2006 ARCHAEOLOGICAL INVESTIGATIONS AT TOWN CREEK INDIAN MOUND STATE HISTORIC SITE

by

R. P. Stephen Davis, Jr.

Research Report No. 26
Research Laboratories of Archaeology
University of North Carolina at Chapel Hill

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ABSTRACT

Over five days between September 11 and October 10, 2006, archaeological investigations were conducted at Town Creek Indian Mound State Historic Site in Montgomery County, North Carolina. These investigations were sponsored by the North Carolina Archaeological Society, the Friends of Town Creek, and the Research Laboratories of Archaeology, and were conducted under ARPA permit # 75. The project was scheduled to coincide with the fall meeting of the North Carolina Archaeological Society at Town Creek on October 7, 2006, which permitted participation by Society members and the interested public.

The purposes of these investigations were threefold. First, we needed to re-establish the excavation grid, following a 20-year hiatus of fieldwork at the site. Second, we wished to evaluate the effectiveness of two remote sensing techniques (resistivity and magnetometry) for detecting subsurface archaeological features at Town Creek and then apply those exploratory techniques to a previously unstudied area outside the reconstructed palisade. Third, we planned to re-excavate and photograph several previously excavated 10x10-ft units for which mosaic photographs were missing. This latter goal also allowed us to examine the applicability of a new, and perhaps more efficient, method for acquiring vertical photographs for the Town Creek Photographic Mosaic.

ACKNOWLEDGMENTS

This project was initially conceived by the Executive Board of the North Carolina Archaeological Society as a volunteer-oriented field project for Society members at its fall meeting, which was held at Town Creek on Saturday, October 7, 2006. Their help that day, despite intermittent rainfall, was greatly appreciated. Other individuals also helped out both before and after the meeting, often driving several hours just to "dig at Town Creek." I am particularly grateful to Linda Carnes-McNaughton, Duane Esarey, Barker Fariss, Andy Greene, Matt Mirarchi, Paul Moehler, Brian Overton, Brett Riggs, Terri Russ, Archie Smith, Erin Stevens, and Yang Nan for their participation. Finally, I wish to thank Gerald Schroedl and Stephen Yerka for undertaking the gradiometer and resistivity surveys at the site.

Remote sensing was made possible by grants from the Friends of Town Creek and the North Carolina Archaeological Society. The Friends of Town Creek also provided accommodations for the field supervisor and the remote sensing crew. Field equipment was provided by Terri Russ and the Research Laboratories of Archaeology.

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BACKGROUND

Town Creek Indian Mound (31Mg2 and 31Mg3) is a South Appalachian Mississippian single-mound center located on Little River in southern Montgomery County, North Carolina (Figure 1). Archaeological evidence at the site indicates it was occupied successively during the Archaic, Woodland, and Mississippian periods, with the most intensive occupation occurring between about A.D. 1200 and 1500 (Boudreaux 2005; Coe 1995; Ward and Davis 1999). The archaeological complex representing this latter period of site use was originally termed the "Pee Dee culture" (Coe 1952).

Investigation of the site, under the overall direction of Joffre Coe, began in 1937 with the exploration of the mound (designated 31Mg2); by 1940 excavations also had begun within the adjacent village area (designated 31Mg3). These investigations were supported largely by Federal work programs, including the National Youth Administration (NYA), Civilian Conservation Corps (CCC), and Works Progress Administration (WPA), and continued until early 1942 when mobilization for the Second World War brought about their termination. Excavations resumed in 1949, following Coe's completion of military service and his Master's degree at the University of Michigan, and continued largely uninterrupted until the early 1970s. Sporadic investigations continued until the mid-1980s.

From the mid-1950s onward, archaeological research at Town Creek was accompanied by efforts to stabilize and partially reconstruct the "Pee Dee" village for public interpretation. These efforts were initiated in the 1950s with the reconstruction of the mound. Later, using evidence gained through archaeological excavation, two wattle-and-daub structures with thatched roofs were constructed atop the mound and across the plaza from the mound. Additional interpretative constructions include a wattle-and-daub and thatch mortuary house and a surrounding palisade. A permanent museum was constructed in the early 1960s, and today Town Creek is the only historic site administered by the North Carolina Department of Cultural Resources which is dedicated to interpreting the prehistory and history of the State's first peoples.

Because of the length and duration of archaeological research at Town Creek, it stands as one of the most extensively investigated prehistoric sites in the southeastern United States. Unlike many large-scale excavations which have relied on heavy

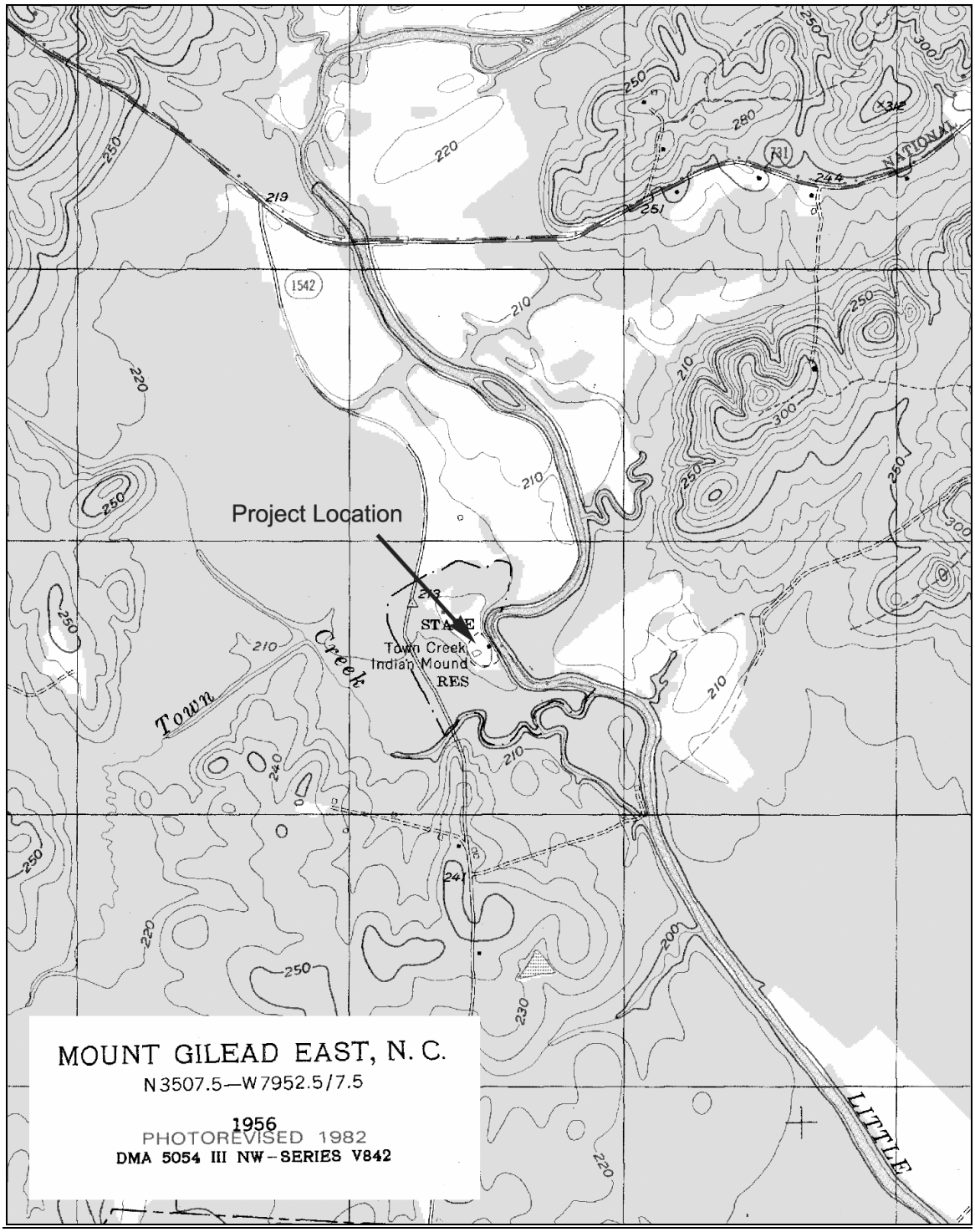

Figure 1. Portion of Mount Gilead East 7.5-minute quadrangle, showing the location of Town Creek Indian Mound in southern Montgomery County, North Carolina.

machinery to expose underlying archaeological features and deposits, Town Creek was excavated methodically by hand in 10x10-ft units, and all excavated soil was screened. By this process and using mostly small work crews, almost 900 contiguous excavation units were dug to top of subsoil, photographed, and mapped. While some underlying features (mostly burials and postholes) were subsequently excavated, most were not and remain available for future scientific study.

Perhaps the most creative and innovative procedure employed during these excavations was the systematic preparation of each excavated unit prior to photographing and mapping, and the use of a wooden tower to obtain precise vertical photographs of each unit. This technique reflected Coe's deep commitment to the value of photographic images in archaeological documentation and interpretation, and was inspired by the U.S. Soil Conservation Service's program of systematic aerial photography which began in the late 1930s. Showing considerable foresight, Coe's development and implementation of this technique permitted the collection of a consistent visual record of each excavated unit over a period of several decades, during which numerous archaeological supervisors worked at Town Creek. In fact, the resulting photographs provide a consistency in documentation not provided by the accompanying scale drawings of excavated surfaces (Davis and Boudreaux 2002).

2006 INVESTIGATIONS

On September 11, 2006, Brett Riggs and Steve Davis of the Research Laboratories of Archaeology, with assistance from Archie Smith of Town Creek Indian Mound State Historic Site, re-established the excavation grid using existing reference points. We began by assessing the reliability of the existing above-ground, concrete grid reference points. We set up a Leica total station over the concrete monument at grid point 0R10 (measured in feet), located just north of the "Minor Temple." This monument is shown on a plat drawn by Barton Wright, dated November, 1949, and was the original site datum with an assigned elevation of 100 ft. Next, we aligned the instrument to the concrete monument for the mound excavation grid (Mg 2 grid 100R20; Mg 3 grid -23.99 L234.78), located just north of the mound. Afterward, we used the total station to locate a pre-determined point south of the mound and adjacent to the stockade where Jack

Wilson on August 3, 1976, marked the -200L160 grid point with a buried cam shaft. When we failed to find this buried marker at the predicted location, we used a metal detector and found it several feet away. This told us that any one, and possibly all three, of the points we had used were not accurately placed (or had been subsequently disturbed).

Following this, we metal detected the approximate area of the L100 line, searching for metal stakes which Joffre Coe had told Archie Smith were buried on grid at 50-ft intervals. We located three points: a piece of iron rebar set between two bricks at 100L100; an iron pipe at -100L100; and another iron pipe at -150L100. The alignment and measured distances between these three points indicated that they were accurately set and had not been disturbed. We then set up the total station on the 100L100 point and aligned the instrument to the -150L100 point. When we re-shot the position of Jack Wilson's -200L160 point (i.e., the cam shaft), we got a reading of -199.99L160.09! This confirmed the integrity of the points along the L100 line. Once this was accomplished, we set in corner points, using the total station, for the following units: -160L80, -200L80, -200L70, -200L60, and -200L50. We also set in corner points for two remote sensing blocks.

Remote Sensing

Remote sensing was conducted on October 7, 2006, by Gerald Schroedl and Stephen Yerka of the University of Tennessee. They examined two 20x20-meter blocks using a GeoScan FM36 Fluxgate gradiometer and a GeoScan RM15 Soil Resistivity instrument. These permitted a non-invasive examination of below-ground deposits for magnetic and electrical anomalies, respectively, that might be produced by subsurface archaeological features (e.g., pits, hearths, etc.).

The first block, with corners at -180L4.38 (SE), -180L70 (SW), -114.38L70 (NW), and -114.38L4.38 (NE), was located southeast of the mound and within the reconstructed palisade, in an area which had been previously excavated (though pits and postholes were not excavated) (Figures 2, 3, 4, 5, and 6). This block contained a palisade line and a circular house with numerous intrusive burial pits, and it also extended into the southeastern edge of the plaza. Both the gradiometer and the soil resistivity instrument

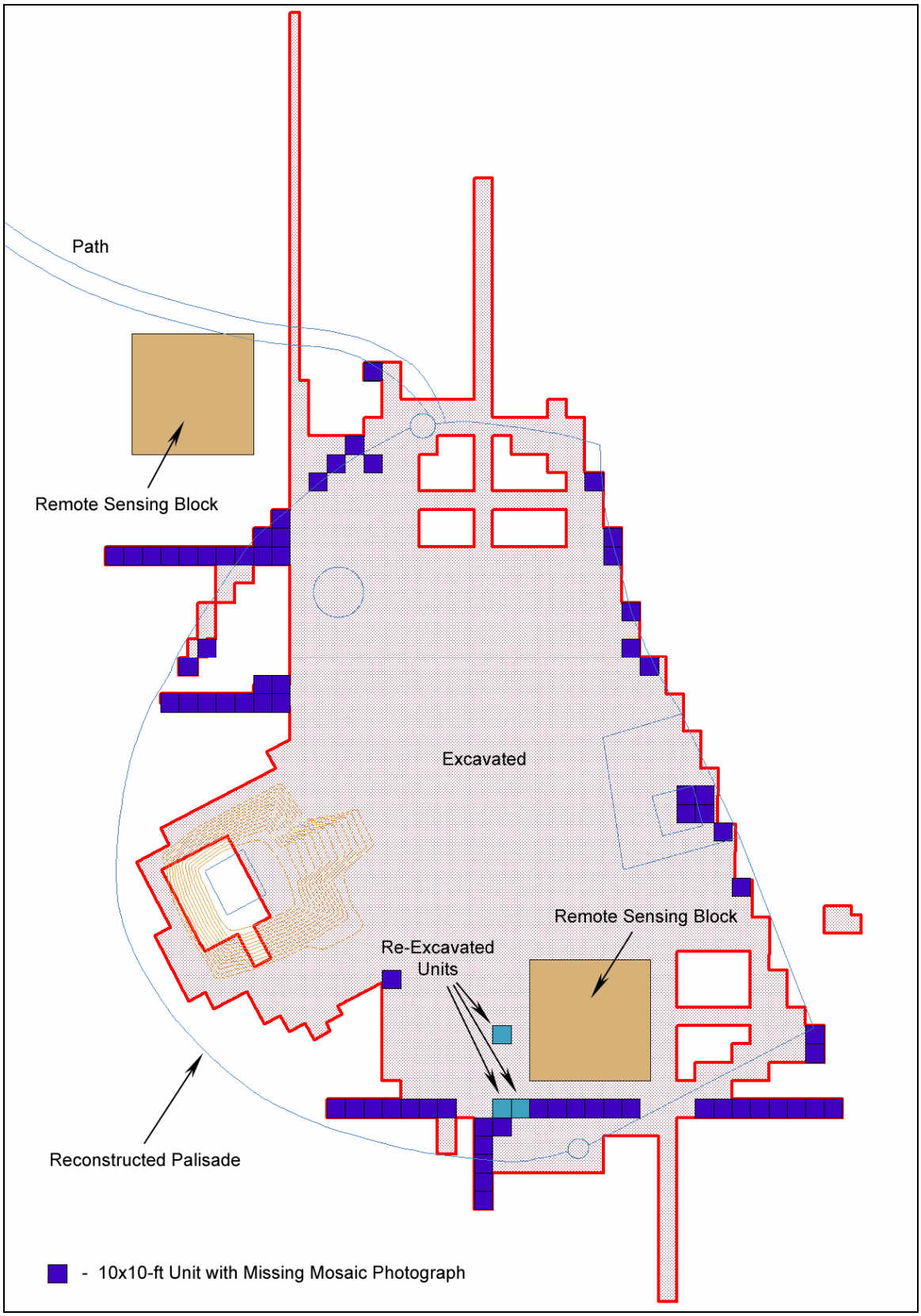

Figure 2. Map of Town Creek showing areas of 2006 investigations.

Figure 3. Conducting the soil resistivity survey inside the reconstructed palisade.

Figure 4. Conducting the gradiometer survey outside the reconstructed palisade.

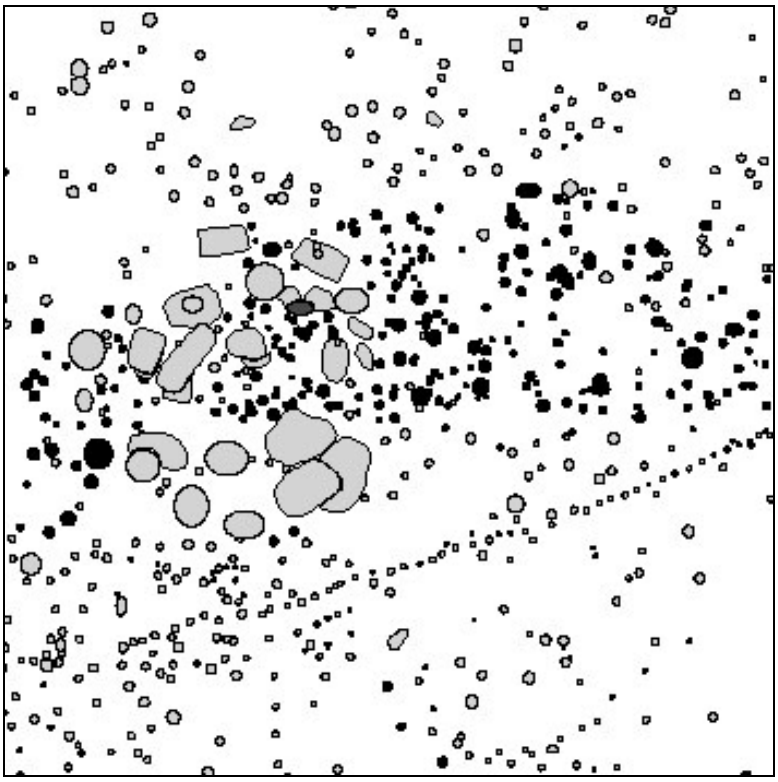

Figure 5. Excavation plan of the remote sensing block inside the palisade.

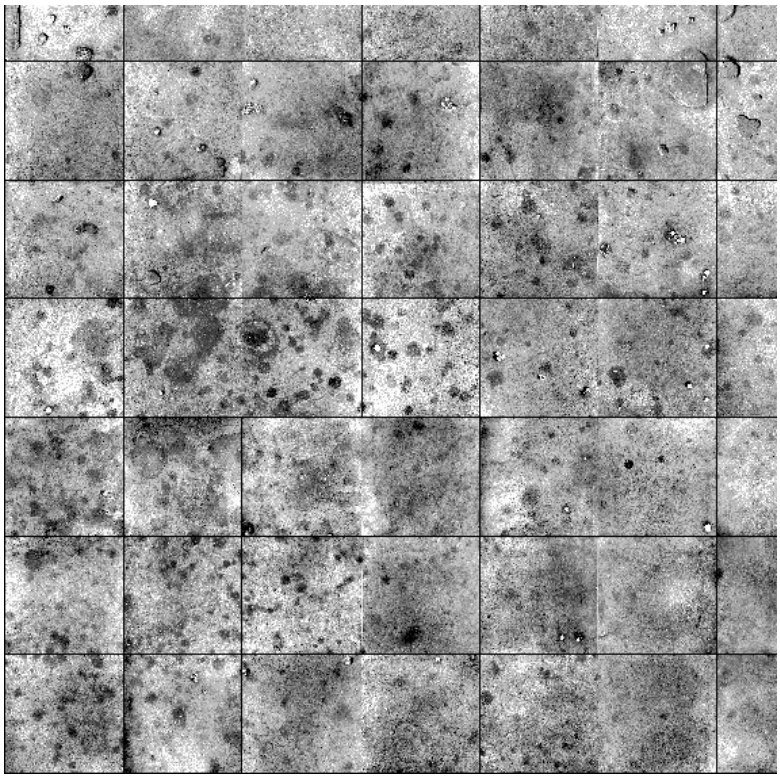

Figure 6. Photographic mosaic of the remote sensing block inside the palisade.

were utilized in this block. Preliminary imaging of the gradiometer survey showed a pattern of magnetic anomalies at 10-ft intervals which represents the metal corner pins of the excavation units.

The second block, with corners at 160L220 (SE), 160L285.62 (SW), 225.62L285.62 (NW), and 225.62L220 (NE), was located north of the mound and just outside the reconstructed palisade in an area that has not been excavated (Figures 2 and 4). Due to inclement weather, this block was examined only with the gradiometer. Preliminary imaging of the survey data indicated that several metal objects might be located within this block, so it was systematically scanned with a metal detector, and all identified metal objects were mapped with the total station.

A final report of the 2006 geophysical studies at Town Creek is presented in Appendix B.

Re-Excavation of Units for Photography

Excavations were carried out on October 6, 7, and 10, 2006; heavy rain prevented any field activity on October 8 other than bailing water from the already excavated units. Three of the five 10x10-ft units targeted for excavation (-160L80, -200L80, and -200L70) were completed (Figure 2). Two of these units (-200L80, and -200L70) were originally excavated by Barton Wright in April, 1950. The third unit (-160L80) was dug by Robert Crawford in July, 1965. For unknown reasons, photographic negatives for each of these units are missing from the Town Creek photographic records. More than a dozen individuals participated in the excavations and include volunteers from Fort Bragg, NC DOT, UNC-Chapel Hill, Environmental Services, Inc., the North Carolina Archaeological Society, and Town Creek Indian Mound State Historic Site.

The procedure used to excavate and document these units was as follows. First, a string was pulled between the corner pins to outline the unit. Next, the sod was carefully removed and placed in a pile adjacent to the unit. Following this, the topsoil (i.e., old backfill) was dug with shovels and placed nearby (Figure 7). When the excavators reached a depth about 0.2 ft above the top of subsoil (and the tops of unexcavated pits and postholes), they began flatshoveling the remaining soil, which was hand-sifted through ¼-inch mesh (see Figure 14). Excavation continued in this manner until subsoil

Figure 7. Removing topsoil from Sq. -160L80 (view to east).

Figure 8. Removing sod from the 0.5-ft margin around Square -160L80 (view to north).

was reached. The tops of pits and postholes were carefully cleaned with trowels, and artifacts protruding from the tops of those features were left in place.

While the initial decision to sift soil was made primarily to allow more volunteers to participate in the project (since the soil presumably had already been sifted), the results of this task were quite illuminating, particularly for the two units dug in 1950. Not only did those sifting the soil find small artifacts that would have passed through the ½-inch screens used by earlier excavators; they also found numerous large artifacts which should have been collected previously, including large flakes, large potsherds, projectile points, and a small, complete toy pot. One ramification of this observation is that spatial distributions of artifact densities across the excavated area may be as much a result of variations in collection procedures as a spatial pattern indicative of activities at the site during the more distant past. A catalog of recovered artifacts is presented in Appendix A.

Once all topsoil had been removed from a unit, an additional 0.5-ft margin was excavated in the manner just described (Figure 8). In doing this, care was taken to precisely relocate the corner pins at the top of subsoil. (At each corner of every unit, one or two existing corner pins were found no more than 0.2 ft from the new corner pin.) This additional margin was necessary in order to obtain photographs of the unit's entire excavated surface without shadows from the adjacent excavation walls. Additional pins also were placed midway between the corner pins and at the center of the unit to provide photographic registration points for 5x5-ft quarter-units. Finally, the entire excavated surface was uniformly trowelled to produce a crisp, clean surface (Figure 9). Just prior to photographing, this surface was sprayed with a fine water mist to enhance the soil-color differences between the darker pits and postholes and the lighter, brownish-tan subsoil.

Throughout the 50-year history of archaeological fieldwork at Town Creek (excluding the mound excavation), unit photographs were taken vertically from a wooden tower which placed the photographer and his camera (either a large-format 5x7-inch or 4x5-inch Graflex black-and-white camera) over the center of the unit and about 16 ft above the excavated surface. This was necessary because errors in camera perspective could not be easily corrected in the darkroom. One objective of the current field project was to test a different photographic procedure which relied instead upon digital photography and a much smaller and more portable "photographic tower." Use of such a

Figure 9. Troweling Square -160L80 (margin corners not removed) (view to southwest).

Figure 10. Mapping pits and postholes in Square -160L80 (view to southwest).

procedure was justified since: (1) the entire photographic mosaic has been digitized (photograph by photograph) and is now utilized solely in digital form; (2) the digital format permits much greater flexibility in dealing with mosaic photographs; and (3) the use of a wooden tower is logistically much more complicated and thus discourages brief field investigations. Also, use of the wooden tower is inherently more dangerous for the photographer, who must be suspended high above the excavation unit.

Instead of attempting to obtain a single mosaic photograph of the entire 10x10-ft excavation unit, vertical photographs were taken separately for each of the unit's four quadrants. This was accomplished using a Canon Digital Rebel SLR camera (6 megapixels) with a 17mm lens. Photographs were taken from an 8-ft aluminum ladder straddling the 5x5-ft quadrant, which placed the photographer approximately 8–9 ft above the excavation surface. The ladder was positioned so that it and the photographer would not cast a shadow onto the excavation. Each of the three excavated units was photographed in this manner (see Figures 11, 12, 13, 15, 16, 17, and 18).

Once photographed, each unit was mapped using a procedure followed by earlier excavators at Town Creek. Pits and posthole outlines were etched with the point of a trowel, and a plotting frame (with string strung at 0.5-ft intervals) was used to transfer those outlines (with descriptions) onto graph paper at a scale of 1"=2' (Figure 10).

Before backfilling, all reference pins were removed except those marking the units' corners. Backfilling and re-sodding was performed by local prison laborers under the close supervision of Andy Greene of the Town Creek staff.

Processing of the digital photographs was done in Photoshop 6.0 and followed a procedure similar to that used to construct the digital photographic mosaic from earlier excavation photos. First, a blank image file measuring 4000x4000 pixels was created. Next, a black box (with a line width of 3 pixels) measuring 3000x3000 pixels and representing the edge of an excavation unit was drawn in the center. This box was then divided into four quadrants measuring 1500x1500 pixels each. (This only had to be done once since the same grid file could be used multiple times.) The four quadrant photographs were then added, with each defined as a separate layer. Using the *Edit* | *Transform* | *Skew* function, each photograph was properly aligned by matching the registration pins in the photograph to the corners of the appropriate quadrant. Once

Figure 11. Square -160L80 (with margins excavated) after troweling (view to north).

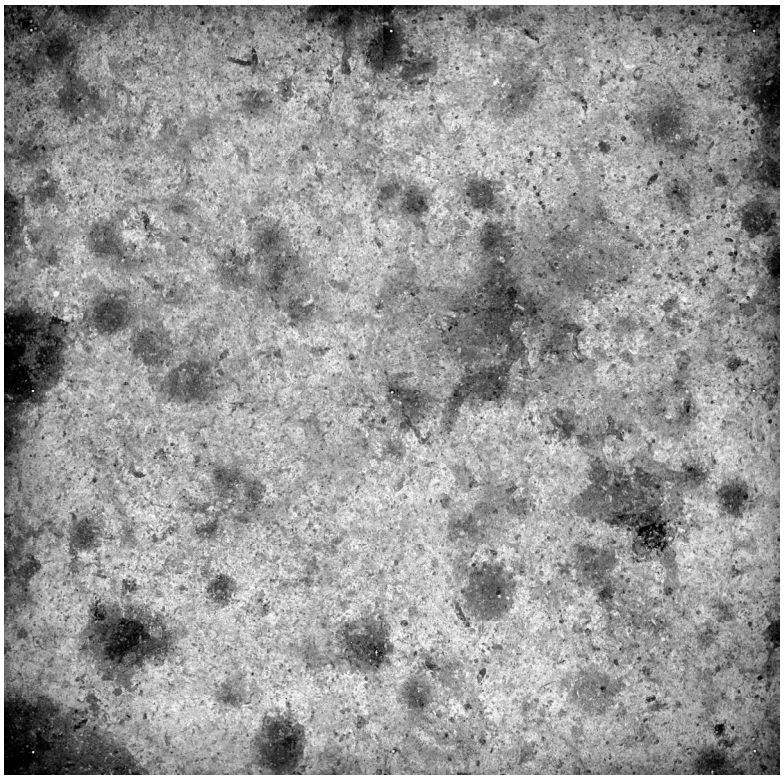

Figure 12. Square -160L80 mosaic photograph (north to top).

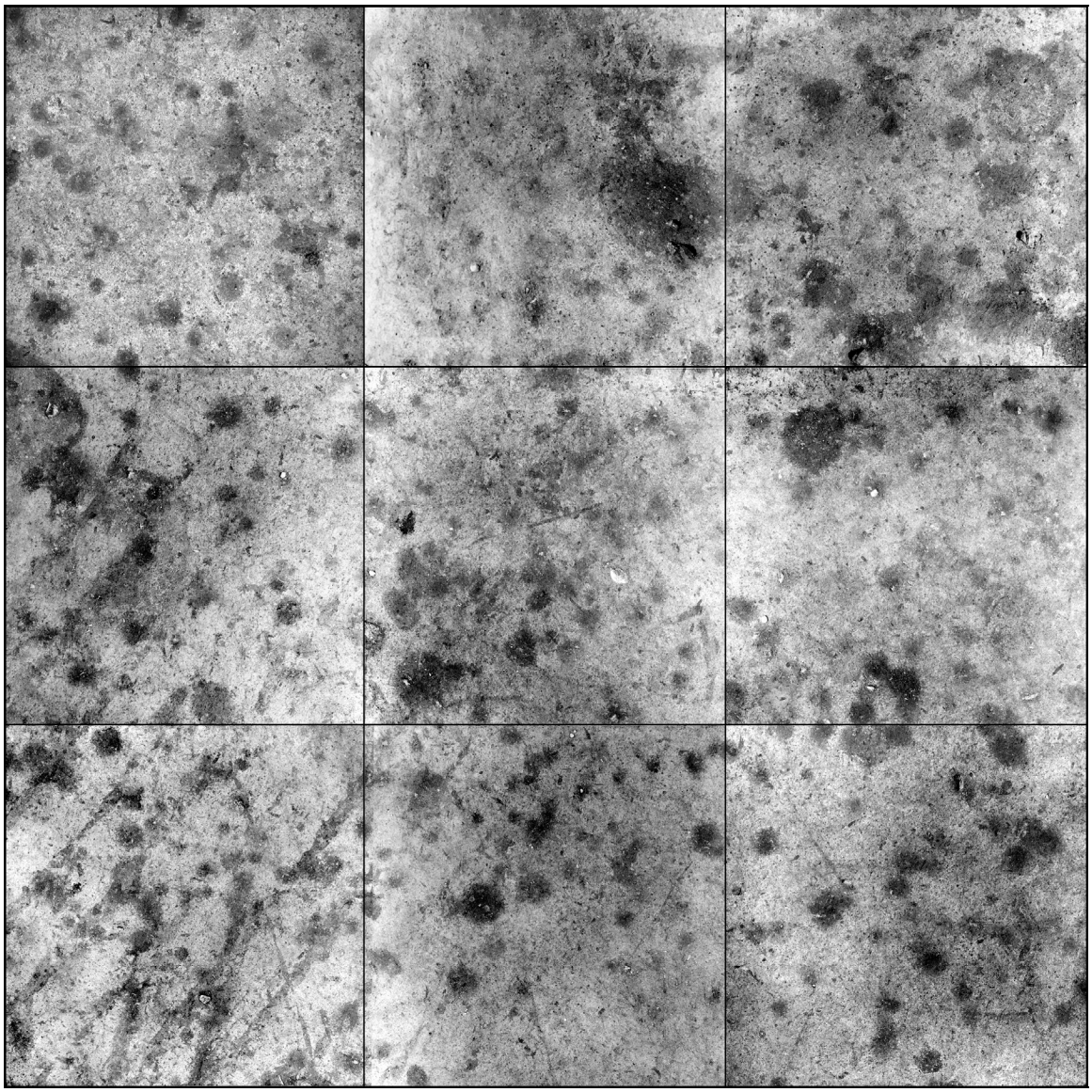

Figure 13. The -180L60 to -150L90 photographic mosaic block. The new photograph for Square -160L80 is at top left.

Figure 14. Archaeological society volunteers screening topsoil to retrieve artifacts.

Figure 15. Squares -200L80 and -200L70 after troweling (view to west).

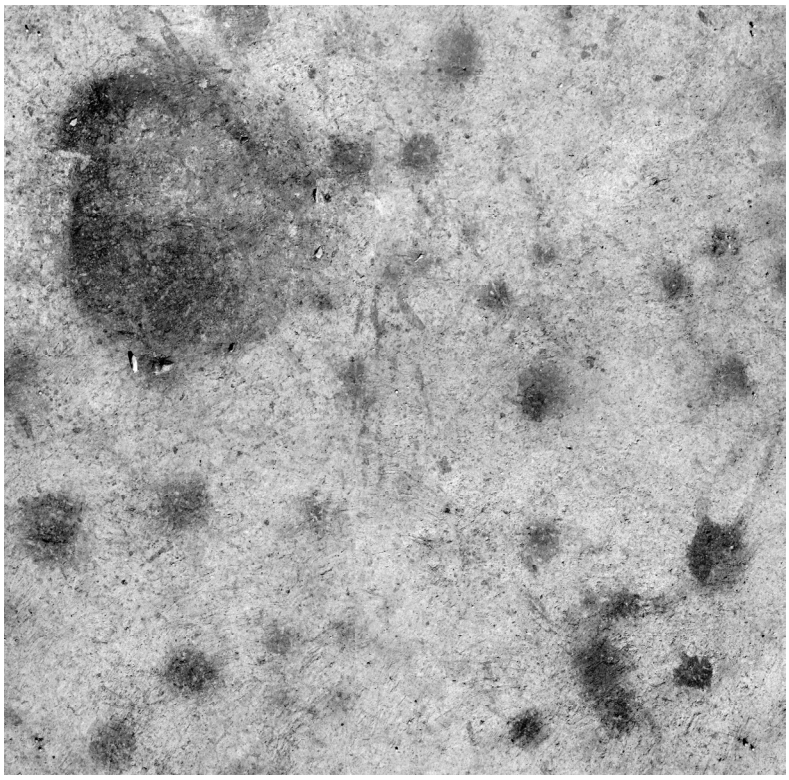

Figure 16. Sq. -200L80 mosaic photograph (north to top).

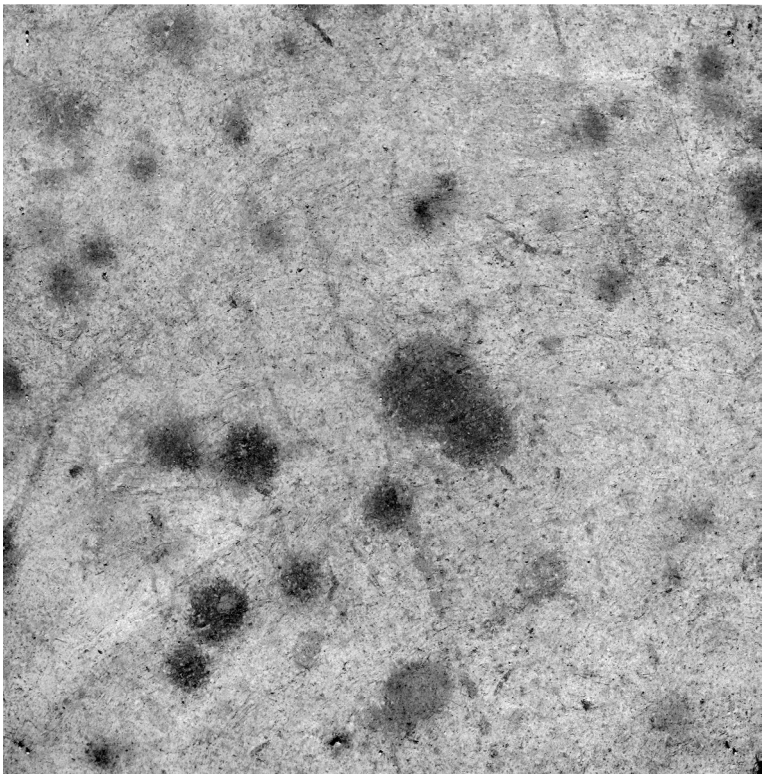

Figure 17. Square -200L70 mosaic photograph (north to top).

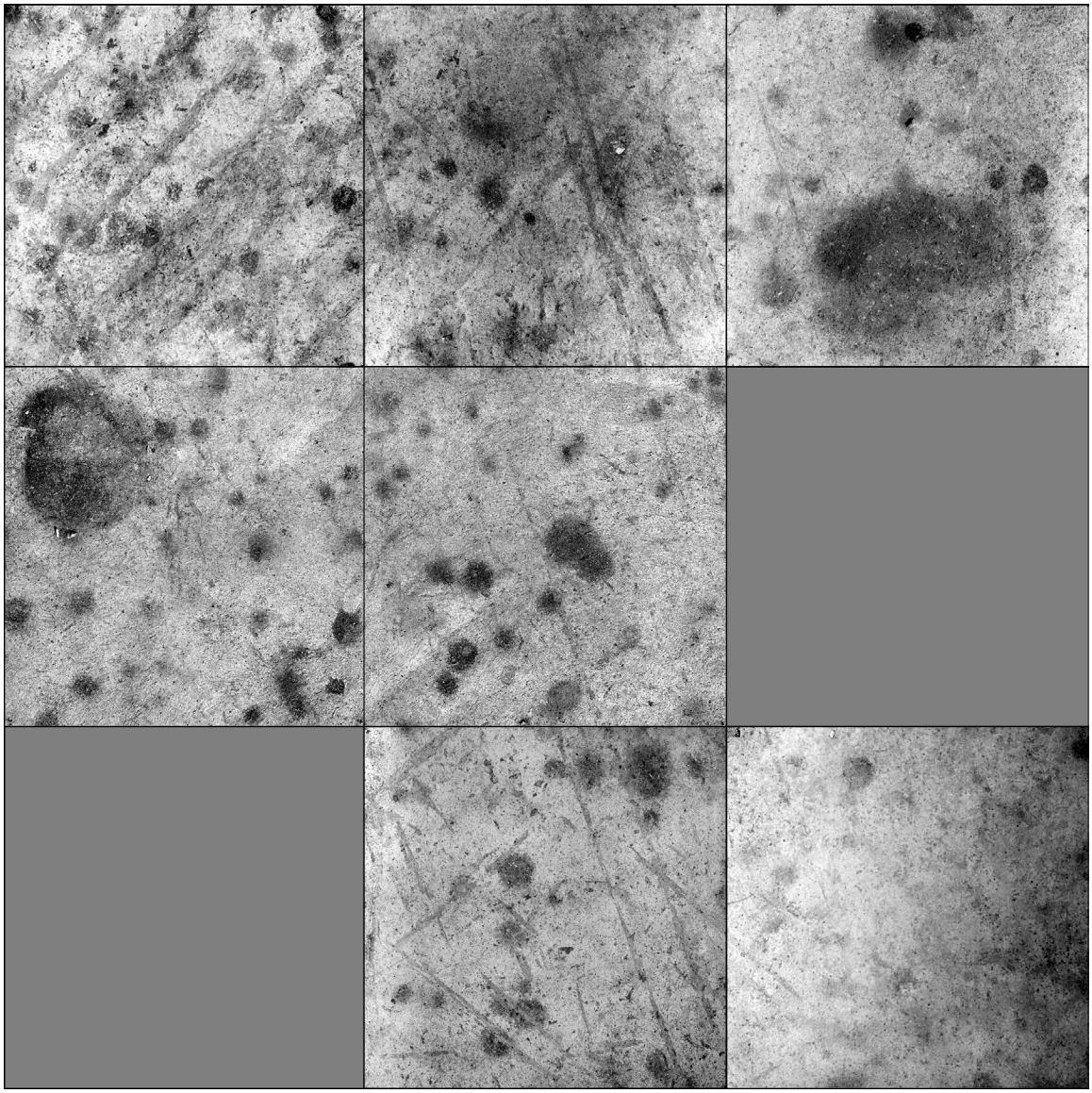

Figure 18. The -210L60 to -180L90 photographic mosaic block. The new photographs for Squares -200L80 and -200L70 are at center left and center, respectively.

properly registered, the edges of each quadrant photograph were trimmed. Finally, contrast and brightness were adjusted for each photograph until the four adjacent quadrants appeared as a single image. At this point, and after saving the file in Photoshop's proprietary format (*.psd) in case later editing was necessary, the image was converted to black-and-white and added to the Town Creek Photographic Mosaic. In each case, the new mosaic photo blended well with the adjacent, existing mosaic photographs.

CONCLUSIONS

All three goals of the 2006 investigations at Town Creek Indian Mound were achieved, despite periods of inclement weather which reduced the amount of time we anticipated being in the field. First, we were successful in re-establishing the excavation grid and accurately located the units we intended to re-excavate. Second, while the final remote sensing results are not yet available, there is every reason to expect that they will provide meaningful insight into the applicability of gradiometer and resistivity survey to future research at Town Creek. Third, the excavation, digital photographing, and mapping of the previously excavated units demonstrated the usefulness of this approach for filling in gaps in the Town Creek Photographic Mosaic. And, this work developed a protocol for undertaking additional excavations at Town Creek to further enhance the site's existing visual record.

Given the positive outcome of this project, it is recommended that similar, future research endeavors at Town Creek be favorably considered and encouraged. Without large-scale field projects and without new excavation, meaningful archaeological work can still be conducted which contributes positively to our present knowledge of the site. This work could be accomplished sporadically with volunteers, as was the case with the present project; however, a more reasonable approach might be to develop a regular, annual program whereby, over the course of a week or less, similar fieldwork at Town Creek is conducted as part of a teacher workshop through Project Archaeology. Such an approach would serve the dual purpose of research and education, and could foster a deeper interest among regional teachers in incorporating visits to Town Creek in their

overall lesson plans. This would help to strengthen Town Creek's proper role as a resource for K-12 education about our state's native peoples and ancient past.

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Appendix A

Catalog of Artifacts Recovered During 2006 Investigations at Town Creek

Context N	Description
Square -160L80, Flatshoveling Subsoil	
1	Projectile point fragment
92	Potsherds
5	Calcined bone fragments
381	Flakes
Square -200L80, Flatshoveling Subsoil	
2	Projectile point fragments
1	Drill
2	Biface fragments
3	Cores
3	Worked flakes
1	Complete toy pot
182	Potsherds
1	Calcined bone fragment
334	Flakes
Square -200L70, Flatshoveling Subsoil	
7	Projectile point fragments
1	Worked flake
147	Potsherds
1	Whiteware sherd
8	Charcoal fragments
6	Calcined bone fragments
634	Flakes
24	Daub fragments

Appendix B

Gradiometer and Soil Resistance Survey at Town Creek Indian Mound, Montgomery County, North Carolina

by
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November 2006

INTRODUCTION

On October 7, 2006, geophysical survey utilizing Geoscan FM36 gradiometer and Geoscan RM15 soil resistivity meter was conducted by Gerald F. Schroedl and Stephen J. Yerka of the University of Tennessee, Department of Anthropology. The areas selected for geophysical survey consisted of two 20 by 20 m squares, one located within the area surrounded by the reconstructed palisade, and one outside of this area (Figure B1). These areas for study were selected by archaeologists on site. The first 20 by 20 m test unit, referred to as grid 1, was placed in an area previously examined by Joffre L. Coe of the Research Laboratories of Anthropology, University of North Carolina, beginning in 1937. During these investigations, archaeological deposits were exposed below the plow-zone, and in some cases were excavated. Grid 2 was placed outside of the area covered by the previous excavations, and outside of the reconstructed village area. Gradiometer data was collected from both 20 by 20 m units, and resistivity was collected only on grid 1. The grid was defined onsite and the corners of the test units were measured by tape. The corners of the grids were collected on a Trimble pro XRS, and these coordinates were used to georeference the images from the geophysical data. In the following report all images of the geophysical data are oriented with the top being north, unless otherwise indicated.

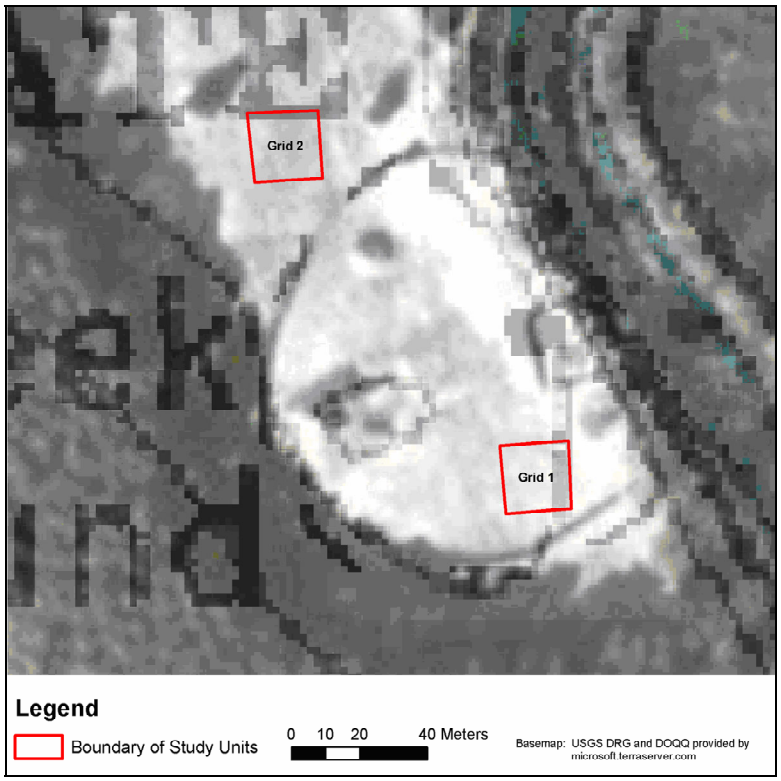

Figure B1. Locations of the geophysical study areas (in red).

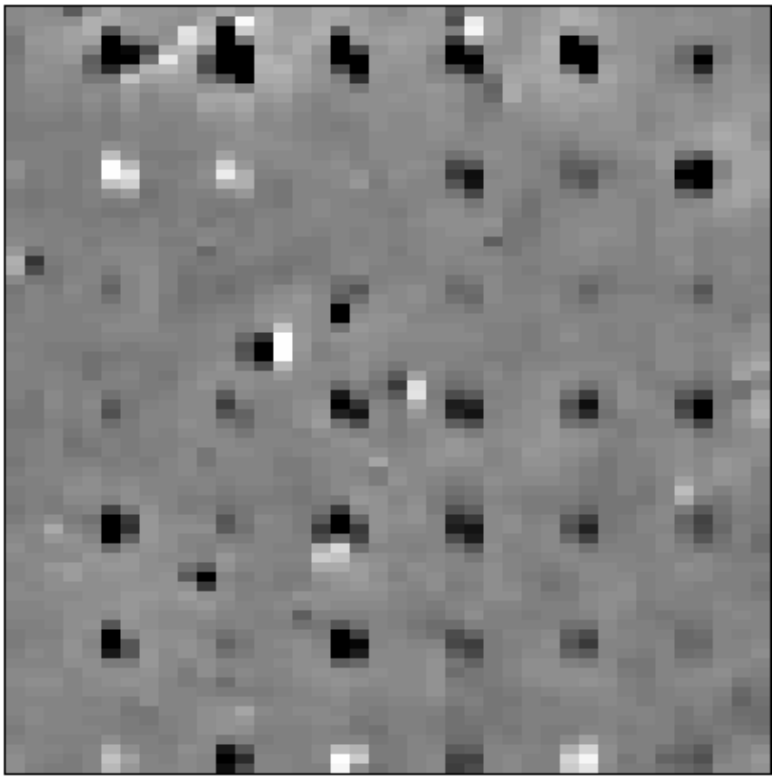

Figure B2. Grid 1, unprocessed.

GEOPHYSICAL INSTRUMENTS

Gradiometer

A gradiometer measures variation in the earth's magnetic field. The magnetic field varies geographically and diurnally. Disturbance or disruption to the magnetic field is created locally by geological variation, particularly the occurrence of magnetic bedrock (primarily metamorphic and igneous rocks), soils derived from these sources, and cultural features such as the remains of buildings (particularly if they have burned), subsurface excavations such as pits and cellars, and metal objects (especially those made from iron). A gradiometer is calibrated to account for diurnal variation in the earth's magnetic field so as to record the magnetic signatures of the objects, sediments, and disturbances in a local area. Data are recorded in nanoteslas (nT). Burned areas and ferrous objects produce strong magnetic readings in the > ± 10 nT range, while variations in soils and more subtle features such as pits and postholes most often found at prehistoric sites show weaker readings in the ±10 nT range. The FM36 gradiometer records anomalies no deeper than about 1 m below the surface. Gradiometers have been successfully used to investigate and interpret archaeological sites for nearly 60 years.

The Geoscan FM36 gradiometer used in this study was designed and constructed specifically for archaeological applications, and is widely used in the United States, Great Britain, and Europe. The gradiometer was calibrated to automatically record four readings per meter at half meter intervals with a resolution of 0.1nT.

Resistivity Meter

Soil resistivity survey also has a long and successful record of application to the discovery, assessment, and interpretation of the archaeological record. Soil resistivity simply uses a resistance meter to measure an electrical current as it passes through the ground. The unit of measure is the ohm. Variability in background geology, soils, and subsurface disturbances, including cultural and natural features such as building foundations and tree roots, will exhibit differences in electrical resistance, and consequently are appropriately identified as patterns related to the archaeological record.

At Town Creek Indian Mound the Geoscan RM15 resistivity meter was configured as a parallel 50cm twin probe array with two remote probes for comparison.

The current range was set to 0.1 mA. Data were collected on half meter samples and half meter traverses. This configuration collects roughly the average resistance for an area 50 cm^3. Sixteen hundred readings are recorded per 20 by 20m unit.

The data obtained from both the FM36 and RM15 instruments were downloaded to a computer for further processing and analysis using Geoplot®, the software specifically designed for use with these instruments. The software permits a variety of data manipulations to enhance the representation of features of cultural interest while suppressing noise created by operator error while collecting the data and by soil and geological characteristics of the surveyed area.

GRADIOMETER RESULTS

The raw results from grid 1 recovered using the FM36 gradiometer are shown in Figure B2. Mostly what are noticeable are the regularly spaced, very high contrast anomalies that create a grid over the recorded area. These anomalies range to the hundreds of nanoteslas. Our research team was informed of the probability that nails from the grid laid in during the excavations directed by Coe before collecting this grid were still in place. The raw data seem to confirm that these nails are there, and that the current archaeological team at Town Creek has tied in to the previously used grid system at the site. Figure B3 represents an attempt to remove the anomalies created by the historic iron by means of filtering and clipping the data. Although this processed data still is obscured by the large portions of the grid that are missing (areas shaded in blue), some of this grid may be interpretable. Areas of relative difference in Figure B3 have been circled in yellow. These anomalies were circled because they do not seem to fit into the scheme of what we are interpreting as the nails from the Coe excavations. Beyond this, we would suggest that gradiometer data are not likely to be of much use for detecting prehistoric features where this historic grid of nails is *in situ*.

The second grid that was recorded with the gradiometer was outside of the excavation area, and the results are less skewed (Figure B4). Several areas of interest are notable in grid 2. This area of the site had surprisingly low magnetic contrast throughout the 20 by 20m grid. The mean reading was -0.52 nT with a standard deviation of 1.4 nT. The raw data from grid 1 had a mean reading of -0.87 nT with a standard deviation of 9.2

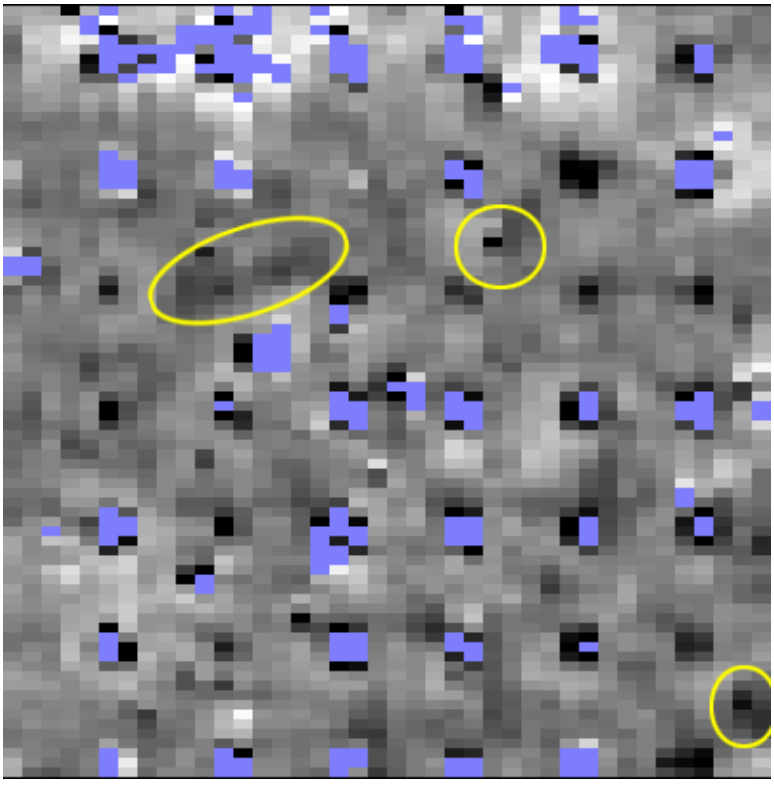

Figure B3. Grid 1, processed (spike anomalies from historic iron removed).

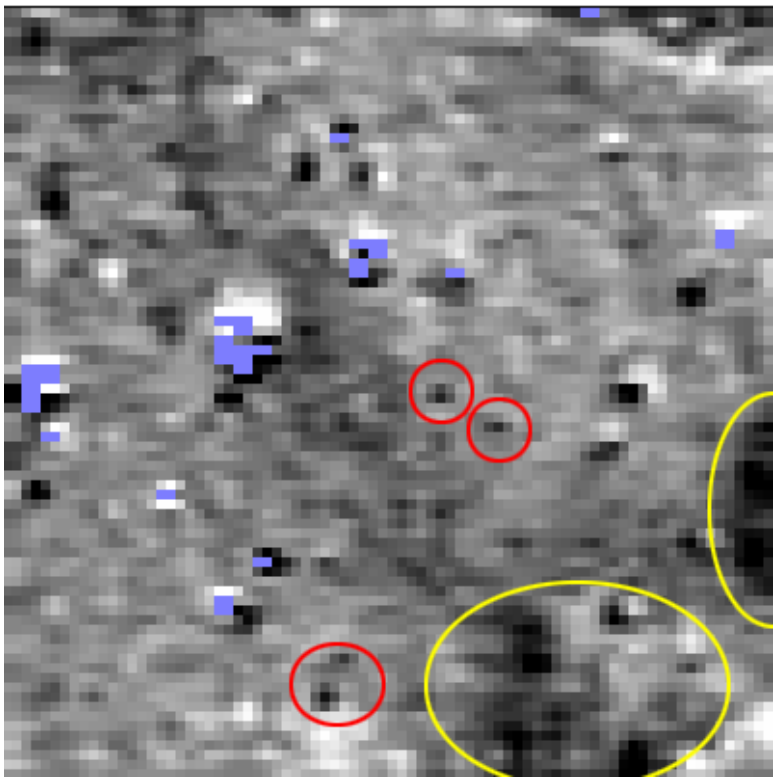

Figure B4. Gradiometer results from grid 2.

nT. In viewing the processed data in Figure B4, a generally linear anomaly runs from the bottom right to the top left of the image. We were informed that there is a buried power line in the area that brings power to the area of the reconstruction. This general linear anomaly may represent the buried line. A large anomaly suggestive of iron of historic/modern origin was encountered along this linear anomaly, adding to the likelihood of it being the power line. Of interest are the areas circled in yellow. The anomaly at the eastern edge of the image appears as a semicircular low contrast positive magnetic anomaly. A similar anomaly is located in the northeastern corner of the grid. Because of the low contrast of these anomalies, they have the potential of being prehistoric in origin. Other, scattered anomalies that do not show a dipole signal (ones that do not have paired white and black readings) have the potential to be prehistoric in origin. These anomalies are circled in red. Not much can be concluded from this single test unit, and for a better understanding of the site's magnetic structure, and better interpretation of small anomalies, more area should be recorded outside of the Coe excavations.

SOIL RESISTIVITY RESULTS

Results from the resistivity survey are reproduced in Figure B5. This grid was collected over grid 1 as shown in Figure B1. Since the resisivity meter collects resistance data, the nails that were such a problem for the gradiometer did not impact the resistivity results as much. Although metal objects in the matrix can decrease the amount of resistance recorded over an area, the historic iron objects here are small enough that they are roughly averaged out of the data. This image is best interpreted when comparing it to the corresponding photographic mosaic for this part of the site (Figure B6). Again, the results of the resistivity could be more readily interpretable with the addition of more surveyed area. The results here are promising in that, although the gradiometer is virtually ineffective in this area, resistivity has the potential to locate areas of interest even within the area previously exposed by Coe. It should be noted, however, that the results may be a little misleading since the entire upper surface of the site was disturbed in the previous excavations and, therefore, may be partially responsible for the anomalies present in the data.

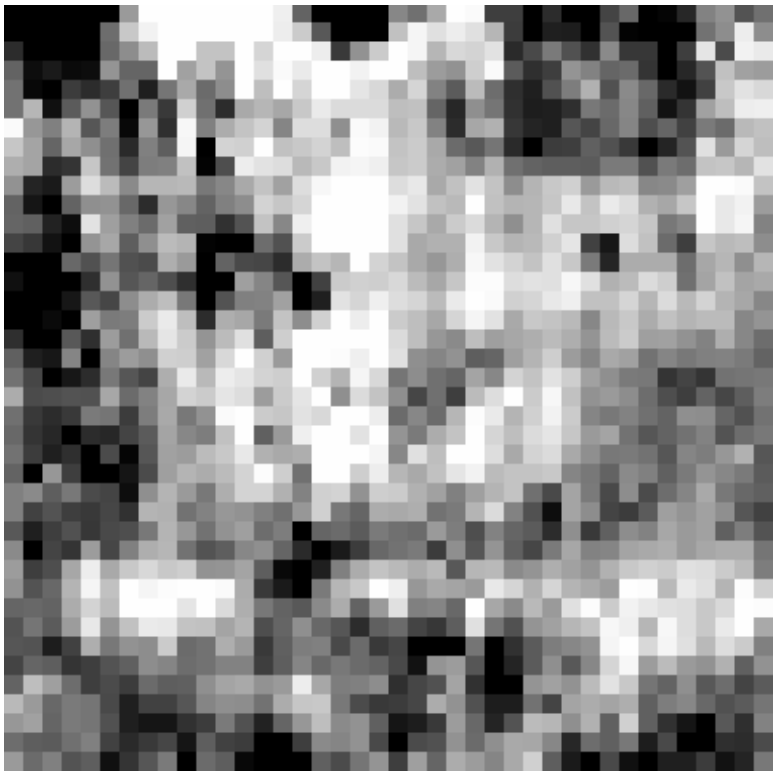

Figure B5. Soil resistivity data for grid 1.

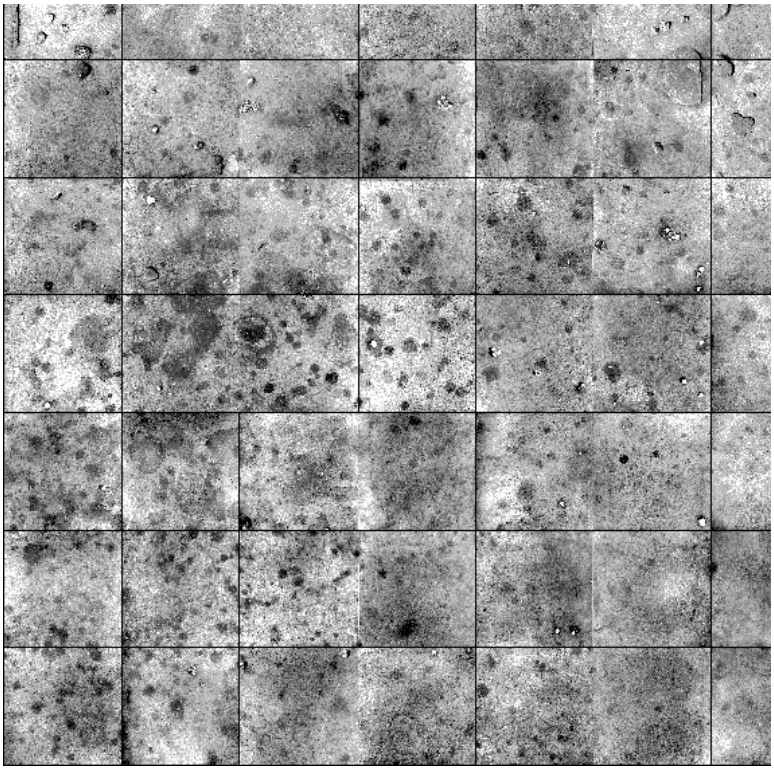

Figure B6. Photographic mosaic for grid 1.

SUMMARY

Gradiometer and soil resistivity surveys were conducted over two areas totaling 800m^2. The areas surveyed include one within the area excavated by Joffre Coe and one outside of this area. The presence of historic iron objects in the previously excavated area obscured any gradiometer results from the survey. Resistance readings over the previously excavated areas produced better results and, when compared to the photographic mosaic from the previous excavations, several mapped archaeological features correspond to the geophysical anomalies. Gradiometer survey over the area outside of previous excavations yielded results with anomalies consistent with prehistoric remains, yet further survey is suggested in order to better define the range of magnetic anomalies and allow for statistical comparison. The potential for discovering anomalies in the area outside of the Coe excavations is likely.