1. A Message from the Editor: Introducing a New Format; by Mark J. Lynott

Hopewell Archeology was initiated in 1995 to "promote interest in the study and interpretation of Hopewell archeology" (Vol. 1, No. 1, p. 2). Since its inception, we have managed to produce 11 issues (counting the one you are now reading) featuring a wide range of topics. The first issue of this newsletter was printed on standard white paper, and subsequent issues were printed on green paper. This is the first issue of *Hopewell Archeology* since Volume 5, Number 2 was printed in December 2002.

In 2002 the Midwest Archeological Center was selected for a Competitive Sourcing Initiative Study by the National Park Service. The Competitive Sourcing Initiative (CSI) is designed to compare the cost of activities performed by government workers with the cost of doing those same activities by the private sector. From September of 2002 through October of 2003, employees at the Midwest Archeological Center spent a tremendous amount of time generating information for the CSI Study. Regrettably, this meant that production of *Hopewell Archeology* and many other important programs at the Center were put on hold while employees worked to generate data to justify keeping their jobs. The Department of the Interior elected to halt the CSI Study at the Center in October of 2003 ("Threats of Privatization Beaten Back", *Lincoln-Journal Star*, October 29, 2003).

Nearly a year after the end of the CSI Study at the Midwest Archeological Center, we are still trying to catch up on work and projects that were set aside during the course of the study. Happily, we are now ready to resume publication of *Hopewell Archeology*. The nearly two-year hiatus in the publication of this newsletter has brought changes to the format we plan to use for publication. The National Park Service is experiencing funding shortages in many of its programs, and the high costs of printing and mailing are leading us to move to an electronic publication format.

The shift to electronic publication is a worldwide trend, and we believe it has many benefits beyond the savings on printing and mailing costs. The electronic format will allow us to include a wider range of features, with fewer limitations on the length of papers and the numbers and types of illustrations and graphics. One of the most exciting aspects of the electronic format is that we will be able to begin using color figures. This should add interest to many of the papers we feature, and this will give readers a better appreciation for the sites and artifacts of Hopewell archeology. Most importantly, the electronic format has the potential to reach many more people. The increasing use of the Internet to share information cannot be ignored, and this is the perfect time for us to join that trend. For those of us who still enjoy reading paper copies, or maintaining paper files for reference, this issue of *Hopewell Archeology* and all future issues will be posted in a format that you will be able to print.

One final issue relating to the shift to an electronic format warrants special comment. We have noted that many of the papers that we published in previous issues of *Hopewell Archeology* have been cited by authors in their own publications. We hope that readers will continue to find the papers we publish useful and worthy of citation. Recognizing that some readers might be uncertain as to the appropriate way to cite Internet publications, I have asked John M. Andresen, the Editor at the Midwest Archeological Center, to share some of his thoughts on this subject (Article 8, this issue).

2. Abstracts of the Summer Lecture Series 2004 at Hopewell Culture National Historical Park

Residents of central and southern Ohio and visitors to Hopewell Culture National Historical Park in Chillicothe made a habit of attending the annual Thursday evening summer lecture series. This annual series has been very well received in past years, and the 2004 series was also very popular. The speakers for 2004 generated considerable interest about Ohio archeology, with most of the speakers focusing on Ohio Hopewell. Abstracts of these wonderful lectures are presented below. Plans for next year's lecture

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series are already underway, and readers are encouraged to contact Hopewell Culture National Historical Park for details in 2005. Hopewell Culture National Historical Park was pleased to host the summer archeological lecture series. The following is a list of speakers, titles, and abstracts of the topics presented.

June 10, 2004. Dr. Frank Cowan: "Visualizing Ohio Hopewell Sites: Earthworks or Woodworks?"

Ohio Hopewell sites are well known for their monumental earthworks, and our current understanding of those places is strongly influenced by the earthen architecture witnessed and recorded by 19th century surveyors and antiquarians. However, the architectural medium that dominated those places during their actual periods of active use was wood. Recent excavations at Fort Ancient and Stubbs Earthworks in the Little Miami River valley reveal numerous wooden structures, including special-purpose shelters, temporary dwellings, ritual buildings and enclosures, and monumentally scaled ceremonial architecture. There are also clear hints for an extraordinary variety of Hopewell wooden architecture elsewhere in the Ohio River valley region. Such evidence forces us to rethink the character and use of Hopewell ritual spaces and to recognize that these were not static monuments but active, dynamically changing places.

June 17, 2004. Dr. Mark Seeman, Kent State University: "Ohio Hopewell and the Wild West: The Social and Symbolic Importance of Grizzly Bear Teeth in Hopewell Societies"

Ohio Hopewell (1–400 AD) is an archeological complex that required the acquisition, display, and burial of many standardized artifactual forms. In this lecture, I discuss the characteristics that lend Ohio Hopewell its distinctiveness, and examine the importance of using precious and costly materials for public display. As an example, I present the results of my recent research on the use of ornaments made of grizzly bear teeth, and discuss how they fit into the larger pattern of western voyaging for spiritual power.

June 24, 2004. Dr. Robert Riordan, Wright State University: "The Pollock Hilltop Enclosure: Research and Interpretations"

The Pollock Works, a small Hopewell hilltop enclosure in Greene County, has been under archeological investigation by Wright State since the 1980s. This presentation will discuss some of the major findings that have been made there, including some recent discoveries in the central gateway. Pollock is the only Hopewell enclosure for which a construction sequence has been determined, and is so far the only hilltop enclosure known to have been stockaded. The significance of the use of stone to face its embankments is discussed in the context of how the site may have been viewed in its landscape setting.

3. The Field Museum Hopewell Catalogue Project: Getting the Word Out

By Tristan T. Almazan, Stephen E. Nash, and Lauren Zych

The Hopewell Collection at the Field Museum is the world's second-largest (next to the Ohio Historical Society's) collection of material culture from the Hopewell site. Recently, Field Museum staff re-discovered cataloging forms from the 1980s and decided to use the information from this unfinished project as a starting block for creating a Hopewell catalogue. The catalogue (which we hope will be published) will act as a tool for disseminating data on the collection as well as serving to pique the interest of additional scholars in the Field Museum's collection.

The Collection

The Field Museum's Hopewell Collection comes primarily from one source — the 1891 and 1892 excavations by Warren K. Moorehead. Frederick W. Putnum, director of the Department of Ethnology and Archaeology for the 1893 World's Columbian Exposition, hired Moorehead (along with dozens of others), to collect material representing cultures of the Americas. Moorehead, a native Ohioan who had already excavated at Fort Ancient and published his findings (Moorehead 1890), was a natural choice for gathering material from the Hopewell site. He spent the fall and winter of 1891–1892 excavating there

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and keeping notes on his finds. Although he did not always keep detailed records, he and his crew nevertheless uncovered the most significant material to be collected from the site.

Figure 1 Stone disks from Mound 2. © The Field Museum, CSA39671.

The Field Museum's collection of Moorehead material encompasses roughly 800 catalogue numbers, although the number of individual pieces is much higher. The scope and content of the Hopewell Collection are impressive. For example, one storage room in the museum holds more than 7,000 chipped stone disks unearthed from Mound 2 (Figure 1). Not only is this impressive for sheer quantity, but the fact that the disks are made of Wyandotte chert from Southern Indiana makes it even more astonishing. Hundreds of pounds of obsidian came from the Obsidian Cliffs in Yellowstone National Park, Wyoming. Thousands of sheets of mica from Tennessee or North Carolina composed some of the strata of Moorehead Mound 17, while a large quantity of galena is believed to have accompanied a burial from that mound. One obsidian blade, among many others, measures 30 cm long by 12.5 cm wide (Figure 2). There are also many pearl beads, bear claws and teeth (Figure 3), copper ear spools, carved stone effigy figures, and mica and copper sheet ornaments.

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Figure 2. Obsidian blade. © The Field Museum, A113969_11c; Cat. No. 56803.

Figure 3. Bear claws and teeth ornaments. © The Field Museum, A110123c; Cat. Nos. 56402 and 56427

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The remainder of the museum's Hopewell Collection came from the Ohio Historical Society and the Kalamazoo Valley Museum. In 1925, the Field Museum gave material from its anthropology collections to the Ohio Historical Society in exchange for Hopewell material excavated by Henry C. Shetrone from 1922 to 1925. This collection contains casts and replicas, effigy pipes, celts, mica ornaments, and raw materials. In 1999, the Kalamazoo Valley Museum donated a collection of Hopewell and prehistoric Woodlands material to The Field Museum, as these materials had once been at The Field Museum and did not fit within the Kalamazoo Valley Museum's collecting purview. Taken together, the Ohio Historical Society and Kalamazoo Valley Museum components compose less than a quarter of the Field Museum's total Hopewell Collection.

Mound 25

One of the most fascinating group of objects in the Field Museum collection comes from Mound 25. This mound is the largest at the Hopewell site and contains the most interesting and complex array of material. Originally, Mound 25 was the site of a central building complex with plazas. Over time, burials were created in the building, as were separate deposits of exotic materials. The mound is in three sections, with burials only being in the middle and largest section. When excavated, Mound 25 held at least 100 burials, but the greatest groupings of material were in the "altar" deposits and a copper deposit. For example, large obsidian bifaces were found in "Altar 2." Nonetheless, some burials did hold unusual objects and unusual amounts of material. One burial (Moorehead Burial 248) is especially noteworthy (Figure 4). In Moorehead's words (Field Museum Library Archives, p. 125):

Figure 4. Copper and shell objects. © The Field Museum,

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A108265c; Cat. Nos. 56080, 56091, 56114, 56128, 56200, 56201, 56371, and 56751. (Note: The objects pictured above are from several different proveniences within the Hopewell site.)

> At the head of the skeleton was a remarkable deposit of copper. Wood covered with copper in the form of deer antlers … The antler shaped ornament was composed of wood covered with and incased in thin sheets of copper one-sixteenth of an inch thick. There were 4 prongs on each side of nearly equal length. The mass of copper in the center originally was in the form of a semicircle reaching from the lower jaw to the crown of the head. It has been pressed flat by the weight of the earth, but part of the original contour is still apparent.

Another burial (Moorehead Burial 260-261) contained a large amount of copper (Figure 5) including several celts and adzes. Others held shell and bone beads, textile imprints, carved effigies, pearls, and copper plates.

Figure 5. Copper ornament with pearl eye. © The Field Museum, A110028c; Cat. No. 56356.

The Cataloging Project

The Field Museum's project to catalogue the Hopewell Collection is ongoing. It began last year, when museum staff funded by the Save America's Treasures program (NEH PT-50004-03) were busy organizing and creating finding aids for the North American anthropology archives. They found two boxes containing cataloging forms, notes, and photos from a project started, but never finished, in the mid-1980s. Michael Moseley and the late Pat Essenpreis headed the project, and N'omi Greber acted as a consultant. David Jessup, then a student at the University of Chicago, completed most of the catalogue forms. A large amount of data had been recorded about the individual Hopewell objects as a result of their efforts, but the project fizzled, and the unfinished product ended up in the archives. We contacted Greber, and Jim Brown of Northwestern University, about the project and they agreed to help us make a final effort to complete it and, if possible, publish a catalogue containing a summary and synthesis of these descriptive data.

The first step in this process was to put the data in electronic format, not as a matter of preservation (the cards and writing in No. 2 pencil will be around a lot longer than electronic media), but to ease data manipulation and access. We enlisted the help of graduate student Lauren Zych of the University of Chicago, and in the fall of 2003 we began entering the data from 1,300 forms into a project-specific

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FileMaker Pro database. Syeda Razeen, a summer intern from Loyola University, has joined in the project to assist with the data entry and to inventory the collection. The information from Zych's database will be combined with Razeen's inventory data to create a complete catalogue of extant Field Museum holdings. The next step will be to compile the data into coherent and useful sets for publication.

The collection is definitely not without problems, however. There are missing objects, missing data, and missing associations between objects and excavation contexts. Provenience information, where it exists, will have to be closely scrutinized because Moorehead's notes were not always accurate, much less precise. The project will not be halted by these problems, however. We will do what we can, but we believe it is more important to disseminate these data, even if they are less than perfect, than to keep them in archival purgatory because of a few errors that we cannot solve. Science is a cumulative and iterative process. Our goal is to provide scholars with basic data about a world-class collection, thereby exciting them to a world of analytical possibilities, the surface of which has barely been scratched at The Field Museum (Figure 5).

Conclusion

Museums are continuously engaged in the effort to gather more information on their collections and The Field Museum is no different in this regard. Because many researchers use these materials, we especially value scholarly data that will increase the scholarly utility of our collections. The rediscovery of the Hopewell catalogue forms is allowing us to expand our knowledge of the collection and of the Hopewell site itself. Disseminating this information will hopefully bring in more scholars and even more findings in a positive-feedback loop. Some of these data may enrich labels for Hopewell objects to be exhibited in the Field Museum's new *Hall of Americas*, which opens in 2006. No matter the results of our Hopewell Catalogue Project, the presence of an electronic catalogue of this important collection will allow us to better serve the scholarly community in engaging new and innovative research on the fascinating Hopewell culture.

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July 1, 2004. Dr. Richard Yerkes, Ohio State University: "Hopewell Settlements"

For many years archeologists thought that Hopewell maize farmers lived in sedentary villages. It was believed that earthwork construction and elaborate Hopewell rituals required a food surplus and a sedentary agricultural economy. A later model has the Hopewell living in dispersed farmsteads where they grew native weedy crops using a system of shifting slash-and-burn cultivation. However, Robert Hall, James B. Griffin, and others have described Ohio Hopewell societies as egalitarian, mobile, and decentralized. The few small domestic Ohio Hopewell sites that have been excavated have not produced any evidence for prolonged occupation. A mobile Hopewell settlement-subsistence system seems more likely. Regular trips to mounds and earthworks for ritual and social interaction were probably followed

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by dispersal to small settlements to hunt, fish, gather wild nuts, seeds and fruits, and harvest domesticated weedy plants. Elaborate ceremonies at the earthworks might have been necessary to integrate the small mobile populations that used wild foods to meet most of their subsistence needs. The Hopewell show us the degree of cultural complexity that can be achieved with the organizational flexibility of tribal societies, without agriculture, food surpluses, and permanent settlements.

July 8, 2004. Dr. Kathryn Jakes, Ohio State University: "Fabrics from Hopewell Mounds: Evidence of Technology and Cultural Practice"

Native American sites are classified as "Hopewell" by the particular characteristics of their ceremonial mounds and by the artifacts contained therein. The incised mica and copper, the marked and painted ceramics, and the flint bladelets are well known to the public who visit museums such as the Hopewell Culture National Historical Park. The similarity in style of these artifacts, the trade of raw materials for artifact manufacture, and the manner in which the mounds were constructed provide evidence of communication between people from Minnesota to Florida and from Kansas to New York.

The textiles recovered from these sites are less well known to the public. They have also received less research attention than the more permanent artifacts of copper and stone and ceramic but recent investigations lend some new insights into Hopewell technological knowledge and cultural practices. Study of fabrics provides evidence for their manufacture and their use. We can learn how fibers were processed from plants, spun into yarn, and twined in to fabric. Different fabric structures have different properties, and therefore are made with different uses in mind. Fibers removed from specific plants are long, strong, and able to be spun into the yarns observed in these fabrics. Dyed and painted fabrics were noted by early travelers to the North American continent, and were also noted by archeologists, but very little material retains visible coloration today. Recent studies in replication of dyeing processes will ultimately lead to the ability to identify dyes and pigments employed on the Hopewell fabrics.

From the study of textiles, we can also infer cultural practices. For example, the charred fabrics remains, though fragmentary and very fragile, show the types of structures used in cremation ceremonies as distinguished from fabrics used in other ways. Recent investigations of fabrics and yarns from Hopewell Mound sites revealed significant differences between sites and between charred and uncharred material, leading to the conclusion that although cremation rituals and burials may have been culturally dictated over a wide geographic area, the textiles used in these rituals were locally produced by individual craftspeople or groups.

July 15, 2004. Lynn Simonelli and Bill Kennedy, Dayton Society of Natural History: "Exploring the Past in Dayton, Ohio, AD 1200"

Past and current excavations in Dayton have allowed archeologists to uncover a window into the prehistory of southwestern Ohio, ca. 800 years ago. Investigations at two Fort Ancient culture villages have revealed surprising variety in the types of activities practiced at these two sites that are separated only slightly in time and space. This program will highlight two important sites that are allowing archeologists to reconstruct a portion of Ohio's rich prehistoric heritage. The program will help visitors to understand what is was like to be a farmer in the year AD 1200 and will demonstrate how archeologists use both high and low tech tools to learn about the Fort Ancient culture.

July 22, 2004. Dr. Bob Genheimer, Cincinnati Museum Center: "On the Edges of Earthworks: Important Hopewell Sites Near Stubbs and Fort Ancient"

Recent work at both Stubbs, a geometric earthwork, and Fort Ancient, a hilltop enclosure, illustrate the importance of sites near the periphery of these Hopewell-age earthworks. Extreme and exotic lithic densities have been recorded at a site near each of these earthworks, and structure footprints have been identified at several. The temporary nature of these structures, and the large quantities of exotic lithic debitage, suggest that the sites may have served as short-term knapping locations for the production of bifacial and blade artifacts. Exotic materials at the Barnyard Site, near Stubbs, include Flint Ridge, Wyandotte, Newman, Knox, Knife River Chalcedony, obsidian, and mica.

July 29, 2004. Brian Redmond, Cleveland Museum of Natural History: "Fishing and Farming along the North Coast, Studying the Later Prehistory of Northern Ohio"

For a thousand years prior to European contact (ca. AD 650–1650), Native American societies in northern Ohio fished and hunted the rich wetlands, river estuaries, and islands of Lake Erie's southern shoreline. By AD 1000, these same groups made the shift from full-time hunting and gathering to farming. More than 30 years of archeological work in this area has turned up the well-preserved remains of the huge fishing campsites and fortified village sites where this transition took place. Recent excavations at the Danbury site on Sandusky Bay have provided intriguing new evidence of these once-thriving north coast cultures.

4. Survey and Excavations in 2004 at 33RO1059, by Ann C. Bauermeister

The Hopewell site (33RO27), with its extensive earthwork complex, is renowned as the type site for the Hopewell culture and has long been a focus for archeological research, beginning as early as 1845 with Squier and Davis. Recently, active erosion along the bank of the North Fork of Paint Creek has drawn attention to archeological resources located outside of the complex that are threatened by the encroaching stream. Site 33RO1059 is located south and east of the Square Enclosure in a formerly cultivated field flanked by Paint Creek on the south (Figure 1). The site was originally identified through observation of artifacts on the surface of the field, but relatively little was known about this site and its relationship, if any, to the earthwork complex.

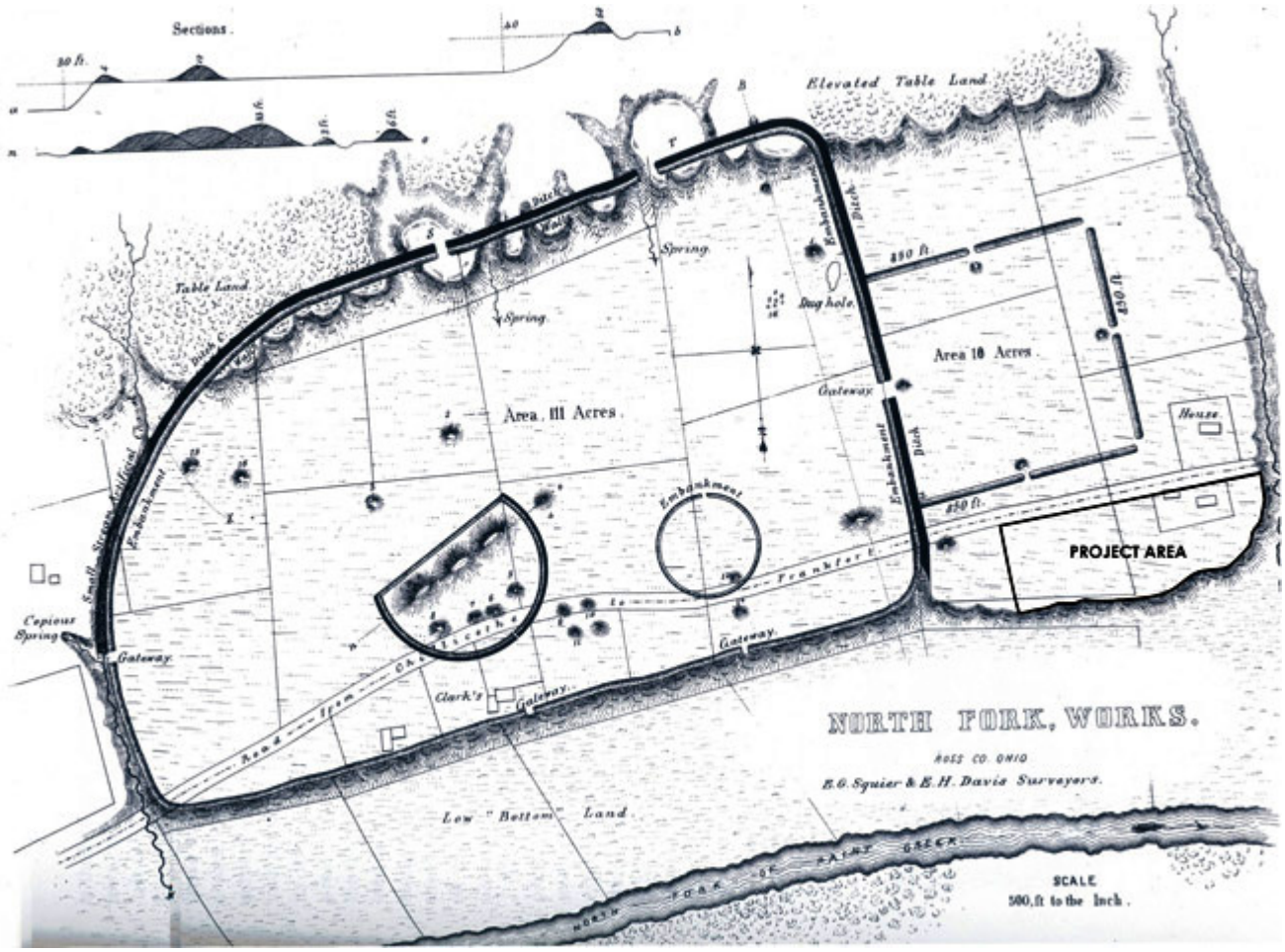

Figure 1 The Squier and Davis 1845 map of the Hopewell site, adapted from Squier and Davis (1998:Plate X). The project area is depicted north of Paint Creek.

Realizing the site might be in jeopardy, managers from Hopewell Culture National Historical Park began pursuing alternatives that would protect the site from further erosion and loss of archeological resources. One alternative would involve a construction approach where the bank would be mechanically stabilized; another, the no-construction alternative, would allow the erosion to continue but would involve the mitigation of adverse impacts through archeological data collection. Several strategies for mechanical stabilization were considered, all of which would involve substantial ground disturbance albeit to varying degrees. Under the no-construction alternative, archeological resources within the area expected to erode in the foreseeable future would be removed through excavation. Before the preferred alternative could be chosen, however, the resources at site 33RO1059 needed to be evaluated to determine not only site type, but whether or not the resources were significant and if the site had enough integrity to warrant protection.

Geophysical and Pedestrian Surveys

National Park Service archeologists from Hopewell Culture NHP and the Midwest Archeological Center began by conducting geophysical and pedestrian surveys. The survey area was confined to the open, previously cultivated portion of the field, encompassing about 2.2 hectares, and included any area that might be impacted by the erosion occurring along the southern end of the field or from construction-related ground disturbance (Figure 2). Forty-eight complete 20-x-20-m blocks and six partial 20-x-20-m blocks were surveyed using an FM 36 fluxgate gradiometer; three complete 20-x-20-m grids were

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surveyed with an EM 38 electromagnetic conductivity meter. In total area, about 21,600 m² were included in the geophysical survey. Results from the survey identified numerous anomalies in the data indicative of prehistoric subsurface features (De Vore and Bauermeister 2003).

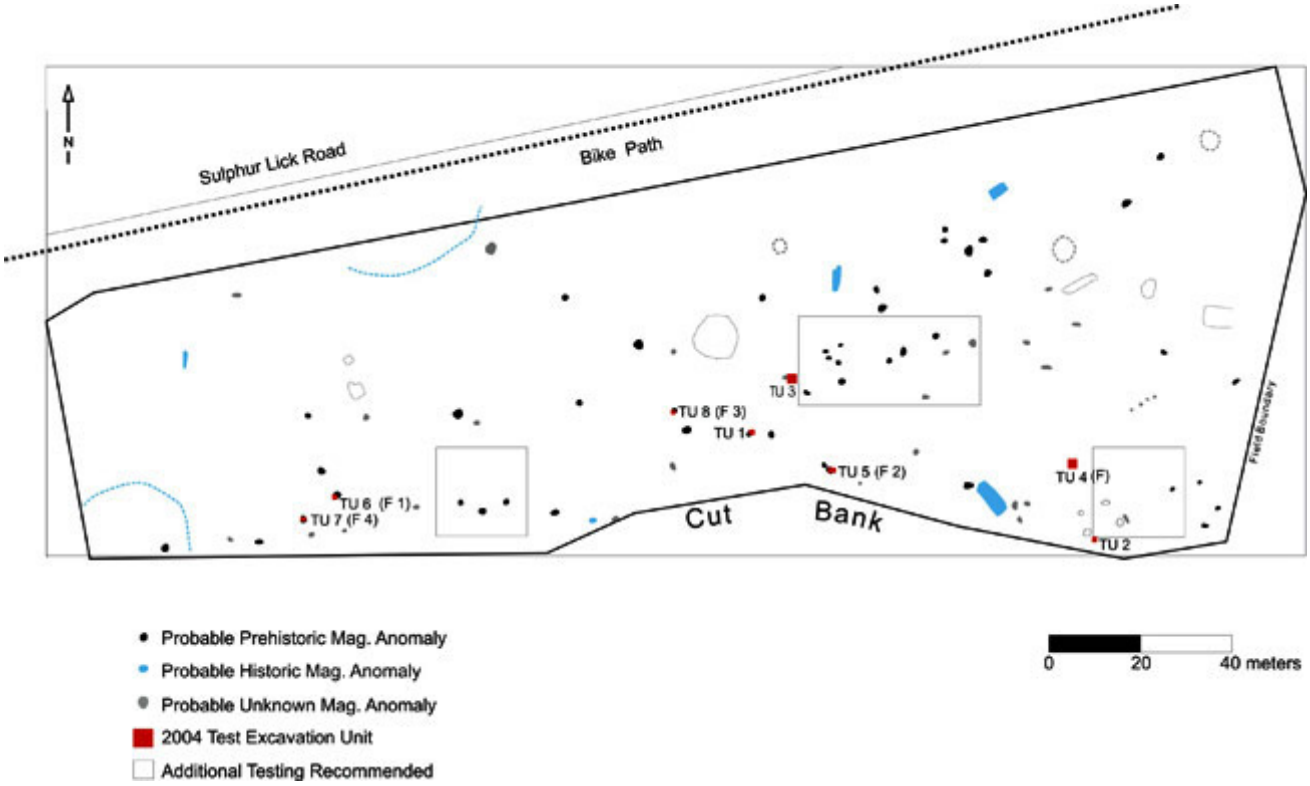

Figure 2 Map of project area, site 33RO1059, showing location of potential archeological features, test unit and feature locations, and areas slated for additional testing.

The pedestrian survey that followed was completed shortly after the project area was mowed and disked, which improved surface visibility to about 85 percent. In total, 341 artifacts were encountered and mapped according to Global Positioning System position. Both prehistoric and historic materials were noted, but prehistoric materials were far more prevalent (308 compared to 33) and became the primary focus of this research; refer to Burks (2004) for details on the historic component. Fire-cracked rock was the most-represented artifact class and was widely scattered across the field, with a slightly heavier concentration in the western half of the project area. Additional prehistoric artifacts identified include debitage, pitted stones, bladelets, and an end scraper. These, too, occurred more regularly in the western half of the field with a specific cluster noted approximately in the center of the area. Hopewell artifacts were among those in the cluster and include two bladelets, a Vanport chert perform, and two quartz crystal flakes, giving this surface deposit a Middle Woodland affiliation.

Data obtained through the surface collection and mapping helped delineate site boundaries while documenting concentrations of prehistoric artifacts. Coupled with the geophysical survey data, this information proved quite useful in planning the next phase of work that would focus on excavations. Archeologists were effectively able to concentrate on specific areas having the greatest potential to yield information through subsurface deposits as predicted by these combined data. Fifteen locations were identified where the potential for buried prehistoric features was both highest and within the potential zone of impact (the width of the creek bend west to east and approximately 30 m north). The zone of impact was determined based on the amount of ground disturbance required by the construction alternatives and assumed the greatest possible extent.

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Excavations

Archeologists returned to the site in April 2004 to conduct the excavations at the specified locations. At this time it was apparent that even more of the field had been lost to erosion just since the previous year. In fact, three of the test unit locations were now so close to the edge of the bank and the undercutting was so severe that excavation in this portion of the field was not feasible (Figure 3). In all, five 1-x-1-m test units (TUs 1, 2, 6–8) and three 2-x-2-m test units (TUs 3–5) were excavated at the site in 2004. All of the units yielded prehistoric materials, with five features (Features 1–4, and unassigned) identified in four of those units (TUs 4, 6–8). Features 1 and 3 yielded temporally diagnostic materials attributed to Late Woodland and Middle Woodland, respectively. They are discussed in more detail below. The unassigned feature and Feature 4 yielded prehistoric materials, but none from within the features themselves are culturally or temporally diagnostic. Hopewell bladelets were, however, recovered from the plowzone above Feature 4. Feature 2 was determined to be natural rather than cultural in origin.

Figure 3 Erosion along the southern edge of site 33RO1059.

Feature 1 was identified in TU 6 as a distinct and intentional intrusion dug into the surrounding subsoil, which in this field is a gravelly clay loam (Figure 4). As excavation continued, the feature began to take the shape of a basin and appears to extend to the north and to the east. Artifacts turned up consistently throughout the feature fill and include debitage, fire-cracked rock, pottery, two bladelets, and a triangular projectile point. The point and pottery are typical of Fort Ancient artifacts, giving Feature 1 a Late Woodland association.

Figure 4 Feature 1 in Test Unit 6.

Feature 3 emerged as a large, dark burned earth stain that encompasses the majority of TU 8 and extends well to the north, west, and east. Artifacts recovered included fire-cracked rock, burned bone, cord-marked pottery, debitage, and two copper fragments (Figure 5). Most of the pottery sherds are fairly small (2–3 cm in diameter), though larger sherds (5–8 cm in diameter) were recovered from deeper soils. One of the larger sherds exhibits a surface treatment similar to incised rocker-stamped. The discovery of copper fragments, particularly what appear to be remnant debris, is quite a rare and significant find and might provide a link between this site and 33RO27. Based on feature content, Feature 3 appears to be Hopewell in origin.

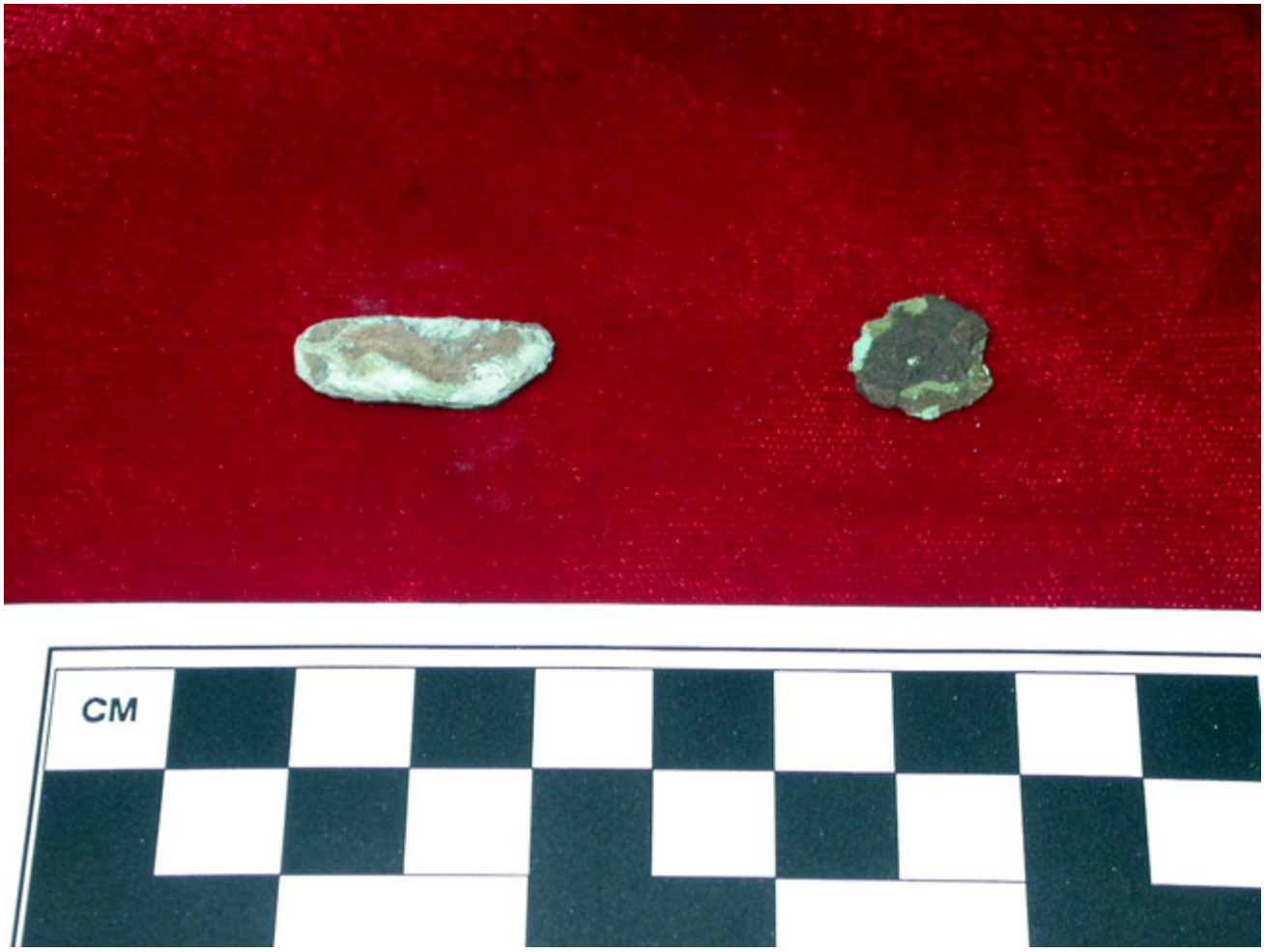

Figure 5 Copper debris recovered from Feature 3 in Test Unit 8.

Initial observations indicate that this is a habitation site that represents at least two temporal periods, Middle and Late Woodland, and perhaps several occupations. Of particular interest is the presence of copper debris. Copper is a rare find, and it is even more unusual to find copper debris that has merely been discarded and not reworked. The copper, the bladelets, and the cord-marked pottery are strong evidence for a Hopewellian occupation—perhaps one that is contemporaneous with events relating to the earthworks. The site has the potential to yield considerable data, which might help answer questions relating to the activities associated directly with earthwork construction and utilization.

Preservation Decisions

The findings verify that important resources are located within the field and that efforts to protect the archeological site from erosion should be pursued. Hydrology studies have determined that the flow of water along this curve of Paint Creek has slowed, and it is anticipated that at some point the erosion will slow or stop. The erosion is active at the toe of the bank, which is undercutting the upper bank and causing it to recede. In effect, the bank is attempting to stabilize itself by developing a more even slope. It follows, then, if the toe erosion were to stop, so too would the erosion along the upper bank that is impacting the site. The questions then become, how much would be lost, and is bank stabilization needed?

The mechanical bank stabilization would effectively prevent additional erosion from occurring, but a substantial portion of the site would be subjected to ground disturbance during construction. The

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mitigation of construction impacts to the archeological resources would require extensive excavation of the site. Significantly less of the site would be impacted by the erosion, without any bank stabilization work, assuming the stream will erode at a certain rate over a defined period of time. The threatened resources could still be recovered through excavation and more of site would be left intact, providing future opportunities to learn from it.

The National Park Service chose the no-construction alternative as the most advantageous to protecting the archeological resources at the site. No mechanical bank stabilization will take place and the erosion will be allowed to continue. Additional and more extensive archeological excavations are set to begin in 2006 and will continue into 2007.

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5. New Discoveries Right in Our Own Front Yard: Preliminary Results of Recent Research at Mound City Group

Jarrod Burks, Jennifer Pederson, Lynette Willsey, Dawn Walter Gagliano, and Kathy Brady-Rawlins

The Mound City Group: Past and Present

Mound City Group is probably the most extensively excavated Hopewell earthwork in Ohio. Squier and Davis (1848), William Mills (1922), and a whole host of more recent archaeologists, have conducted excavations within and between the site's 23 mounds and ca. 950 m of earthen embankment. In addition to their diggings in the mounds, Squier and Davis produced the first map of the 15.6-acre earthwork complex, which included other mounds and earthen enclosures in the vicinity of Mound City (Figure 1). Among these additional mounds and earthworks are a circular enclosure and four mounds to the west and northwest of Mound City. The larger of the two mounds located just south of the small circular enclosure northwest of Mound City, known as the Briggs Mound (33RO7), was excavated in the 1897 by Clarence Loveberry (Moorehead 1899). While Moorehead (1899:136) also mentions another mound that was excavated at the same time in the near vicinity, to our knowledge none of the remaining mounds west and northwest of Mound City that appear on the Squier and Davis map were excavated prior to their disappearance from the landscape. Additionally, only limited work has been conducted in non-mound areas among these enclosures and mounds. To better understand how prehistoric peoples used these earthworks and mounds near Mound City, exploration of non-mound areas must be undertaken. A project begun in June 2003 sought to address this need by studying a small area in the front yard of the visitor center at Mound City.

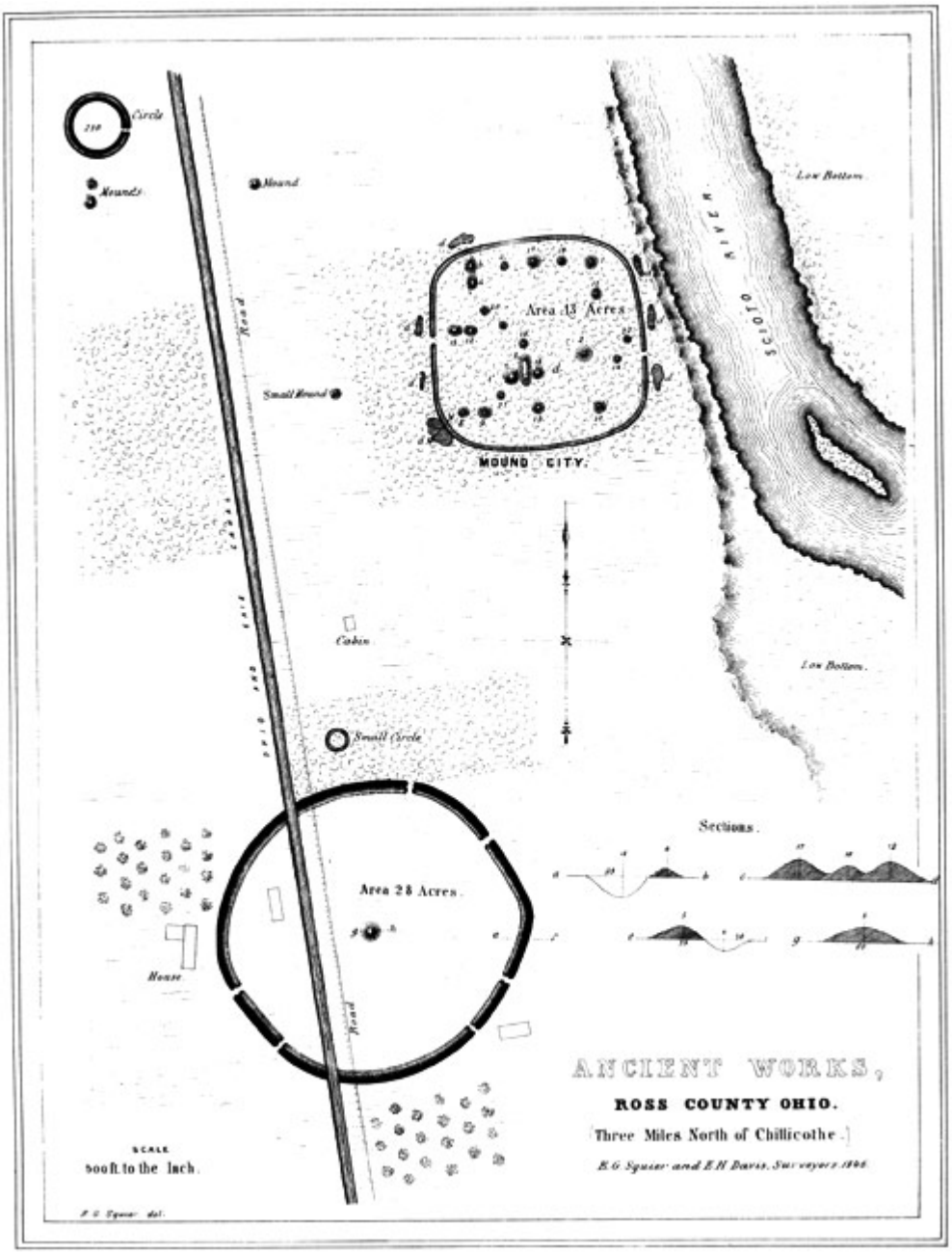

Figure 1 Squier and Davis map of Mound City and vicinity.

The project area covers 1,200 m² and contains one of the isolated mounds, now reconstructed, thought to have been mapped by Squier and Davis (Figure 2). The mound is located about 230 m to the west of the Mound City enclosure. Dimensions of the mound were not recorded in the 1840s, and no documentation exists for excavations of the mound or its immediate vicinity. However, a comparison of the Squier and Davis map and a modern map of the reconstructed elements of Mound City and the project area (Figure 3), show that the reconstructed mound is located about 200 m south and east of where Squier and Davis show it on their map.

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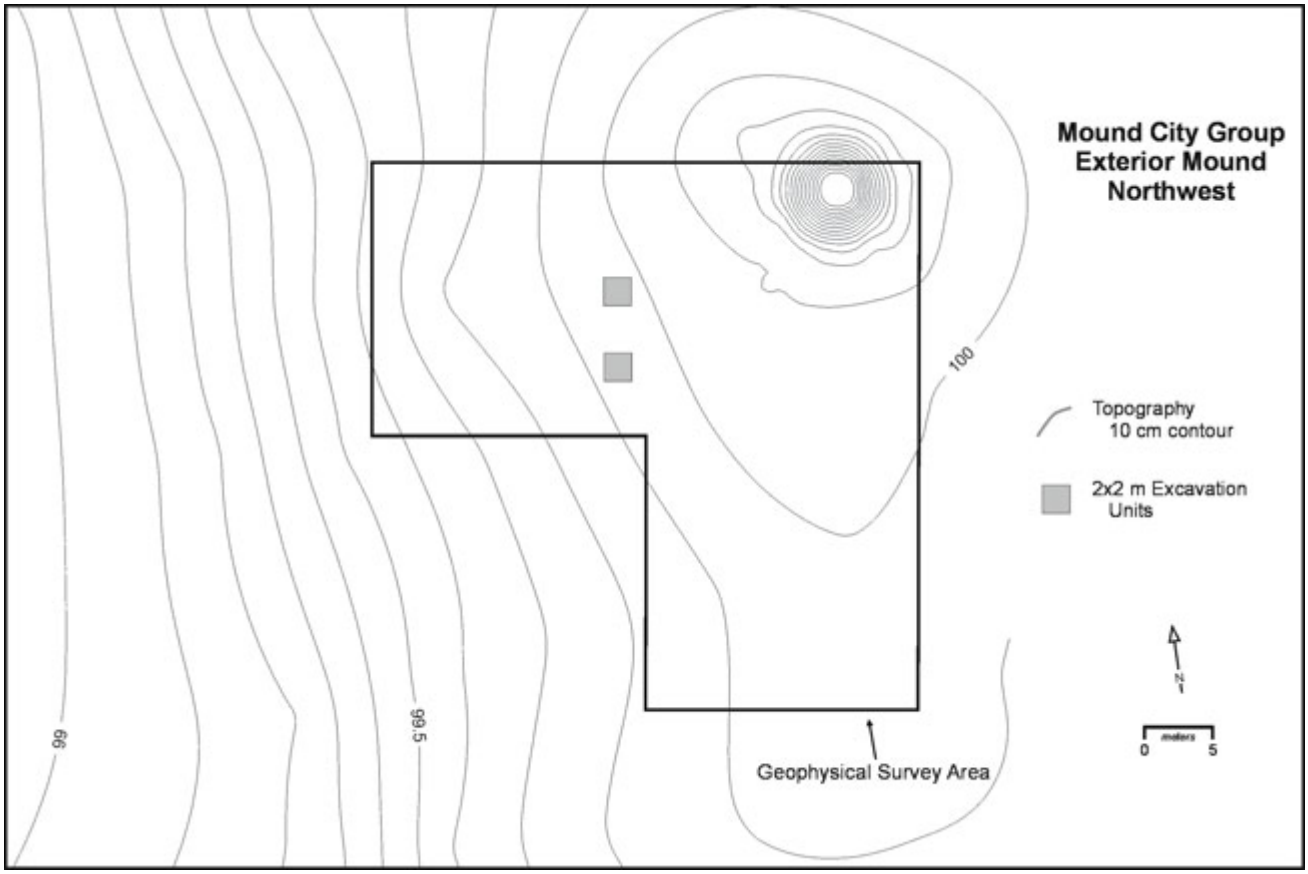

Figure 2 Close-up of the project area with topographic contours, geophysical survey area, and excavation unit locations.

How the reconstructed mound could be so far off the Squier and Davis location is easy to understand. After many decades of agricultural use, beginning perhaps as early as 1800, this area was used in 1917-1920 as a parade ground for Camp Sherman, a World War I training camp that covered the Mound City earthworks and miles of Scioto Valley floodplain (Figure 3). While Camp Sherman buildings were not part of the project area, the parade grounds were no doubt leveled off by cutting and filling bumps and gullies. This presumably accounts for the ultimate fate of mounds located within the parade ground area that once lined what is now State Route 104. Today the former parade ground area west of Mound City is a grassy lawn and the two mounds that appear on the Squier and Davis map of Mound City have been reconstructed to a height of 1.5 m and a diameter of 10 m, though apparently in the wrong locations.

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Figure 3 Project area map showing the location of Camp Sherman structures, current mounds and earthworks, and mounds mapped by Squier and Davis.

Geophysical Survey

Our research in the vicinity of the northern reconstructed mound began with topographic mapping and geophysical testing of three 20-x-20-m blocks. Both magnetic gradient and electrical resistance data were collected. A Geoscan Research FM 36 fluxgate gradiometer was used for collecting magnetic gradient data every 12.5 cm along transects spaced 50 cm apart, yielding 6,400 readings per block. Resistance data were collected every 50 cm across the survey area using a Geoscan Research RM 15 resistance meter. A total of 1,600 resistance readings were recorded per block.

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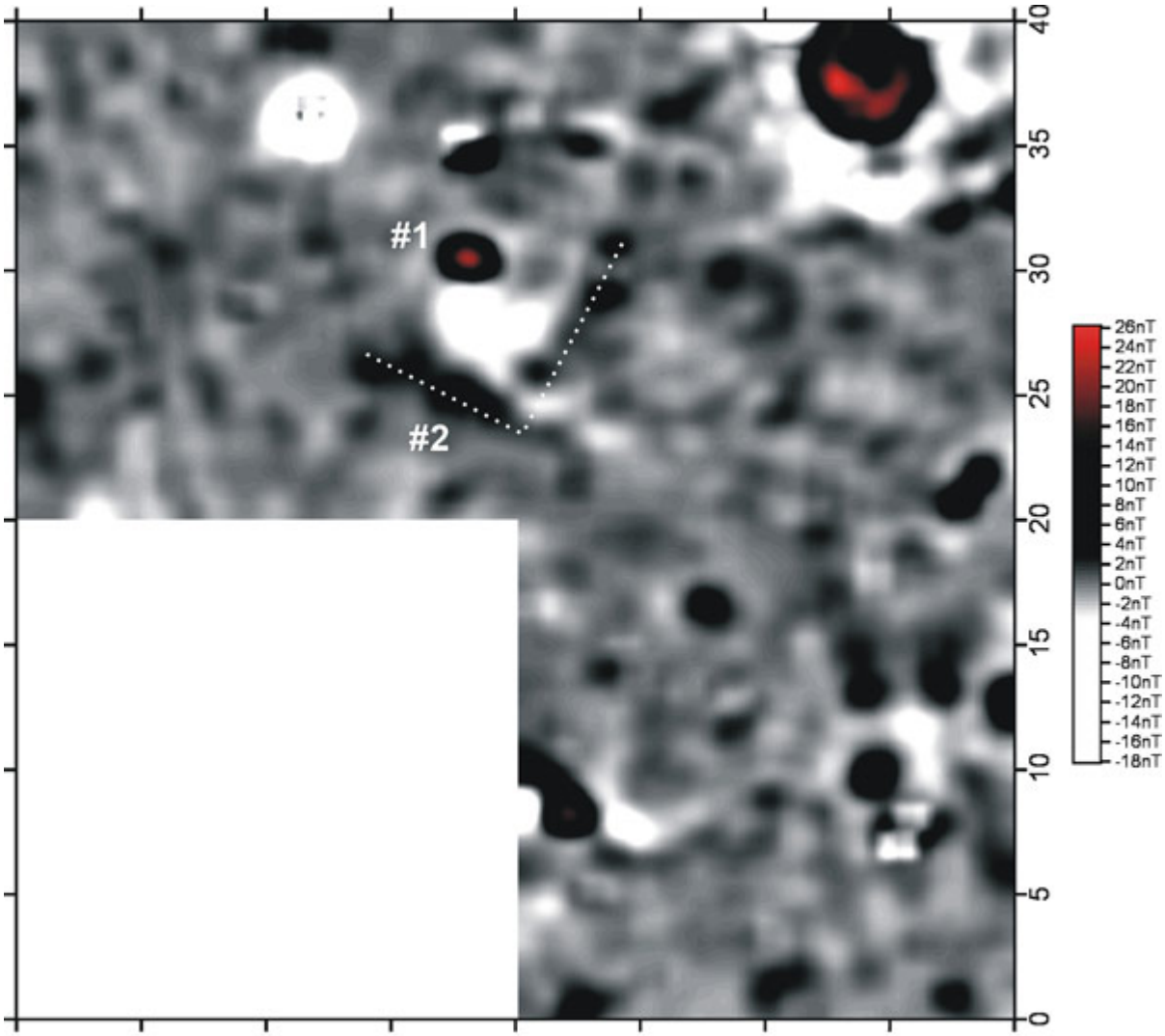
Geophysical data can provide a unique glimpse of subsurface deposits, as it does for this study. The reconstructed mound is clearly visible in the northeast corner of both the magnetic gradient data (Figure 4) and resistance data (Figure 5). It is particularly interesting that the extent of disturbance from the reconstruction is also visible as a rectangular area of lower magnetic gradient and resistance readings. At least 23 possible prehistoric features, among numerous historic features and artifacts, are visible in the magnetic gradient data. Similarly, the resistance data show multiple anomalies, a few of which are rectangular.



Instrument: Geoscan Research FM 36 Fluxgate Gradiometer

Data Spacing: 8 readings per meter
50 cm transect interval

Figure 4 Magnetic gradient data.

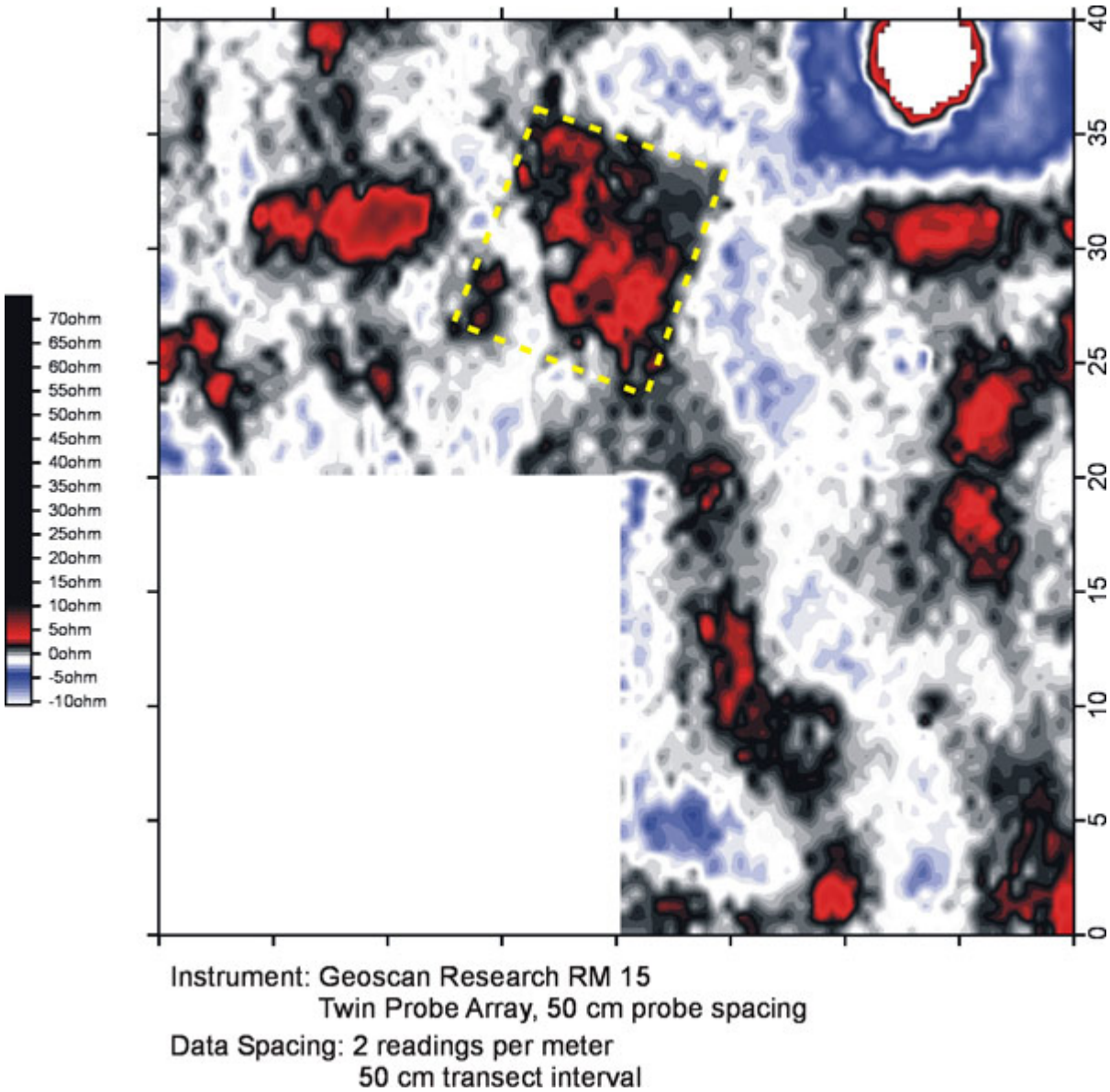


Figure 5 Electrical resistance data.

When the two data sets are superimposed, a large area containing both magnetic and resistance anomalies is apparent to the west of the mound. This area contains two magnetic anomalies. Anomaly 1 is circular, about 2.5 m in diameter, and has an unusually strong magnetic gradient intensity (37.65 nT) for a possible prehistoric feature. Anomaly 2 is linear, about 7 m long, and consists of above-average magnetic gradient readings (ca. 5 nT).

In our preliminary analysis we speculated that Anomaly 1 was a prehistoric fire pit feature and Anomaly 2 was possibly part of a series of post holes present along the southern and eastern sides of the large pit. In the resistance data, the same area as magnetic Anomalies 1 and 2 appears to have higher resistance readings arranged in a rectangular shape roughly 10 m². Was it possible that this resistance anomaly indicates the presence of a compacted floor? In combination, the geophysical data point to the presence of a possible structure to the west of the reconstructed mound. This was very intriguing at the time since we now know that all of the Mound City mounds were built over the remains of structures. Had we discovered the remains of a submound building and the actual spot where the nearby mound should have

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been reconstructed? To determine the exact nature of these geophysical anomalies, ground-truthing was needed.

Excavations

To date, our excavations have focused on the two magnetic anomalies. Removal of the plowzone by hand has revealed a large circular pit at Anomaly 1 and patches of darker soil at Anomaly 2. In excavating Anomaly 1 (Figure 6), we have bisected the feature, removing the southern half in 10-cm levels down to a depth of about 1 m. The Anomaly 1 pit appears to be the remains of a thermal feature now filled with three distinct stratigraphic levels: a pottery-rich upper layer; a middle layer of redeposited subsoil containing significantly fewer artifacts but much gravel; and an organic-rich soil layer at the bottom containing fire-cracked rock and charcoal. Most of the pottery sherds represent a grit-tempered ware, with a couple excurvate rim sherds. One grit-tempered sherd, while heavily eroded, is clearly covered by a fine rocker stamping. In addition to the large amounts of pottery, a number of bladelets and biface fragments and lots of fire-cracked rock were also present in the feature fill.

Figure 6 Anomaly 1 bisected. The photo board reads: Mound City Group; Teacher's Workshop; Feature #1; North Wall Profile; June 30, 2004.

Only the eastern portion of Anomaly 2 was tested due to its large size. Screening of the plowzone produced a small collection of pottery sherds and flakes. More numerous was fire-cracked rock. The patches of darker soil at the base of the plowzone were tested further but no obvious cultural features could be defined. The source of Anomaly 2 thus proved to be elusive as none of the expected postholes were evident.

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Figure 7 Bladelets from Anomaly 1.

Conclusions

At this time, preliminary results are inconclusive as to whether this area represents a structure. Excavations of both magnetic anomalies located artifacts, with bladelets (Figure 7) and a small piece of mica from Anomaly 1. The Anomaly 1 pit feature certainly appears to be related to some sort of Hopewell occupation. Given the large number of similar magnetic anomalies in the study area, perhaps this whole area to the south and west of the present mound was occupied during construction of the mounds within and outside of Mound City. A much larger magnetic survey conducted recently across much of the front yard of Mound City produced over 80 magnetic anomalies in three clusters, each of which might represent areas occupied by the Hopewell while visiting the Mound City area to participate in the ceremonial goings-on within and/or outside the earthwork. These findings outside Mound City, as with similar findings at Hopeton Earthworks and Hopewell Mound Group, show that quite a lot of evidence of Hopewell occupation yet exists at these old earthwork sites, despite hundreds of years of historic disturbance.

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6. Earthwork Construction and the Organization of Hopewell Society

By Mark J. Lynott, Midwest Archeological Center

The mounds and geometric enclosures of southern Ohio have fascinated scholars for two centuries, but many of the questions that sparked the interest of 19th-century antiquarians have yet to be fully addressed today. Contemporary scholars are proposing new and interesting interpretations about these impressive sites, but the sites themselves are disappearing. None of the great geometric enclosures has survived unscathed, and many of them can only be studied now by examining old aerial photographs or reading historic accounts. The need for field investigation of the remaining sites has never been greater.

Archaeological study of geometric enclosures in southern Ohio has been limited, with most work being focused on mounds associated with the enclosures. The large size of these sites has certainly served to deter excavations, and most studies have been limited to one or two summers of excavation. While these studies have generated useful information about some aspect of individual earthworks, none have generated a holistic view of any large geometric enclosure. Fortunately, geophysical survey instruments make it possible to map large areas; these data can be used to plan strategic excavations. The utility of this approach is illustrated by recent work on the rectangular enclosure at the Hopeton Earthworks, Ross County, Ohio.

Hopeton Earthworks is located north of Chillicothe. It was described by Squier and Davis as being a rectangle with an attached circle (Figure 1). The earthwork also has two smaller circles that were integrated into the north side of the rectangle and a pair of parallel walls that extend from the northwest corner of the rectangle 2400 feet to the southwest. The walls of the two larger enclosures were formed by a series of wall segments. Each was estimated to enclose 20 acres. The walls of the rectangular work were of monumental size, twelve feet high by fifty feet at their bases, and lacking a ditch on either side.

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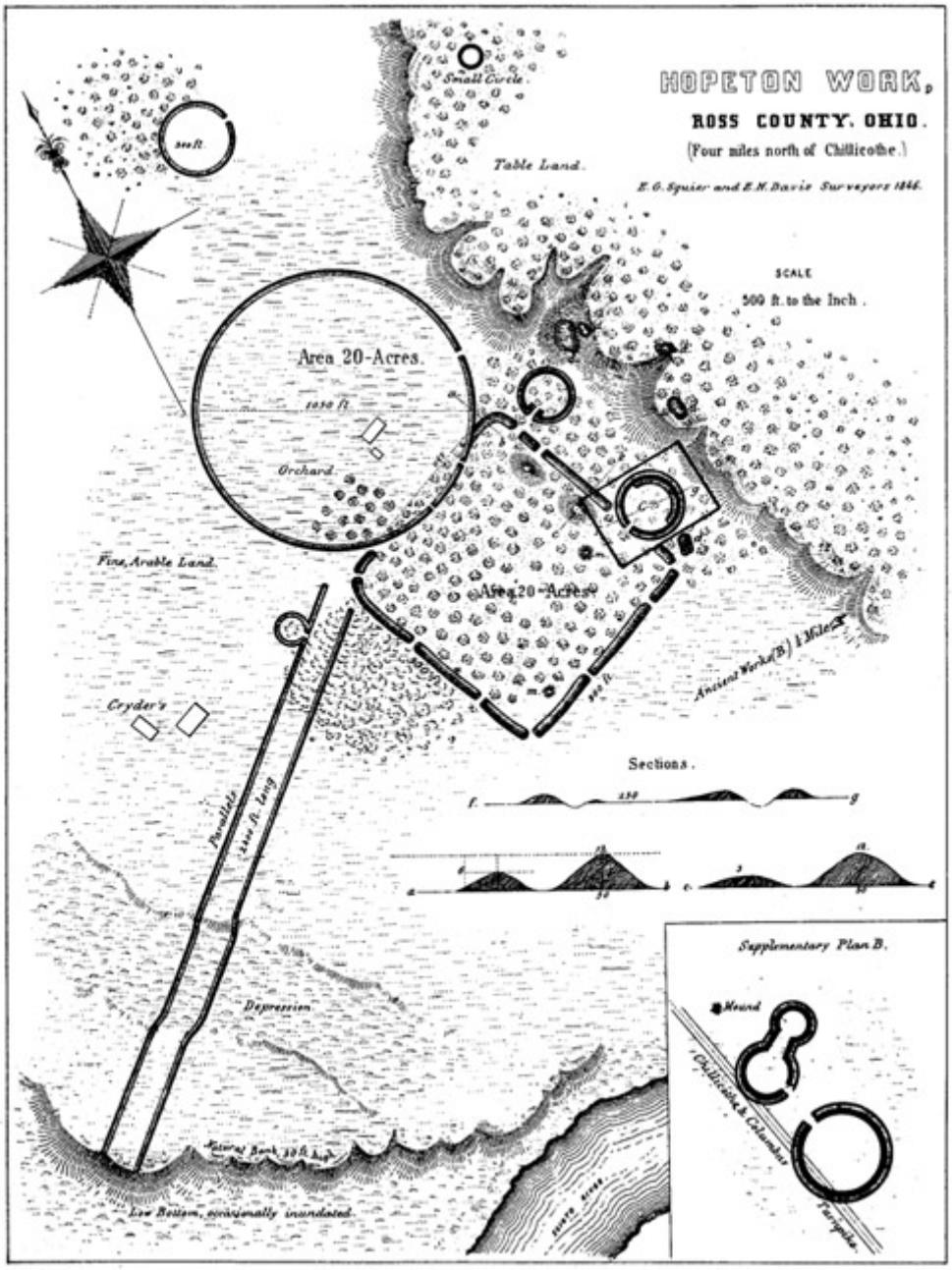

Figure 1 Ephraim Squier and Edwin Davis mapped the major earthwork features of the Hopeton site in 1846 and published their findings in a classic volume that illustrates and describes many nowdestroyed Hopewell earthworks (Squier and Davis 1848:51–52, Plate 17).

Geophysical Survey and Research Design

More than 150 years of cultivation have greatly reduced the walls of this enclosure, to the point where they are barely visible to the untrained eye. In 2001, the National Park Service initiated geophysical survey at Hopeton to determine if geophysical equipment could be useful in evaluating the subsurface composition of mounds and earthen walls. Reports in-progress elaborate on the geophysical studies; it should be noted here, however, that the efforts of John Weymouth, Bruce Bevan, Rinita Dalan, and Rolfe Mandel are producing exceptionally useful data.

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The bulk of our survey efforts have relied upon a Geometrics G858 cesium gradiometer. The most important accomplishment was the discovery that the wall segments of the rectangular enclosure are distinctly visible in the magnetic survey data (Figure 2). The sharp boundaries on the interior and exterior of the wall segments are in marked contrast to the topography of these features, which is very gradual due to years of annual cultivation. The sharp magnetic contrast between the core of the wall and the surrounding soils of the landform suggested that the wall must have been constructed from soils that differ markedly from the natural soils of the alluvial terrace. In an effort to determine how much of the original wall was preserved at Hopeton, the geophysical survey data were used to select four locations around the rectangular enclosure for test excavations.

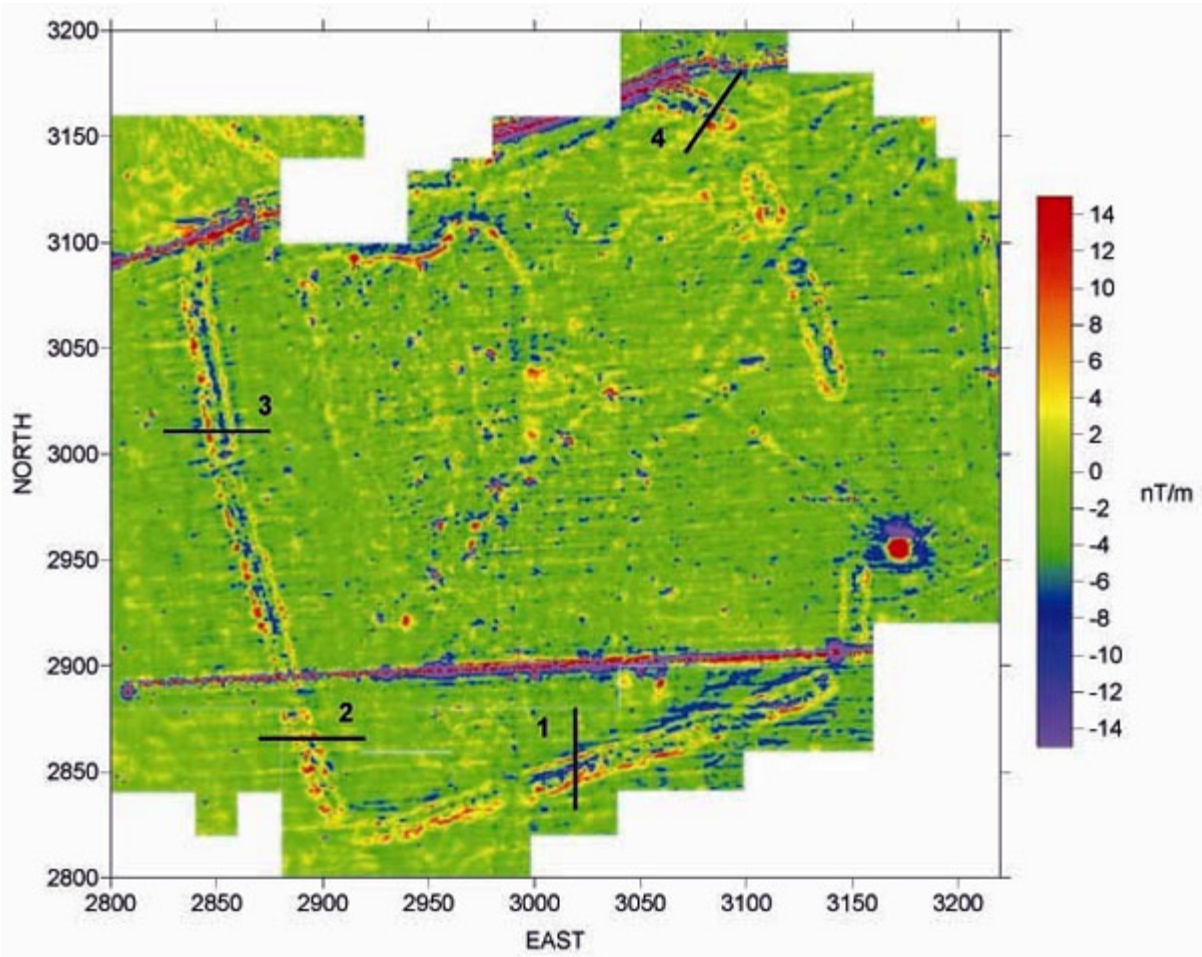

Figure 2 The locations of Trenches 1 through 4. These trenches were placed to give representative cross section information for the main enclosure wall of the large square.

In 1996, Bret Ruby excavated a 1-m-wide trench across a wall segment at the northwest corner of the rectangular enclosure. Aerial photographs indicate this section of wall was preserved in a fence-row since at least 1938. The 1996 trench revealed that three different soil deposits were present in the wall, each representing a different stage of construction (Ruby 1997:3–4). Using this information, we developed a plan for testing other wall segments to determine whether we might be able to learn how and when they were built.

Trench Excavation Results

Field studies of the walls that form the rectangular enclosure were conducted from 2001 to 2003. Using the geophysical survey data to evaluate the potential preservation of the wall segments, we selected four

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locations in four different wall segments for trenching (Figure 2). Each trench was 1.5 m wide and varied in length from 41 to 50 m. Trench 1 was in the central segment of the southern wall of the enclosure. Trenches 2 and 3 were excavated through wall segments forming the western wall, and Trench 4 was excavated across the only curved wall segment that forms the northeast corner of the enclosure.

Examination of each of the trenches revealed that although there were some general similarities in the methods and materials used to build the wall segments, each wall segment was different. In each wall segment, construction was started with removal of topsoil to expose the subsoil. Two different subsoils are present on this landform. Yellow silt loam was exposed at the bases of Trenches 1, 2, and 3, and red sandy loam was exposed at the base of Trench 4. In each of the wall segments, the builders performed rituals that involved burning. These activities left small burned soil features with charred materials often at the interface of two different construction stages. Unfortunately, due to degradation from years of agriculture, we are only able to observe the first stages of wall construction that form the base of the individual wall segments.

The base of the wall segment exposed by Trench 1 was formed by piling up yellow silt loam similar to the subsoil, and then covering the top and outside of the yellow soil with a red sandy loam (Figure 3). In Trenches 2 and 3, a dark gray-brown silt loam was piled on the yellow subsoil to form the base of the wall. Then yellow or yellow-brown soil was piled on the east or inside of this dark material, and red or red-brown soil was placed on the west or outside of the wall segments. The configuration and colors of the materials used in these two segments are quite different, but the pattern of construction as just described is similar.

Figure 3 The west wall profile in Trench 1 showing distinct soil colors; Profile 3, 2852N, June 2001. The base of the wall was created by piling up yellow silt loam similar to the subsoil. The top and outside surfaces were then covered with red sandy loam.

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The contacts between the soil layers exposed in all three of these wall segments were generally distinct, suggesting that little time elapsed between the deposition of the different materials. To determine if this observation was valid, Rolfe Mandel conducted micromorphological analysis of sediments from Trench 1. This analysis indicates that no evidence of weathering or soil formation is present, and construction of the wall segment probably occurred in a few years or less (Lynott and Weymouth 2002:5).

The situation in Trench 4 is quite different from what was observed in the other trenches. Wall construction was initiated by stripping the topsoil and exposing the red sandy loam subsoil. The subsoil was then covered by a layer of dark gray loam with lenses of fine gravel. Dark gray loam was then deposited on the dark base to form the core of the wall segment. Red sandy loam was then piled on the south or inside of the dark core, and the contact between these two layers exhibits a sharp boundary. Gray-brown loam was deposited on the north side of the dark core, but the boundary between these two materials is not sharp. Numerous small lenses of different soil materials, which appear to represent basket loads, form a complex boundary between the two soil units (Figure 4).

Figure 4 Detail in the profile of Trench 4. Small lenses of different soil materials appear to represent basket loads. As a group, these lenses form a complex boundary between the two major soil units.

Construction Methods and Episodes

One of the goals of this study is to determine when the walls of the rectangular enclosure were built. Fortunately, the people who built the wall segments conducted rituals that included burning wood and other materials in association with the various stages of wall construction. Four radiocarbon dates from features in Trenches 1, 2 and 3, plus two other radiocarbon dates obtained by Bret Ruby from his 1996 trench suggest these wall segments were probably built between AD 150 and AD 250.

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Two radiocarbon dates were obtained from features in Trench 4, and they are both 800 years more recent than the dates obtained from the other trenches. Since one of the samples was taken from a feature at the very base of the wall segment, it seems unlikely that these represent intrusive episodes that postdate construction of the wall segment. When these dates are considered in association with the unusual construction methods recorded in Trench 4, it seems likely that this wall segment was either built many centuries after the other wall segments, or it was modified or repaired at this later time.

The work on the rectangular enclosure at Hopeton demonstrates that variation in wall construction methods, and even the age of wall construction, might be significant within individual earthworks. Understanding the methods and materials used to build these walls is important, because the amount of energy that was invested is a reflection of the values, labor force, and social organization of the people who built the enclosure.

Study of the materials used to construct the walls at Hopeton indicates that all of the soil and gravel selected for this purpose was available on the landform where the site is located. The massive amounts of soil used to build the walls were quarried with hand tools and carried in baskets, and vast amounts of soil were moved all across the site. This substantial earthmoving resulted in the creation of a cultural landscape that was probably cleared of vegetation to facilitate gathering and moving soil around the site.

Rather than simply scooping up soil and piling it into an earthen wall, the wall segments at Hopeton were built with carefully selected soils. The entire process began by removing all topsoil from the area where a wall segment was to be built. The action of exposing the yellow or red subsoil certainly provided a very stable foundation for the wall segment, but it also probably was related to the Hopewell people's efforts to manage the spirit world. In the wall segments we examined on the south and west sides of the Hopeton rectangular enclosure, the wall builders always placed red soil on the side of the wall that would be viewed from outside the enclosure. Yellow soils were always placed on the side of the wall that would be viewed from inside the enclosure. The contacts between the different soils used to build these wall segments are sharp and clear, and it is obvious that the selection of soil and its placement in the wall was carefully engineered. These wall segments were all built about AD 200.

The curving wall segment that forms the northeast corner of this enclosure is quite different. In this area, the topsoil was removed to expose red subsoil, and this wall segment is constructed primarily of red sandy loam plus two different shades of gray loam. There are large homogenous deposits of these materials in the wall, but the contacts between the different soil materials are frequently marked by basket-loading. In this instance, red soil was placed to be visible from inside the rectangular enclosure and gray loam would have been visible from outside the enclosure. Of course, as time went by, and soil formed on the earthen walls, the wall colors would have become less noticeable. The variation we have noted in the color placement and construction methods between these wall segments might be related to some intended differences in function. However, the radiocarbon dates from the curved wall segment suggest that the curved wall segment was completed about 800 years after the other wall segments were complete.

Conclusions

As archaeologists and geophysicists continue to study the relationship between geophysical data and the archaeological record, it is apparent that this line of research will provide a more accurate depiction of the original placement and size of the wall segments than can be obtained from either current topographic maps or 19th-century historic maps (Figure 5). Recent interpretations suggest the placement of gateways at Hopeton and other Hopewell enclosures were planned to view solar and lunar events. Evaluation of these hypotheses can be accurately evaluated through large-scale geophysical mapping of these sites. Geophysical survey also provides an efficient and effective way to develop a holistic view of the archaeological record of these giant earthen monuments. This can be a particularly effective way to view large sites when done in concert with systematic surface collections and strategic testing efforts.

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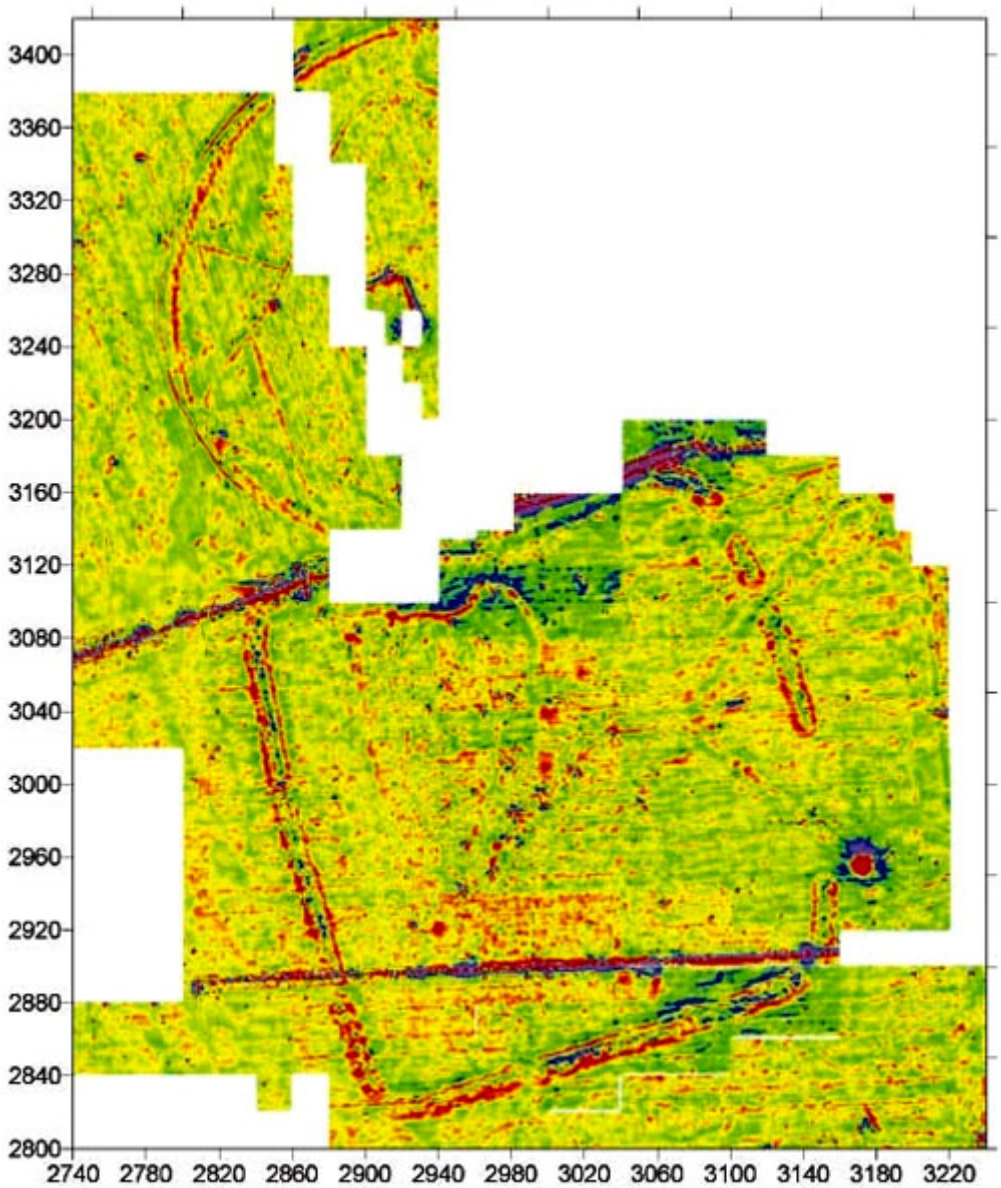

Figure 5 Magnetic survey coverage through 2003 at Hopeton Earthworks. Data from three field seasons are compiled; the resolution is 1 m by 1m.

The timing of the introduction of these new technologies to the study of Ohio Hopewell is critical. Earthworks and mounds were once plentiful across all of southern Ohio. Urban growth, agriculture, and other development activities have damaged or destroyed nearly every single earthen monument in this region. The forces impacting the archaeological record continue to escalate as population grows, cities expand, and agriculture continues. A number of important sites have been purchased and preserved. Unfortunately, now that methods and technologies that permit effective study of these large sites are becoming available, the vast majority of large Ohio Hopewell sites are being erased from the cultural landscape. Increased efforts to preserve sites for future study are certainly needed, but more large-scale archaeological studies of these great places are also needed before they are lost forever.

Note: this article is a slightly modified version of a paper presented at the 69th Annual Meeting of the Society for American Archaeology, Montreal, Canada, April 4, 2004.

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1848 *Ancient Monuments of the Mississippi Valley*. Smithsonian Contributions to Knowledge, Volume 1. Smithsonian Institution, Washington, D.C. The Smithsonian Institution reprinted this volume in 1998 as the 150th Anniversary Reissue Edition, which includes a special Introduction by David J. Meltzer.

7. Meeting Calendar for *Hopewell Archeology*, Volume 6, Number 1, in chronological order:

What: The 62nd Annual Plains Anthropological Conference
Where: Sheridan Billings Hotel, Billings, Montana
When: October 13 through 16, 2004
Who to Contact: The program chair is Lynelle Peterson, Ethnoscience Inc., 4140 King Avenue East, Billings, MT 59101; phone 406-252-7945; email <lynelle@ethnoscience.com>. Or visit the conference web site at <http://www.2004pc.org>.

What: The 50th Anniversary, 29th Biennial Great Basin Anthropological Conference
Where: John Ascuaga's Nugget Resort Hotel, Sparks, Nevada
When: October 14–16, 2004
Who to Contact: David W. Zeanah, Department of Anthropology, California State University, 6000 'J' Street, Sacramento, CA 95819-6106; phone 916-278-5683; email <zeanah@csus.edu>.

What: The 2004 Joint Meeting of the Southeastern Archaeological Conference and the Midwestern Archaeological Conference
Where: The St. Louis Marriott Downtown, St. Louis, Missouri, One Broadway, St. Louis MO 63102; 1-800-228-9290.
When: October 21–23, 2004
Who to Contact: The program chair is Timothy Baumann, Department of Anthropology, University of Missouri, One University Blvd., Clark Hall 507, St. Louis MO 63121-4499; email <tbaumann@ umsl.edu>. The conference web site is at <http://www.southeasternarchaeology.org/2004seac.html>.

What: The Society for Historical Archeology Conference 2005
Where: York, England
When: January 5 through 10, 2005
Who to Contact: The program chair is Harold Mytum, who directs conference inquiries to the conference web site at <http://www.york.ac.uk/depts./arch/SHA2005/SHAwelcom.htm>.

What: The 70th Annual Meeting of the Society for American Archaeology
Where: The Downtown Marriott Hotel, Salt Lake City, Utah (note *Downtown* because there are two Marriotts in Salt Lake City; this is an important point).
When: March 30 to April 3, 2005
Who to Contact: No individual is responsible for all the highly varied aspects of this meeting. The best place to start is at the SAA web site <http://www.saa.org/>.

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What: The 71st Annual Meeting of the Society for American Archaeology
Where: San Juan, Puerto Rico
When: April 26–30, 2006
Who to Contact: To Be Announced; for now the SAA web site has limited information at <http://www.saa.org/>.

What:
Where:
When:
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8. On Referencing and Citing the Newsletter and Other Internet Documents, by John M. Andresen

This is an essay on referencing and citing Internet documents, with special attention to citing this issue and future issues of *Hopewell Archeology*. The essay begins with a true story about an archaeologist, his conference paper, and the archaeological community. It might seem at first that the introductory story has nothing to do with the Internet, but I hope to show by the end of this essay that the story relates to Internet citation and referencing in several ways.

William W. Wasley was a staff archeologist for the Arizona State Museum, Tucson, from the late 1950s to the mid-1960s, during which time he conducted fieldwork and research within the Hohokam culture area, located in southern and central Arizona and largely concentrated in the low Sonoran Desert. His previous fieldwork and research had been within the puebloan Southwest, largely to the east and northeast of the Hohokam area.

When Wasley began working in the Hohokam area, the dominant thinking held that the Hohokam Classic period (ca. AD 1150–1450, the last of four periods) was caused by an influx of puebloan Salado people, whose homeland was in the higher country adjacent to and northeast of the Hohokam area. According to the established scenario, Salado people peacefully moved into the Hohokam area and shared their pottery, their burial methods, and their ideas about architecture, which eventually resulted in the monumental architecture that defines the Hohokam Classic period.

His staff position and the contracts held by the Arizona State Museum enabled Wasley to conduct fieldwork within the Hohokam area at previously unexcavated sites, and he participated with Emil Haury in the re-excavation of the famous site of Snaketown. His research led him to conclude that developments leading to the Classic period were more gradual than might be expected from the sudden influx of Saladoan people, and that outside influences came from Mesoamerica to the south rather than from any puebloan group to the northern or northeast.

In the early 1960s, Wasley had published bits and pieces of his thinking in project-specific reports. In 1966, he brought together all his ideas and his database into a single paper and presented it at the 31st annual meeting of the Society for American Archaeology, held in Reno, Nevada. He took along several mimeographed copies of the report to give away; there were no illustrations. The paper was humbly entitled “Hohokam Classic Period” (Wasley 1966).

His paper generated tremendous interest. Some of his ideas were considered radical at that time; other ideas were considered new and insightful. Wasley had presented a paper that his colleagues could not ignore, whether they agreed with him or not. Almost immediately, colleagues began citing Wasley’s conference paper, sometimes favorably and sometimes not. His paper sparked much formal and informal discussion, and the paper was cited throughout the 1ate 1960s and the entire 1970s by nearly everyone writing about the Hohokam Classic period.

Tragically, Wasley died in an automobile accident soon after he gave his 1966 conference paper. He did not live to refine his ideas or to participate in the revolution he helped start. Nevertheless, his paper was

so widely cited that one could get a good sense of what it contained by analyzing how it was cited and by reading what others said about it. Interestingly, there were far more citations of Wasley's paper throughout the 1970s than could be accounted for by the few copies known to exist. The spread of inexpensive photocopying in the 1970s probably helped increase the number copies in archeologists' files. But it also appears that a few scholars were citing it without having attended the conference or without having a copy in hand.

The continuing citation of this rare, unpublished paper became an increasingly odd academic situation. The Arizona Archaeological and Historical Society resolved the problem in 1980 by publishing Wasley's original 1966 text accompanied by a special introduction for historical context by David E. Doyel (Doyel and Wasley 1980). By this time, Wasley's ideas no longer seemed as radical as they had in 1966, but its 1980 publication at the very least plugged a long-standing hole in the available literature of Hohokam archeology.

Location and Availability

The story of William Wasley and his 1966 paper is not unique; rather, it is an extreme example of something common in the experience of all archeologists. We are all familiar with the citation and listing of conference papers presented at national and regional meetings, and all of us have encountered problems getting copies of all the papers we would like to have, especially when we have been unable to attend a particular conference. With enough persistence, we can usually obtain a copy of a paper that we really want, but sometimes the presenter has no hard copies to distribute and is usually under no obligation to create any.

The traditional archeological literature is full of ephemeral, rare, and hard-to-obtain documents. Some documents exist for years only in the minds and files of individual archeologists, as was the case for 14 years with respect to Wasley's conference paper. Other, less-celebrated papers remain that way forever. Location and availability are closely related. If a document such as Wasley's 1966 paper has no fixed and permanent location, to what extent can it be considered available? Availability in such cases depends on chance circumstances and the kindness of others. The same is true of the availability of the gray literature.

The Internet has dramatically increased the quantity of documents with questionable long-term availability. The uncertainty in long-term availability is the direct result of uncertain future Internet location. Basic computer users have no control over when a document is posted, taken down, moved to a different location, revised, indexed, and so on. It is entirely possible that the location information you use today to obtain a document will become incorrect within a year or two.

The Internet has not introduced a new factor into the fundamental nature of the archeological literature. Instead, the Internet has quickly increased the proportion of ephemeral documents. There has been a quantitative, rather than a qualitative, change. For some purposes, it is helpful to think of the Internet as a very large, ongoing conference. When a person presents a paper, whether in a traditional live conference or in the electronic conference of the Internet, that paper is immediately available to the attendees. In both presentation formats, the continued availability of each paper becomes highly idiosyncratic, with many factors converging on a simple probability—as time increases, the chance of locating the paper decreases. This is equally true for the Internet as it is for a traditional live conference.

One should apply the same judgment and standards in citing Internet documents as one normally applies to conference papers. The uses and citations of Internet documents do not present any new problems. They are the same old problems that have been around for many, many years. The only difference with the Internet is the quantity of such material. It has always been the case, and will continue to be so, that a scholar must take responsibility for what research materials are used and how they are used. In this respect, the Internet has changed nothing.

Reference and Citation Guidelines

Permanency of location is an issue that has bedeviled Internet users and creators of citation formats for many years. There have been many attempts to confer some sort of permanency on Internet documents

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through the development and application of complex and elaborate referencing formats. With minute variations in formatting, these guidelines attempt to cover every conceivable situation one might encounter with respect to any electronic document. Most of these guidelines require the person applying the format to know a good deal about the Internet. There is perhaps an even bigger problem for the innocent reader. If you haven't already memorized the guidelines for the format you are trying to decipher in someone else's References Cited section, then you will have considerable difficulty interpreting the reference itself and finding the item of interest. There are too many such referencing guidelines to cite and list here; Patrias (2001) is just one example.

We have found it necessary to cite earlier *Hopewell Archeology* newsletter articles in later newsletter articles—using, of course, the same format of academic reference listing that is normally applied to a journal. Although all earlier issues are available electronically, they were always primarily available as hard copy. As such, referenced *Hopewell Archeology* articles were easily cited and formatted for listing in the References Cited section at the end of an article.

With this issue, that situation changes. Unfortunately for the editor, the new online-only format will add a layer of complexity to the reference formatting of future articles that cite something in this issue or later issues of *Hopewell Archeology*. Fortunately for the editor, there are simple guidelines in place at the Midwest Archeological Center to cover such a contingency. One purpose of this essay is to introduce to our readers to what those guidelines consist of and how these might be applied to an online-only format, such as we now have with *Hopewell Archeology*.

The most recent version of the Midwest Archeological Center style guide is divided into several interlinked subsection and distributed as a group of PDF files, which all fit on a single 3.5-inch floppy disk, and could easily be sent as email attachments, and placed on the office intranet for easy access by Center employees. The style guide consists of one central file containing the core of style guidelines with three linked, separate files entitled *Enhancing Readability* (an essay on headings), *References Cited* (a major topic of its own), and *Citing Internet Sources.* For the first time, we are making this collection available to the public.

The last of the files mentioned in the previous paragraph is the subject of the remainder of this column. For those who can't wait, click **here** to open *Citing Internet Sources*. Please note that the linked file is an Adobe Acrobat Portable Document Format (PDF) file, and you might need to upgrade your version of Adobe Reader to Version 6, which is available free at their website, <http://www.adobe.com>.

In general structure, the format for listing an Internet source is very much like that for a traditional hard copy book, journal, or thesis. There is the usual author, date, document title, series or institution name when applicable, location details, and additional information to help the reader locate the item. When outlined like this, it all seems very simple, and often it is that simple.

However, there are many kinds of "Internet documents" with all types of authorship situations, ambiguous or multiple dates, ambiguous or missing document titles, location details prone to instant and unannounced change, and a host of other complexities that most seasoned Internet users are already quite familiar with and are too numerous and varied to list here. How, then, do we squeeze unprecedented variability and complexity into a simple, traditional format? That question is answered in detail in our *Citing Internet Sources* and discussed in general terms in the next few paragraphs.

Guidelines Used at the Midwest Archeological Center

For reasons explained in detail elsewhere, email messages and documents on CD are not part of this discussion. An email message is treated as a traditional personal communication, and a document on CD is treated like a hard-copy book or a traditional publication series. For a fuller discussion of this issue and the underlying rationale, refer to pp. 6–7 in the Midwest Archeological Center's **References Cited** section of the style guide.

Perhaps the most important issue of all is that there is nothing new about Internet citation that hasn't been already treated in traditional style guides and other academic writing manuals. Long before there was an

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Internet, there were documents without titles, documents with uncertain or corporate authorship, documents with missing, unknown, or estimated dates, no established location, no clear revision date, documents existing in draft form only, and no publisher. Usually not all for of these problems would apply to a single document, but every archive has at least one exception.

The Center's guidelines make use of special characters traditionally used to indicate special types of information, and these special characters can be adapted to Internet document citation formats. Quotation marks always indicate a string of text that has been exactly transcribed word for word from something. Square brackets always enclose comments or clarifications inserted by an author, transcriber, or editor. More recently, angled brackets have become the standard way of enclosing Internet location information, which is usually a web site address but might be an ftp location or an email address.

Putting it all together, the Midwest Archeological Center *Internet Citation Guidelines* use long-standing, pre-Internet ways of dealing with uncertain reference information in combination with traditional and universally recognized punctuation. This allows an author to create Internet reference listings that are understandable even to those who are not directly familiar with the Midwest Archeological Center *Internet Citation Guidelines*.

A significant degree of responsibility and creativity falls upon the author or other creator of a references cited entry. There will be many situations when a certain bit of information is not spelled out for you in an obvious place, and you will have to do a little more searching and thinking than is normally required for creating a references cited entry for a traditional book or journal. The job is not as daunting as it might seem at first, and a little bit of practice will go a long way.

It is important to keep in mind is that the placing of an Internet document's reference details into a format—any format—and listing it within a formally prepared References Cited section of a report does not confer any special legitimacy on that document. Similarly, the fact that it was found on the Internet does not detract from its legitimacy or usefulness. The author must make judgments and take responsibility for what references are used and how they are used. This has been true for as long as there have been books with bibliographies and journals with references cited.

For further discussion and details, refer to *Citing Internet Documents* introduced above. The following example reference listing shows how to use the Center's guidelines to reference Ann Bauermeister's article in this issue of the newsletter:

Bauermeister, Ann C.
2004 "Survey and Excavations in 2004 at 33RO1059." [Hopewell Archeology, Vol. 6, No. 1, Article 4] <http://www.cr.nps.gov/mwac/hopewell/v5n1/index.html#four>. Document dated September 2004; accessed October 2004. Comments: if the specific location information fails, go to the Midwest Archeological Center home page at <http://www.cr.nps.gov/mwac/> for directions to the Hopewell newsletter directory.

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Patrias, Karen
2001 *National Library of Medicine Recommended Formats for Bibliographic Citation, Supplement: Internet Formats*. U. S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Library of Medicine, Reference Section, Bethesda, Maryland.

Society for American Archaeology
1992 Editorial Policy, Information for Authors, and Style Guide for *American Antiquity* and *Latin American Antiquity*. *American Antiquity* 57(4):749–770.

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2003 “Editorial Policy, Information for Authors, and Style Guide for *American Antiquity* and *Latin American Antiquity*” [PDF downloaded from SAA web site] <http://www.saa.org/Publications/StyleGuide/saaguide.pdf> Document revised 21 January 2003; accessed 05 February 2003.

Wasley, William W.
1966 Classic Period Hohokam. Paper presented at the 31st Annual Meeting of the Society for American Archaeology, Reno, Nevada.

Wasley, William W., and David E. Doyel
1980 Classic Period Hohokam. *The Kiva* 45(4):337–352.

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