and modernized as well. The rear gate became the main access to the property, and the garden buildings and privies were constructed.

Aiken's financial, political, and social success engendered another round of renovation and expansion to his Elizabeth Street home in the 1850s. Aiken added an art gallery wing to house items acquired during the year-long tour in 1857. Wallpapers and carpets were installed, and gas lighting, a service bell system, and improved plumbing were added to the house.

William and Harriet Aiken remained in the Elizabeth Street house after the Civil War, until his death in 1887. Researchers have discovered another round of renovations and improvement to the house and grounds in the 1870s. Their only daughter, Henrietta Aiken, married Andrew Burnet Rhett in 1862, and the couple lived with the Aikens. Rhett died in 1879, and his widow and her five children remained in the Aiken-Rhett mansion with her parents. The two widows inherited the house and continued to make periodic improvements through the end of the 19<sup>th</sup> century. Family descendants retained the house until 1975, when it was bequeathed to The Charleston Museum. Historic Charleston Foundation purchased the property from The Charleston Museum in 1995, and continued to operate it as a house museum.

Each of the rounds of changes and improvements (1820s, 1833, 1858, 1870s, 1890s) are reflected in the historic fabric of the house and outbuildings. These changes are reflected in the archaeological record, as well. Construction trenches for the buildings and surrounding walls,

layers of architectural refuse, and well-defined post holes provide evidence to support the evolution of the property. Excavations are now revealing uses of the lot and changes to the urban landscape here prior to construction of the Robinson house in 1820.

### Field Methods

Excavations focused on the area just east of the garden folly. The area was cordoned off for visitor safety. A screening station was established north of the folly, along the west property wall. Historic Charleston Foundation staged volunteer docents in front of the cordoning to answer visitor questions.



Location of the trench revealed through GPR, facing southwest and northwest.



Beginning block excavation

Excavations began by re-establishing the site grid using a manual transit. During the initial (1985) project, horizontal control was established by superimposing a Chicago grid over the site. Grid north was parallel to Elizabeth Street and the Aiken-Rhett house. This base line is 20 degrees west of magnetic north.

In 1985, a datum point was established 15.0' north of the northeast corner of the stable building. This datum point was given the designation N100 E100 in 1985; in order to

carry the grid to the front yard area in 2001 the point was re-named N300 E100. This point was re-established for the 2017 project by triangulating a point relative to the north face of the stable building. From this point, the E100 line was re-established to the N350 point at 5' intervals.

From this gridline, two 5' squares were triangulated to the east, at N325 and N330. Through further triangulation a block of six units was established over anomaly revealed in the ground-penetrating radar survey. These units were N325 E100 through N330 E110.

Vertical control was also maintained with use of a manual transit, in the same method used in 1985. An elevation point was established then, on the northeast side of the lowest rear step in front of the boot scraper. All elevations were taken relative to this point. The absolute elevation of this point was calculated in 1985, relative to the known elevation of a manhole cover at Meeting and Anne Streets, as 12.69 feet above mean sea level. For this project, Dr. Brent Fortenberry measured the elevation at this point at 12.71, using GPS.



Excavation of the five-unit block

During the excavation period, a five-unit block was excavated over the suspected feature, exposing portions of the northern and southern limits of a trench and its alignment. Two additional test units excavated north of the block revealed 19<sup>th</sup> century features.

All units were excavated with shovels, picks, and trowels. Screening was through ¼ inch mesh, and was accomplished at a central screening station, located along the western property wall. Soil from each unit was transported to the screens by wheelbarrow.

All units were troweled and photographed at the base of the cultural deposits and whenever appropriate, informative, or confusing. A Nikon D3400 digital camera was used for all photographs. Planview and profile drawings were made of each unit. Narrative notes and a variety of field forms were completed on a daily basis, including feature forms, excavation unit forms, photo logs, and field specimen logs.

Rain showers hampered excavation throughout the course of the excavation project, and these were particularly impactful on the last scheduled day of excavation, as will be described in detail later. At the conclusion of the project, the floors of the excavation units were lined with landscape fabric and the units were backfilled with soil. The brick rubble was left in piles along the property wall. Nails marking the corners of the 5-unit block were left in place, and all others were removed.



The central screening station.

Description of Excavated Proveniences

A block of six 5x5 units was established over the expected path of the trench. Five of the six were excavated: N330 E100, N330 E105 and N330 E110. The southern section of the block included units N325E105 and N332E110. The units were excavated concurrently, with 1' baulks left between the units during excavation. These were subsequently removed by zone.

The block was excavated by natural zone, and deeper zones were subdivided into .5' levels. Three zones were defined in the block, but only zone 1 as present across the entire excavated area. Zone 1 was a dark (10yr2/2) topsoil, averaging .75' in depth. The base of zone 1 was undulating, as the result of root action and the uneven surface of the underlying deposits. Several features were defined at the base of zone 1; some of these were likely planting stains, while others may have been the result of root action.

Features 81-84, 90, 95, 98, and 108 were defined and excavated separately.



West profile, N330 E100, showing Zones 1 and 2, followed by sterile subsoil (portion of Feature 107 visible in the southern portion of the unit).

Zone 2 was a medium brown sand (10yr3/4-4/3) and was present intermittently across the block. Zone 2 was best defined in areas outside of the large trench feature that was eventually designated Feature 89 and 107. Zone 2 was defined and excavated in all units, but was best defined in N330 E100 and in the southeast corner of N325E110. Soils excavated as zone 3 were actually a cap of mostly sterile sand overlying the brick rubble of feature 89. Outside of the trench, a narrow band of light brown to tan sand was excavated as zone 3 (10yr4/6). Gold sterile soil (10yr6/8) was present beneath this zone.

<u>Dates of Deposition for features, Zone 2 block</u>				
FS#	Feature	Unit	TPQ	Date
438	Fea. 90	N330 E110	tr. Print whiteware	1830
439	Fea. 91	N330 E100	no ceramics	
454	Fea. 94	N330 E105	shell edge whiteware	
461	Fea. 96	N330 E105	no. matl.	
464	Fea. 97	N330 E100	tr. Print whiteware	1830

A few small features were encountered in the context of Zone 2, but were likely not deliberate deposits, but instead part of the undulating surfaces of the zone and fill deposits. These include Features 90 through 97, and their dates are shown below.

The principal feature anticipated in the block was encountered as a complex of layers, generally defined as two features. Directly beneath zone 1 in most areas was heavy brick rubble. The rubble varied in content and depth. Based on the most intact profile, feature 89 ranged from .9' to 1.8' in depth.

The content was principally large brick fragments, quarter- to half-brick pieces. There were sections of mortar and plaster, including strips of pointing. Black-glazed redware pantile fragments were recovered throughout, and roof slate was concentrated in the southeast corner of N330E100 and adjoining units.



North profile of N330 E110, showing concentration of brick in Feature 89.

The jumble of brick rubble made it difficult to excavate in levels and to segregate the overlying dark soil of zone 1. As a result, several small features were defined at the base of zone 1 that eventually proved to be part of feature 89. Feature 85 was defined as dense brick rubble in the upper zones of the E110 units. Upon further excavation, it was not visibly separate from the larger feature 89. Separation of feature 85 provided a physically separate upper level of the deposit. Feature 86 was designated in N330 E100, as a concentration of brick, mortar, and slate in the southern wall of the unit. The soils defined as Feature 86 were excavated in multiple levels. Features 87 and 88 were defined in N325 E105.

Just as the top of feature 89 was uneven, the base of the brick deposits was even more so. It was at the base of the brick rubble that the edges of the large trench became clear. The mottled sand that defined the trench was designated feature 107. The trench trended northeast/southwest through the block, and was 10-13' wide.



Feature 107 was defined as bands of highly mottled soil, ranging from dark brown to light yellow-brown. The feature was excavated in .5' levels, to sterile subsoil where possible, and the east profile of the E110 units suggests the feature was a maximum 2.4' deep. Only the easternmost units were excavated to the bottom, in six levels. The feature was excavated to the base of level 5 in N330E105 and to the base of level 3 in N325 E105. The mottled soils



Undulated top of Feature 107, at base of brick rubble (Feature 89).

were excavated as Feature 91 and feature 97 in N330 E100, a unit that was located along the northern edge of the ditch. The mottled, layered soils of feature 107 suggest a large trench that was backfilled quickly. There was no evidence of the lensing or layering consistent with a deep feature that remains open to the weather and rain for an extended period.



East profile of block at completion of excavation. The profile shows zone 1 followed by heavy brick rubble of Feature 89. Bands of fill, designated Feature 107, are directly below. A small area in the southeast corner is outside of the trench, and exhibits a narrow band of zone 2 beneath zone 1, followed by sterile subsoil.

Based on the profile, Feature 107 represents a large trench that was filled quickly, but not completely, with previously-excavated soils. Various lenses of fill are evident in the unit profiles. Some architectural rubble is distributed throughout the soil, along with other occasional artifacts. Above the soil the remainder of the trench was filled with brick and other architectural rubble, followed by a cap of sand and soil. Artifacts recovered in the excavated layers suggest the two deposits were separate events.

The search for the trench impacted a portion of the Aiken-Rhett yard previously investigated – in 1985 and in 2001 – and found to contain evidence of a formal garden installed by the Aikens in the 1830s. Excavations around the brick structure, interpreted as a garden folly, and in the northwest quadrant of the yard. These units reveal two distinct garden events, one in the 1830s and a second after the Civil War, likely in the 1870s. A secondary, and concurrent, goal of the present project was to identify garden features in the excavated units. A few postbellum features were defined in the trench block. Additional features were uncovered in two 5' squares excavated north of the block. These were located in an attempt to locate the trench, prior to the definition of Feature 107.

Units N350 E100 and N355 E100 were located along the base line and excavated concurrently. Both were shallow, similar to units excavated there previously. Zones 1 and 2 were defined and excavated in both units; zone 1 was .5' deep while zone 2 was an additional .2' in depth, followed by sterile subsoil. Numerous small features were defined at the base of zone 2. Features 99, 100 and 109 were filled with dark soil (10yr2/1) and some cultural materials. Four smaller features contained lighter brown soil consistent with zone 2, and like reflect plantings. Features 101, 102, 103, and 104 exhibited these characteristics. Feature 104 was truncated by Feature 99, reinforcing the temporal sequencing of the deposits. Feature 105, in the southeast corner of the unit, was filled with brick rubble, and may not reflect gardening activities.



Garden features visible at the base	of Zone 2 in N350 E100
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Dates of Deposition for planting features, Zone 2

<u>FS#</u>	<u>Feature</u>	<u>Unit</u>	<u>TPQ</u>	<u>Date</u>
481	Fea. 99	N355 E100	no matl.	
473	Fea. 101	N355 E100	tr. Print whiteware	1840s
477	Fea. 102	N355 E100	undec. Whiteware	1820
478	Fea. 103	N355 E100	undec. Whiteware	1820
474	Fea. 104	N355 E100	tr. Print whiteware	1830

Dating the Trench Features

The two defined features associated with the siege line. Feature 107 represents the layers of sand fill in the bottom of the trench. Feature 89 is the brick, mortar, and slate rubble filling the remainder of the trench feature. Both were excavated in arbitrary levels, by unit, resulting in multiple proveniences for each (seventeen for Feature 107 and eight for Feature 89). The materials, but particularly the datable ceramics, were examined to determine a TPQ (Terminus Post Quem) for each provenience.

Dates of Deposition for Feature 107

<u>FS#</u>	<u>Feature</u>	<u>Unit</u>	<u>TPQ</u>	<u>Date</u>
500	Fea. 107 level 1	N325 E110	Annular pearlware	1795
501	Fea. 107 level 1	N325 E105	Yellow ware	1827
502	Fea. 107 level 2	N325 E105	Yellow ware	1827
503	Fea. 107 level 2	N325 E110	tr. Print pearlware	1795
504	Fea. 107 level 2	N330 E110	tr. Print pearlware	1795
505	Fea. 107 level 3	N325 E110	tr. Print pearlware	1795
506	Fea. 107 level 3	N325 E105	tr. Print pearlware	1795
508	Fea. 107 level 3	N330 E110	molded pearlware	1780
510	Fea. 107 level 3	N330 E105	annular pearlware	1795
509	Fea. 107 level 4	N325 E110	tr. Print pearlware	1795
511	Fea. 107 level 4	N330 E110	annular pearlware	1795
516	Fea. 107 level 4	N330 E105	tr. Print pearlware	1795
512	Fea. 107 level 5	N325 E110	hand paint pearlware	1780
513	Fea. 107 level 5	N330 E110	sprigged ware	1800
517	Fea. 107 level 5	N330 E105	tr. Print pearlware	1795
520	Fea. 107 level 6	N325/330 E110	hand paint pearlware	1780
521	Fea. 107 level 6	N330 E110	tr. Print pearlware	1795
522	Fea. 107 level 6	N330 E110	Canton porcelain	1800
514	Fea. 107 w. profile	N325 E105	annular pearlware	1795

Feature 107 was excavated in six .5' levels. The majority of the proveniences contained a small number of ceramics, ranging from one to five per provenience. The majority were very small (smaller than a dime), suggesting trampling or other forms of post-depositional redistribution. TPQ for the proveniences ranged from 1780 to 1800, and there were no temporal differences through the layers. The deepest (level 6) contained Canton porcelain dating after 1793, while the shallowest (level 1) contained annular pearlware, dating after 1795. Fragments of two distinct ceramics, a yellow ware pitcher and a sprigged soft porcelain cup were recovered in multiple layers. The white-slipped yellow ware pitcher was recovered from level 1 and level 2. The small, but readily-recognizable sprigged ware came from level 3 and level 5. The inclusion of these ceramics, as well as some brick and mortar rubble, suggests that Feature 107 was filled around 1800, possibly as late as 1820 when John Robinson began to develop the property.



Ceramic assemblage from multiple proveniences of Feature 107. Image on the left includes levels 1-3; image on the right includes levels 4-6. Ceramics include transfer printed, banded, and hand-painted pearlwares, sprigged ware, and creamware.

The majority of ceramics recovered from Feature 107 were refined earthenwares, from creamware developed in the 1760s-1770s to pearlwares manufactured in the 1780s and 1790s. The yellow ware, sprigged ware, and Canton porcelain mentioned above were all developed at the turn of the 19<sup>th</sup> century. Feature 107 also contains a number of ceramics in use in the colonial period (Staffordshire combed and trailed slipware, lead-glazed redware, delft), much earlier than the development of the Aiken-Rhett house and surrounding neighborhood. A few colonial ceramics have been recovered elsewhere on the site.

The overlying brick rubble, Feature 89, contained a comparable, but not identical, ceramic assemblage. Refined earthenwares from the 1780s and 1800s dominate the assemblage, while an occasional colonial artifact (Staffordshire combed and trailed slipware, Westerwald stoneware, Chinese Export porcelain) was recovered in multiple proveniences. The feature also

contained readily-identifiable ceramics manufactured after 1830. Fragments of a hand-painted whiteware tea bowl in chrome colors (mulberry and black) were recovered in multiple proveniences. Banded yellow ware and blue and grey stoneware likewise are ceramic types associated with the second quarter of the 19<sup>th</sup> century. Further, the brick and mortar rubble included some of the distinctive small red bricks from the garden follies and privies constructed during the 1833 renovations of the Aiken property. Together, these artifacts suggest Feature 89 was deposited separately from the underlying soil layers, likely in the 1830s.

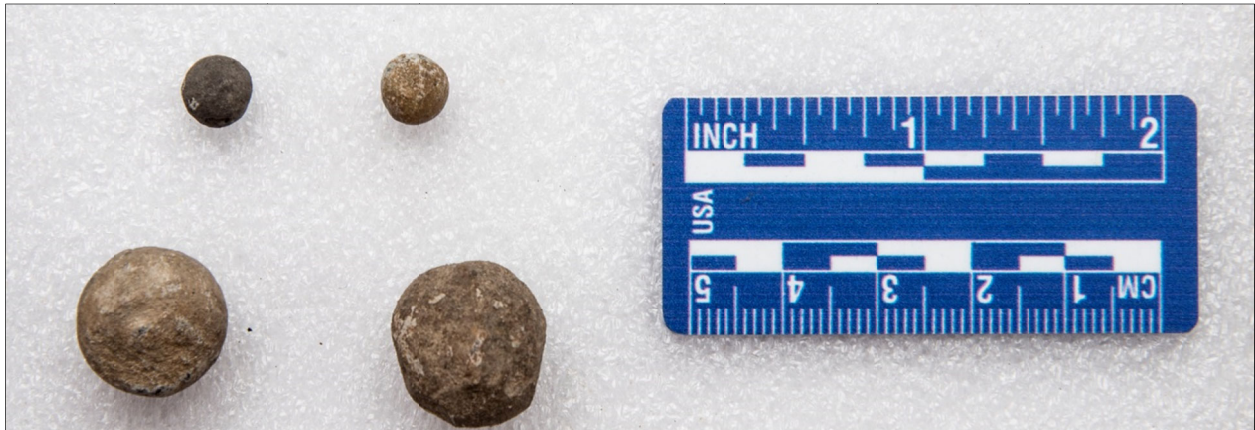


Ceramics from Feature 89. Note hand-painted whiteware fragments on top row

Dates of Deposition for Feature 89

FS#	Feature	Unit	TPQ	Date
435	Fea. 89		hand paint whiteware	1830
437	Fea. 89/zone 3			
444	Fea. 89/zone 3		yellow ware	1827
448	Fea. 89		undec. Whiteware	1820
451	Fea. 89		tr. Print whiteware	1830
483	Fea. 89 level 2		tr. Print whiteware	1826
485	Fea. 89b		annular whiteware	1820
492	Fea. 89		hand paint whiteware	1830
497	Fea 89		hand paint whiteware	1830

Only a few arms or military artifacts were recovered during the dig. An impacted musket ball (15.5mm) was recovered from the base of the trench, precisely where one would be expected if the trench is the siege line. The size suggests the ball is not from an issued military weapon, but from a “trade gun”, the type frequently used by militia. A slightly larger ball (17mm) was recovered from zone 1 in the same unit. This ball also exhibits some evidence of impact. Two small shot (7mm), possibly buckshot, came from the dig. One in unaltered condition was recovered from Feature 107, and the second came from Unit N350 E100.



Lead shot recovered from the excavation. Impacted ball from the base of the trench is lower left.



Artifact totals – Trench feature	Fea 89	Fea 107
Whiteware, undec	6	14
Whiteware, flow blue		
Whiteware, gilt		
Whiteware, shell edge	1	1
Whiteware, transfer print	6	3
Whiteware, hand painted	3	
Whiteware, annular	4	
Pearlware, undec	4	9
Pearlware, blue tr pr	6	16
Pearlware, hand paint	3	10
Pearlware, shell edge	3	3
Pearlware, annular	2	5
Creamware, undec	4	13
Creamware, black transfer		
Yellow ware	2	2
Sprigged ware		2
Stoneware, misc	1	3
Stoneware, westerwald	4	1
Stoneware, blue on grey	1	
Stoneware, white saltglaze	1	
Porcelain, Canton/Chinese	2	1
Porcelain, white	2	
Earthenware, lead glazed		4
Slipware, comb and trail	2	3
Delft	1	
Mottled ware		
Buckley ware		
American slipware		
Colono, yaughan	1	
Colono, River burnished		

Nail, wrought	12	49
Nail, cut	1	4
Nail, ud	219	12
Nail, wire	1	
Nail frag	132	32
Nail, brass	1	
Flat glass	126	25
Screw		
Encaustic tile		
Strap metal	1	11
Tin can		13
u.d iron object	1	1
Pipe bowl		1
Pipe stem	3	2
Button	1	
Furniture tack		1
Furniture hardware	1	
Lead strip	1	
Bullet		
Flint flake		1
Prehistoric ceramic		1

### Other Material Culture

Artifacts, generally, were sparse in the excavation units. This has been a general trend for the entire rear yard area, as noted in 1985 and 2001. Most of the Aiken Rhett site is relatively clean, with the exception of certain areas. The interior of the laundry room, excavated by Nicole Isenbarger in 2016, was filled with debris and cultural materials.

The excavations produced a sizeable assemblage from zone 1 deposits, with a smaller volume of soils and materials from zones 2 and 3; zone 1 deposits in the block were followed by the dense rubble of Feature 89 covering most of the block. The artifact totals for Features 89 and Feature 107 are shown above.

Materials from Zones 1 and Zones 2-3 were tabulated separately, as shown below. Artifacts were more numerous in zone 1. Here, the assemblage was dominated by fragments of container glass, particularly clear bottle glass. This was noted in adjoining units excavated in 2001, particularly in and around the garden folly. The accumulation of otherwise undated glass suggests activities spanning the late 19<sup>th</sup> and 20<sup>th</sup> centuries. A few ceramic fragments likewise have long date ranges, suggesting gradual accumulation.

Zones 2-3 had relatively less container glass, but an increased proportion of architectural materials, including nails and flat glass. These deposits may be associated with the building



rubble of Feature 89; the orange soils defined as zone 3 were a cap of soil placed over the rubble-filled trench. Zones 2/3 appear to be antebellum deposits.

Only a few small finds were recovered from the block. Furniture items include a section of brass chain, possibly from a small writing desk, a brass hinge, and a brass upholstery tack. Only a few clothing items were found, including a brass buckle and brass buttons. Zone 1 yielded several late 20<sup>th</sup> century pennies. The most unusual item was what at first appeared to be a Roman coin, the second recovered at the Aiken-Rhett house (a first century a.d. coin was recovered from the laundry in 2016). This one, however, was unusually thin. It is instead a token, or reckoning penny (rechenpfennig), made in the early 19<sup>th</sup> century by Johann Jakob Lauer. Toys and games included a die and three marbles. The last object retrieved, from the profile of the block, was a horse shoe.



Buttons and token; small padlock

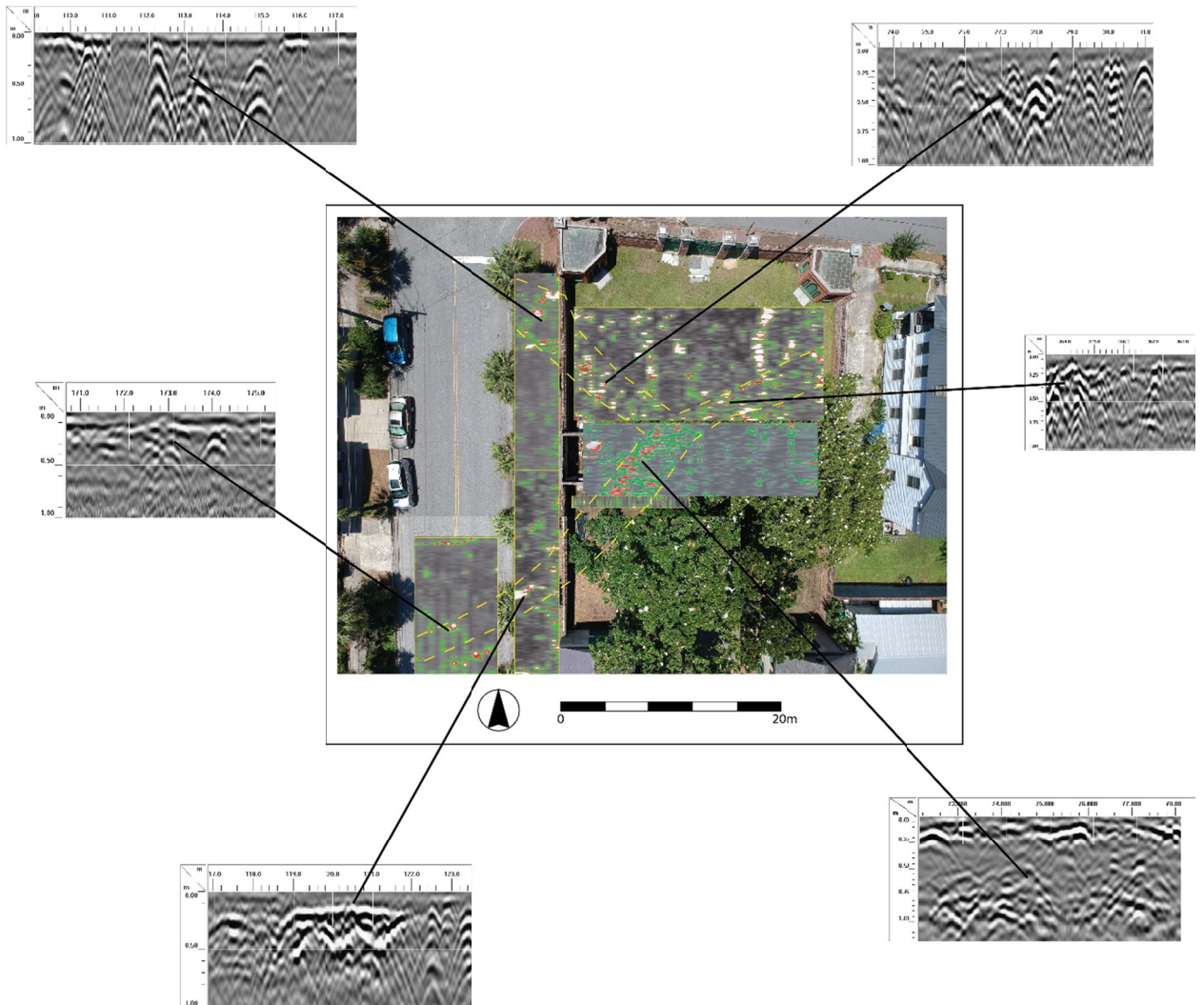


Recovery of horse shoe from profile on last day of project.



Chapter VII  
2018 Ground Penetrating Radar Survey of Portions of  
the Aiken-Rhett House, Elizabeth Street, and Wragg Mall

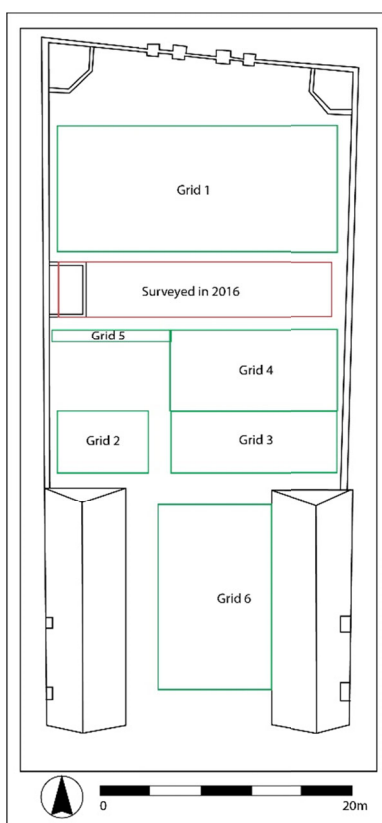
Jon Bernard Marcoux, Ph.D.  
August 2018



## INTRODUCTION

This report summarizes the results of a ground penetrating radar (GPR) survey conducted between May 27 and May 29, and on June 20, 2018 for the Historic Charleston Foundation (HCF). The survey was performed by Dr. Jon Bernard Marcoux of Salve Regina University, assisted primarily by Martha Zierden of The Charleston Museum, but also Ron Anthony of the Charleston Museum and Sarah Platt of Syracuse University. The primary focus of the survey was the back yard of the Aiken-Rhett house (48 Elizabeth St.). Within the yard, Marcoux laid out individual areas (called “grids”) in order to maximize coverage while avoiding a number of large trees and bushes. In total, the survey included 6 survey grids (Figure 1). Along with the grid surveyed during the summer of 2016 (report filed with HCF), these grids covered all accessible portions of the yard north of the stable and kitchen. Marcoux also positioned a grid in the area between the stable and kitchen to follow up on initial work done in 2012. In addition, survey grids were laid out along the sidewalk and in Elizabeth Street west of the Aiken-Rhett house.

**Figure 1.** Locations of GPR survey grids within the Aiken-Rhett back yard.



There were three main goals for the survey: 1) to locate intact archaeological features associated with the property’s extensive history; 2) to identify any patterned anomalies that might aid cultural and historic interpretation of the landscape associated with the property, especially the possible 1780 Siege of Charleston trench feature first identified in 2016; and 3) to provide HCF with location data of possible cultural features that can be used to guide future archaeological explorations and aid in managing cultural resources on the property.

This work follows two previous archaeological geophysics surveys conducted by Marcoux in 2012 and 2016 (reports filed with HCF), as well as four seasons of excavation under the direction of Martha Zierden (1986, 2003, 2018) in 1985, 2001, 2002, and 2017.

The results of the survey identified a number of significant intact cultural features within the Aiken-Rhett yard. The investigation identified three features associated with metal or ceramic pipes, the central driveway leading from Mary St., six stone- or brick-lined drains, fill episodes along the eastern margin of the property, a large filled-in pit along the southwestern margin of the yard, and a system of drainage ditches located in the area between the stable and kitchen. Table 1 provides a summary of these features along with relevant characteristics. The survey also added considerable information regarding the possible 1780 Siege of Charleston Trench Feature. Results indicate that the trench continues to the northeast, to the wall of the property, to the southwest, outside of the yard and into Elizabeth St., and to the northwest outside the yard and under the sidewalk. The survey grids in Wragg Mall also identified a large trench-like feature located approximately where the 1780 Blaskowitz Map depicts some siege features.

## **SURVEY METHODS**

The survey employed techniques and methods that fall under the subfield of archaeological geophysics (AG). Archaeological geophysics is a field of study that utilizes precise measurements of certain physical properties of soil in order to identify and define buried archaeological features (e.g., storage pits, trash-filled pits, burials, house posts). The most obvious benefit of AG is that it provides the archaeologist with a "picture" of sorts of what lies beneath the surface of the ground. This image can be used as map to direct excavations to specific features within an archaeological site - greatly reducing the amount of time spent searching for these features using traditional field methods. Archaeological geophysics has been in existence since the 1940s; however, only within the last decade have major advances in computing power and increases in the sensitivity of measuring instruments made AG a practical and cost-effective research tool (Ernenwein and Hargrave 2009; Gaffney and Gater 2003; Johnson 2006). While still at a nascent stage, AG is growing in popularity among archaeologists in the southeastern U.S. Recently, AG techniques were used to define the size and structure of manmade "shell rings" along the coast of Georgia (Thompson et al. 2004) and to identify buried trash-filled pits and house structures at the Crystal River Mound site in western Florida (Pluckhahn et al. 2009). Despite this recent growth, however, AG remains largely limited to projects conducted by researchers at large universities (Johnson 2006).

Archaeological geophysics includes a number of different techniques, each of which focuses on a different physical property of soil. Ground penetrating radar (GPR) is the most popular technique because it is cost effective and time efficient (Conyers 2006; Aspinall et al. 2008; Kvamme 2006) GPR accurately maps objects (like metal pipes) and archaeological features by sending radar wave pulses through the soil and measuring the time it takes for each wave to be reflected back to an antenna at the surface. Differences in soil, such as would be expected between the subsoil and a filled-in pit or the presence of subsurface objects are detected as changes in the velocity of the radar wave. The benefit of GPR is that it results in a three-dimensional picture of subsurface features, where the analyst can record the horizontal positions of features as well as their depths.

For the GPR survey of the Aiken-Rhett house, the six survey grids covered virtually the entire yard (Figure 1). The goal of the survey grid placement was to maximize coverage of the property while avoiding obstacles, primarily trees. Grid 1 is a rectangular area, 23 meters East-West - by - 11 meters North-South, located in the northern portion of the yard. This survey grid is just north of the survey grid where the possible 1780 Siege of Charleston trench feature was identified in 2016. Grid 2 is a 7 meter East-West - by - 4.5 meter North-South rectangular area located north of the stable. It is bordered to the north by a large fig tree and to the east by a magnolia tree. Grid 3 is a 12 meter East-West - by - 4.5 meter North-South rectangular area located east of Grid 2. Grid 4 is a 12 meter East-West - by - 6 meter North-South rectangular area located north of Grid 3. Grid 5 is a 10 meter East-West - by - 1.5 meter North-South rectangular area located west of Grid 4. The size of this grid is constrained by the large fig tree, which occupies most of the area between Grid 2 and Grid 5. Grid 6 is a 9.5 meter East-West - by - 21 meter North-South rectangular area located in between the stable and kitchen.

Marcoux also placed a number of grids outside of the Aiken-Rhett yard with the goal of tracing out the extent of the possible 1780 Siege of Charleston trench survey grids along the sidewalk just west of the Aiken-Rhett house. This survey grid, which measures 4.5 meters East-West by 54 meters North-South, runs the length of the Aiken-Rhett yard. Marcoux placed another grid in Elizabeth Street. This grid measured 7 meters East-West by 15 meters North-South. Survey grids are also located in each of the four grass-covered areas composing Wragg Mall. The western two grids extend from approximately 1 meter east of the meeting street sidewalk to 3 meters west of the central North-South path. The eastern two grids extend from approximately 3 meters east of the central North-South path to approximately 10 m west of the sidewalk on Elizabeth St.

Pin flags were used to mark transects for Dr. Marcoux, who covered each grid by pacing in a zigzag pattern (Figure 2). All of the survey grids in the Aiken-Rhett yard, the sidewalk, and Elizabeth St. were covered on North-South oriented transects. The Wragg Mall survey grids were covered on East-West oriented transects. A second round of survey, focused in a specific area of Wragg Mall east of the central walk, was conducted on North-South oriented transects.



**Figure 2.** Dr. Jon Bernard Marcoux and Martha Zierden performing the survey.

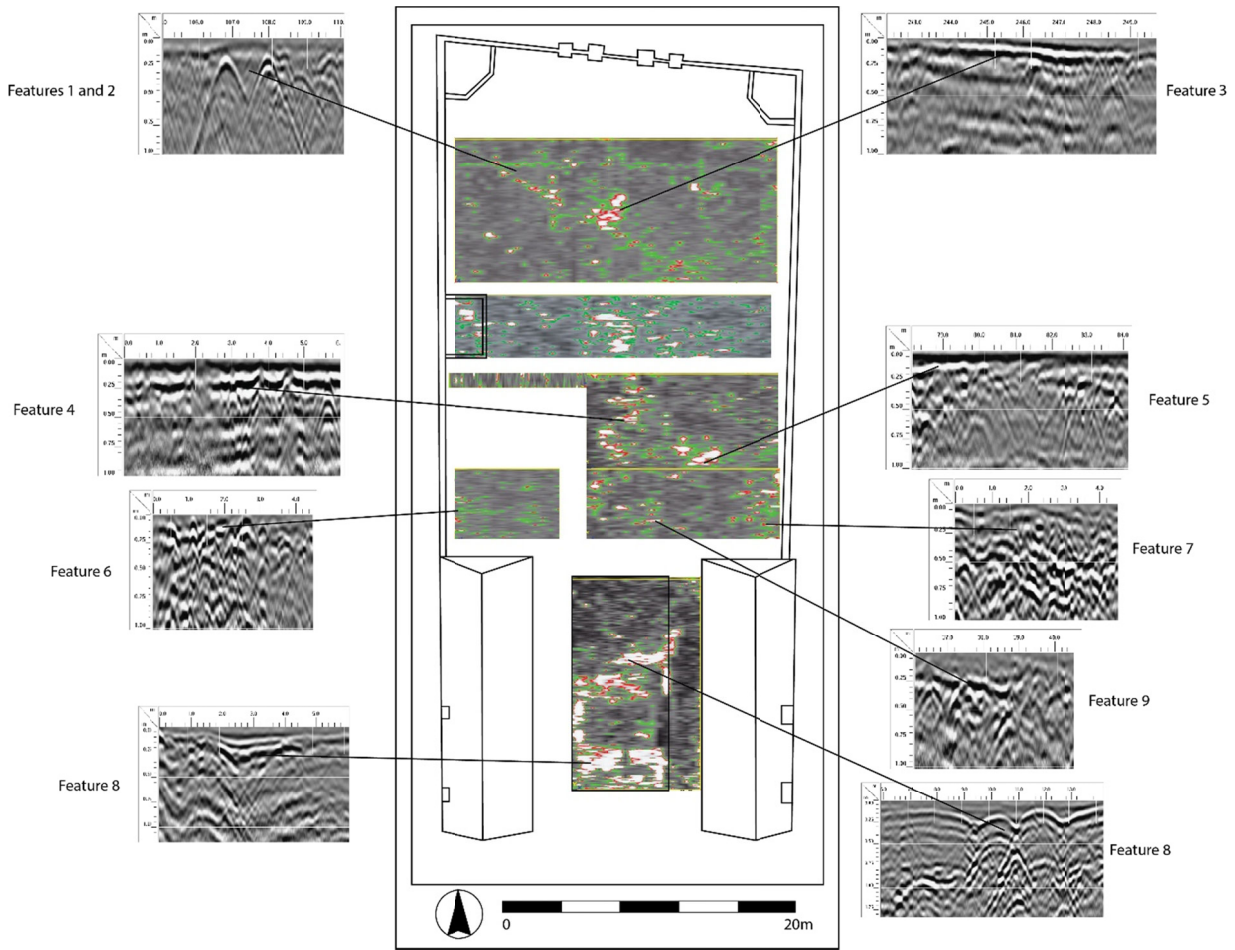
The geophysical survey instrument parameters were set to collect the maximum amount of data within reasonable time and data storage limits. The GPR instrument is capable of relatively dense data point collection. The GPR instrument was set to record 50 scans per meter with 512 individual radar pulses per scan on transects spaced 50 cm apart. This resulted in 25,600 radar pulses per meter, which for example would equate to 5,120,000 individual pulses for a 10 m-x-10m area. The data recovered from the GPR survey were processed by Dr. Marcoux using RADAN 7 software manufactured by GSSI, Inc.

## **SURVEY RESULTS**

### *Aiken-Rhett Yard*

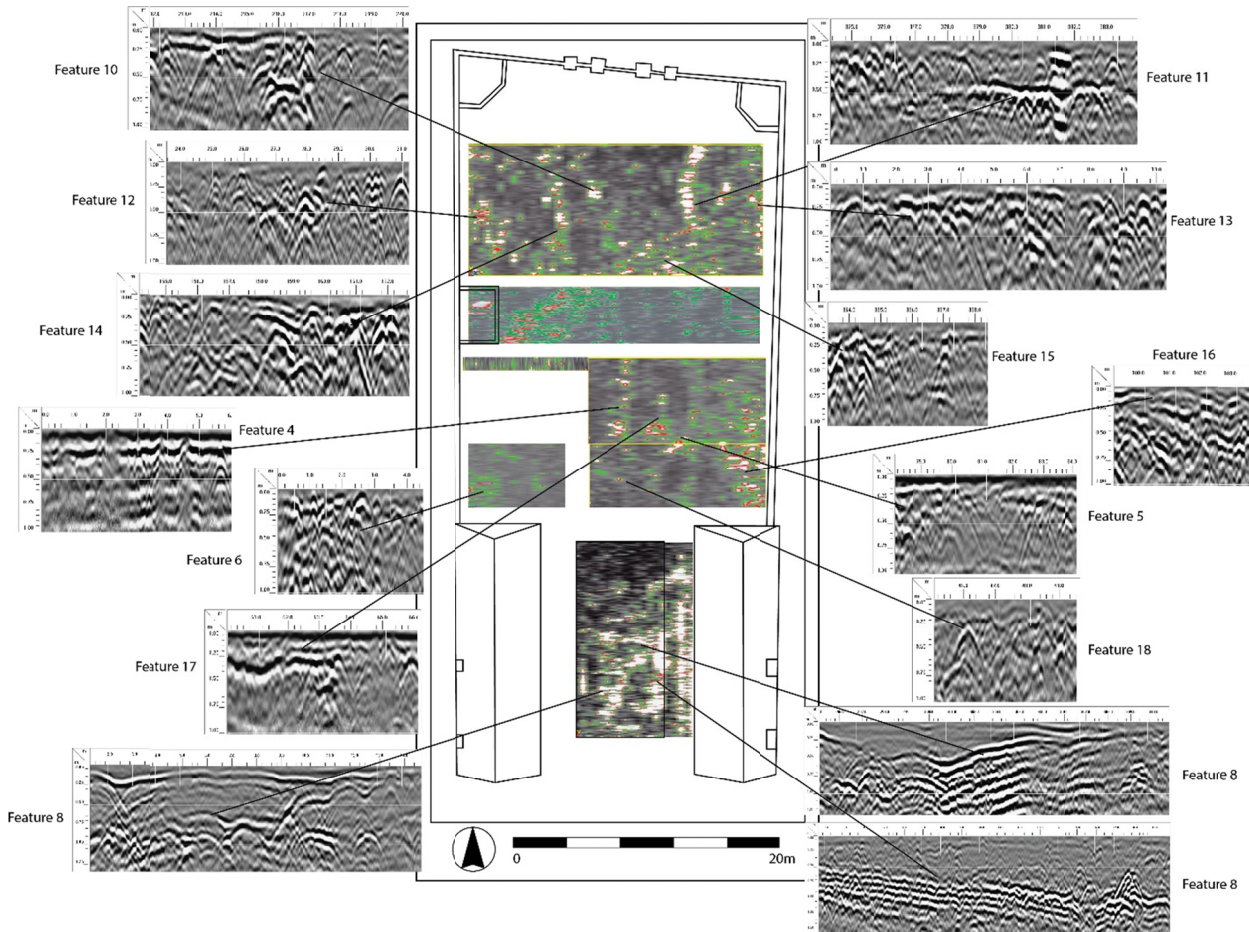
The data recorded from the survey transects in each grid are combined to create a three-dimensional subsurface model. The plan-view map figures in this report represent horizontal “slices” taken at a particular depth below surface. Figure 3 and Figure 4 depicts the results of the GPR survey across the yard at depths of 25 centimeters below surface (cmbs) and 55 cmbs. These plan-view slice maps depict the amplitude of radar reflections recorded by the GPR instrument. The amplitude, or strength, of the reflection is color-coded from dark low (gray) to high (white). Green and red are used to mark particularly strong contrasts, aiding the analyst in the identification of possible features. As stated above, one of the benefits of GPR is the ability to explore subsurface features in both the horizontal (plan view) and vertical (profile) dimensions. Each transect in the survey captures a vertical profile of the soil to a depth of approximately one meter. The right and left margins of each plan-view map present representative profiles of each feature. In these profiles, the features are shown as high amplitude reflections (color-coded as high-contrast white and black) that represent significant differences in the soil encountered by the radar waves. Hyperbolas - the upside-down, U-shaped reflections- suggest a round objects like a pipe, roots, or brick rubble. Flat or undulating planar reflections represent flat objects or surfaces such as brick drains or floors. The profiles of features with both multiple high amplitude point-source reflection hyperbolas and planar reflections typically indicate fill episodes. Table 1 presents summary data for each of the features. The features in

the table are described with respect to amplitude (strength of reflection), source (a point, line, or plane), depth, and preliminary working interpretation.



**Figure 3.** Results of the GPR survey at 25 centimeters below surface (cmbs).





**Figure 4.** Results of the GPR survey at 55 centimeters below surface (cmbs).

Features 1, 2, 9 (Figure 3) and 18 (Figure 4) are all linear features likely representing metal, ceramic, or possibly PVC pipes. Features 1, 2, and 18 are all moderate –to–high amplitude linear source hyperbolic reflections. As can be seen in their profiles along the margins of Figure 3 and Figure 4, the upside-down U-shaped reflections suggest a rounded object – most likely metal pipe. The profile for Feature 9 includes multiple undulating planar and point-source reflection hyperbolas, which suggest that it is the filled-in trench for Feature 18.

Feature 3 (Figure 3) is a high amplitude planar reflection measuring approximately 3 meters East-West by 4 meters North-South. The amplitude of the features indicates a dense surface, which could be comprised of compacted earth or some sort of paving material. Based on its central location in the yard just south of the north gate and its shallow depth, this feature is most likely the remains of a central driveway.

Features 4, 5, 7, 11, 14, and 17 are most likely stone- or brick-lined drains. In plan view, these features appear as linear high amplitude reflections (areas of red, green, and white) (Figures 3 and 4). Because linear features like drains and pipes are best defined when survey transects run perpendicular to their orientation, these features are particularly difficult to identify in profile. As depicted in the profiles, the features generally appear as moderate – to – high amplitude undulating and sometimes dissected planar reflections (Figures 3 and 4). The dissected or broken appearance of the planar reflections is due to the fact that the drains are not a single surface, but rather are

constructed of joined bricks and/or stones. With the exception of Feature 7, these features are oriented North-South. Features 11 and 14 are located in the northern portion of the yard on either side of the central driveway. These appear to intersect with Feature 12 and Feature 15 (these latter features may represent the remains of the 1780 Siege of Charleston trench). Features 4, 5, and 17 are clustered in the central portion of the yard, and Feature 7 is located north of the kitchen building. In plan view, Features 4 and 17 each have rounded southern termini that project west. These are very similar in shape to the configuration of the drain and basin features Martha Zierden (1986) identified in her 1985 excavations at the Aiken-Rhett House (Figure 5). Indeed, based on the locations of excavation units, Features 5 and 7 are most likely two of the drains and basins that Zierden identified (Zierden 1986: Features 1, 2, 3, and 7). Additional support for this interpretation can be found in the profile data. The profiles of Features 7 and 17 both include U-shaped “dips” in the high amplitude planar reflections. These dips are



what one would expect if the profiles represented cross-sections of brick-lined basins.

**Figure 5.** Brick-lined drain (Features 1, 2, and 3) identified in the Aiken-Rhett yard in 1985 (photo from Zierden 1986).

In plan view, Feature 6 is a 3 meter – by- 3 meter square area of high amplitude reflections located north of the stable building (Figures 3 and 4). The profile data define Feature 6 as a series of high amplitude undulating planar reflections ranging from 10 cmbs to over 100 cmbs. This profile suggests that Feature 6 is a filled-in pit.

Feature 10 is an approximately 2 meter - by – 2 meter square area of high amplitude reflections located in the north-central portion of the Aiken-Rhett yard (Figure 4). In profile, Feature 10 is comprised of multiple high amplitude undulating planar and point-source reflection hyperbolas. This indicates that Feature 10 is a filled-in pit.

Based on the location of excavation units from a 2002 project, it is likely that Feature 10 is a filled-in excavation unit.

Features 13 and 16 are both large areas of high amplitude reflections running along the eastern margin of the Aiken-Rhett yard (Figure 4). The profiles of both features evince multiple undulating planar and point-source reflection hyperbolas, indicative of fill, ranging in depth from 10 cmbs to 100 cmbs. Based on the modern topography of the yard and neighborhood, 19<sup>th</sup>-century plats, and the results of Zierden's (1986) archaeological research, it is probable that these features represent episodes in which fill was used to level the eastern portion of the yard.

In plan view, Feature 8 consists of an extensive series of high amplitude linear reflections located within the courtyard between the stable and kitchen buildings (Figures 3 and 4). Feature 8 includes three large North-South oriented linear features, one running along the western margin of the courtyard, one running along the eastern margin of the courtyard, and one or perhaps two connected features running underneath the brick paving next to the kitchen building. It is possible that a similar feature runs under the brick paving next to the stable building; however, this area was not included in the survey grid. These North-South oriented features appear to be connected by a series of smaller East-West oriented features. These smaller linear features are concentrated in the central portion of the courtyard.

The profiles of Feature 8 provide evidence to suggest the function of these linear reflections. The reflections of all of these features are planar, indicating that they are surfaces. The profiles of the East-West oriented features are U-shaped, indicating that they are filled-in ditches. Because the survey transects ran parallel to the North-South oriented features, it is not possible to describe their cross-section; however, in 2002 Zierden (2003) exposed the profile of one of these features in the southeastern portion of the courtyard (Figure 6). It was U-shaped as well. Furthermore, as seen in Figure 4, the profiles of the North-south oriented features in the eastern portion of the grid slope toward the center of the courtyard, while the profile of the easternmost of these features slopes solely to the North. Taken together, this evidence suggests that Feature 8 is a series of ditches that were designed to collect water from the yard and drain it to the Northeast – in the direction of the former tidal creek that once ran through the area.



**Figure 6.** North Profile of large ditch feature identified by Martha Zierden in Aiken Rhett courtyard (photo from Zierden 2003).

In plan view at 55 cmbs, Features 12 and 15 are linear areas of high amplitude reflection, approximately 3 meters wide, running across the central portion of the yard (Figure 4). These features are possibly the remnants of the British siege trenches from the 1780 Revolutionary War battle known as the Siege of Charleston. Feature 15 is oriented Northeast-Southwest and extends from the northeastern corner of the yard, approximately 5 meters south of the privy, to the western wall of the yard just south of the garden folly. Feature 12 is oriented Northwest-Southeast, and it runs from the western wall, approximately 10 meters south of the privy, to where it intersects with Feature 15 in the west-central portion of the yard. In profile, both of these features consist of multiple point-source reflection hyperbolas in a U-shaped configuration indicating a filled-in trench (Figure 4). Excavations by Zierden in 2017 (2018) across a portion of Feature 15 (originally identified by Marcoux in a 2016) revealed the U-shaped profile of a trench (Figure 7). Stratigraphy encountered in the feature includes soil strata and a thick stratum of brick fragments – the likely source of the GPR reflections. While artifacts in the feature are generally sparse, a single impacted large-caliber musket ball lends evidence to an association with the 1780 battle. Feature 12 has not yet been tested archaeologically; therefore, it is difficult to ascertain its association with Feature 15.

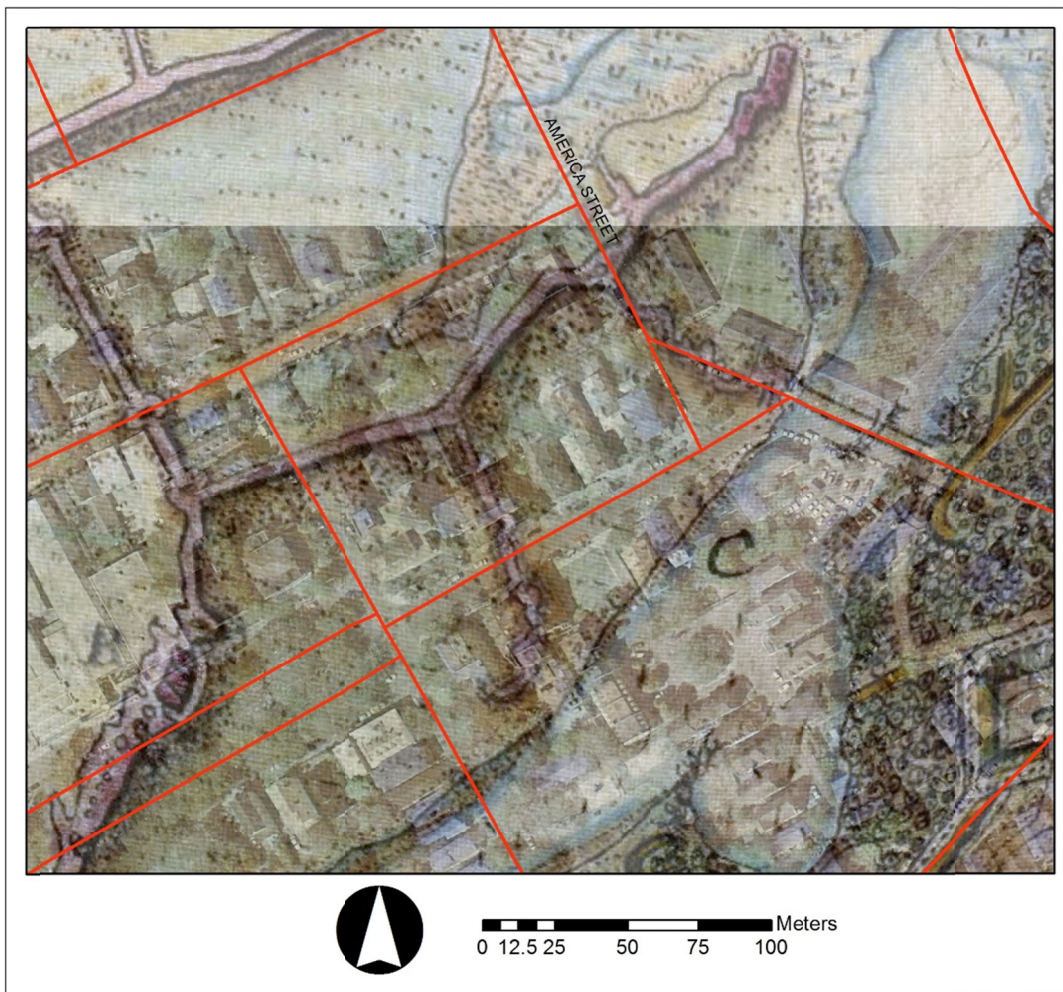


**Figure 7.** Profile of trench feature identified in 2016 GPR survey and excavated in 2017 (photo from Zierden 2018).

The Y-shaped intersection of Feature 12 and Feature 15 generally corresponds to an area of the British siege lines depicted in the 1780 Blaskowitz map. Figure 8 depicts the 1780 map geo-referenced over the modern Charleston streetscape. Marcoux used ESRI ArcMap GIS software to create the figure by matching landmarks on the 1780 map with corresponding locations on the modern streetscape. While a fair bit of interpretive license is required, the figure shows a Y-shaped intersection in the general vicinity of the Aiken-Rhett house, albeit to the east of the location of Feature 12 and Feature 15.

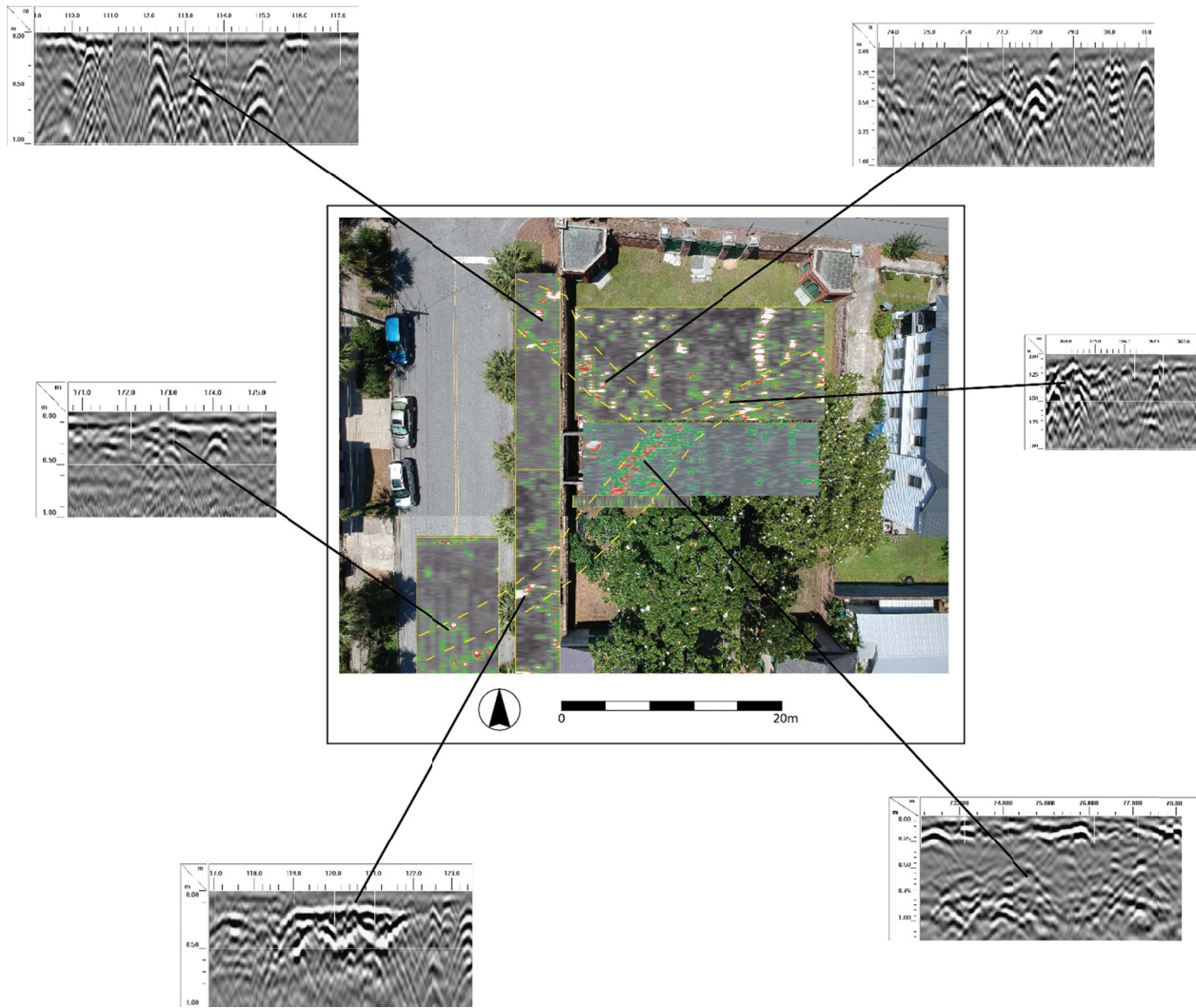
#### *Survey Areas Outside of the Aiken-Rhett Yard*

In fulfilling the second goal of the survey, to trace out the extent of the possible 1780 Siege of Charleston trench, Marcoux also located grids outside of the Aiken-Rhett yard. One grid was placed along the sidewalk just west of the Aiken-Rhett house. This survey grid, which measures 4.5 meters East-West by 54 meters North-South, runs the length of the Aiken-Rhett yard. Marcoux also located a 7 meter East-West - by - 15 meter North-South grid in Elizabeth Street.



**Figure 8.** Map showing the 1780 Blaskowitz map projected over the modern area around the Aiken-Rhett House.

Figure 9 depicts the survey results from these survey grids at approximately 50 cmbs. The results identified features along the sidewalk and in Elizabeth Street that are good candidates for extensions of Features 12 and 15. Along the sidewalk, there are two areas of high amplitude reflection that correspond to where Feature 12 and Feature 15 would extend beyond the western wall of the Aiken-Rhett yard. In Elizabeth Street there is a linear feature running in the same Northeast-Southwest orientation as Feature 15. Representative profiles of the possible features are shown in Figure 9 along with profiles of Features 12 and 15. Like Features 12 and 15, the linear features under the sidewalk and Elizabeth Street are U-shaped in profile and contain multiple high amplitude planar and point reflection hyperbolas – indicating fill. Additionally, there is a noticeable “dip” in the ground surface where Feature 15 would extend west of the Aiken-Rhett yard wall (Figure 10). The dashed yellow line in Figure 9 traces the potential extent of all of these features and establishing a possible route for the 1780 Siege trench.



**Figure 9.** Results of the GPR survey at 50 centimeters below surface (cmbs). The yellow-dashed line outlines the projected location of the possible 1780 Siege of Charleston trench features.

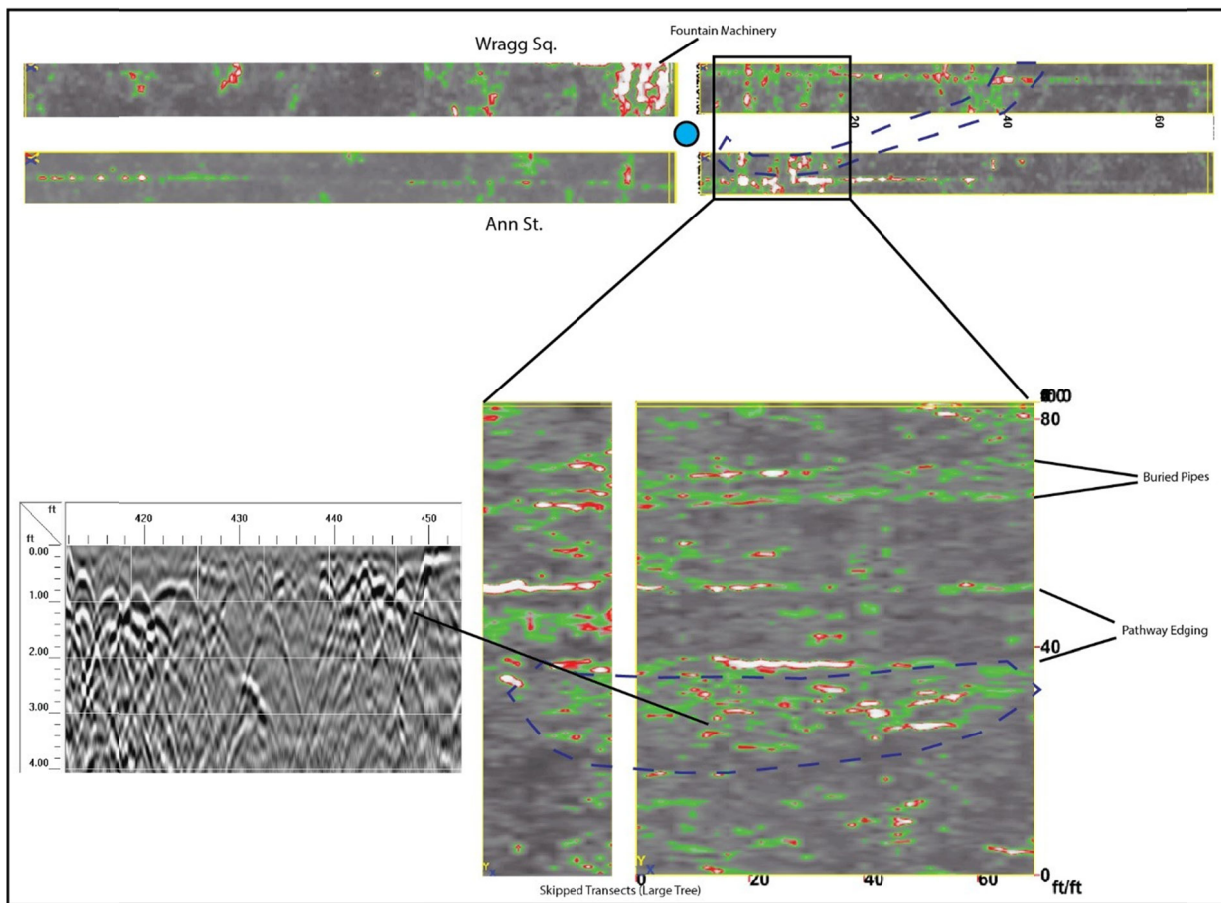


**Figure 10.** Photo of “dip” located in the projected path of Feature 15 (photo from the Post and Courier).

Based on past research on the Siege of Charleston conducted by Carl Borick (2003), survey grids were also located in each of the four grass-covered areas composing Wragg Mall (Figure 11: Top). The western two grids extend from approximately 1 meter east of the meeting street sidewalk to 3 meters west of the central North-South path. The eastern two grids extend from approximately 3 meters east of the central North-South path to approximately 10 m west of the sidewalk on Elizabeth Street. A portion of Wragg Mall was covered in Marcoux's 2012 survey (report filed with HCF); however, more extensive coverage was desired.

The survey results from these grids at 50 cmbs are presented in Figure 11. Overall, Wragg Mall does not contain a large number of features, suggesting it is a relatively undisturbed area. The primary disturbances are four the East-West oriented utility pipes that run the length of the mall. These pipes appear at various depths across the survey area. Each is buried within an approximately one meter wide trench. Other disturbances in the western two grids are associated with tree roots. Two areas containing high-amplitude reflections also correspond to the possible location of the 1780 Siege of Charleston trench. These areas are outlined in the dashed blue line in the center of Figure 11. The northeastern portion of this feature was also identified in Marcoux's survey conducted in 2012 (report filed with HCF). In order to achieve greater resolution, one area was chosen for follow-up survey employing North-South oriented transects, which were perpendicular to the original survey transects. The results of the second round of survey appear at the bottom of Figure 11. The results clearly define a number of pipe disturbances, along with the stone edging that lines the mall's central walkway. Of interest to the 1780 siege trench, is the crescent-shaped area of high amplitude reflections just south of the central walkway. The profile of this feature presents a U-shaped cross section with multiple point-source reflection hyperbolas, indicative of a filled-in trench. Unlike the other trenches in the mall, the profile of this feature does not evince the high amplitude linear-source hyperbola associated with a metal or ceramic pipe.





**Figure 11.** Top: Map showing the 1780 Blaskowitz map projected over the modern area around Wragg Mall. Center: Results of the GPR survey at 50 centimeters below surface (cmbs). The blue-dashed line outlines the projected location of the possible 1780 Siege of Charleston trench features. Bottom: Results of the second GPR survey of a portion of Wragg Mall at 50 centimeters below surface (cmbs). The blue-dashed line outlines the projected location of the possible 1780 Siege of Charleston trench features.

## CONCLUSIONS

The results of the survey provide a great deal of additional information addressing both the back yard of the Aiken-Rhett house and the location of the 1780 Siege of Charleston trench. Figure 12 presents an interpretive summary of the features identified in the Aiken-Rhett yard. The approximate locations of 1985-2017 excavation units is included. Data from the survey supports Zierden's (1986) interpretations regarding land-leveling fill episodes in the eastern portions of the yard. Evidence of fill along the eastern wall of the yard extends up to 100 cmbs. Six possible stone- or brick-lined drains were also identified, two of which were previously found in Zierden's (1986) 1985 excavations. If the remainder of drain features are confirmed through excavation, it indicates the existence of a very complex hydraulic system in the yard. Adding evidence to this interpretation, the survey also identified a large system of perpendicular ditches crisscrossing the courtyard between the stable and kitchen. As originally



**Figure 12.** Map depicting the locations of excavation units and features identified through GPR survey. Features are color-coded to reflect working interpretations of their function.

argued by Zierden (2003), this system appears to have been designed to drain the areas around the yard and house. The slope of the drains identified in the GPR profiles indicates that the ditches collect water in the center of the courtyard and drain it to the eastern margin of the yard north of the kitchen. The survey identified a relatively large (3 meter –by – 3 meter) and deep (100 cm) filled-in pit just north of the stable building.

The survey also significantly adds to our knowledge of the possible 1780 Siege of Charleston trench. Grids placed north of the 2016 survey, as well as in the sidewalk and in Elizabeth Street west of the yard, identified features that are likely extensions of the trench identified in 2016. Survey grids placed in Wragg Mall also identified a large trench-like feature that matches the projected location of the siege trench depicted on the 1780 Blaskowitz map.

Of course, archaeological excavation is the only way to “ground truth” the interpretations laid out in this report. Indeed, it will be necessary to recover additional artifact and stratigraphic data before we can confidently associate Features 12 and 15 with the 1780 Siege of Charleston trench. Furthermore, the results of this survey strongly suggest that future archaeological investigations will provide crucial information that will greatly benefit the interpretation of the historical landscape at this unique property.

Feature	Amplitude	Geophysical Description	Approximate Depth (cmbs)	Working Interpretation
1	High	Linear-source reflection hyperbolas	10-25	Metal/Ceramic Pipe
2	High	Linear-source reflection hyperbolas	10-25	Metal/Ceramic Pipe
3	High	Large-area planar reflection	10-25	Buried flat surface (Driveway)
4	Moderate	Dissected planar reflection	10-25	Stone- or brick-lined drain
5	Moderate	Undulating planar reflection	10-25	Stone- or brick-lined drain
6	High	Multiple undulating planar reflections	10-100	Large filled-in pit
7	Moderate	Undulating planar reflection	10-25	Stone- or brick-lined drain
8	High	Multiple undulating planar reflections	10-100	Surfaces of drainage ditch system.
9	Moderate	Multiple undulating planar and point-source reflection hyperbolas	25-50	Filled-in ditch associated with Feature 18 (pipe)
10	High	Multiple undulating planar and point-source reflection hyperbolas	10-100	Filled-in excavation unit
11	High	Dissected planar reflection	50-60	Stone- or brick-lined drain
12	High	Multiple point-source reflection hyperbolas	10-60	Filled-in trench, possibly associated with Feature 15
13	High	Multiple undulating planar and point-source reflection hyperbolas	10-75	Filled-in area
14	High	Multiple undulating planar and reflection hyperbolas	25-60	Stone- or brick-lined drain
15	High	Multiple point-source reflection hyperbolas	10-80	Filled-in trench, possibly associated with Feature 12
16	High	Multiple undulating planar and point-source reflection hyperbolas	10-100	Filled-in area / Central area in profile is likely a filled-in excavation unit.
17	High	Dissected planar reflection	25-50	Stone- or brick-lined drain
18	Moderate	Linear-source reflection hyperbolas	25-30	Metal/Ceramic Pipe

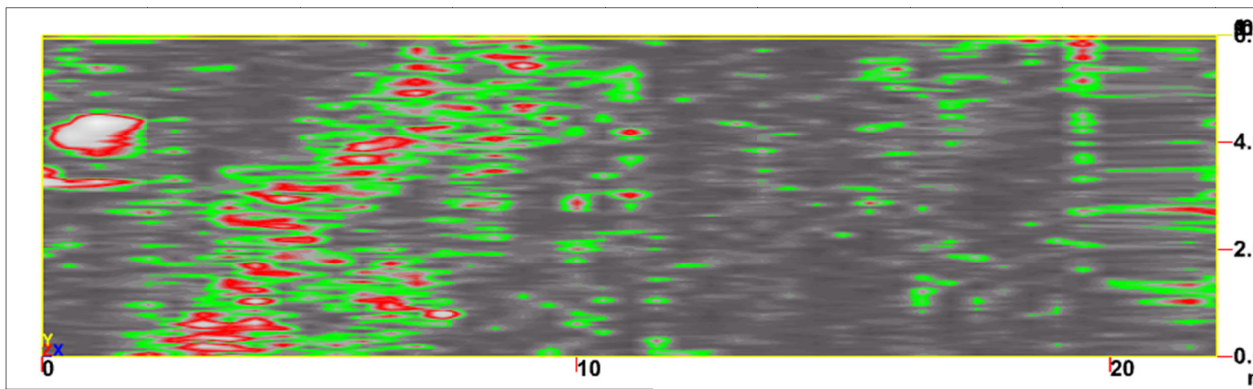
## Chapter VIII

### Summary and Recommendations

The three-phased approach to delineating the siege of Charleston - placement of historic maps on the current landscape, focused remote sensing, and targeted excavation – has produced concrete results. A small portion of the siege lines, particularly the eastern portion of the third parallel, has been anchored to the Charleston landscape. The successive projects detailed here indicate that evidence for this pivotal event in Charleston's history is preserved in the archaeological record, particularly in locations already set aside for preservation. It may be possible to use these same methods to expose and interpret the events of 1780 in other portions of the Charleston peninsula.

#### Interpreting the Trench

The feature excavated in the Aiken Rhett yard does not precisely match the described events, but the evidence for its association with the siege line is compelling, nonetheless. Excavation of an area 15' x 10' in front of the garden folly revealed a trench trending northeast/southwest in the western portion of the yard. The trench exhibited an uneven surface and undulating sides, but measured 8.5' to 12' across. Based on the eastern profile, the trench initiated 1' below present ground surface, and was 4.2' deep from base to the top of the brick fill (5.2' below ground surface). This feature matches the anomaly revealed by ground penetrating radar in location, size, and orientation.



Comparison of trench signature from GPR survey and orientation of Feature 107 at base of excavation.

The characteristics of the soil in Feature 107 suggest a large feature that was originally excavated through dark brown topsoil, into yellow and tan subsoil, and then filled with the same soils, now mixed together. This matches the methodology of defensive trench construction, where soils excavated from the trench would be piled in front, to create a defensive structure. Filling the trench would require pushing that mounded earth back into the trench.

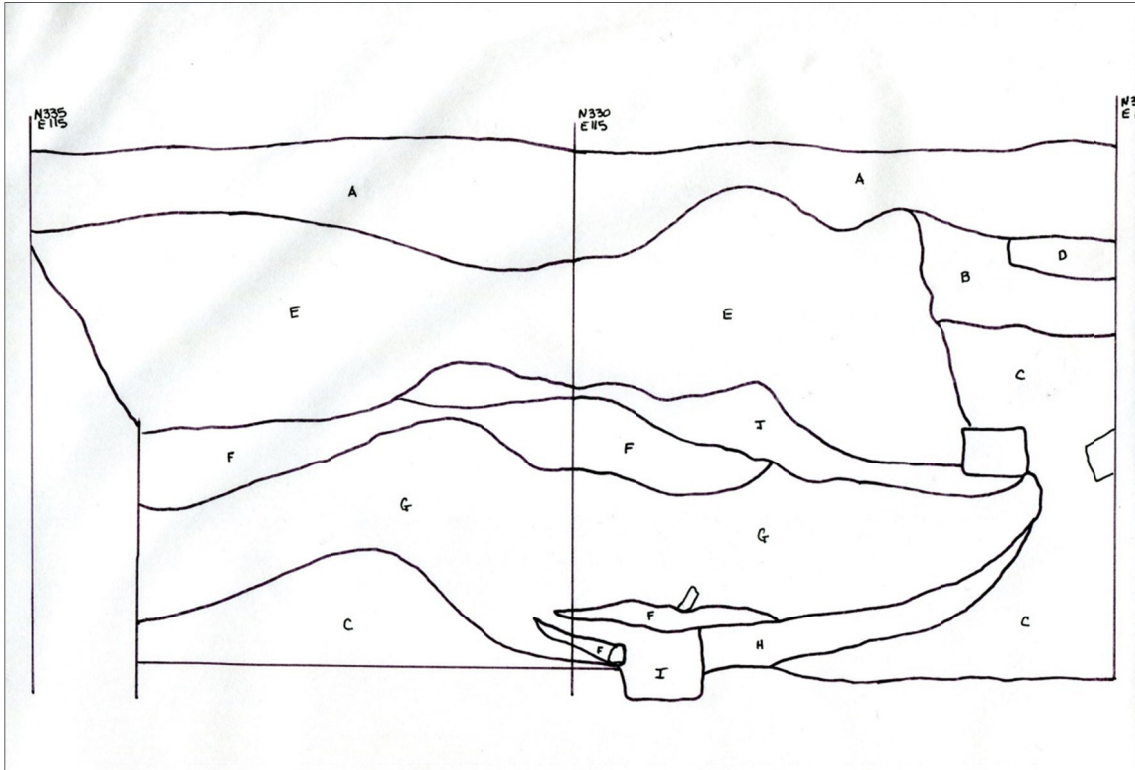
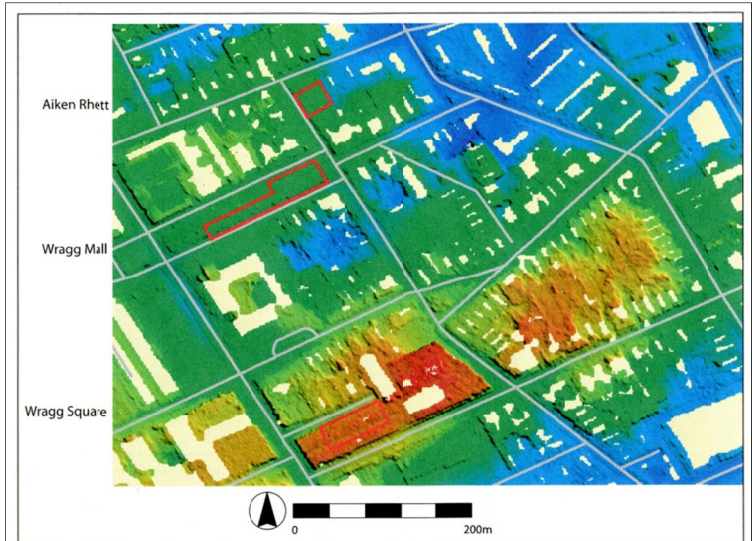


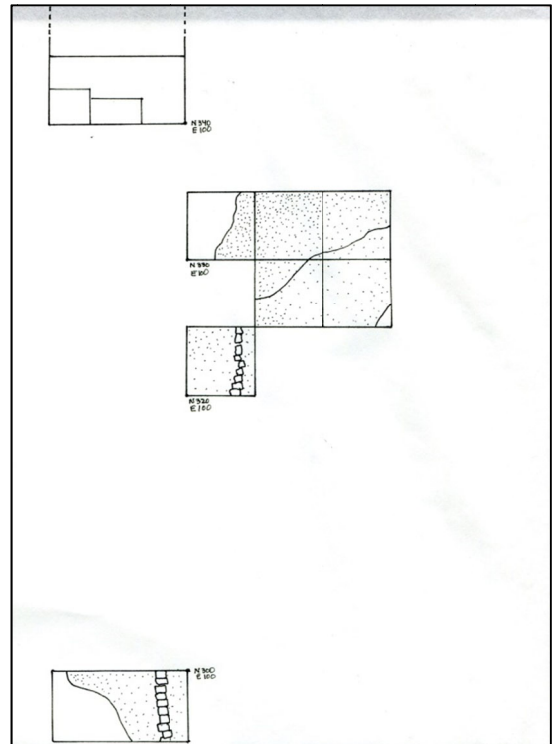
Photo and drawing, east profile.  
 A: dark soil (10yr3/2)-zone 1  
 B: brown sandy soil (10yr4/3) – zone 2  
 C: sterile subsoil  
 D: deposit of white lime mortar  
 E: concentration of brick rubble – Feature 89  
 F-G-H: mottled brown and yellow soils – Feature 107  
 I: trench/post hole of brown sand – Feature 110  
 J: lens of mortar rubble

After the surrender of Charleston in 1780, British commanders ordered their troops, and presumably enslaved city residents, to immediately fill the approach trenches so that they could not be used against the occupiers. The artifacts recovered suggest the trench, or at least this portion of it, was not filled until after 1790. The most obvious interpretation here is that unseen portions of the trench were not completely backfilled, in contrast to orders or official reports.



Location of the Aiken-Rhett yard on current LIDAR imagery (red square) and portion of the Blaskowitz map (circle).

It appears that the trench was filled in two episodes, and both could be associated with construction events. House construction by John Robinson in 1820 and renovation by William Aiken 1833 closely match the dates of the recovered ceramics. The first filling may coincide with preparation of the vacant lot for house construction. But a partially filled trench in the yard of a residential property that has been occupied for nearly twenty years is puzzling, as is the density of architectural rubble in the upper levels of the feature. Most of the brick in the fill has mortar adhering to it, suggesting the rubble comes from demolition of a structure, rather than new construction. Possibly, the rubble represents a Robinson-era structure demolished to make way for Aiken's new design. Of course, the fact that the upper levels of the trench are filled with 1830s architectural rubble does not negate



Units excavated in 1985, 2001, and 2017

the likelihood that the excavated trench was originally part of the Siege of Charleston.

Natalie Adams (1998: 36) found similar deposits at the Hornwork in Marion Square. Based on location and configuration, two features (Feature 18 and Feature 27) were clearly part of the fortification ditch. Adams found that both were filled after the Revolution, but only one (feature 27) was filled shortly after the end of the war. Feature 27 contained ceramics dating to 1780. Feature 18 was evidently filled in more slowly, as the excavated sample contains artifacts developed in 1830. Adams suggests that the ditch was not filled in at once, but gradually over time, “with perhaps the final filling and leveling occurring in preparation for the Citadel.” (Adams and Joseph 1998:37). This interpretation parallels that for the Aiken-Rhett trench.

Feature 107 and its alignment are shown in the figure above in relation to Feature 12 and Feature 53 from previous excavations. The precise relation of these three features is not clear, principally as a result of limited excavation. Feature 53, adjoining the 2017 block, was not completely excavated, and so boundaries were not defined. It appears to be a continuation of feature 107. The relation of feature 12, 30’ to the south, is less clear, and the exposed section appears to be oriented at a right angle to the 2017 trench. It is possible that the excavations are located over an area of the third parallel that includes batteries, a small fortification, traverses or other embellishments to a straight trench. The property may also be positioned over the intersection of the parallel and approach trench noted on the Blaskowitz map.

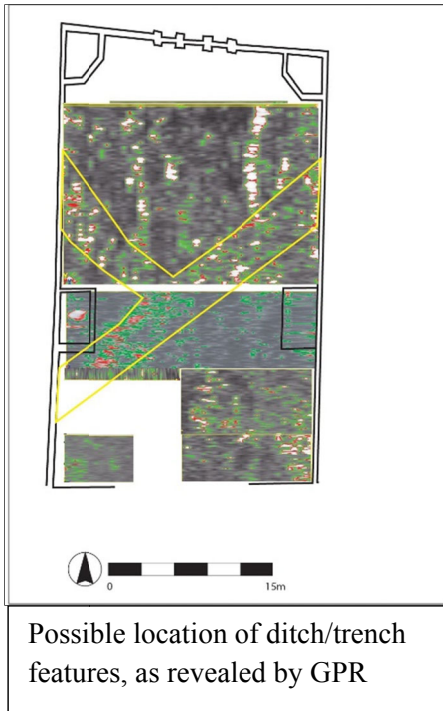
### Other Aiken-Rhett Features

The discoveries of 2017 also led us back to the very puzzling features in the courtyard. Archaeologists and architectural historians have long debated the purpose of the series of trenches and swales in the brick-paved courtyard between the kitchen and stable buildings. These are described as Feature 8 by Marcoux (Chapter VII), and Feature 99 by Zierden in the 2003 site report. Excavation in 2002 revealed multiple layers of fill and paved surfaces that follow these contours. These undulations have been interpreted as drainage/water collection for a site that is much higher in the rear yard than in the work yard. These swales may have collected, then channeled, stormwater. The 2002 dig also revealed that the lowest level of the slough was decayed wood. Another possible explanation for the features was that the depressions are part of the siege lines, associated with control of water from the adjacent marshes and creek. This remains a possibility.



Regular depressions in the paved courtyard





The physical and cultural data recovered during the 2017 excavations strongly suggest the trench feature (Jon Marcoux’s Feature 15 and Charleston Museum’s Feature 107) is part of the third parallel or approach trench excavated by the British army in 1780. The location of this feature follows closely that shown on a variety of 1780 maps, most notably the very detailed Blaskowitz document. There is no other reason for such a feature to be located in what was an uninhabited portion of the Charleston peninsula during this time. Now that the physical attributes and precise location of the anomaly discovered via ground penetrating radar in 2016 were verified, it was possible to follow this feature, and provide a more complete footprint of the trench. The remote sensing survey of 2018 successfully traced the trench across the back yard, and beyond the western wall into the street.

Feature 15/107 continued beyond the brick property wall and under the brick sidewalk into the shoulder. Here, the soils in the shoulder are sunken, what the research team has taken to calling “the dip”. The settling of soils in this location may be a much later event, but it does mirror the sequence revealed in Feature 107 excavation – that a late 18<sup>th</sup> century trench was partially filled, settled, and was later filled again. It may be that this subtle depression is one more above-ground remnant of the siege lines. It is certainly in the right place. Efforts in 2019 to obtain permission for excavation on this public right-of-way were not successful. While disappointing, it did leave this feature intact, and available for interpretation and tours.



The “dip” or sunken area in the shoulder matches the GPR signature for the trench

## Recommendations

More work is obviously necessary to confirm the association of the trench. The 2018 phase of remote sensing provided an additional guide to follow this unique feature and determine a larger footprint for the trench. This survey also refined our understanding of the relation of deep deposits encountered in the 2001 excavations along the eastern side of the yard – ones containing late 18<sup>th</sup> century grapeshot – to the trench. Additional excavation of this feature, both within the boundaries of the Aiken-Rhett yard and outside of its walls on public property will refine our understanding of this feature.

Likewise, the relatively undisturbed ground and possibly well-preserved features in Wragg Mall present another excellent opportunity for a public archaeology project. Two remote sensing surveys, as well as the general land configuration, suggest that portions of the parallel, and perhaps a battery, are located on the high ground occupied by the park adjacent to a former creek beneath The Charleston Museum building. Moreover, an excavation here on a City property, adjacent to the Museum, presents an excellent opportunity for a public education project that would inform residents and visitors.

It may be more than coincidence that evidence of the siege, both the American defenses and the British approach trenches, is preserved in public parks. The documents provide no details on the reason for the Wragg family's delineation and donation of Wragg Mall and Wragg Square to the City at the time of subdivision. Was there still visual evidence of the 1780 events in those areas? Did this render the lands less valuable, perhaps unlikely to sell? Or was this a very early example of historic preservation? Perhaps additional documentary research will uncover more details. Regardless of the reason, Charlestonians in 2020 are fortunate for the Wragg family's foresight and generosity. Two public parks and a Museum property preserve evidence of the Siege of 1780. It is likely that other Charleston lots between Calhoun and Spring streets hold similar evidence, but chances to expose and analyze these diminish in this section of the city as development and construction of large public buildings proceeds at a rapid rate.



The impacted musket ball from base of the trench



Aerial view of the Aiken-Rhett rear yard and the Charleston peninsula, by Jon Marcoux captures a similar perspective as the historic Alonzo Chappel “Siege of Charleston”





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