

THESIS

CIRCLES, BIRDS, AND SOIL: EXPERIENCE ACROSS THE ITINERARY OF PINSON'S
EASTERN ENCLOSURE

Submitted by

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ABSTRACT

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The Eastern Precinct of Pinson Mounds State Archaeological Park in Tennessee encompasses Middle Woodland earthworks including the large Eastern Enclosure, Mound 29, and Mound 30. A paucity of investigation in comparison to other parts of the site has left large gaps in our understanding of these features and their relationships to the rest of Pinson and the Middle Woodland Southeast and Midwest. To address these gaps, I apply geophysical and geoarchaeological techniques to reconstruct the itinerary of this landform. Both North American Indigenous and Western perspectives on mnemonic landscapes, places, and experiences in relation to earthworks like the Eastern Enclosure are evaluated to form an interpretive framework for this data. My findings include the assertion that Pinson's Mound 30 is a bird effigy mound, that the Eastern Enclosures itinerary progresses from activities before earthmoving to preparatory removal of A-Horizon soils across its extent, through several phases of construction and continues with meaningful interactions between person and place even after earthworks are completed. This research also enables me to compare this landscape temporally, spatially, and morphologically to other enclosures across the Mississippi, Ohio, and Tennessee River Valleys during the Middle Woodland period.

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CHAPTER 1. INTRODUCTION

Archaeologists refer to the span between 200 BCE and 500 CE in the southeastern region of the United States as the Middle Woodland period (Henry and Miller 2020). This was a time of significant intra-regional exchange, wherein peoples participated in a vast trade network known as the Hopewell Interaction Sphere. This phenomenon is named after the Ohio Hopewell culture in what is considered the network's "center," located in the Ohio River Valley. However, as Wright (2017:38) points out, an overemphasis on the influence of Ohio Hopewell culture can inadvertently reduce other parts of the southeast to "cultural backwaters". Different regions participating in this network during the Middle Woodland period should instead be understood in the context of their own local histories *and* more "global" developments.

One tradition emblematic of this variability across the Ohio, Tennessee, and Mississippi River Valleys and adjacent areas are earthen enclosures, which exhibit distinct regional characteristics while also remaining connected to intra-regional material and ideological exchange. The largest Middle Woodland earthwork center outside of the Ohio Hopewell region is Pinson Mounds in Tennessee, which lies along the South Fork of the Forked Deer River (SFFDR) within 10 km of two other earthwork centers (Mainfort 2013). Exhibiting at least 13 mounds, it also contains the large Eastern Enclosure, a 6.7 ha., loosely geometric enclosure on its eastern edge. Because of lower artifact densities, assumed lack of burials, and earthworks that were smaller and perhaps less eye catching in comparison to other areas of Pinson, only a small amount of work had previously been done to investigate this eastern area of the site, which includes three notable earthworks: the enclosure itself, Mound 29, a platform mound, and Mound 30, a suspected, but unconfirmed effigy mound.

This previous work (Morse 1986; Thunen 1990; Mainfort 2013) revealed a truncated soil profile across the landform as well as limited evidence of any preserved artifacts or features, suggesting either severe erosion or large-scale terraforming that had yet to be confirmed either way. Also unconfirmed, but much debated, was the original shape of Mound 30. LiDAR imagery, historical maps, and pedestrian observation suggest it was constructed as a bird effigy mound, but known historical disturbances, high rates of erosion, and excavations into the potential tail and wing portions (Thunen 1990) threw doubt on the reliability of its current morphology to inform an understanding of its previous appearance. These investigations, then, lay the groundwork for several questions yet to be answered about this area of Pinson:

- Why was this landform chosen to be enclosed and what guided the shape of the Eastern Enclosure?
- Is Mound 30 a bird effigy?
- What is the history of this landform?
- How do the Eastern Enclosure monuments relate to other multi-regional Middle Woodland enclosure and effigy mound sites?

These questions will be explored in this thesis with geophysical survey including magnetic gradiometry and electromagnetic induction (EMI), as well as geoarchaeological techniques including sequential loss-on-ignition, particle size analysis, and measurements of magnetic susceptibility used to reconstruct the history, or what I will refer to as an *itinerary* of the Eastern Enclosure landform. I use the term *itinerary* to refer to the journey of the landform, with the goal of recreating a narrative of its interactions with humans and other-than-humans throughout the past but understanding that this journey very much continues in the present. Other theoretical approaches such as landscape biographies fulfill similar purposes but can also restrain

histories to certain timespans or miss elements of the narrative in their dedication to a singular focus. I also use the term *mnemonic* to refer to techniques, objects, and places up to and including the landscape itself that are used to aid memory processes. Interpretation of geophysical and geoarchaeological data will then be informed by a framework derived from a close consideration of both Indigenous and Western theories that consider Indigenous landscapes, knowledge, and memory practices, as well as the specific mnemonics of earthworks in the ways they are constructed and experienced.

Chapter 2 provides background for this project, reviewing archaeological literature to cover current understandings of the layout and material culture of the three SFFDR sites, environment, geomorphological setting, radiocarbon (^{14}C) dates, and the relationship of the SFFDR landscape to other Middle Woodland sites with attention to similarities in enclosure and effigy earthwork forms, as well as a detailed overview of excavations and interpretations of Pinson's Eastern Precinct. Chapter 3 will introduce and develop the theoretical framework applied in this thesis by comparing Indigenous and Western approaches to knowledge and memory and their connections to place. Chapter 4 covers the geoarchaeological methods used to answer questions about the Eastern Precinct, explaining the utility of geophysical techniques in this setting, the reasoning behind the placement of excavation units, and lab tests used to interrogate stratigraphic relationships. In Chapter 5, data collected during the summer 2023 archaeological investigations and subsequent lab results are reported. Chapter 6 provides a discussion of these data, relaying it in the context of previous investigations and understandings through the theoretical framework introduced in Chapter 3. This enables me to create an itinerary for the Eastern Precinct landform and relate it to the larger Middle Woodland world.

CHAPTER 2. THE EASTERN ENCLOSURE IN CONTEXT: EXPLORING REGIONAL AND LOCAL ARCHAEOLOGICAL LITERATURE

Pinson Mounds State Archaeological Park (PMSAP) is an Indigenous earthworks center in Western Tennessee constructed primarily in the Middle Woodland period, between 200 BCE-500 CE (Mainfort 2013; Wright et al. 2022). It lies in the uplands above the SFFDR in close proximity to two other mound centers, Johnston and Elijah Bray (Fig. 2.1). Pinson contains at least thirteen known mounds, at least three enclosures, and a variety of activity areas spread across about 160 ha., making it not only the largest of the three SFFDR sites, but also one of the largest mound centers of its time outside of present-day Ohio (Henry et al. 2020). Johnston, located about 6 km northwest and downriver from Pinson, includes at least ten platform and conical mounds all within about 48 ha. Elijah Bray is much smaller, containing two known mounds across 4 ha., and situated about 8 km upstream from Pinson. These three sites comprise what is currently known as the Pinson landscape.

2.1 SFFDR Geomorphology and Environment

The SFFDR corridor is situated on the transition between the West Tennessee Uplands and the West Tennessee Plain, two sub regions within the Gulf Coastal Plain (Mainfort 2013), which stretches up from the Gulf of Mexico through Western Tennessee via the Mississippi embayment. The Mississippi Embayment is a topographic and geologic depression underlying the southern part of the Mississippi River drainage basin (Hosman 1991). Along the SFFDR corridor, this inundation resulted in the McNairy Formation, an Upper-Cretaceous deposit consisting of interbedded layers of sand and clay.

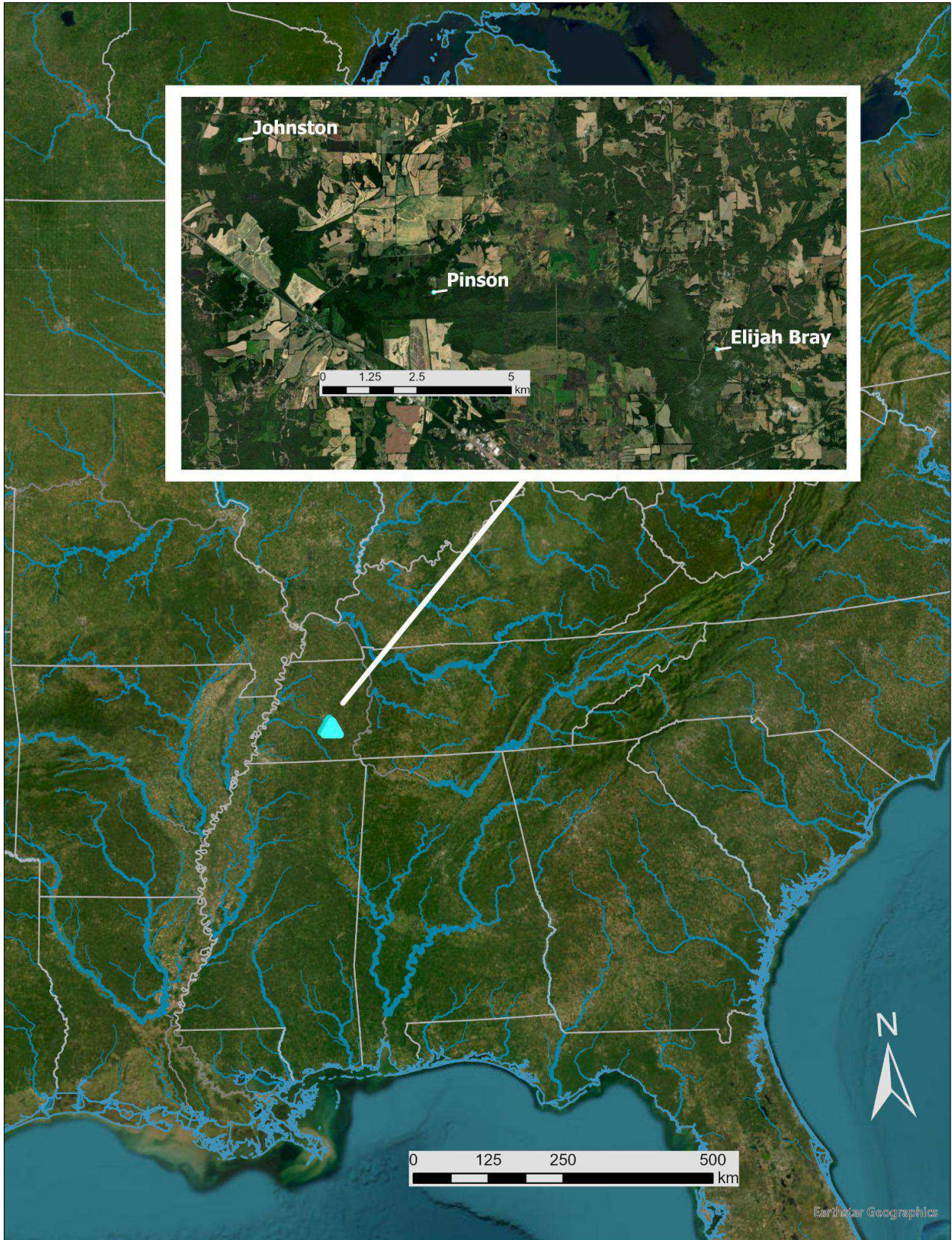


Figure 2.1. Location of project site in southeastern USA, and map of Johnston, Pinson, and Elijah Bray earthwork sites along the SFFDR corridor.

The surface soils overlying the McNairy formation on the SFFDR landscape, a loess deposited and developed after the retreat of the bay, are classified in the Lexington soil series as a Lexington silt loam. These are “very deep, well drained soils on level to moderately steep uplands. The soil formed in a mantle of loess about 2 to 3 feet thick and in the underlying loamy and sandy marine sediments” (NRCS Web Soil Survey accessed March 29, 2024). As Mainfort (2013) points out, these soils are easily eroded and perhaps not the most ideal setting for constructing earthworks. However, they also state that it is evident that the Middle Woodland Indigenous engineers behind the SFFDR mounds understood these issues and were equipped to deal with them. It has only been in more recent times, as industrial agriculture became common, river channelization occurred, and other developments impacted local geomorphology, that the more precariously placed mounds appear to be significantly threatened by erosion.

The SFFDR earthwork corridor is located approximately 160 river miles from the tributary’s confluence with the Mississippi River to the west (Mainfort 2013), and less than 40 miles directly east from the Tennessee River, flowing northward. The earthworks themselves are situated on uncommonly large flat expanses near the bluff edge, surrounded by a hilly upland geomorphology typical of the area. They are constructed of both upland and floodplain materials. Mainfort concludes that, “...those who selected the locations for these sites were concerned with at least three variables—the particular segment of the [SFFDR], a setting immediately above the bottomlands, and level terrain” (2013:11). The reasons behind selecting this specific portion of river corridor appear to be unrelated to, or at least not fully a result of, any preexisting topography, which would have also been present along the numerous other tributaries flowing into the Mississippi out of Western Tennessee. However, the site's accessibility either to, or from, both the Mississippi and the Tennessee Rivers is a factor that has not yet been thoroughly

investigated. The potential of the SFFDR to provide easier transfer between the south and north flowing rivers may also be a consideration in Pinson's placement.

Also not unique to this stretch of river are available resources or environmental conditions. The flora and fauna are diverse and abundant, providing ample subsistence and technological resources from the SFFDR floodplain, the oak-hickory uplands, and the mixed beech-oak slopes between them (Broster and Schneider 1977). Clay also would have been readily available in the floodplain, and springs flow from various points along the bluff slopes (Mainfort 2013). Western Tennessee possesses a moderate climate, with a minimum of 200 frost-free days per year. These factors certainly would have made the SFFDR corridor attractive, but no more than any other adjacent tributary. Though the density of earthworks at Pinson, Johnston, and Elijah Bray and their proximity to one another make the SFFDR corridor unique in Western Tennessee, with current evidence, their chosen locations appear to be contingent on more than topography or ecology.

2.2 Pinson Mounds Layout

Pinson was first mapped in 1917 by local surveyor E.G. Buck, who was hired and supervised by William E. Meyr, an archaeologist associated with the Smithsonian. This map of the then "City of Cisco"(Figure 2.2) missed several smaller earthen constructions, introduced some that did not exist, and included extensive breastworks that encircled the whole site, the majority of which were also fictitious (Mainfort 2013). As a result of these cartographic additions, the belief that platform mounds indicated Mississippian occupation, and the discovery of a Mississippian wall-trench structure in the Mound 14 Sector (2013:154), early interpretations of the site defined it as a palisaded Mississippian (ca. 1000-1500 CE) village. Though much of the original map and resulting interpretations have been challenged and discarded, Meyr's

original mound numbers as well as his division of the site into three areas are vernacular descriptors for the site. These areas include Meyr’s “Inner Citadel,” “Eastern Citadel,” and the Western Mound Group, referred to in this paper as the Central, Eastern, and Western Precincts to avoid implications of defensive use (Mainfort 2013) (Fig. 2.3). These divisions remain in use, as the site is split quite naturally by drainages and other topography, leaving its earthworks, for the most part, in three distinct clusters.

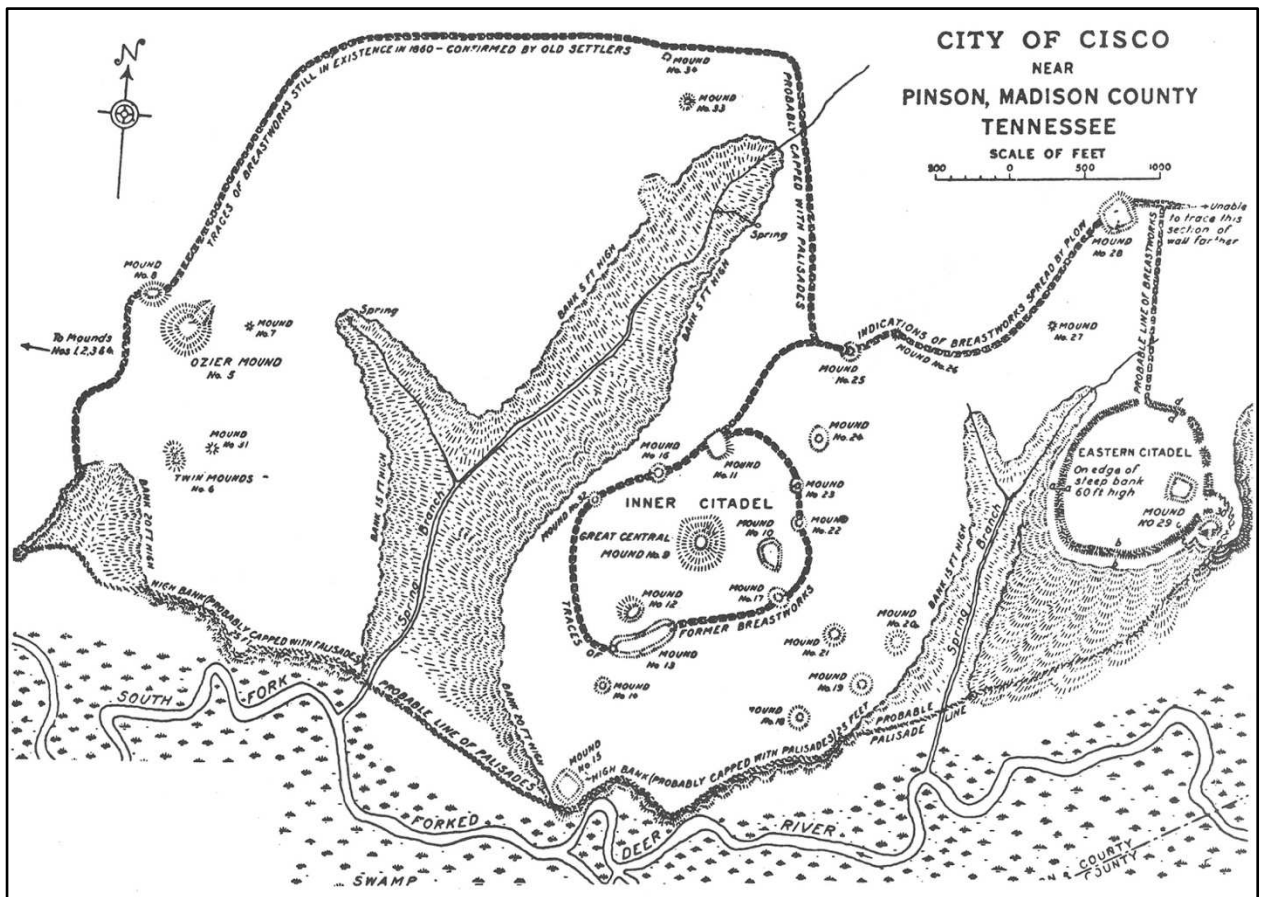


Figure 2.2 Buck and Meyr’s “City of Cisco” map.

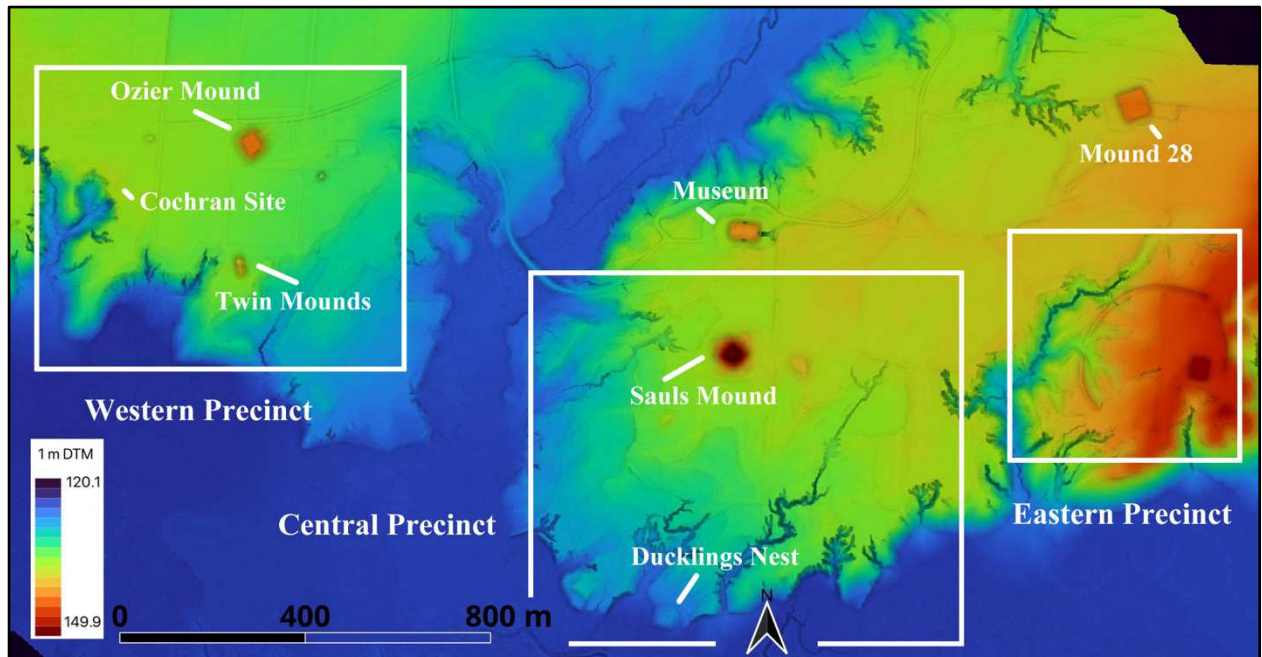


Figure 2.3. LiDAR-derived terrain model of PMSAP.

The Western precinct is a cluster of earthworks separated from Pinson’s Central Precinct by Hudson Branch, a drainage that flows south into the SFFDR between the flat areas favored for mound building on top of the terraces. These earthworks consist of the large platform mound, Ozier Mound, the conjoined conical Twin Mounds, the much smaller and enigmatic Mound 31, the Cochran and Twin Mounds Sector activity areas, as well as several other potential earthworks that have not been confirmed or published on (see Mainfort 2013:18,85). Within the Cochran activity area is also a buried enclosure ditch, thought to have been intentionally refilled (Henry 2023).

To the east of the Hudson Branch is the Central Precinct, often assumed to be the spatial “center” of Pinson around which the other earthworks have been situated. This is in part due to the presence of Sauls Mound, which measures 112 x 91 m at its base and 22 m tall, making it the largest earthen construction by height of its time and one of the tallest earthen monuments ever constructed in North America, second in height only to Cahokia’s Monks Mound (Henry et al. 2020). Other notable features in the Central Precinct include the Ducks Nest, a small

embankment built around a central depression with a large combustion feature at its base, the associated Ducks Nest Sector, as well as Mounds 10, 15, and 12, two platform mounds and an elliptical mound respectively. Both the Ducks Nest and Mound 15 are spatially removed from the rest of the earthworks, situated on the terrace edge approximately 550 m south of Sauls Mound (Mainfort 2013)

Pinson's Eastern Precinct is also separated from its central cluster by an unnamed drainage, smaller than the Hudson branch, that breaks up the terrace formation (Fig. 2.4). The majority of the earthen constructions in this precinct lie isolated on a flat-topped ridge landform bordered by this drainage to the west and a steep ravine to the east. Enclosing this space is the Eastern Enclosure, the only part of Meyr's breastworks to be confirmed as a true earthwork. This roughly circular embankment averages 2 m in height and surrounds an area of approximately 6.7 ha. (Mainfort 2013). Mound 29, a large platform mound, lies off-center inside the embankment, and Mound 30, sometimes described contentiously as a bird effigy, sits outside of one of its entrances to the southeast. Mound 28, another platform mound, is constructed on its own in a field approximately 500 m to the north and will be considered separate from the other Eastern Precinct earthworks. The Eastern Enclosure, Mounds 29 and 30, and the landform they are built on comprise the areas investigated in association with this thesis project.

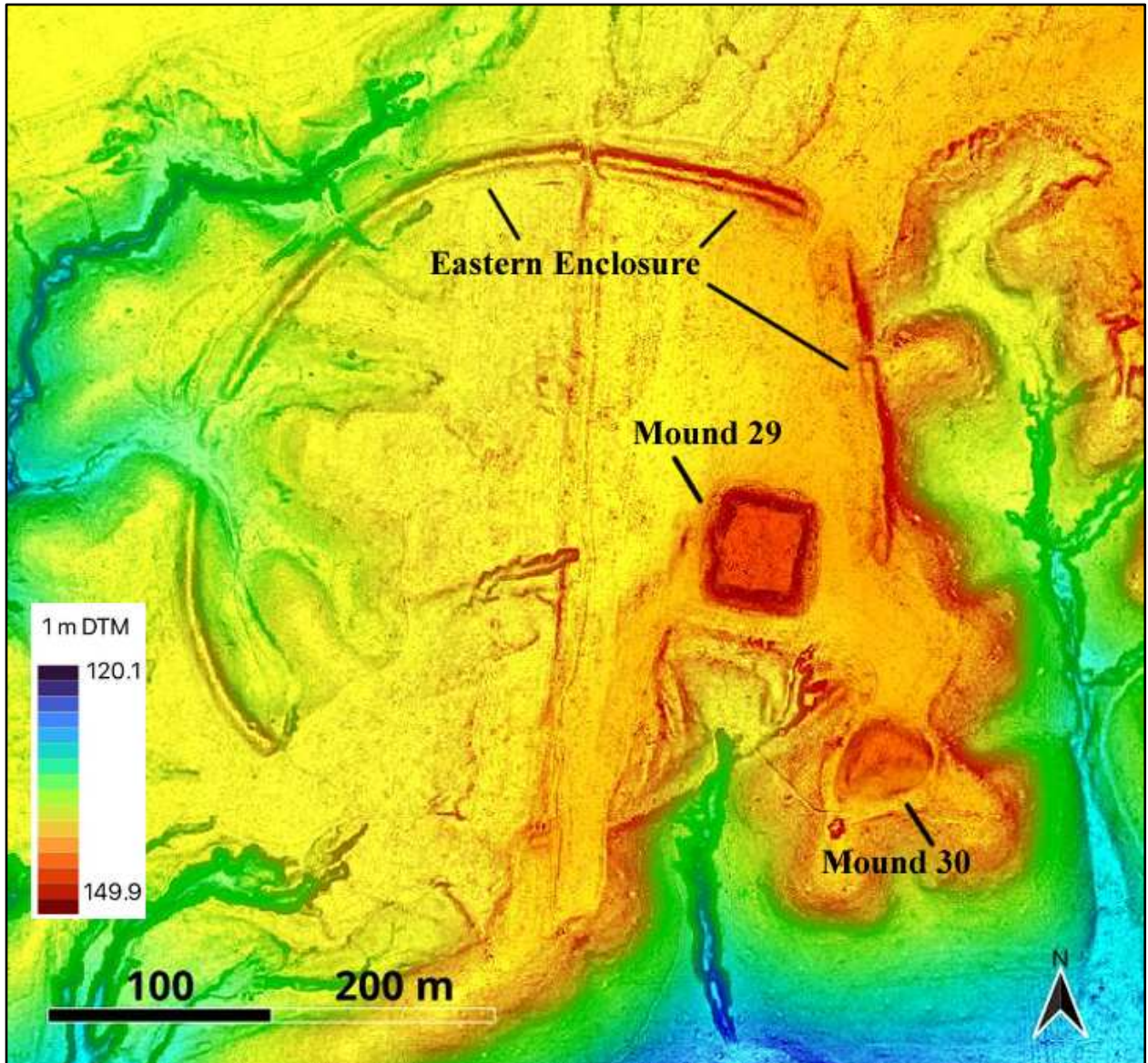


Figure 2.4. Labeled LiDAR imagery of Pinson's Eastern Precinct

2.3 Legacy Radiocarbon Dates from the SFFDR Landscape

Numerous samples of charred wood and plant remains have been collected across Pinson and Johnston since the 1980's for use in ^{14}C radiocarbon dating with varying quality in context, material, and method (Mainfort et al. 1982, Mainfort 1986, Mainfort and Walling 1992, Mainfort et al. 1985, Mainfort and McNutt 2004, Mainfort 2013, Wright et al. 2022, Henry 2023). No ^{14}C dates exist yet for Elijah Bray due to being on privately owned land, which has resulted in

minimal archaeological work. New samples for Pinson's Eastern Precinct, which also lacks radiocarbon dates, will be introduced later in Chapter 5 of this thesis.

The earliest dates within the SFFDR corridor come from open air storage pits at the Johnston site containing charred hickory nut shells dating around the early-to-mid 5000's BCE (Wright et al. 2022). Charred hickory nuts have also been identified in contexts at Pinson, dating to the early 3000's BCE, and continuing intermittently through approximately 500 BCE (Henry 2023). Roasted hickory nuts were a staple of Middle and Late Archaic period (ca. 8000-1000 BC) subsistence, and it is unsurprising that all of the oldest SFFDR dates are remnants of this activity. The earlier Johnston site dates may indicate that Johnston was visited earlier than Pinson. However, there has been an archaeological focus on pre-mound and off-mound activities at the Johnston site in contrast to the focus on monumental earthwork contexts at Pinson. This may introduce some bias into the temporal ranges of samples obtained between the sites.

Wright et al. (2022) also discuss the concept of path dependence on the SFFDR landscape. They argue that after a certain point, consistent visitation to, and activities in, a place creates a "self-reinforcing inertia" (2022:2) that results in the creation of a *persistent* place. Path dependence in this scenario opens up lines of investigation into why earthwork centers became established where they were; what events and features determined their creation in certain places and not others. However, not all events are necessarily part of this contingent sequence. Hickory nut roasting reflects Archaic period patterns of mobility with intermittent, possibly seasonal, site reuse by the same or even different groups of people, and at this point there is nothing to differentiate the early use of Johnston and Pinson for these activities from any of the other countless camp sites spread across the landscape. This means that the earliest date ranges for Johnston do not necessarily indicate that its existence as a *persistent* place predates Pinson. Other

pre-mound activities at Johnston, however, might signal the start of persistent placemaking at the beginning of the Early Woodland period, around 1000 BCE (Wright et al. 2022). Hearth and pit features dated to this time appear to share alignments with mounds, indicating that earthwork building activities may have been planned later in reference to them.

Mounds at Johnston have been assumed to date to the Middle Woodland period, though only one sample has been collected directly relating to mound construction. This was a sample from Mound 5, which was dated to a much earlier age than an underlying ditch, implying that the fill has been redeposited from an older context. Wright et al. provide a *terminus post quem* (TPQ), or a date after which the earthwork would have been built, of *cal 30 BCE-130 CE* from this pre-mound feature, indicating that at least one of Johnston's earthworks was built in the Middle Woodland period or later. The earliest mound context dated at Pinson is a sample taken from a basket load below the summit of Ozier mound, likely dating to between *cal 255 BCE- AD 85* (Mainfort 1986). Because this sample originated from the summit, it is unclear how much earlier the construction of the mound actually began, and because it is from loaded fills rather than a feature, it also provides a TPQ and not a definite range for the summit. Other features on the summit of Ozier, from other mound contexts, and from off-mound contexts at Pinson also date to the Middle Woodland period. Though Mainfort (2013) hypothesizes an earlier temporal range for Johnston based on lithic artifacts, its earthworks themselves are poorly dated. Wright et al.'s (2022) pre-mound TPQ and the site's close proximity to Pinson tentatively indicate similar, if not exactly contemporary, construction periods for both places on the SFFDR landscape. The few artifacts collected from Elijah Bray also appear to be part of a Middle Woodland assemblage (Mainfort 2013).

An activity area in the Western Precinct of Pinson known as the Cochran site has yielded samples from a refuse pit feature dating to the early 1000's CE (Henry 2023). This suggests at least intermittent visits throughout the early Mississippian period, indicating that, while people were perhaps no longer constructing earthworks, they were still invested, or at the very least interested in this landscape. In the south-central portion of the site is a Mississippian wall trench structure dated to a similar range as the Cochran feature. This structure is described as "probably an isolated farmstead or part of a small cluster of dwellings," as "subsequent investigations have produced virtually no additional evidence of Mississippian occupation at Pinson" (Mainfort 2013:199). It is possible that the same people who occupied the building knew of those who used the Cochran site pit or used it themselves, but if so, it is not located anywhere near the house structure. The placement of this pit in the very area used for so long throughout the Woodland period may be coincidence, or it may be something about this specific locality that continuously drew people back to use it, even hundreds of years later. The latest dates from the entire SFFDR are from a large irregular pit at the Johnston site interpreted as potentially a borrow pit or overlapping pits that were intentionally refilled. These date to the early 1400's CE, though little is known about them.

These dates, while useful for situating the SFFDR sites temporally in relation to one another and other sites regionally, also only represent a very partial understanding of the use of this landscape. Bias is easily introduced from the types of archaeological research undertaken, as well as from the nature of activities most likely to preserve dateable samples in the record. Not all visits leave charcoal or even features behind, and just because construction of earthworks has halted or not yet begun does not mean that a site is not significant, or that it is not remembered, visited, or meaningful. Discussion of new dates introduced later in this thesis will similarly be of

great utility but should not be mistaken for data meant to confine landscapes to bracketed temporal ranges.

2.4 SFFDR Material Culture

The material culture on the SFFDR landscape is varied, though relatively low in density. Generally lacking from material assemblages is domestic debris associated with village or camp features that might be expected if people were living around the mound centers as was originally suspected. Instead, its material culture is characterized by a low-density assemblage of ceramics, lithics, and other materials originating from both local and “exotic” contexts, sometimes consisting of local materials upon which patterns, skills, or ideas from other geographic areas are evident. This has led archaeologists to interpret Pinson as a pilgrimage site where people from across the Eastern Woodlands gathered to create earthworks and participate in other ceremonies linked to cosmology shared throughout the Hopewell interaction sphere, discussed below. Burial items also represent a range of materials and ideas from both local and non-local contexts connected to this inter-regional network. However, I refrain from discussing these contexts extensively because they have been covered in detail in previous publications (Mainfort 2013).

Off-mound contexts excavated at Pinson include the Cochran site, the Twin-Mounds Sector, Ducks Nest Sector, and the Mound 12 and 14 Sectors. Though features at the Twin Mounds Sector and Mound 12 Sector were originally thought to be evidence of bent pole structures, this interpretation was later rejected (Mainfort 2013). The only verified enclosed architectural structure at Pinson is a Mississippian wall-trench structure in the Mound 14 Sector (Morse 1986), which would have been constructed long after the mounds were built. The Ducks Nest Sector and Cochran site do contain evidence for middens, but their contents have been interpreted as the residues of feasting and other debris from intensive, short-term gatherings at

the site rather than indicative of extended permanent occupations (Henry 2023). It is possible that temporary camps were set up within the mound centers themselves during ceremonial gatherings but did not leave behind abundant archaeological evidence. Additional occupation evidence could also exist in areas not yet investigated. However, it seems clear that societies who built the mounds maintained no collection of permanent structures around Pinson, and possibly lived off-site when gatherings were not planned. Different areas at Pinson have varied material assemblages characterized by non-local materials that reflect various points of origin, indicating that groups from across the Southeast visited Pinson and used different locales within it at different points in time.

The SFFDR material assemblage paints a picture of sites that appear to not have been permanently occupied before or during mound building, but periodically or seasonally visited by diverse groups of people from across the Southeast and beyond. It is unclear, due to the lack of survey information collected across this landscape, where or if people were living nearby or later in time for longer periods. What follows below are descriptions of some of the materials and artifacts recovered from sites within the SFFDR corridor and their significance.

2.4.1 Ceramics

Middle Woodland ceramic typologies from Western Tennessee are not well understood and are largely based on comparison to adjacent regions and with minimal inter-site stratigraphic sequencing or association with radiocarbon dates from sound contexts. Archaeologists (cf. Ford 1981) have characterized West Tennessee ceramics largely by composition of their fabric, which at times reflect both the very sandy tempers common in ceramics from the Tombigbee River drainage to the southeast and the grog tempered ceramics from the Lower Mississippi River valley to the west and southwest (Mainfort 1986). The most common compositions found at both

Pinson and Johnston are very sandy in their fabric, with low percentages of clay. A smaller number of ceramics have moderate amounts of clay, and still fewer contain predominantly clay (Mainfort 2013). Sand tempered ceramics are generally interpreted as local, while those with more clay content and the rare limestone or bone tempered sherds are thought to represent non-local materials and pottery making traditions. Limestone in particular is not found near Pinson and would either have to be brought in or produced elsewhere and transported to Pinson by humans. Petrography and neutron activation analysis have also been used to better understand the geographical source of materials for a small assemblage of sherds collected from Pinson (Mainfort et al. 1997; Stoltman and Mainfort 2002). Though initial chemical and mineralogical characterization were contradictory, it was ultimately concluded that “a significant minority of the sample vessels were imported into the Pinson Mounds locality” (Stoltman and Mainfort 2002:28) in addition to vessels that were determined to be made with local pastes.

A chart of ceramic types reported from excavations up until 2013 (Mainfort 2013) at Pinson, as well as their temporal and spatial ranges is provided in Table 2.1. The most recent report released on excavations at the Cochran site in 2019, demonstrates a similar assemblage of Middle Woodland sandy tempered sherds as well as some grog-tempered materials that could date to the Early Mississippi Period (Henry 2023). The ceramics at Johnston are considered contemporaneous with those at Pinson (Kwas and Mainfort 1986). What few artifacts that have been studied from Elijah Bray apparently include a large percentage of fabric marked limestone-tempered sherds (Mainfort 1988). However, their context is unclear, and it is doubtful they provide a large enough sample size to be representative of the site, especially given the diversity of assemblages within Pinson itself.

Table 2.1. Pinson Ceramic Spatial and Temporal Distribution

| Typology | Chronology | Geographic Distribution | Source |
|---|-------------------------------------|---|-----------------------------------|
| Furrs Cordmarked | Middle Woodland | Upper Tombigbee, Central Alabama | Jenkins and Krause 1986 |
| Baldwin Plain | Middle-early Late Woodland | Upper Tombigbee, Northern Mississippi, Western and Central Tennessee | Jennings 1941, Hollingsworth 1991 |
| Saltillo Fabric Impressed | Middle-early Late Woodland | Upper Tombigbee | Jennings 1941, Hollingsworth 1991 |
| Mulberry Creek Cordmarked | Middle Woodland-Early Mississippian | Louisiana, Mississippi, North-central to Northwestern Alabama | Heimlich 1952, Hollingsworth 1991 |
| Withers Fabric Marked var. Craigs Landing | Early Woodland | Louisiana, Mississippi, Eastern Arkansas, southern Missouri, Southwestern Alabama | Wimberly 1960, Ford 1951 |
| Baytown Plain var. Tishomingo | Middle-Late Woodland | Central and Northern Mississippi, Western Tennessee, Eastern Arkansas | Ford 1951 |
| Mulberry Creek Plain | Early-Late Woodland | Louisiana, Mississippi, North-central to Northwestern Alabama | Oakley and Driskell 1987 |
| Swift Creek Complicated Stamped | Middle Woodland | South and Eastern Alabama, Georgia, South Carolina, Tennessee, Northern Florida | Wallis et al. 2010 |
| Larto Red | Middle Woodland-Early Mississippian | Upper Tombigbee, lower Mississippi Valley | Hollingsworth 1991 |
| Marksville Incised | Middle Woodland | Louisiana, Mississippi, Southeastern Alabama | Willey 1949, Setzler 1933 |
| Flint River Cordmarked | Middle Woodland | Middle Tennessee River Valley, Eastern Alabama | Hollingsworth 1991 |
| McLeod Simple Stamped | Middle-Late Woodland | Georgia, Alabama | Gresham et al. 1987 |
| Santa Rosa Punctated | Middle Woodland | Northwest Florida Coast, lower Tombigbee, and Alabama River Basins | Willey 1949 |

| | | | |
|------------------------|-----------------|--|-------------------------------|
| Marksville Stamped | Middle Woodland | Alabama, Louisiana, eastern Mississippi, Arkansas | Wimberly 1960 |
| Basin Bayou Incised | Middle Woodland | Northwest and West Florida Coast, Tombigbee River | Willey 1949; Wimberly 1960 |

2.4.2 *Lithics and Other Materials*

Chert artifacts are relatively uncommon on the SFFDR landscape, “in part because the mound complex was not used for long-term habitation, but also perhaps due to the lack of a good local chert source” (Mainfort 2013:160). Types of material recovered include Flint Ridge, Wyandotte, Upper Mercer, and Fort Payne chert. Fort Payne is the closest source of chert and the most abundant at Pinson. Its nearest outcrop is 70 km to the east, located in the valley and ridge region of the lower Tennessee valley and stretching across parts of Tennessee, Alabama, Georgia, and Mississippi (Mainfort 2013; Parish and Durham 2015). Flint Ridge and Upper Mercer Cherts are found primarily in Ohio, with the former also found in Pennsylvania. Wyandotte chert comes from Indiana, Kentucky, and sometimes in Illinois. Also present at the SFFDR corridor sites, though much less common, are “flakes with a range of brownish colors, a few with water-worn cortex” (2013:160), which Mainfort hypothesizes derive from the Pleistocene gravels that occur locally along the bluffs. In the absence of chert, other local materials such as siltstone were used as well.

Mainfort (2013) characterizes the points found at Pinson as typical of the Middle Woodland varieties of the area, like Bakers Creek, Flint Creek, and Gary. Earlier point types like Dalton and Big Sandy that may indicate Late Paleo-Indian/Early Archaic activity have been found in the Ducks Nest Sector, though these are theorized to be points reused by Middle Woodland peoples. Johnston has a notably different assemblage, including Pickwick variants that may corroborate conclusions drawn from radiocarbon dates in suggesting an earlier

construction period than Pinson. A significant tool type found at Pinson are bladelets, made most commonly from Fort Payne chert but also frequently found in Flint Ridge cherts from Ohio.

Bladelets and other non-local materials and artifacts found at the SFFDR sites like copper, mica, galena, quartz, shell beads, greenstone, etc., have been interpreted by archaeologists as part of a widespread trade network operating during the Middle Woodland Period called the Hopewell Interaction Sphere, a conceptual framework that describes the interrelated organization of societies in the Eastern Woodlands of North America during the Middle Woodland era.

2.5 The Hopewell Interaction Sphere and Middle Woodland Culture

Cherts from Ohio, copper from the Great Lakes Region, mica from the Appalachians, galena from the upper Mississippi River Valley, as well as a variety of other non-local ideas and materials represented on the SFFDR landscape are markers used by archaeologists to identify places and peoples participating in the Hopewell Interaction Sphere (see Fig. 2.5 and Table 2.2 for a map and legend of sites in this section). This was a Middle Woodland multi-regional exchange network that stretched across nearly half the continent, usually characterized as emanating from its “center” in Ohio Hopewell Culture (Wright 2017). The model of an Ohio Hopewell core has been criticized, as it can imply that other southeastern Middle Woodland sites, such as those on the SFFDR landscape, are merely peripheral “backwater” areas. Wright (2017) instead suggests that these ideas and materials being propagated across the Eastern Woodlands be considered part of a “global” phenomena influencing and influenced by the various environments and practices of people in different areas. The “culture areas” represented in some of the ceramics at Pinson, for example, are all identified with distinct local traditions and assemblages, but participate in their own way in the wider circulation of Hopewell ideas, manifesting uniquely at Pinson with clear connections to distinct regional practices.

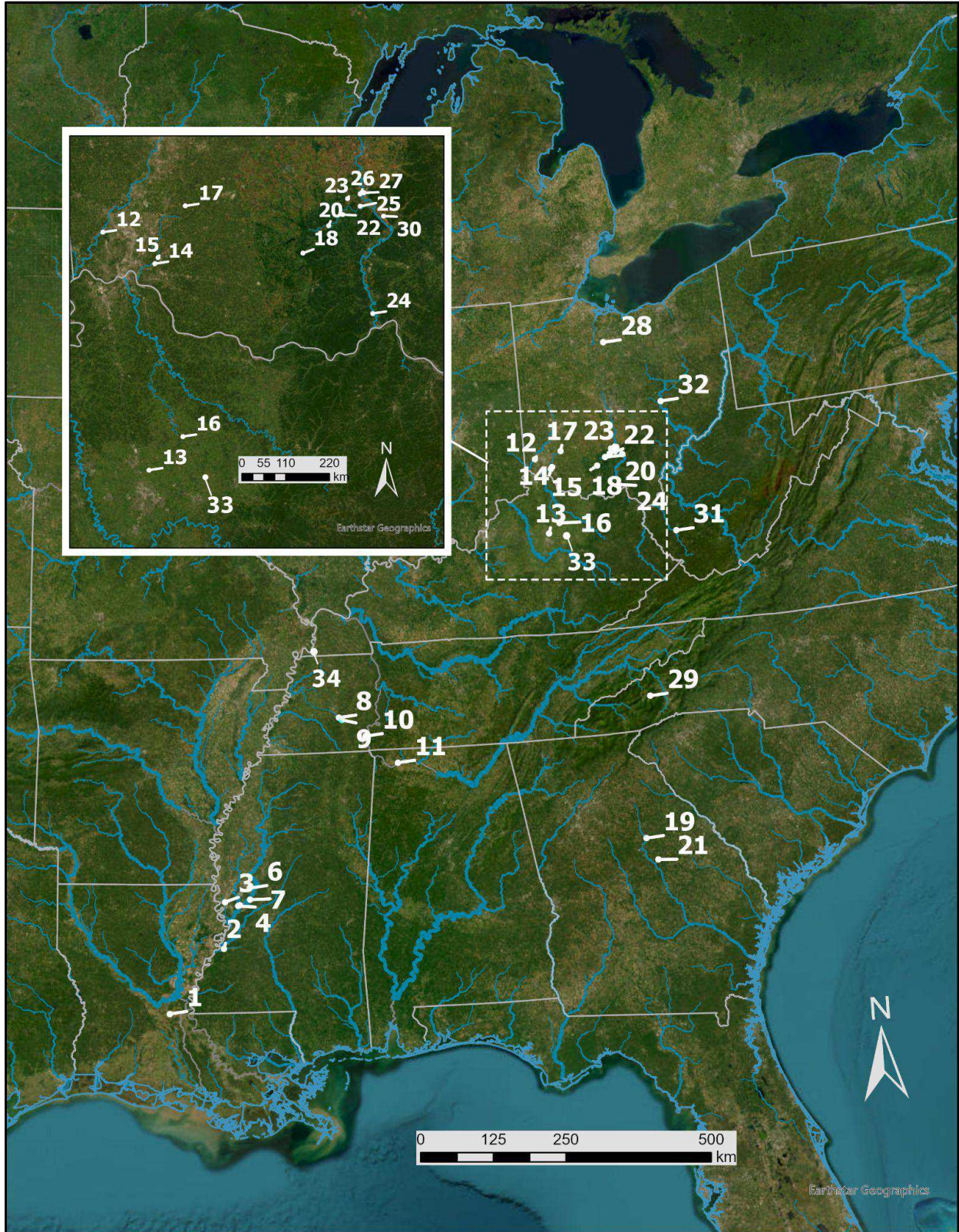


Figure 2.5. Map of Middle Woodland sites referenced in text.

Table 2.2. Legend for Fig. 2.4 with Site Names, Types, and Sources.

| Map ID | Site Name | Small Geometric Circle (<80m diameter) | Semicircular Enclosure | "Squircle" Enclosure | Large Irregular Enclosure | Large Geometric Enclosure | Hilltop Enclosure | Effigy Mound | Source |
|--------|---------------------|--|------------------------|----------------------|---------------------------|---------------------------|-------------------|--------------|---|
| 1 | Marksville | x | x | | | x | | | McGimsey 2003 |
| 2 | Magna Vista | | x | | | | | | Mainfort 2013 |
| 3 | Onward | | x | | | | | | Mainfort 2013 |
| 4 | Leist Landing | | x | | | | | | Mainfort 2013 |
| 5 | Little Spanish Fort | | x | | | | | | Mainfort 2013 |
| 6 | Wilzone | | x | | | | | | Mainfort 2013 |
| 7 | Spanish Fort | | x | | | | | | Mainfort 2013 |
| 8 | Johnston | x | | | | | | | Henry et al. 2020 |
| 9 | Pinson | x | | x | x | | | x | Mainfort 2013; Henry 2023 |
| 10 | Savannah | | x | | | | | | Welch 1998 |
| 11 | Florence | | x | | | | | | Mainfort 2013; Boudreax and Johnson 2000 |
| 12 | Colerain Works | | | | x | | | | Clay 1987 |
| 13 | Mt. Horeb Complex | x | | x | x | | | | Clay 1978; Henry et al. 2021 |
| 14 | Turner | x | | | | x | | | Hooton 1922 |
| 15 | Milford | x | | | x | x | | | Squier and Davis 1848 |
| 16 | LeBus Circle | x | | | | | | | Henry 2011 |
| 17 | Fort Ancient | x | | | | | x | | Burks 2014 |
| 18 | Fort Hill | x | | | | | x | | Squier and Davis 1848 |
| 19 | Rock Hawk | | | | | | | x | Carr 2021 |
| 20 | Seip | x | | x | | x | | | Komp et al. 2020 |
| 21 | Rock Eagle | | | | | | | x | Carr 2021 |
| 22 | Spruce Hill | | | | | | x | | Ruby 2009 |
| 23 | Hopewell | | | | | x | | | Ruby 2019 |
| 24 | Tremper | | | | x | | | | Weets et al. 2005 |
| 25 | Junction | x | | x | | | | | Burks 2010 |

| | | | | | | | | | |
|----|--------------|---|--|---|--|---|---|---|--------------------------|
| 26 | Mound City | | | | | x | | | Mills 1922 |
| 27 | Hopeton | x | | | | x | | | Burks and Walter 2009 |
| 28 | Fort Miami | | | | | | x | | Squier and Davis 1848 |
| 29 | Garden Creek | | | x | | | | | Wright 2014 |
| 30 | Liberty | x | | | | x | | | Squier and Davis 1848 |
| 31 | Biggs | x | | | | | | | Squier and Davis 1848 |
| 32 | Newark | x | | | | x | | x | Lepper 2016 |
| 33 | Nelson-Gay | x | | | | | | | Henry et al. 2014 |
| 34 | 15Fu37 | | | | | x | | | Mainfort 1988 |

Evidence from across the Southeast indicates that Middle Woodland people employed mixtures of subsistence styles, such as foraging, farming, fishing, gardening, and hunting, depending on their location and need (Wright 2017). Even as populations and sedentism increased, the natural resources provided by the southeastern woodlands were likely enough for people to avoid the requirement of more intensive farming. Year round sedentism was occurring at some sites across the southeast, while others were occupied seasonally. Some of the early, more permanent villages do occur alongside earthen features, in contrast to Ohio Hopewell constructions “where mound and earthwork sites are characterized as vacant ceremonial centers” (Wright 2017:47). Pinson and Johnston also follow this model of “vacant ceremonial center,” as un-occupied sites where people presumably gathered primarily for ceremonial reasons. This blanket label can be helpful, but should be used with care, as it can reinforce a false dichotomy between “sacred” and “secular” activities, implying that the two represent distinct and separate spheres of human existence and behavior, and that the *only* experiences people have at these sites are ritual.

Subsistence and lifeways in the vicinity of the SFFDR are still unclear as Middle Woodland occupation has not been thoroughly studied in the area. However, it seems likely that those who were visiting Pinson from afar relied on a mixture of hunting and gathering during their stay. Archaeological surveys for camp or village sites dating to this period across nearby stretches of the river channel and in upland areas would be necessary to explore this issue further.

2.5.1 Enclosures

Monumental Ohio Hopewell sites are often characterized by their geometric earthwork layouts, expressed as large configurations of circular, square, octagonal, triangular, and linear embankments. Some prominent examples include earthworks at the Hopewell mound group, Liberty Earthworks, the Mound City group, Seip Earthworks, Tremper Works, Turner Earthworks, Hopeton, Newark, or the Junction group (Lynott 2014; Seeman and Nolan 2023). In western Kentucky, enclosures are sometimes built in specific “tuning fork” configurations, with rectangular enclosed areas and long linear entrance ways, as at site 15Fu87 (Mainfort 1988). Other smaller geometric enclosures in the Ohio River Valley may relate to Adena culture, distinct from, but overlapping with, traditions identified archaeologically as Ohio Hopewell (Henry et al. 2021). Clay (1987) differentiates between two types of Adena enclosures, one of which are large asymmetrical enclosures, like the “free form” oval at Peter Village (see also DeSanto 2021) or the Colerain Works Enclosure. Hilltop enclosures like Fort Hill, Fort Ancient, Spruce Hill, and Fort Miami (Prufer 1997), which conform to the landscape rather than prioritizing geometry, are also found in the lower Ohio Valley, misinterpreted in the past as defensive features.

While enclosures in general are much more common in the Ohio River Valley (Lynott 2014), several were constructed to the south of Pinson in the Yazoo and Red River drainages (Mainfort 2014). Those in the Yazoo drainage include Spanish Fort, Little Spanish Fort, Wilzone, Leist Landing, Onward, and Magna Vista (Thunen 1990; Mainfort 2014), which resemble asymmetrical hilltop enclosures rather than geometric forms common to the Ohio Valley, and trend towards semi-circular shapes. The Marksville site in Louisiana's Red River drainage has more than one of these. Similar enclosures have also been mapped close to Pinson in the Tennessee River Valley at the Savannah and Florence sites (Welch 1998; Mainfort 2013), though these remain unconfirmed and undated by more recent investigations. Mainfort (2013) draws a comparison between Pinson's Eastern Enclosure and Milford site in Southwestern Ohio, which share the combined characteristics of topological and geometrical planning, discussed in greater detail below, as well as utilizing surface-scraped soils rather than materials from borrow pits or associated ditches.

Clays' (1987) other category of Adena enclosures include small, symmetrical, circular, or other geometric constructions characterized by ditch and embankment forms, and sometimes called "sacred circles." Embankment material for these forms is sourced from a ditch dug around an interior space, with a small causeway left as an entrance/exit which often possesses astronomical alignments. Examples of this tradition are abundant at sites including Mt. Horeb, Winchester Farm, LeBus Circle, Biggs, and many more in Kentucky (Clay 1987; Henry 2011; Henry et al. 2021) but are also present throughout the Ohio river valley in West Virginia, Pennsylvania, and New York (Lynott 2014). Similar morphological expressions to the Adena "sacred circles" are observed at Ohio Hopewell sites and often articulate with the layouts of larger geometric forms. In several cases, larger enclosures also have accompanying ditches, such

as the Great Circle at the Newark earthworks, or at Peter Village where there might be two embankments surrounding the ditch, one to the exterior and one to the interior (Clay 1987; DeSanto 2021). Though they are generally less common in the south, the Marksville site contains at least eight small circles in addition to its several larger embankment forms (McGimsey 2003). It is possible that more exist in the Lower Mississippi valley that have gone undiscovered because of the prevalence of intentionally refilled ditches, demonstrated at both Marksville and by Henry (Henry et al. 2021; Henry et al. 2020) at several enclosures in Central Kentucky. Another example of this process at Pinson is the “squircular” ditch, or a distinctive square or rectangular shaped ditch with rounded corners, of the Cochran site (Henry 2023). This feature was also refilled soon after its construction, though it possesses a different form from the perfect circles of the Ohio Valley or those at Marksville. Constructions more similar to its shape are found at the Garden Creek site in the Appalachians of North Carolina (Wright 2014), as well as some Ohio Hopewell and Adena sites. Henry et al. (2020) located an additional squircle at the Johnston site and determined that its ditch was also refilled at some point before Mound 5 was built over it.

Sometimes small Adena circles, rather than being deconstructed, instead are developed into, or surround accretional burial mounds, like the Adena Mound in Ohio, the Nelson-Gay Mound in Kentucky, or the Grave Creek Mound in West Virginia (Clay 1987; Henry et al. 2014). A similar practice may be represented by Twin Mounds in Pinson’s Western Precinct, where one of the first construction stages for the mound was a circular embankment surrounding pre-mound burial facilities (Mainfort 2013). The Ducks Nest at Pinson and the Ducklings Nest at Johnston bear limited resemblance to the “sacred circle” tradition. They are built around a central depression rather than an enclosing ditch and have no causeway. This may be due to their size,

constrained by location on limbs of the terrace edge, or they may be unique, possessing no relation to other known monument forms.

2.5.2 Effigy Mounds

The potential effigy status of Mound 30 also necessitates consideration of effigy mound traditions in the southeast, particularly of bird forms. Birds are a repeating motif across several media in the precontact Eastern Woodlands (Carr 2021; Power 2004), but bird effigy mounds are less common, especially further to the south. The largest concentration of effigy mounds lies in Wisconsin, where the built landscape emerged between 700 and 1100 CE (Birmingham 2009), several hundred years after the Middle Woodland dates from other earthworks at Pinson. There are also the Rock Eagle and Rock Hawk effigies in Georgia, the latter of which is enclosed in a stone circle, though neither are dated (Carr 2021). Perhaps bearing the most resemblance and demonstrable cultural connections to Mound 30 and the Eastern Enclosure is the Great Circle and Eagle Mound at Newark Earthworks in Ohio (Jones and Shiels 2016). Effigy mounds are often described as part of storied landscapes, wherein the earthworks themselves embody important stories (Lepper et al. 2022; Birmingham 2009). Mound 30, if confirmed as an effigy mound, may provide evidence that similar narrative experiences have been cultivated in the Eastern Precinct.

2.6 Archaeology in Pinson's Eastern Precinct

Buck and Meyr's 1916 map depicts several openings in the Eastern Enclosure, which require further investigation to determine if they are features of its construction or sections that have been destroyed by more recent land use. The largest of these gaps spans nearly the entire southwestern section of the enclosure. Though this portion is often added to maps in the form of a dotted line, or sometimes modeled as was done in Mickleson's (2010) digital terrain model

(DEM) (Fig. 2.6a), investigations have yet to provide evidence that this portion of the wall ever existed. It is not present in a 1941 aerial photograph (Fig. 2.6b), and its modern topography suggests that the most severe erosion is occurring in the more central western portion of the enclosure. The supposedly destroyed wall section rests on a comparatively gradual slope, while several portions of the embankment continuing into or abutting highly eroded areas like the ravine south of Mound 29 have *not* been destroyed. This is not to imply that a southwestern wall did not exist, merely that it merits further investigation before being added to our maps. Mainfort (2013) argues that it was present when E.G Buck mapped the area in 1917 (Fig. 2.6c), though the reliability of the Buck and Meyr map has proven doubtful in other places. It is possible that it was cultivated and plowed historically, as other historical disturbances are known in this area. The eastern interior of the enclosure was used for agriculture until the 1960's, and a field road entered through at least two openings in its wall, crossing it diagonally and running around its perimeter. Additionally, a historic house was built on top of Mound 29 in the early 1800's, and Mound 30 was reportedly used as a garden to grow potatoes (Mainfort 2013). Today, a small gravel footpath runs through the enclosures northeastern "entrance," to Mound 29, and around Mound 30.

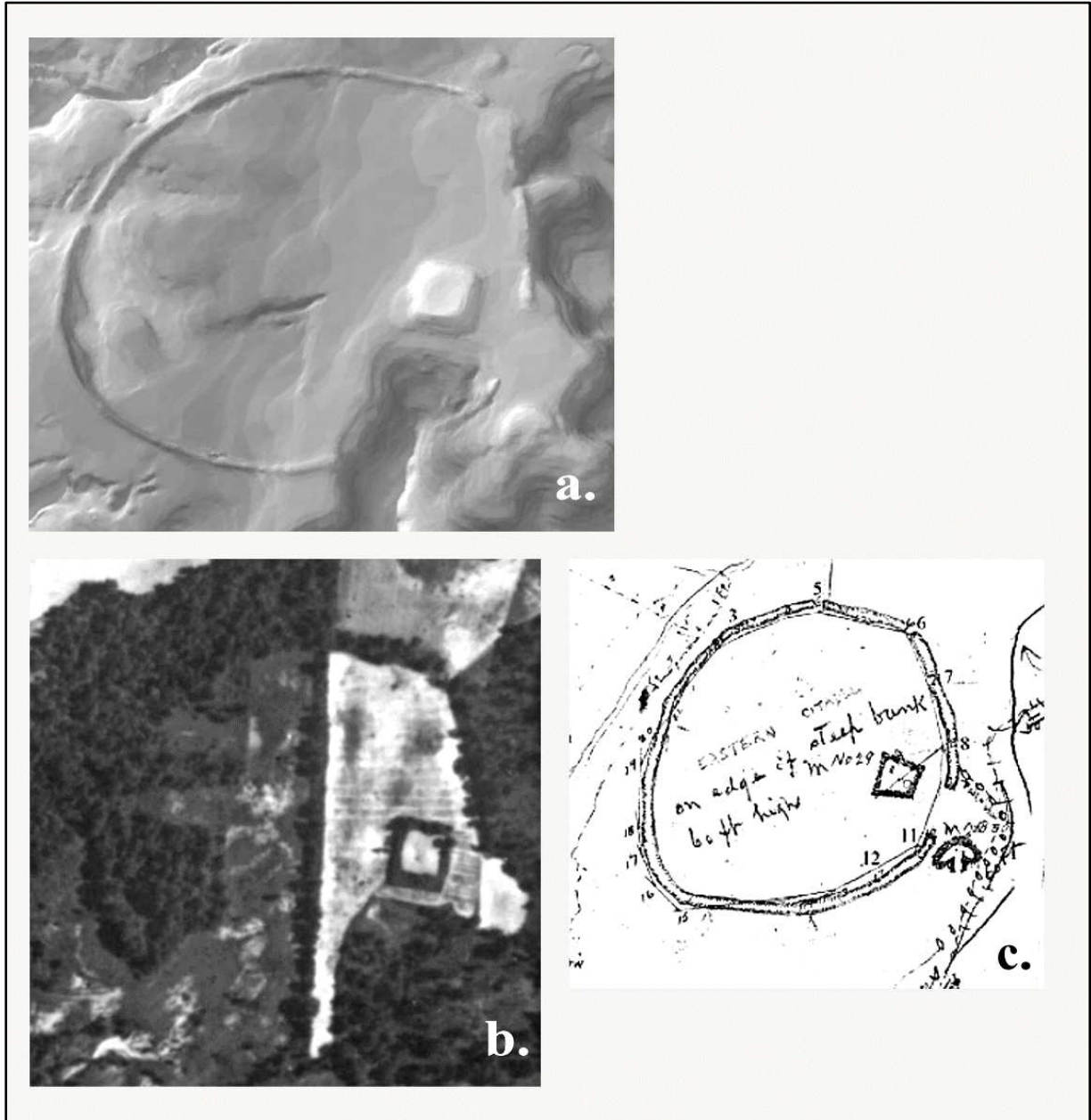


Figure 2.6. (a.) DTM of Eastern Enclosure from Mickleson 2010. (b.) 1941 aerial photograph of Eastern Enclosure. (c.) 1917 E.G. Buck map of Eastern Enclosure.

Early surface collections were conducted in the Eastern Precinct between 1916-1919 by William Myer and in 1961 by Fred Fisher and Charles McNutt (Thunen 1990), revealing low artifact densities on its surface. The first recorded excavations there were undertaken by Dan Morse in 1963. A number of test pits were excavated within the unvegetated eastern part of the enclosure, one 2.7 x 1.3 m unit atop Mound 29, one 1.75 x 1.75 m unit on Mound 30, another

outside of its northeastern “entrance,” one 14 x 1.5 m trench into the embankment itself, and five others scattered both in and outside of its walls (Morse 1986). Additionally, Morse extended the embankment test pit by 1.5 x 3 m, cutting through the embankment fill and intruding a small amount into the interior area to expose more of its stratigraphy (Mainfort 2013).

Across his off-mound test units, Morse consistently found sterile clay underneath the plow zone. Because of the light scattering of surface artifacts and lack of sub-surface archaeology, Morse determined that “possible campsites, probably dating to the Archaic and Early Woodland periods, appear to have existed in these areas,” but “there was no surface indication of a village” (Morse 1986:100). While people were using this landscape during the Archaic period (Wright et al. 2022), Morse’s only evidence of their presence in this area are two Archaic points from surface collections, one of which he believes was likely resharpened in the Woodland period (Morse 1986).

Morse identified three levels in his excavation profile of the enclosure’s embankment (Morse 1986). The first was a plow zone, as the section of wall he selected was in cultivation at the time. The core of the embankment was composed of a level of mottled loam and clay basket filling, overlying a level of “light grey silty clay occupation zone” (1986:114) that extended through the end of his test trench. This rested on sterile subsoil. Based on Woodland ceramics found in the embankment, Morse hypothesized that much of its fill originated from an Early Woodland habitation area that had been stripped to provide materials for earthworks. The fill was added in one building event on top of this “occupied area” represented by the white clay.

Mound 29 was found to have an approximately 1.6 m core of dark brown clayey loam, capped by two 6 cm levels of brown clayey sand and pale-yellow McNairy sand. Its upper mound fill was 1.7-1.9 m thick and consisted of mottled brown clayey loam, possibly built in

two stages. The Mound 30 stratigraphy consisted of an uneven level of mottled sand between 50-120 cm thick, capped with light brown sandy loam 3-15 cm thick, and overlain by mottled brown sand 55 cm under the surface. Mottled light brown sand, disturbed by historic cultivation, makes up the topmost level. Morse could not determine from these limited excavations if Mound 30 was a bird effigy or if its morphology was due to erosion as he suspected.

In 1986, Robert Thunen (1990) also opened a trench into the eastern part of the embankment, Mound 29, and across the bird “body and wing” of Mound 30, returning in 1987 to put in several soil probe transects across the interior and northeastern exterior of the embankment. This resulted in a similar understanding of stratigraphy to Morse, with the enclosed area again consistently exhibiting a shallow plow zone resting directly on top of subsoil. Embankment excavations revealed general embankment fill of mixed soils,” exhibiting basket loading, overlying a “pre-embankment cultural zone” (Thunen 1990:110) on top of reddish-brown clay subsoil. Thunen noted that there was no evidence of habitation in the pre-embankment level as Morse suggested and observed no weathered surfaces within the zone of loaded fills, indicating a single uninterrupted construction period. Artifacts, though not abundant in the fill, included chert flakes and plain, fabric, and cordmarked sand-tempered sherds, causing Thunen to also conclude that the fill must have come from a previously utilized area. To explain the scarcity of associated features and artifacts within and adjacent to the enclosure, he hypothesizes that this fill may have come from the landform itself, completely stripped to build the embankment. Alternatively, natural and historical erosion may have played a large part in creating the truncated soil profile observed by both Morse and him, though he states that there is no evidence in the soil probes from lower areas where colluvium would collect for “an intensive

or widespread redeposition of soils, nor have prehistoric artifacts been found in this area” (Thunen 1990:137).

Limited artifactual evidence from the Eastern Enclosure, which “compared to other Middle Woodland "ceremonial" sites, and other areas of the Pinson site... is devoid of artifacts that are clearly ritual or specialized objects” (Thunen 1990:157), caused Thunen to conclude that this was an “occupation area.” This and Morse's characterization of pre-earthwork surfaces as occupation zones is probably misleading, as very few artifacts are found in these intact levels. What pottery does come out of the anthropogenic levels may indicate landscape use in the source area, though likely not intense occupation. The unusually high frequency of fabric-marked sherds compared to the rest of the site, recovered from multiple contexts in the Eastern Precinct, does indicate that much of this building material did likely come from the same area (Mainfort 2013).

Thunen’s excavations on the eastern side of Mound 29 exhibited too much disturbance to draw new conclusions or corroborate the observations made by Morse. However, among the typical sand tempered pottery, Thunen recovered a single quartz tempered sherd, a non-local material that likely originated from eastern Tennessee. Later investigations suggest a construction sequence consisting of pre-mound stripping and at least two building stages with fill typical of the rest of the Eastern Precinct earthworks, containing a higher percentage of fabric marked sherds. Excavations placed into a landform west of Mound 29, thought to be a natural ridge, revealed it to contain anthropogenic sediments. Thunen concluded that a ramp was built up to Mound 29 during its first major construction phase, located between it and the enclosure's radial center.

Mound 30 was tested by Thunen largely for the purpose of determining if its bird-shape was original to its design. Though he was not able to collect conclusive evidence to answer this

question, his excavations offer a second look at Mound 30's stratigraphy. It was constructed by stripping the topsoil and adding a flat level of gray clay (Fig. 2.7). Mainfort (2013) considers the possibility that this might be a leached E Horizon, but ultimately also decides it is likely a constructed level. On top of this surface, "a clay basin or berm..." of the same material was built, which appeared "...to be a prepared surface defining an unknown architectural feature. It does not seem to be the edge of a burial crypt or the edge of a cremation basin or fire pit" (Thunen 1990:130). Thunen thought it was possible that other activities may have occurred there before basket loads of sand and clay were used to build up areas in the western part of the mound, and "... in the 'body' of the mound, sandy and clayey soils were layered in a linear fashion. Following this construction event, a sandy loam layer was deposited over the entire area" (1990:134). Based on the observed stratigraphy in these units, some of which appeared to be disturbed, Thunen (1990) and Mainfort (2013) conclude, as Morse did, that Mound 30's bird shape was likely due to erosion rather than intentional construction, though further testing would be needed for more certainty.

In 2010, Andrew Mickleson collected magnetic gradiometer data in two blocks, one directly north of Mound 29, and one to the southeast, between Mound 29 and Mound 30 (Mickleson 2010). The data indicated that there were anomalies within the enclosure, though understanding if these are representative of Indigenous use of the site would require further testing. The block adjacent to Mound 30 covers one of the enclosure entrances suspected to be historical in nature. However, the magnetic data indicate that the embankment likely never continued over this area, leaving an opening connecting Mound 30 to the interior of the enclosure.



Figure 2.7. Photo of Mound 30 east profile from Thunen (1990) excavations. No scale provided.

2.6.1 Theorizing the Eastern Precinct

While Morse's primary goal at Pinson was to verify and characterize the archaeological nature of earthworks and activity areas, Thunen targeted the Eastern Enclosure because he was interested in understanding more about the use of space at the site, or in "the social dynamics, the spatial and conceptual frameworks for turning "space" into a "place." (Thunen 1990:138). He first emphasizes the placement of the enclosure on the flat-topped ridge, envisioned as a peninsula-like landform. This landform would have contributed to a sense of isolation, as well as enhancing the scale of the embankment walls by placing them on slopes and along ravine edges. The selection of this landform was a more important aspect of planning even than the geometrical nature of the design.

For approximately 141 degrees of its circumference, the walls were a true circle. On the southern and eastern sides the embankment walls become elliptical. These walls conform to the bluff edge and are inside the projected line of a perfect circle. If the radial center location was the important fact in the enclosure's design, then the designers knew ahead of time that a true circle could not be placed on the peninsula. (Thunen 1990:142)

The embankment wall was placed, then, both according to geometric planning principles and "topological" design following the landform. Thunen also argued that the enclosed area and peninsula morphology created an enhanced sense of directionality, guiding people to enter it from the north where the landform was most easily accessible from the rest of Pinson's flat upland areas. However, the most prominent northern entrance is used as a modern road/trail, so its age is still unclear.

The asymmetrical placement of Mound 29 within the enclosure was of interest to Thunen (1990) as well. There is an apparent alignment between Mound 29, the enclosure's radial center, and Sauls Mound on an east-west line, with the ramp discovered on Mound 29's western side also within this alignment. Mound 29's placement could then be for "1) alignment to the larger

Pinson site through Sauls Mound, 2) so that attention could be focused back to the radial center from the mound” or “3) creat[ing] a larger area for focused activities” (1990:155). Mainfort (2013) also notes the mound’s position directly north of a large ravine through which the embankment wall continues. They believe this indicates that the ravine and its relationship to the Eastern Precinct earthworks was of some cosmological significance to the builders, stating:

The likely referent here is the underworld and its associated forces. At this specific locality, the embankment begins in the blufftop upland (i.e., the upper world), descends into the underworld, and returns to the upper world. Like the upland section of the embankment, this section of the embankment exhibits a K.S-profile (i.e., there is no associated ditch; Byers 1987:55–57, 2004:26) and therefore must be constructed of surface-scraped soil of the upper world... Mound 29 is an upper world feature constructed by people. As such, it [the ravine embankment] effectively, both symbolically and as an erosion control measure, holds back underworld forces. (Mainfort 2013:186)

This interpretation reflects a trend in American archaeology of looking for meaning by studying the “architectural grammar” of monumental sites, with the presupposition that architecture “reflects design decisions that were based on widely shared meanings” (Lewis and Stout 1998:1). The different “worlds” in this case refers to a commonly understood cosmological structure in Indigenous North America, in which the world is divided into the Upper, Lower, and Middle Worlds (Mack 2015:4). An oversimplified description of the associations of each would list the Middle World as the place where humans dwell, with the Upper World associated with the sky, and the Lower World often associated with caves and water, among many other things. Animals and other entities that can travel between these worlds are granted extra significance and often feature in stories.

It should be noted that, though earthworks are often built in reference to the Upper or Lower World through their locations, building materials, and relationships, it is unclear if

Mainfort directly consulted anyone to draw this specific conclusion. The continuity of the embankment wall through the ravine is an intriguing aspect of the eastern enclosure, as it is not present at any other southeastern Middle Woodland sites. The fact that it has not completely eroded is used by Mainfort (2013) to conclude that most of the sloped portions of the Eastern precinct would not have been cleared, leaving vegetation to prevent deterioration. The people engineering and constructing Pinson were aware of the vulnerability of the local soils to erosion and planned its earthworks and their management of the land with this issue in mind.

Evidence from these previous investigations both at Pinson and other Middle Woodland Enclosure sites indicates that Pinson's Eastern Precinct is a local expression of widespread Hopewell ideas within a pilgrimage site where people gathered from across the Eastern Woodlands. Pinson and other sites along SFFDR corridor contain enclosures bearing morphological similarities to other Hopewell-related sites, such as "squircular" ditches, small geometric circles, and the large Eastern enclosure, which has geometric elements but also adapts to the contours of its landscape. Investigations in the Eastern Precinct show a "cleanliness" to the area indicating intense erosion or intentional removal of A-horizon, and the original nature of many of its features, including enclosure openings and Mound 30, remain unclarified. This thesis aims to both build upon and in places challenge this body of work with further archaeological investigations into this area as well as the inclusion of literature concerning Indigenous thought on Pinson and places like it. In the following section, both Indigenous and general Western theory on earthworks, memory, and landscape are explored to develop a framework through which results from the Eastern Precinct can be discussed.

CHAPTER 3. INDIGENOUS AND WESTERN PERSPECTIVES ON MNEMONIC LANDSCAPES: DEVELOPING A THEORETICAL FRAMEWORK FOR THE EASTERN ENCLOSURE

The name “Pinson Mounds State Archaeological Park” may provide a useful starting point for discussing theory at this site. Beyond the obvious use of a Euro-American namesake (Mainfort 2013:24), its specific label as an *archaeological park* plays into the ongoing narrative that Pinson is an example of an impressive but static past, preserved simply to be studied. This is also reflected in the literature surrounding the site, reviewed in the previous section, which includes no writing from Indigenous authors. Certainly, the earthworks at Pinson have a deep history that deserves to be respected, but it is not a history that has ended. Rather, its role as a living site continues as it is attended to by Native peoples in the present with potential that stretches into the future.

Archaeology is a discipline closely tied to the establishment of a colonial government and its disenfranchisement and removal of Indigenous peoples from their lands in what is now the United States of America. This is a history that non-native archaeologists have begun to acknowledge and attempt to reconcile in the last few decades as activism has spurred the passage of legislation like the Native American Graves Protection and Repatriation Act (NAGPRA) and the establishment of Tribal Historic Preservation Offices (THPO’s) (Colwell-Chanthaphonh et al. 2010). This has brought greater attention to the Native voices that have been critiquing the field since its inception. As a result, alternative archaeologies and theoretical approaches such as Indigenous archaeology have emerged within the discipline to challenge dominant Western narratives and gatekeeping of Indigenous histories.

Indigenous archaeologies are diverse, including “an array of archaeological practices undertaken by, for, and with Indigenous communities in ways that challenge the discipline's historical political economy and expand its intellectual breadth” (Colwell-Chanthaphonh et al. 2010). They can encompass multiple ways of knowing and multiple truths but should always *prioritize* Indigenous perspectives. The historical context in which archaeological theory developed has created a field still dominated by Eurocentric assumptions about knowledge and the nature of the world. Where archaeologists do implement ethnographic studies to supplement their research with Indigenous knowledge, there can sometimes be a trend of “translating” those perspectives through Western frameworks. Because Indigenous knowledge is context-specific, the universalization of knowledge that arises from this translation has been critiqued. As Indigenous philosopher Viola Cordova writes, “identifying one's own gods with the gods of other peoples, one convinces oneself that their names have the same meaning” (Cordova 2004:28). There is no need to dichotomize Indigenous and Western knowledge systems as fundamentally opposed but suggesting that they are saying the same things in different ways or implying that Western science can “explain” Indigenous practices is misleading. In acknowledging the multiple divergent and convergent perspectives within both Western and Indigenous epistemologies, we can focus on “fellowship and dialogue between parties and not the competition to define the truth” (Deloria 2004:9).

Archaeologists also should be cognizant of the tendency to homogenize Indigenous knowledge and experiences across both space and time. To avoid the trap of “romantic primitivism” that sometimes results when ethnography is used to directly explain the material past, it should be understood that the experiences of contemporary Indigenous people differ both between different communities today and from the people whose lives created the archeological

record we study (Weismantel 2015). Knowledge of the present is always informed by the experiences of people and places stretching into deep history, but still exists in its own time, created in the circumstances of a constantly changing world.

Though this project may fall short of many of the ideals of Indigenous archaeology, especially its tenets of community engagement, acknowledging its shortcomings and engaging with Indigenous ways of knowing allows us to work towards a future of more collaborative research. Towards this end, theory in this thesis will include Indigenous perspectives related to memory, landscapes, and earthworks, still incorporating, but decentering Western literature on these topics to build a framework through which to discuss Pinson's Eastern Enclosure.

3.1 Mnemonic Places on Indigenous Landscapes

Incorporating Indigenous philosophies has the potential to both guide ethical research practices in the present and tell us about how people may have viewed their world in the past. This is not to imply that Indigenous knowledge and experiences have remained static and unchanging or represent a pan-Indigenous cognitive foundation. Rather, it is to suggest that practices transformational to the landscape itself, with roots in diverse knowledge systems, are recognizable to people today familiar with related contemporary practices and epistemologies. The framing of knowledge and traditions by Indigenous people within these systems implies a longevity that makes connections to deeper time histories possible (see also Echo-Hawk 2000).

Keith Basso, in his book *Wisdom Sits in Places* (1996), recounts the integral connection between western Apache stories and places on the landscape. These stories do not exist only to entertain, but to contain knowledge. For example, stories with lessons about morality and proper social conduct have been described by some Apache as arrows used to hunt people displaying bad behaviors. The tale itself carries a lesson about the consequences of actions, but because of

its place-association, the “hunted” person will find the lesson returning to them each time they encounter that location, either physically or mnemonically. Landmarks serve as reminders of lessons, transforming the landscape itself into a moral framework through which the Apache people shape their community and identities.

Moral frameworks are not the only things “embedded” in places on the landscape either. For example, Judaculla Rock, a Cherokee place in western North Carolina, contains information about plants and animals, formulas for medicine that can only be made at that specific locale, instructions for accompanying ritual and ceremony, a map of the surrounding landscape, and astronomical locations (Kirk 2013). The wider Cherokee landscape is covered with story places that recount history, convey warnings, guide navigation, and contain Cherokee cultural identity. Allen (2022:23) tells us that we should think of earthworks and landscapes across the Southeast “not only as built environments, but also as forms of information storage, transmission, and exchange... a system of signs arranged into systematic patterns, as systematic encodings of knowledge produced through Indigenous technologies and practices”. The ways that memory is structured and cultivated both in everyday experiences and more formal contexts reflects the reciprocity of Indigenous epistemologies; stories recall the places where they occur, and places are used to recall the stories told so that knowledge is constructed reciprocally with the landscape.

Given the context specific nature of Indigenous knowledge (Waters 2004), it would be wrong to directly extrapolate meanings for unrelated places based on these specific cosmologies, which cover the beliefs of very different ethnic and cultural identities from a large portion of North America. My intention is not to suggest that these perspectives should be homogenized. The specific beliefs of the Western Apache or Cherokee likely have little direct bearing on a site

like Pinson, which lies in the ancestral homelands of the Chickasaw, though was likely visited and influenced by a variety of groups. However, I do believe that exploring how a diverse range of Indigenous communities relate so deeply to places speaks to the intimate interconnectivity between place and knowledge of Indigenous landscapes. This includes the conviction that “Indigenous people are people of place” (Cajete 2004:46), a sentiment echoed across many cultures native to the present-day continental U.S.

3.2 Indigenous Knowledge and the Method of Loci

Memory is an area of study where Western scientific approaches parallel Indigenous perspectives quite closely, as archaeologists have long been interested in how placemaking, knowledge production, and memory are connected. Indigenous place-based knowledge has been explained as a characteristic of oral cultures who rely on mnemonic practices rather than writing (Kelly 2015). Parts of this approach to understanding Indigenous societies do tend to homogenize them and position non-Indigenous researchers as authorities on the explanations supposedly underlying Indigenous experiences. In no way do I intend to ‘identify my own gods with the gods of other peoples’ (Cordova 2004) or suggest that Indigenous practices in any way need to be justified by Western science, but to point out that in some cases, our epistemologies may be convergent in specific and powerful ways.

The method of loci is a memory technique derived from Western psychology, the basic premise of which is that through geographical indexing systems, memories can be “stuck” to places and enhanced with visuals, stories, and performances (Kelly 2015). Knowledge of any kind is always created in space and time, and the human mind is very good at remembering places and relating both itself and other places to them spatially. By dint of our existence and everyday lived experiences in the world, we can recall and move around familiar surroundings

easily in our minds. There are several steps through which artificial memory, or memories that need to be reinforced through training and are not retained naturally, can be stored and accessed through this method (Yates 2013). The desired knowledge is embedded in stories, performances, and other practices which have a natural memorability to them. Stories are “a sort of natural container for memory: a way of sequencing a set of images, through logical and semantic connections, into a shape which is, in itself, easy to retain in memory” (Kelly 2015:51). This “natural container” can then be attached to a node within a network of loci, which can range from features on portable objects to places on landscapes, whether they be visibly modified or not. Working backwards through this process, the creator can “unlock” their memory by visiting the loci either physically or cognitively, retelling or performing the original narrative, and ultimately recalling the knowledge within.

While framing landscapes in terms of the method of loci highlights some similarities in which Western and Indigenous thinkers may approach them, there are also critical divergences. The method of loci is rather individualized while Indigenous knowledge is described as much more communal. When passing knowledge on or obtaining new knowledge, commitment to community is always stressed.

“Sanction of knowledge through the appropriate ritual and tribal society acknowledgment, and commitment to gain and share knowledge are important, since knowledge of the natural world and how best to relate to it is not just a matter of individual understanding but is gained and shared for the benefit and perpetuation of the community.” (Cajete 2004:55)

Formal teaching and initiation practices involving high-context models with various levels of knowledge and access exist for passing on information, regulating when and to whom it should

be transferred. Because of this, the creation of places, the knowledge tied to them, and the methods to access memory are all shared rather than individualized.

The method of loci also fails to address the contextuality of knowledge. It is often used by Western practitioners as a memory “trick” to recall trivia; information does not need to share relevant connections with locations it is attached to (cf. McCabe 2015 for example). This psychological explanation can co-exist with Indigenous ones to create a stronger understanding of these sites, but it's framing alone would reduce them to referential index points used like banks to deposit or withdraw knowledge. Because Indigenous knowledge is created in and with the world, and so arises at specific places, the resulting process is very different from banking random trivia facts in a natural or built feature. More likely, knowledge actually relates to family members, events, plants, animals, navigation, or other specific things that a place can represent for a person through both their experience and its own history of relationships and interactions.

Critically, Indigenous knowledge is not only *stored* in place, but *created* in places. Mnemonic practices assist in knowledge retention, but engaging with the world is not only about searching for or finding information that already exists. Even if it was, knowledge systems are social systems, and memory is not inert when held by people or by places. Contemporary political, social, and economic situations will always recontextualize memories of the past which can be actively manipulated in the present (Mixer and Henry 2017; Van Dyke 2019). For example, Henry (2017) explores how “processes of remembering” were intentionally cultivated in the various layers of Robbins Mound, a conical burial mound in Kentucky, as well as what they imply about the social and power dynamics of the communities that gathered to construct them. Citation, or the “construction of knowledgeable references to the past” (Van Dyke 2009:224), is used at places with meaningful histories as people create and experience them

again and again (Van Dyke 2009). Echo-Hawk (2000:272) points out that oral traditions can also change over time to “*enhance* [emphasis added] the entertainment value or memorable quality of historical information”, and that the natural memorability of certain elements and stories will lend them greater longevity than others.

The performances undertaken, narratives told, and features added and revised at mnemonic places are an essential part of collecting and transforming the knowledge that sits in them, but also facilitate interactions that form new understandings about the world (Dufour 2004). “Native science is born of a lived and storied participation with natural landscape and reality” (Cajete 2004:46), and an understanding about the world cannot be reached separately from it.

3.3 Incorporating Indigenous Earthworks into Mnemonic Landscapes

Indigenous earthworks in particular embody the idea of mnemonic places that not only store memories but facilitate the creation of new knowledge. They are places with deep histories of interaction between humans, non-humans, and landscapes, and materialize as knowledge literally layered with earth onto the earth. Though mnemonic places do not have to be modified, earthworks communicate an intentional placemaking designed to be visible and meaningful to not only their engineers, but also future generations through their architectural grammar (Van Dyke 2019; Lewis and Stout 1998). Each addition or visit to a site like Pinson encourages new ways of moving through and with the landscape and new ways of envisioning and remembering place.

Landscapes are not just backdrops to human experience, but actively shape it just as they are shaped by it. Ingold (1993) provides a definition for landscape by describing what it is not. It is not land, nature, or space. It cannot be quantified like parcels of land and is not homogenous in

its qualities. It is not imagined as separate from us as the term “nature” may imply, and it is not space, which more often is a projection of our own measurements removed from any real perspective within the world. “Whereas with space, meanings are attached to the world, with the landscape they are gathered from it.” (Ingold 1993:155). Landscapes could be loosely defined then as the culmination of interactions across time of people, non-human people, place, and the other forces that shape them. Places owe their character to the experiences they afford other entities; we always dwell in and shape landscapes within the context of those who have dwelt there before. Earthworks are no exception and,

“... were purposefully located and specifically designed to cite connections to already ancient ancestors, to past locations of dwelling, ceremony, or events of communal significance, to entities within or emanating from the cosmos above, to established or evolving understandings of the origins of the community, or of the land itself” (Allen 2022:21).

Because landscapes and people come into being with one another, both Ingold (1993) and Allen (2022) also differentiate between the terminology of human practices *inscribed* onto and practices *incorporated* with the landscape. Inscription implies a form of writing that simply imposes knowledge onto an inert backdrop allowing it to be “read” in a straightforward manner. However, framing earthworks as writing does not fully encapsulate what they are, why and how they are created, or the experiences and knowledge they elicit. Through the dwelling of people in landscapes, meanings, knowledge, and experience are all layered cumulatively onto places. Earthworks embody this process through a literal physical layering as “scripts that rise above the earth's surface, scripts that... re-form, alter, and significantly add to the landscape in ways that affect human and other-than-human movements and interactions.” (Allen 2022:24). This can involve the construction of new earthworks, additions to existing ones, and other modifications

to the landscape like the clearing of plaza spaces or the mining of materials. Layers are created, removed, and transformed through natural processes as well, changing the landscape in both subtle and obvious ways as seasons change, erosion occurs, and other animals and forces alter what is neither purely a ‘natural’ or ‘built’ environment. *Incorporation*, then, describes the process by which forms on the landscape materialize as a result of dwelling within it rather than preexisting and realized apart from it. From an Indigenous perspective, it is not just, as the method of loci suggests, that knowledge and form are being superimposed onto places, but that they arise with them.

3.3.1. Movement on Mnemonic Landscapes

Movement with the landscape is essential not only to the construction of earthworks when earth is first layered, but also to experiencing earthworks even when no physical construction is occurring. To “read” them “requires methodologies that are embodied and performative” (Allen 2022:25). This is different from reading a book or watching a screen, which require a perspective unique in its immobility (Weismantel 2015). Rather, experiencing the world necessitates an “oscillation between perspectives” (Weismantel 2015:148). Weismantel suggests that the engineers of monumental sites recognize this and design them to intensify the experience of seeing. In her example, when viewing stone carvings of animals at a site in Peru, the perspective of human and animal, human and stone, stone and animal, or all three can be experienced simultaneously. This is achieved by “slow seeing” enforced by the material methods used to create the art as well as the design of the space the art is in. Animals that might normally be focal points blend with other animals and motifs within the carvings and are not fully visible or recognizable without movement around the site and deeper exploration of the art itself. Earthworks too create a sense of scale and space not encountered in everyday life that may slow

the process of seeing them. Their forms elicit a ‘kinetic demand’ that invites visitors to move through and with the landscape searching for greater understanding through multiple perspectives (Allen 2022). These kinetic demands guide embodiment that facilitates the “reading” of earthwork places in their layered history and memory, but also incite generative experiences that create new knowledge through interaction of person and place.

Because of their experiential nature, Indigenous epistemologies have sometimes been compared to phenomenology. However, Indigenous writers point out significant differences in how this theory frames the world, and how they experience it. Burkhart (2004) differentiates between the natural attitude and the phenomenological attitude. The way we experience the world through phenomenology is by taking a step back from our natural interactions with it to analyze them as if they are a data set. Whereas in Indigenous philosophy, “we must maintain our relations, and never abandon them in search of understanding, but rather find understanding through them” (2004:25). Weismantel’s “slow seeing” and “kinetic demand” are theories inspired by the phenomenological approach. She is cognizant of the dilemmas it may produce, and critiques the theory for sometimes depicting the world as “a pre-cultural domain that preexists the humans who engage with it” (Weismantel: 2015:37). Other critics of phenomenology point out its tendency to explain the world through the experiences of a particular type of person (Johnson 2020:138) typically able-bodied white men. The cultural background of such a person is unlikely to facilitate an experience of an earthworks site like Pinson that would inform us how Indigenous people in the past perceived it. While Weismantel’s insights are not necessarily useful for understanding the specific meanings understood by Indigenous people at Pinson, they do illuminate how “Indigenous spaces are ‘culturally

produced' in specific ways towards specific ends... In contrast to ... orthodox theories that assume Indigenous environments are 'mysteries'" (Allen 2022:30).

3.3.2. Landscape Biographies and Landscape Itineraries

One method sometimes implemented at the landscape scale to track landscape's histories of interaction is a biographical approach, a narrative format dedicated to recounting life-histories with "thick" descriptions of the meanings and relationships formed along the way. This approach is attractive because it can "facilitate the appreciation of objects [and landscapes] as agents and allows for multivocality and the treatment of multiple time layers" (Burström 2014:65). This technique also advances earlier narrative understandings of the "life" of things and places by extending them into the present, acknowledging continued interaction on the social landscape of people, non-human people, and places. This is especially important to note at places like Pinson that have been deemed archaeological and because of this are viewed as landscapes trapped in the past, rather than those that continue to shape and be shaped by their interactions through the present.

The object biography approach is also not free of critique, however. Joyce and Gillespie (2015) point out that ascribing "life" to objects and places, implies definite 'births' and 'deaths' as well, creating discrete boundaries during the history of the entity in question that might not necessarily exist in reality. Though there is no reason that the "lives" of landscapes need to resemble organic life, a better word might be 'itinerary'. Itineraries are defined simply as the route of a journey. That journey may have periods of stasis where not much changes, but it never truly ends; there is no 'death'. Biographical approaches are also critiqued for being insular and linear, following a single predetermined path in great detail while the surrounding context guiding and being affected by that journey blurs into the background (Bailey 2007). An itinerary

is never isolated or segmented and allows us to understand landscapes as invariably connected to the people and non-human entities like earthworks that interact with, in, and through them.

3.4 Animate Landscapes and Earthworks

The influence of the landscape on human activities and behaviors is recognized from both a Western and Indigenous perspective, but as with memory practices, there are significant differences which also beg discussion. Indigenous epistemologies consider landscapes to be and contain animate non-human entities including earthworks which are “embodied material” and not simply inert matter. Allen (2022) describes experiences that he and other Indigenous people have shared regarding their interactions with earthworks. The Great Serpent mound in Ohio, warm and “writhing” beneath them, the breathing of burial mounds and the words of ancestors, or the Alligator mound in Ohio, identified instead as a panther, as an earth body in motion “preparing to spring into action” (2022:144). It is not only the mounds but the other entities around them -insects, birds, grass, the sun- that generate experiences at these places. Though these experiences may not be accessible or appropriate for non-Indigenous researchers to know, Indigenous people have explained how they are different from Western “new materialist” frameworks.

The ontological turn or “new materialisms” within anthropology explores the agency of objects and landscapes traditionally thought of as inanimate, as well as considering the perspective of animate non-humans (Johnson 2020:141). At the most conservative end of the scale, objects are considered to possess a “secondary” agency ultimately only afforded to them by their interactions with humans (see Gell 1998). Some anthropologists go further and challenge the boundaries between ‘object’ and human. They argue that because of their intrinsic material qualities, things can have agency of their own separate from people, and become involved in

‘entanglements’ with humans and other things (see Hodder 2014). Some advocate for a more ‘symmetrical’ archaeology between humans and things where neither is dominant (Witmore 2014).

Though new materialisms may seem on the surface to be a theoretical framework by which to access Indigenous perceptions of animate places and landscapes, it has been critiqued when used for that purpose. New materialisms are not “new” when it is understood that Indigenous people have never had to “rediscover” the animacy of non-human others (Allen 2022; Todd 2016). Additionally, Western epistemologies still do not fully capture the ways that non-human others are “known within our [Indigenous] ontologies to be sentient and knowing persons” (TallBear 2015:234). New materialisms also do not extend beyond theory into the practice of managing and interacting respectfully with non-human others. Examples of harmful interactions might include animal cruelty or mistreatment of the environment, but also apply to the treatment of earthworks. When archaeologists adopt new materialisms and theorize earthworks as possessing their own animacy, they do so as a research framework. Indigenous epistemologies extend beyond academic theory by also guiding ethical practices in how humans should interact with other-than-human persons.

3.5 Pinson’s Eastern Enclosure in a Mnemonic Landscape

The contextuality of knowledge and its deep attachment to places informs us of the significance of sites like Pinson in facilitating experiences that initiate the transfer, creation, and retention of knowledge. The entirety of the various surfaces humans have lived on for thousands of years, whether they have been modified or not, contain their own itinerary of interactions with knowledge and knowledge production. As a pilgrimage site, sought out and transformed by different groups of people across time and space, Pinson is a place where memory has been

physically layered onto the earth while engaging with the memories of humans and other-than humans who dwelt there before. They created a place together with the landscape that was designed intentionally to elicit certain ways of moving and seeing from future generations. Pinson can also be understood not only as an individual site or property bounded by the legal or archaeological borders of the present, but a place connected to the world around it. It is part of not only the landscape along the SFFDR, but also a place among a regional network of places that form the cultural and mnemonic landscape of the Indigenous past and present.

Archaeologists have excavated at this site for the last century in pursuit of various goals, but the questions we ask are inherently limited by our methods (Allen 2022). The “who, what, when, where, why” of a place are useful building blocks, but Allen encourages us to think about the experiences shared by people among and with earthworks, “what it might have meant to live, play, mourn in the presence of— and in relation to” them (2022:22). Some of my data will go towards answering the “when” and “what” questions, contributing to an itinerary shared by landscape, people, and other non-human entities. However, with this dialogue between Indigenous and Western epistemologies, I also hope to enhance the story of Pinson not only in its role as an “archaeological park” but as a dynamic place whose engineers cultivated experiences and memories with the landscape designed to guide knowledge creation into the present and future.

CHAPTER 4. METHODS: USING GEOPHYSICS AND GEOARCHAEOLOGY TO RECONSTRUCT LANDSCAPE ITINERARIES

Geoarchaeology is a useful tool for providing the type of evidence needed to reconstruct landscape histories across large spatial and temporal ranges, as well as at finer scales. To answer questions about the original morphology of Mound 30 and openings in the Eastern Enclosure, the “cleanliness” of the enclosed space, and the overall itinerary of the Eastern Precinct, it was necessary to obtain both a large-scale view of the landform as well as more detailed understandings of its soil profiles in different areas. For the former, geophysical techniques including magnetic gradiometry and soil conductivity were used to survey unvegetated areas both inside and outside of the enclosure, including over Mound 30. Excavation units were opened to investigate the stratigraphy of different parts of the landform and embankment with attention to potential anthropogenic modifications. LiDAR-derived visualizations (DTMs) of the area were used to help interpret how earthworks articulated with the local topography.

4.1 Geophysics

Magnetic gradiometry is a geophysical technique that measures vertical gradients in Earth’s naturally occurring magnetic field. The magnetic gradient detectable at the surface is strongly affected by magnetization of the soil and subsurface materials, induced by the Earth's magnetic field, and varying with their chemistry and composition. Gradiometry is useful to archaeologists, then, in its ability to inform us of the presence of foundations, buried artifacts, compacted sediment, refilled features, and other remnants of the archaeological past. At earthwork sites in particular, archaeologists have used this technique to re-identify leveled mounds (Green et al. 2021), like Mound 10 at the Johnston site, just downriver of Pinson (Henry et al. 2020) and identify the boundaries of eroded enclosure embankments in Ohio (Burks and

Cook 2011). This is often due to the erosion of materials with different physical qualities collecting at the bases of built features, resulting in an “outline” detectable through techniques like magnetic gradiometry.

Magnetic gradiometry data were collected using the SENSYS MXV3 multi-channel cart assembled as an 11-channel push configuration with a .25 m probe separation between fluxgate gradiometer sensors. As the cart was pushed across the survey area, the MXV3 was guided by a real-time kinematic (RTK) global positioning system (GPS) with readings collected at 1 Hz, leading to a maximum of 200 readings m². In the Eastern Precinct, this technique was used to facilitate the detection of anomalies indicating the presence of hearths, pits, and other features, allowing us to test the “cleanliness” of the enclosed space. It also may highlight areas where earth has been moved, providing greater understanding of Eastern Precinct earthwork morphology and extent, with special attention to Mound 30 and Eastern Enclosure openings.

Electromagnetic Induction (EMI) equipment allows archaeologists to non-invasively map subsurface features much like magnetic gradiometry, but instead measures the conductivity of soils or buried objects by introducing them to an electromagnetic field (Clay 2006). An electromagnetic field in a primary electrical coil is used to produce a current in the subsurface. This current in turn produces an electromagnetic field that is detected through the instrument’s secondary electromagnetic coil. Variations in the electromagnetic field measured by the secondary coil are directly proportional to the pattern and intensity of current flow in the subsurface and can be used to infer subsurface electromagnetic properties. This produces two data sets, the Quadrature-phase (QP), which is an estimated measurement of soil conductivity, and the In-phase (IP), which is a secondary measurement of volumetric magnetic susceptibility.

The separation of coils emitting and receiving the EMI's electromagnetic signal determines the depth of the measurement, and multiple coil separations can be used simultaneously. For this research I used the Geonics, Ltd. EM38MK-2 in 40 m grids with a sampling density of 0.5 x 0.5 m, resulting in four data sets; two depths of magnetic susceptibility and conductivity data from a 0.5 and 1 m sensor separation. The response of subsurface materials to the electromagnetic field can be affected by their "size, shape, orientation of a conductive object and porosity/compaction" (Bigman 2012:32). For example, a material like stone will contrast with much less dense soils around it in the case of a buried stone floor, leading to the measuring of lower conductivity in relation to the stone. In the Eastern Enclosure, where we mostly expect to detect changes between soils, magnetic susceptibility contrasts might relate to anthropogenically modified soils, or show higher conductivity when soils retain more water than others, pointing to differentially filled features, earthmoving (i.e., increases in sand or clay), or activity areas (see Henry et al. 2020).

4.2 Excavations and Lab Analyses

Three primary areas were selected for excavation (Fig. 4.1). The results of the geophysical survey were used to target potential features in the interior of the enclosure both to see what activities might have occurred in a space assumed to be "clean," and to observe stratigraphy. Two units, Unit 2 (2 x2 m) and Unit 4 (1 x 2m) were placed in this area. Geophysical results were similarly used in the field north of the enclosure to locate Unit 5 (1 x 1m) in an area devoid of anomalies, with the intention of studying a "control" profile. The theoretically unmodified stratigraphy of the landform could then be compared to other profiles within the enclosure to identify anthropogenic modifications. Lastly, a 1986 excavation trench from Thunen (1990) into the embankment of the Eastern Enclosure was reopened and extended

to better understand its construction history, as well as any modifications that may have been made to the landform prior to its creation. This trench includes Unit 1, a 4 x 1 m trench oriented roughly east west lengthwise into the embankment with an extra 1 x 1 m square protruding north at its end to form an “L” shape. Unit 3 was added as a 2 x 2 m extension extending east into the embankment to reach its apex after it was clear that the full stratigraphy was not yet visible. ArcGIS was used to obtain the coordinates for test units over magnetic anomalies, while the trench was located by georeferencing Thunen's excavation maps (Thunen 1990:108).

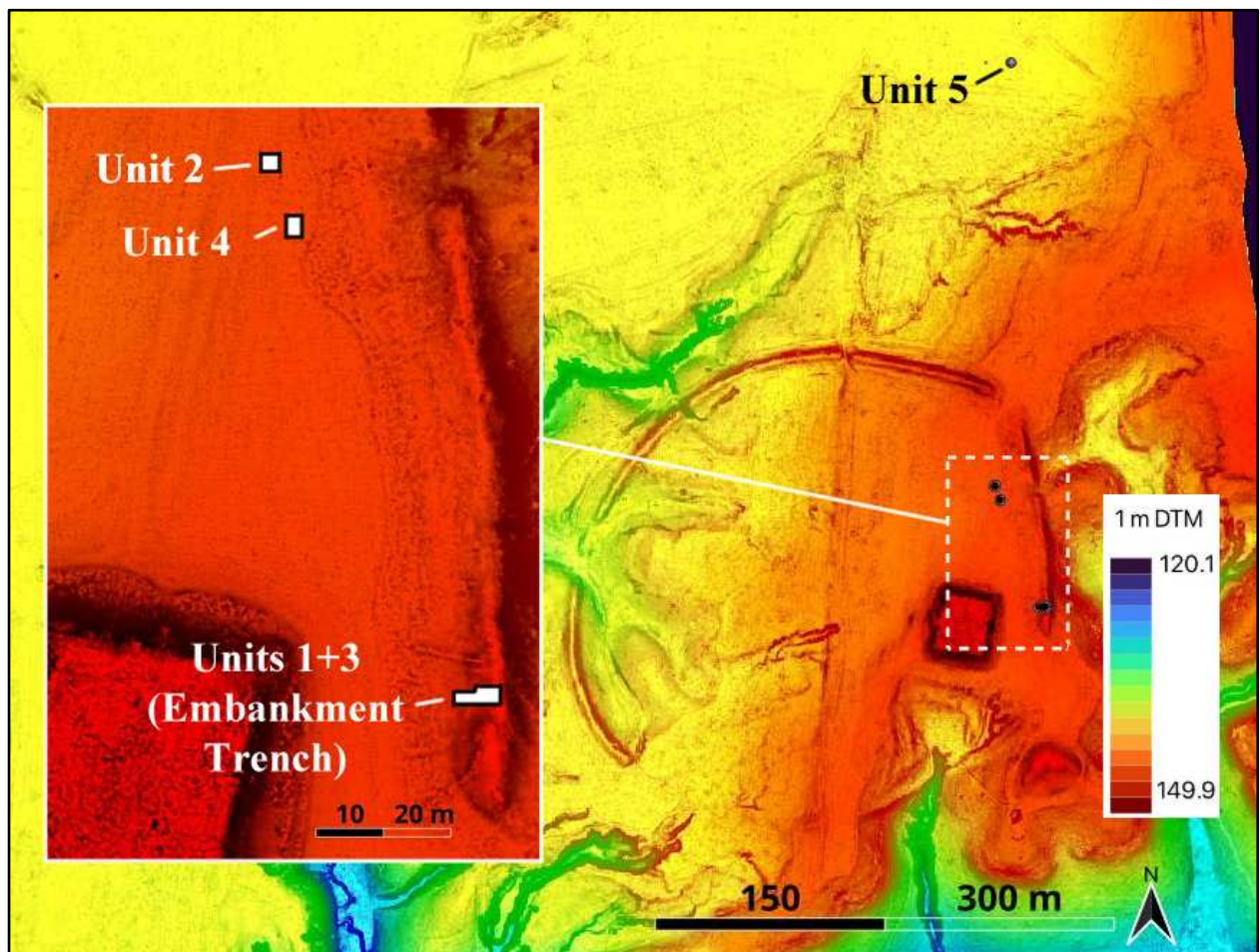


Figure 4.1. Location of Eastern Enclosure excavation units.

Because they were re-excavated from Thunen's (1990) backfill, materials from Unit 1 were screened with 1.27 cm (1/2") screen, while the rest of the units were screened with 0.635 cm (1/4") screen. Bulk soil columns were collected at 5 and 2 cm intervals on selected excavation

profiles in each of the units for laboratory analyses. These lab-based analyses included measurements of magnetic susceptibility (MS), sequential loss-on-ignition (LOI), and particle size analysis (PSA) tests to interrogate stratigraphic relationships.

Seven radiocarbon samples from both anthropogenic and relevant pedological contexts collected through floatation and from in situ contexts in stratigraphy were selected for ^{14}C AMS dating. The samples were sent to the Keck Carbon Cycle Accelerator Mass Spectrometer (KCCAMS) Facility at the University of California, Irvine for dating, and the results were calibrated and modeled in OxCal 4.4 (Bronk Ramsey 2001; Reimer et al. 2020). These dates will allow the Eastern Precinct to be situated temporally compared to the rest of Pinson as well as among other Middle Woodland enclosure sites across the southeast.

CHAPTER 5. RESULTS: SUMMER 2023 ARCHAEOLOGICAL INVESTIGATIONS IN PINSON'S EASTERN PRECINCT

5.1 Geophysical Investigations

The extent of the Eastern Precinct covered with magnetic gradiometer survey is represented in Figure 5.1, hindered by vegetation and slope in the areas that remain unsurveyed. The results shown in this data are most informative in the case of Mound 30 (Fig. 5.2). Dark areas highlighted in Figure 5.2 represent organically enriched A-horizon soils that eroded and collected at the mound base. This weathering process has created a distinct footprint of the mound's original shape because of greater values of magnetic susceptibility of that eroded topsoil in contrast to the surrounding earth. This process has been reported at eroded mounds and embankments elsewhere in Ohio, Kentucky, and at the nearby Johnston site (Green et al. 2021; Henry et al. 2021; Henry et al. 2020) The footprint of Mound 30 revealed by magnetic data verifies it as a bird-shaped effigy mound.

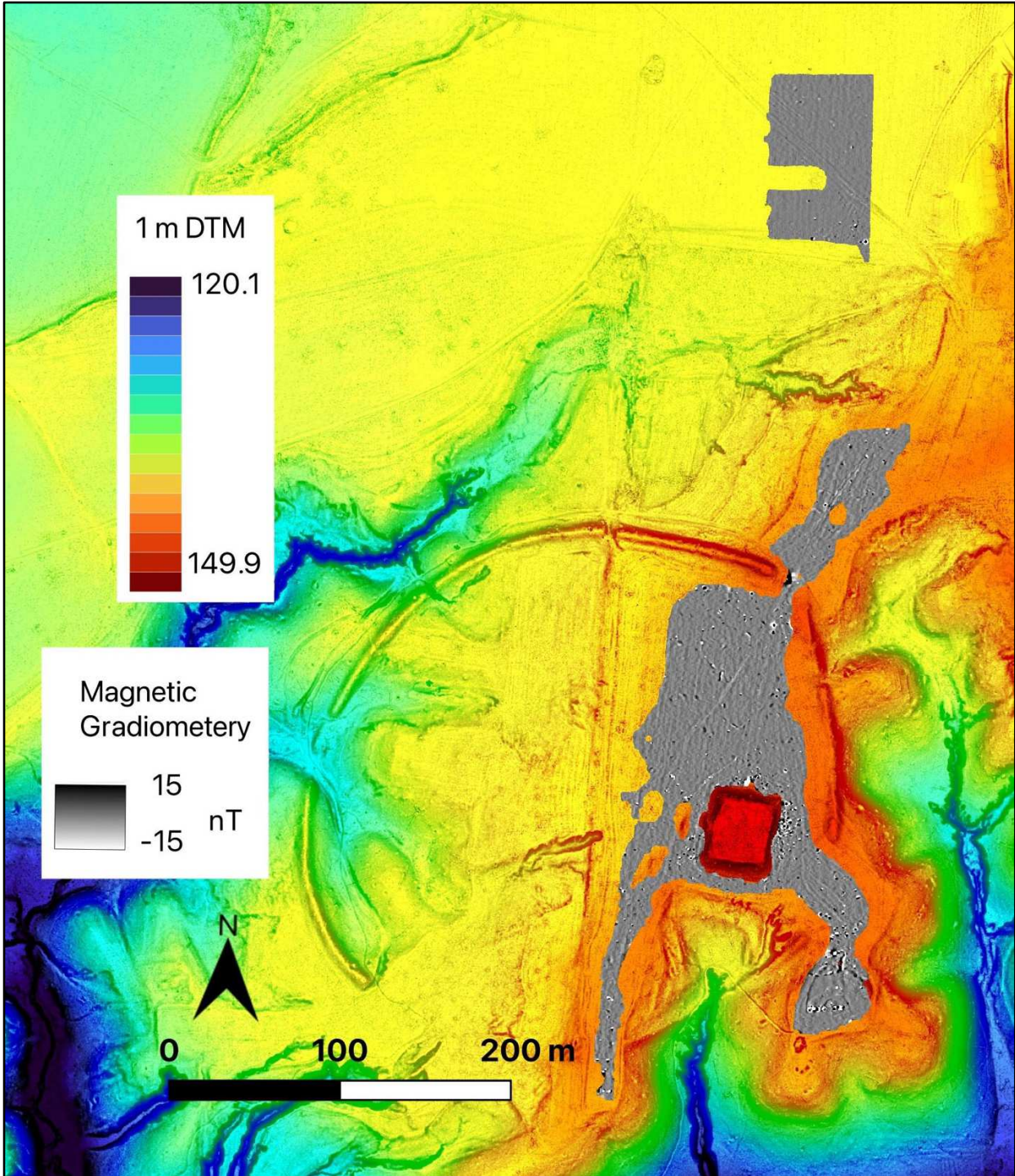


Figure 5.1. Visualization of magnetic gradiometry data across the Eastern Precinct.

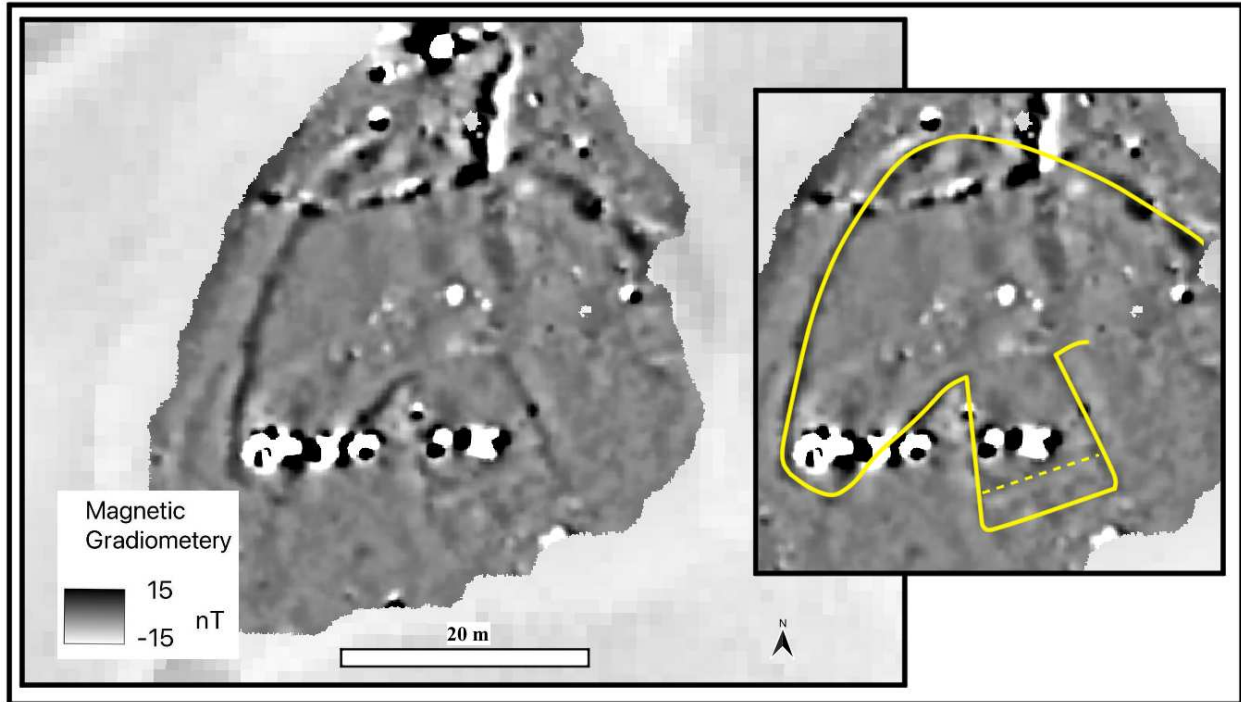


Figure 5.1. Visualization of magnetic gradiometry data over Mound 30. Lines added to highlight mound footprint.

Magnetic susceptibility and conductivity results from the EMI survey replicate the bird shape (Fig. 5.3), as well as provide greater detail in its tail and eastern wing. Similarly to the magnetic gradiometry data set, the outline may be produced by the higher values of magnetic susceptibility in eroded materials, or it may be due to the water retention properties of different soils (Henry et al. 2019). In geophysical surveys of enclosures in Kentucky, Henry has found, for example, that earthen constructions often have “...high earthen conductivity due to the moisture retention of clay-rich sediments that comprise them. Low conductivity is typically recorded over ditches, potentially due to the higher porosity of eroded fills impeding the EMI signal” (Henry 2019:1525).

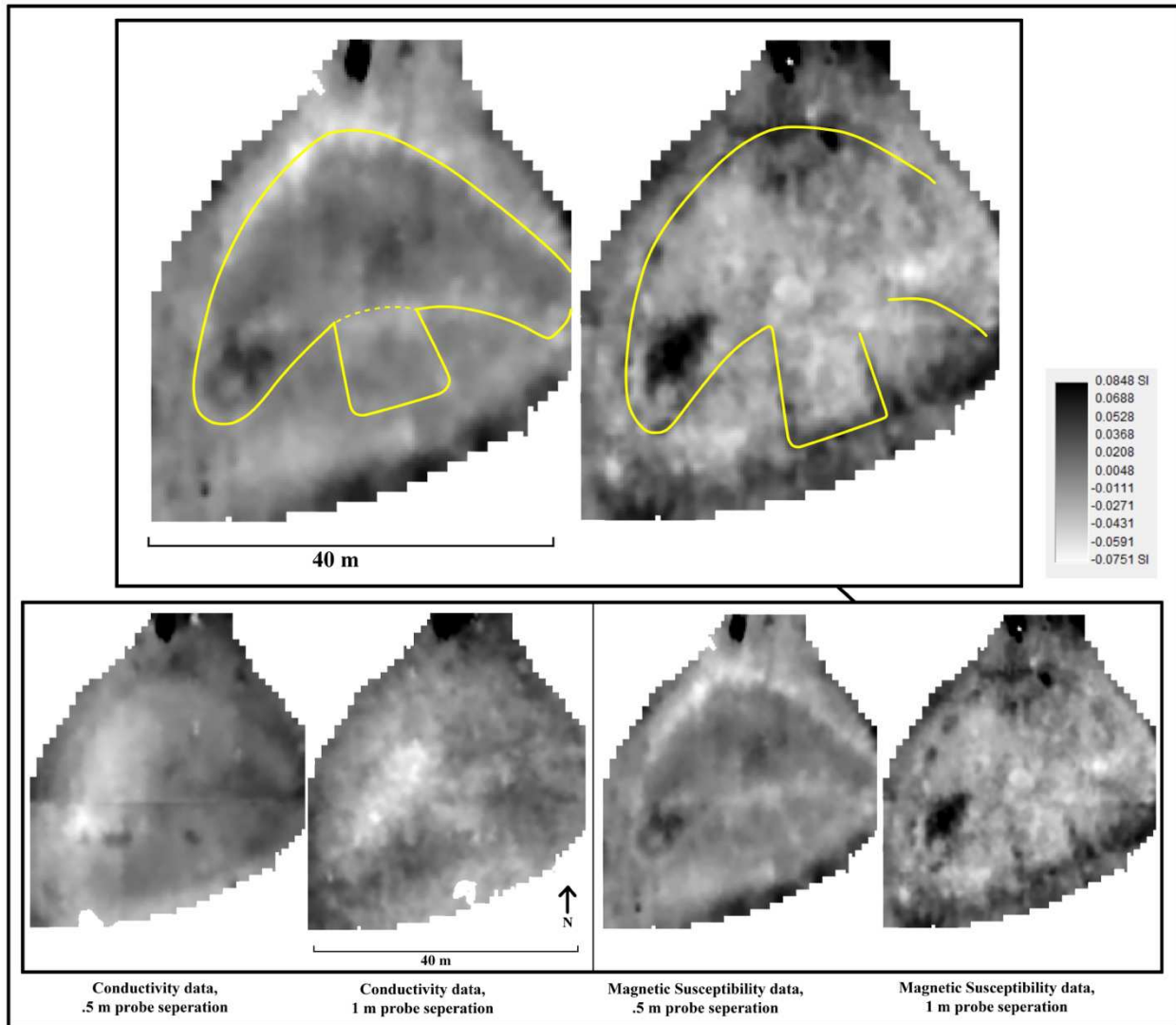


Figure 5.2. Visualization of EMI data over Mound 30. Lines added to highlight mound footprint.

In the magnetic data, there appear to be between two and three different tail lengths for the bird, and the length of its tail also varies between the different EMI data sets. This is most visible in the magnetic susceptibility data, where, at the deeper depth measured by the 1 m probe separation, the tail is at its longest, but is shorter for the .5 m probe depth. At the shallower depth, a line is also evident between the tail and body of the bird. Multiple tail lengths between the different data sets imply that there may have been additional construction or maintenance episodes to extend or reshape this portion of the effigy.

Magnetic survey over the southeastern opening in the embankment near Mound 30 confirms it to be part of the enclosure's original construction, rather than a historical removal of embankment fill (Fig. 5.4) (see also Mickleson 2010). Even when fields have been intensely plowed or sections of earthworks have been removed historically, it is very unlikely that all remnants of earthmoving detectable in the magnetic and electromagnetic data will be removed. There are no traces of a wall visible in the data collected over this southeastern gap, meaning that the embankment builders likely choose to leave this section open, intentionally orienting Mound 30 to point through it and towards the enclosure's interior. Magnetic gradiometer survey inside the enclosure revealed several clusters of potential features (Fig. 5.5), indicating the interior area might not be as "clean" as previously considered.

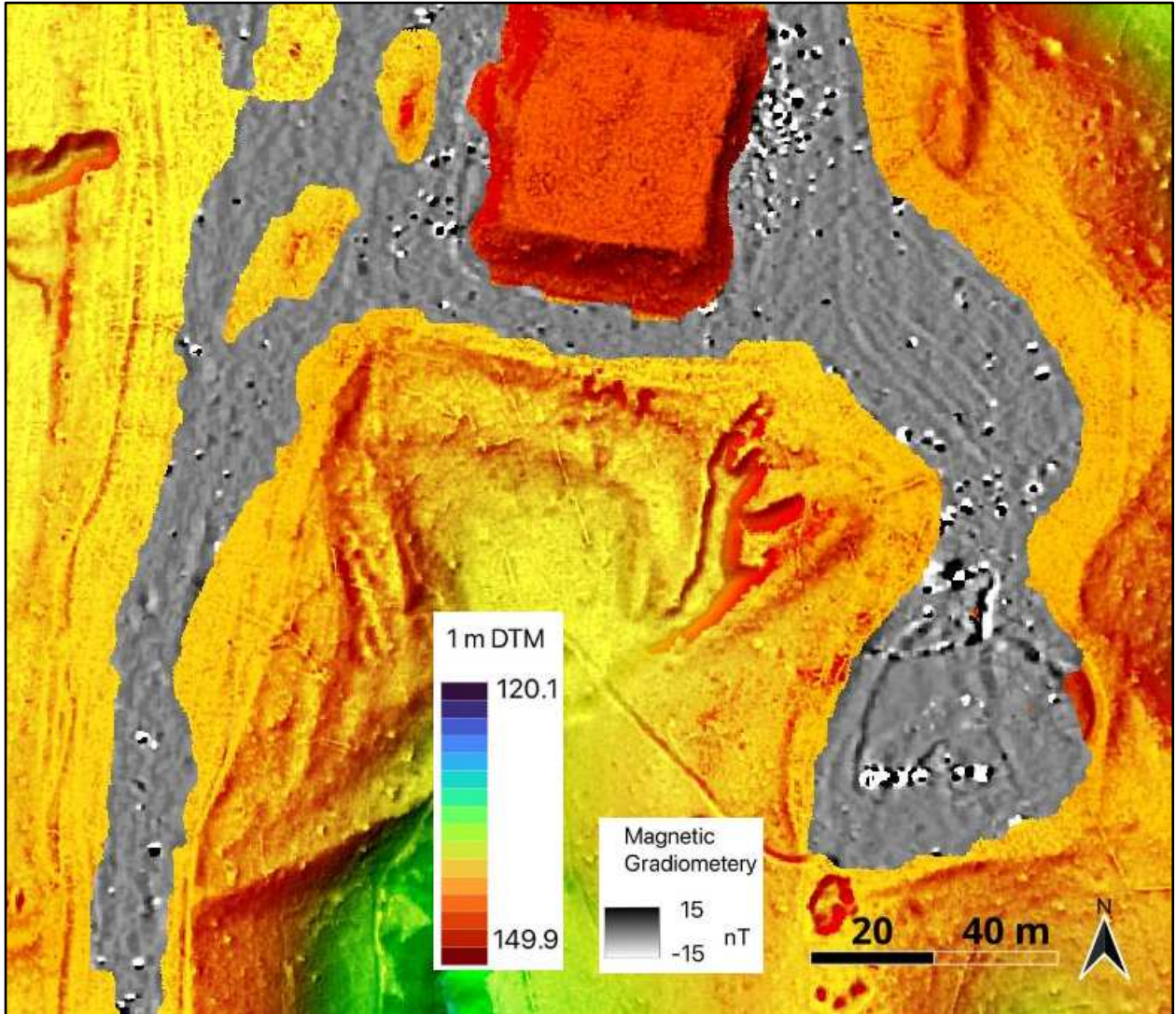


Figure 5.3. Visualization of magnetic gradiometer data over southeastern enclosure entrance and Mound 30.

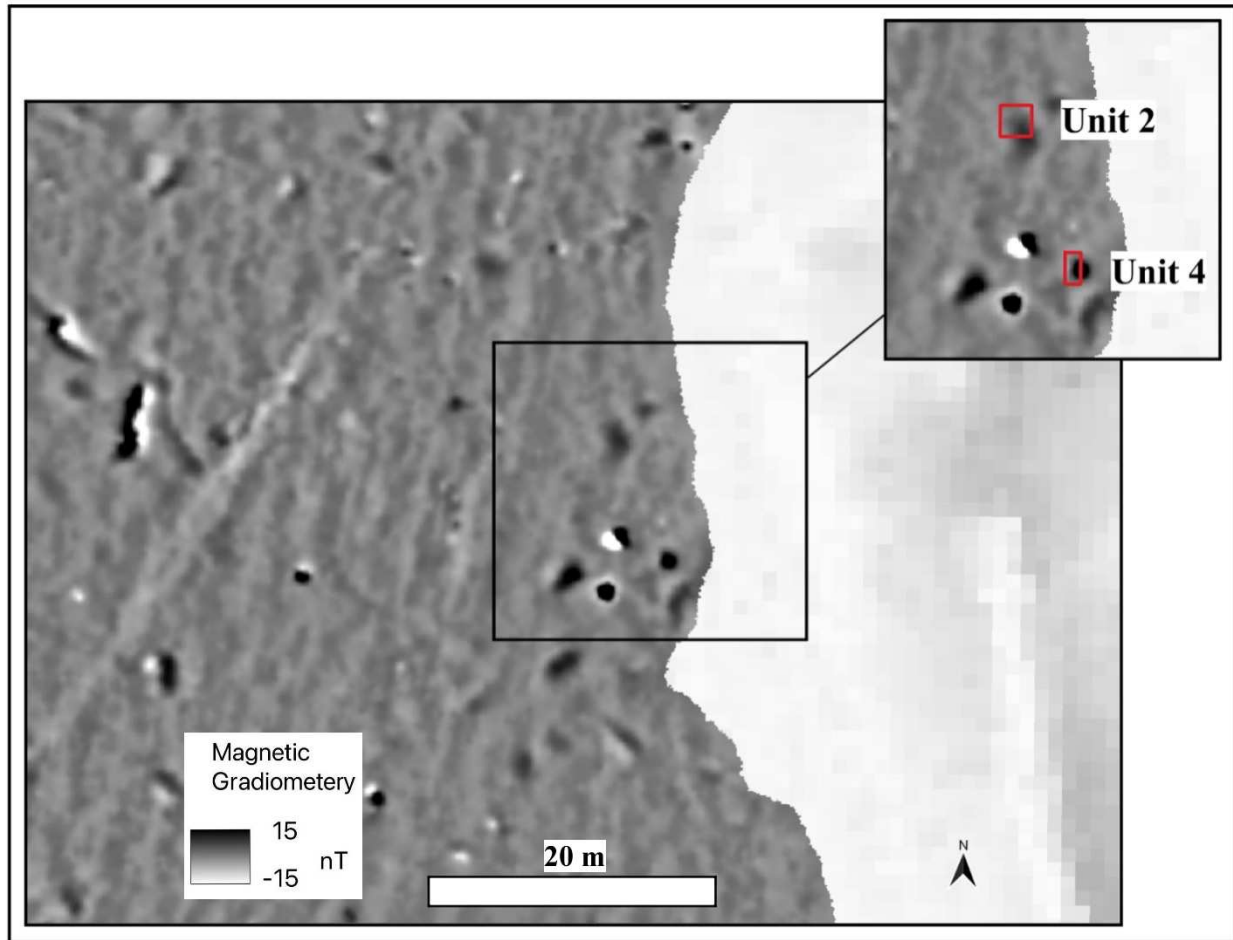


Figure 5.4. Visualization of magnetic gradiometer data inside the enclosure, showing anomalies tested by Units 2 and 4.

5.2 Excavations and Soil Analyses

5.2.1 Unit 2

Unit 2 (Fig. 5.6) was a 2x2 m unit placed over the corner of a magnetic anomaly suspected to be a house pit or other archaeological feature in the interior of the enclosure. It was dug to 50 cm at its deepest point with stratigraphy consisting of a ~15 cm plow zone of dark yellowish brown (10YR 4/4) silt loam overtop of ~45 cm of strong brown (7.5YR 4/6) clay loam subsoil. Between these levels, there are also pockets of lighter yellowish brown (10YR 5/4) silt loam sediments visible. Several disturbances, at first thought to be posts, were discovered to be tap roots in the unit wall and floor.

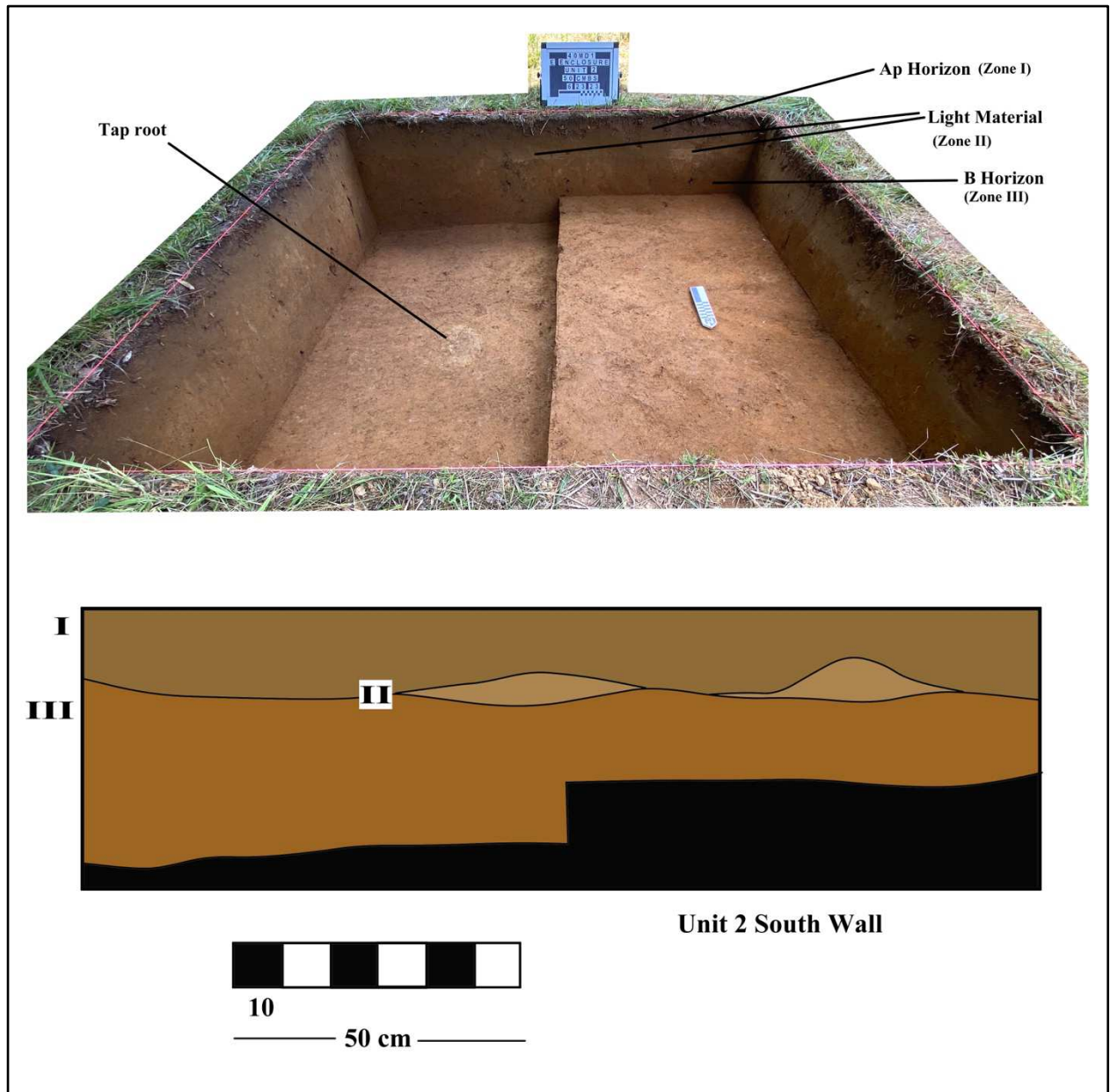


Figure 5.5. Post-excavation photograph of Unit 2, South Profile.

5.2.2 Unit 4

Unit 4 (Fig. 5.7) is a 1x2 m unit placed to bisect a magnetic anomaly resembling a hearth in the interior of the enclosure. It was dug to 30 cm at its deepest point with stratigraphy similar to Unit 2 consisting of a dark yellowish brown (10YR 4/4) silt loam plow zone over a strong brown (7.5YR 4/6) clay loam subsoil, between which is a disjointed lens of yellowish brown

(10YR 5/4) silt loam. The anomaly detected in the magnetic data was discovered to be a 20th century fire pit with modern scraps of trash.

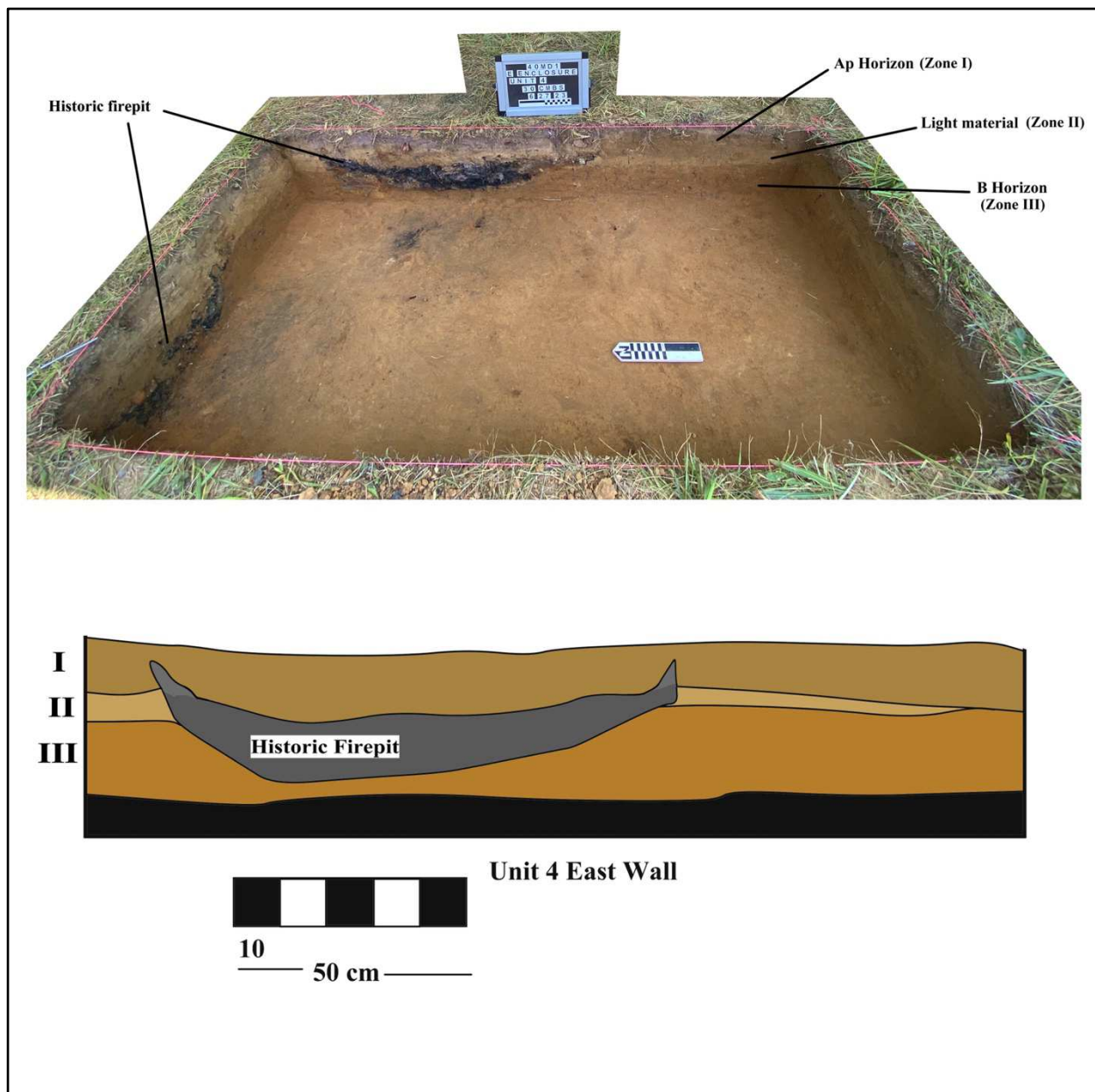


Figure 5.6. Post-excavation photograph of Unit 4, East Profile.

5.2.3 Unit 5

Unit 5 (Fig. 5.8) is a 1x1 m unit placed in an area outside of the enclosure where the magnetic gradiometer survey detected no anomalies. It was dug at its deepest to 140 cm in order

o investigate as close to the “natural” stratigraphy of the landform as possible. This stratigraphy consisted of a 10 cm yellowish brown (10YR 5/4) clay loam plow zone and a modern B horizon over levels of alluvial deposition ~60 cm thick. Within this alluvium were lenses of brown (10YR 5/3) and dark yellowish brown (10YR 4/4) sand and clay loam, with boundaries indicating high energy depositional events. This overlays a well-developed Ab (buried A horizon) consisting of dark brown (10YR 3/3) silt loam from about 65-85 cmbs, below which it gradually transitions to a dark yellowish brown (10YR 4/4) silt loam B-horizon.

Further laboratory testing (Fig. 5.9) revealed magnetic susceptibility consistently low throughout the plow zone, increasing slightly and becoming more variable in the alluvium. It spikes at the transition to the Ab horizon and then gradually decreases down the profile of the paleosol. The percent of organic matter is highest at the surface, remaining consistently low throughout except where it increases at the top of the Ab horizon. CaCO_3 also spikes at the top of the Ab. Sand content generally decreases down the profile, with high ratios in the plow zone, variable and slightly lower ratios in the alluvium, and low ratios of sand in the Ab, which then continue to decrease down into the more clayey B-horizon.



Figure 5.7. Unit 5 stratigraphy from excavation in northern wall.

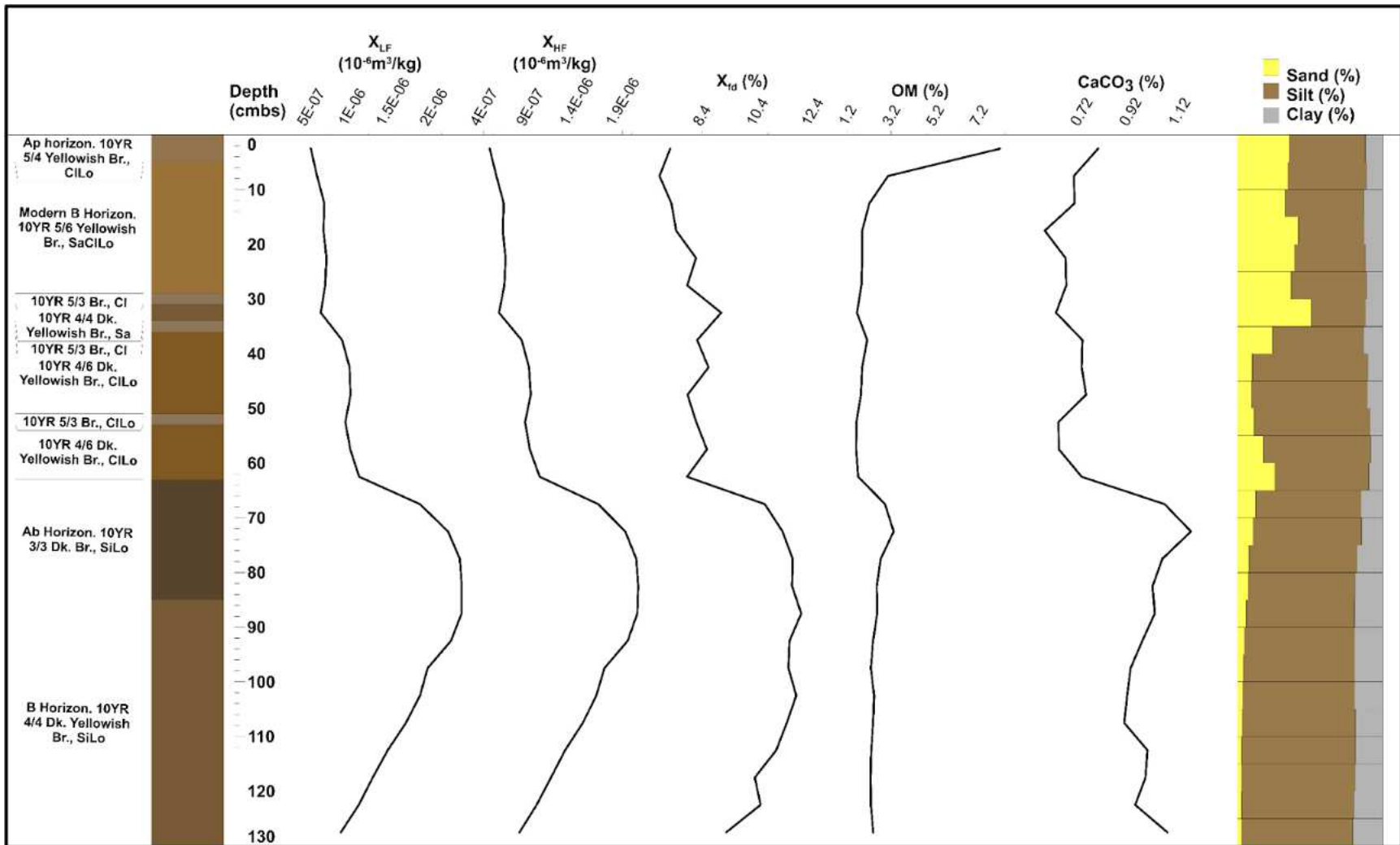


Figure 5.8. Results of bulk soil analysis from Unit 5 profile. Samples taken from 0-130 cmbs at 5 cm intervals. Measurements from left to right: low frequency magnetic susceptibility; high frequency magnetic susceptibility, frequency dependence; percent organic matter; percent CaCO₃; particle size.

5.2.4 Unit 1 and 3 Embankment Trench

Unit 1 was a 5x1 m trench with a 1x1 m extension to the north where it cut into the embankment proper, creating an “L” shape. It served to expose the original stratigraphy revealed by Robert Thunen’s excavations in the 1980’s (Thunen 1990). Unit 3 was added as a 2x2 m extension towards the apex of the embankment. This trench (Fig. 5.10) was excavated down to 135 cm at its deepest to reexamine and gain a better understanding of the embankment’s stratigraphy, as well as any modifications made to the landform prior to its construction.

Excavation of the embankment revealed six stratigraphic zones. Zone I represents the modern A horizon, consisting of a pale brown (10YR 6/3) silt loam, overtop two zones of heterogenous loaded fills. Zone II contains loads ranging between light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6) silt loams, while Zone III is generally darker with a range of colors and textures closer to yellowish brown (10YR 5/4) sandy loam. These overlie Zone IV, a thin ~10 cm level of dark yellowish brown (10YR 4/4) silt loam that does not extend more than 180 cm beyond the apex of the embankment. Zone V, consisting of pale brown (10YR 6/3) silt loam with pockets of light grey (10YR 7/2) silt loam throughout, is also thickest under the embankment, but continues to extend towards the interior of the enclosure in the stratigraphy exposed by the trench, tapering as it goes. The boundaries between Zone IV and the loaded fills above and Zone V below are relatively clean without much gradation or disturbance. Zone V overlies the same strong brown (7.5YR 4/6) clay loam subsoil observed throughout Units 2 and 4. The boundary between these levels is more disturbed than the others, with intense bioturbation intruding into the subsoil, carrying the lighter Zone V sediments downward.

Results of laboratory testing (Fig. 5.11) show low magnetic susceptibility throughout Zones I and II, increasing in the center of Zone III, and gradually decreasing to low values again

into Zones IV and V, with only a very small increase in the Zone IV level. The magnetic susceptibility is highest in the subsoil. Ratios of organic matter are highest in the modern A horizon and consistently low throughout the rest of the profile until a small increase occurs at the top of the subsoil. Levels of CaCO_3 are also highest in the subsoil. Sand, silt, and clay ratios are relatively consistent throughout the silt loam of Zones I and III, with sand content increasing slightly in the loaded fills of Zone III, then decreasing throughout Zones IV and V, becoming more clayey in the subsoil.

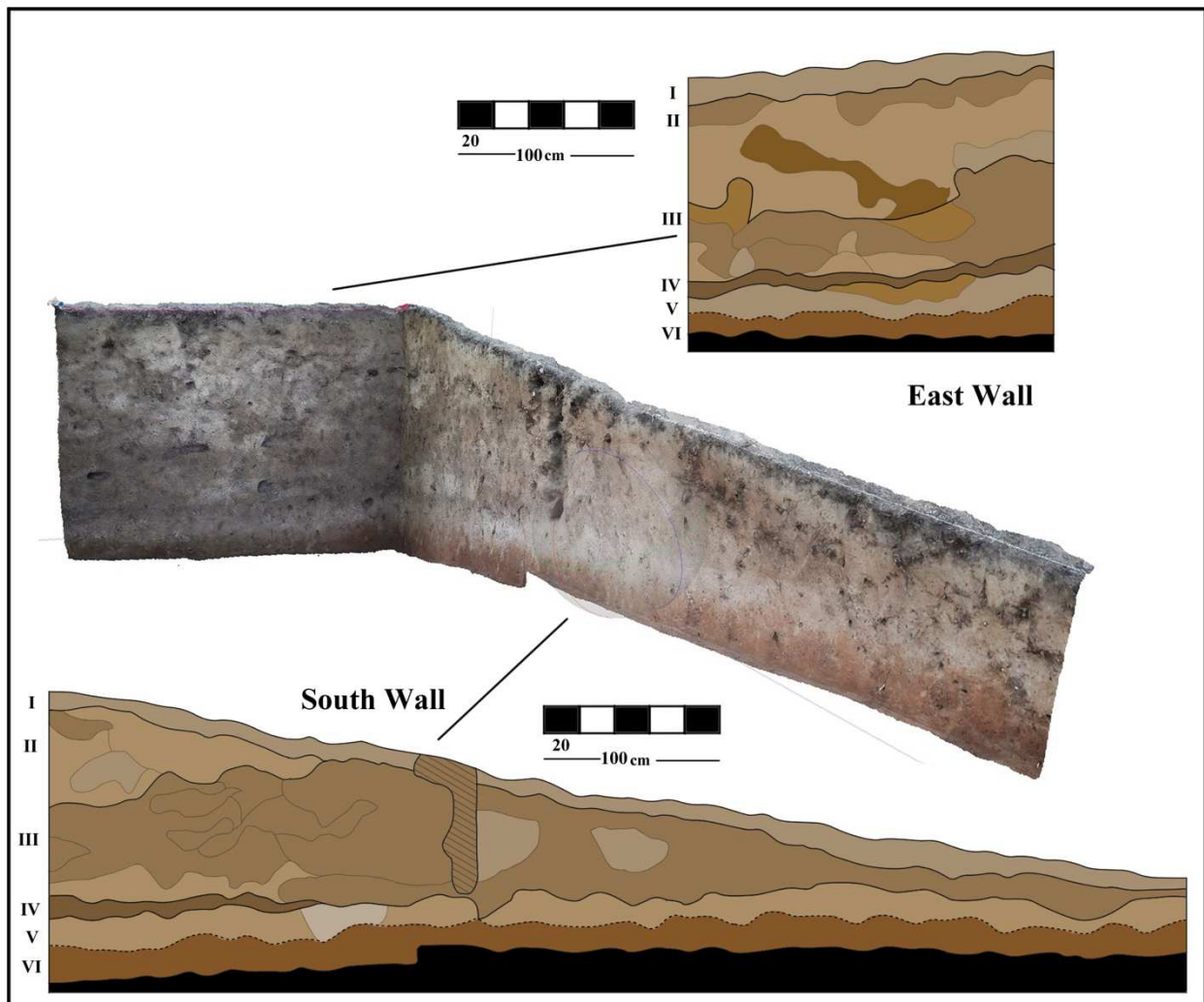


Figure 5.9. Unit 1 and 3 stratigraphy from excavations in the Eastern Enclosure embankment.

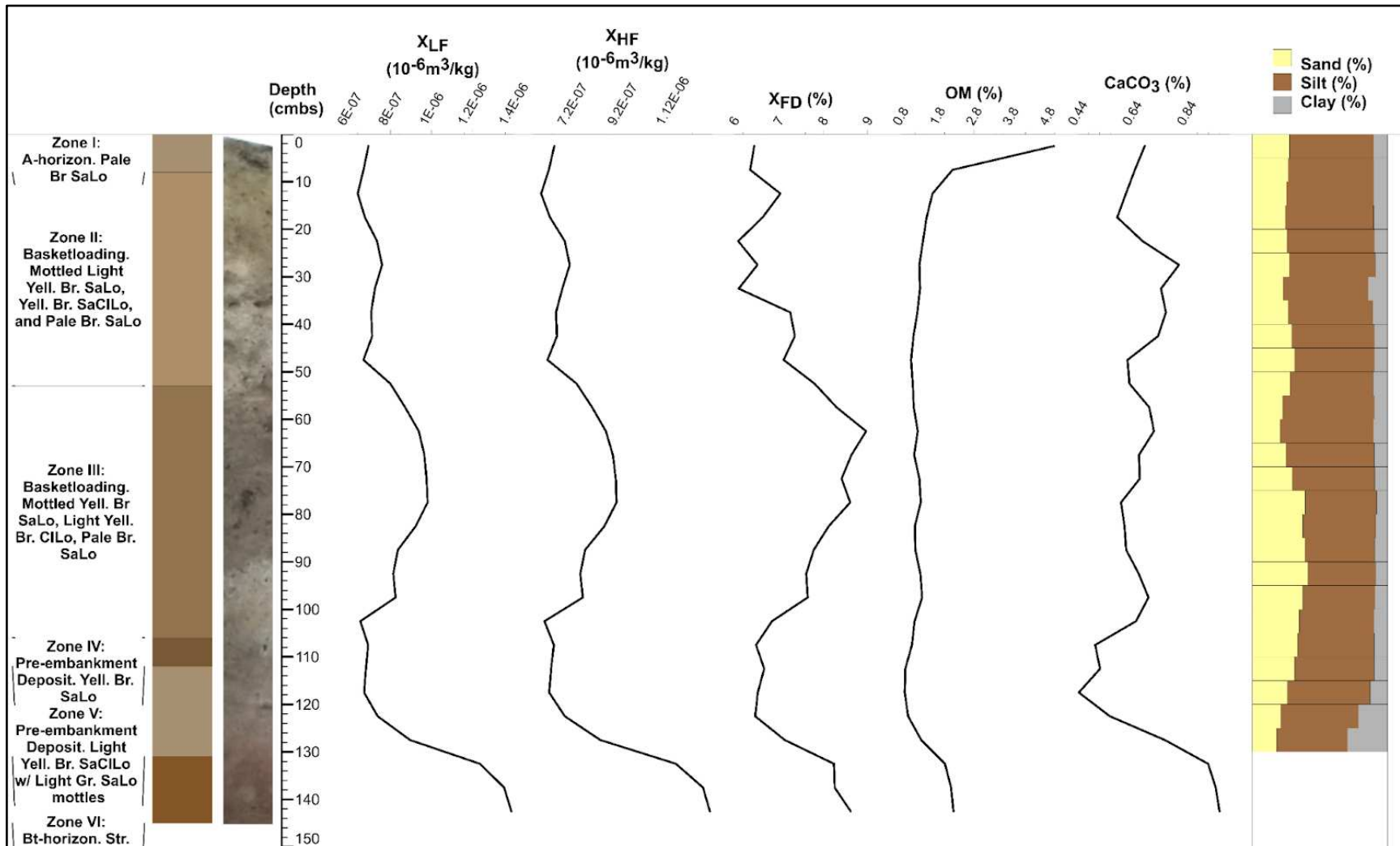


Figure 5.10. Results of bulk soil analysis from Eastern Enclosure embankment profile (Unit 3). Samples taken from 0-145 cmbs at 5 cm intervals. Measurements from left to right: low frequency magnetic susceptibility; high frequency magnetic susceptibility, frequency dependence; percent organic matter; percent CaCO₃; particle size.

5.2.5 Interpretation

Units 2 and 4 revealed that neither anomaly excavated within the enclosure represented an archaeological feature. The Unit 2 anomaly may have originated with a tree throw (the soils and sediments around root systems displaced by an upturned tree), while the Unit 4 anomaly was a historic campfire containing twentieth century trash. These results call into question the archaeological nature of other anomalies in the enclosure data. Further ground truthing is required to discern if anomalies that resemble features represent activity associated with the site's history of Indigenous landscape use.

The stratigraphic profiles of Units 2 and 4, while lacking archaeological features, do provide valuable information about the internal soils and sediments of the enclosure. They are largely consistent with previous descriptions (Morse 1986, Thunen 1990, Mainfort 2013) of a ~10 cm plow zone overlying a red clay subsoil, or Bt-horizon within the enclosed landform. However, the pockets of lighter material observed at the base of the plow zone across both units had yet to be reported by other investigators. In Unit 2, these were assumed to be the result of soils brought up from deeper in the landform by a tree throw and then distributed through bioturbation and plowing. However, because the material is also present at the base of the plow zone in Unit 4 an isolated tree throw can be ruled out as the source. The material is more continuous in Unit 4 than 2 where it is closer to the embankment, perhaps suggesting a connection between this sediment and embankment or pre-embankment construction.

Unit 5 was meant to provide a control profile to which Unit 2 and 4 could be compared, but this plan was complicated by its unexpected stratigraphy. The distinct lenses of sand and clay loam showed evidence of high energy alluvial events, resembling flood wash or other forms of water flow. However, the unit was placed on a flat aspect and none of the minimal surrounding

topography indicated how these processes could have occurred there with such intensity. These alluvial sediments are visually different from the distinct McNairy Formation deposits and overlie a well-developed paleosol, also confirmed by laboratory tests. Organic matter and CaCO_3 spike around 65 cmbs and the increase in magnetic susceptibility throughout the Ab horizon is even more dramatic, as would be expected for a paleosol. While interesting, this stratigraphy is of little utility for the questions addressed in this project.

The embankment stratigraphy was much more informative. Zones II and III are levels of loaded fills, created as baskets full of sediment were used to build up the bulk of the embankment wall. The color differentiation between the two levels may indicate a switch in material source as it was constructed, or that different levels of soil were reached in the same source area. The lack of any weathered horizons within the loaded fills indicates that the addition of these zones was continuous despite the color change. Zone IV and V, though at first resembling a potential Ab and E horizon preserved under the embankment, actually likely represent two more levels of anthropogenic fill. Zone V appears to be consistent with the “white clay occupation zone” identified by Morse (1986), and Thunen’s (1990) “pre-embankment cultural zone,” though the implications of those labels may be misleading. There is nothing to indicate that Zone V was an “occupied” surface. Zone IV, present only under the embankment itself, was not in evidence in either of the previous excavator’s descriptions, perhaps because their excavations did not reach the center of the embankment. Though Mainfort refers to the pre-embankment levels tentatively as a weathered B horizon (Bw) (Mainfort 2013:178), sequential loss-on-ignition results (Fig. 5.11) show little to no increase in organic matter as might be expected for an A horizon or anthropogenic surface. The small spike in magnetic susceptibility results from this level suggests the source of this material either already had high magnetic

susceptibility values or was enhanced through anthropogenic placement (Dalan and Bevan 2002), rather than in situ pedogenic development.

Relatively clean boundaries between all these zones, with the exception of the Zone V-to-subsoil transition, provide further evidence of an anthropogenic origin rather than pedogenic formation. A sharp increase in both organic matter and magnetic susceptibility *does* occur at the boundary between the subsoil and Zone V, pointing potentially to an incipient, invisible A horizon, though the spike in magnetic susceptibility could also have resulted from ferrous inclusions in the subsoil. Measurements of magnetic susceptibility have been used elsewhere to reveal surfaces invisible to visible observation (Dalan 2008; Henry 2011).

The increase of organic matter and MS in the subsoil could also be evidence of the collection of leached materials from an E horizon collecting in the subsoil, though there is further evidence that Zone 5 is not an eluvial horizon. Its pockets of different materials are deposited irregularly rather than formed consistently as might be expected from pedogenesis. The intense bioturbation in the boundary between Zone V and the subsoil, even underneath the embankment, indicate that it was left exposed before basket loading began, though no clear A horizon developed or was left by builders to indicate its exposure for a lengthy time. In contrast, relatively clean upper and lower boundaries with far less bioturbation suggest Zone IV was added later, closer to construction of the embankment with basket-loaded fills

5.3 Artifacts

5.3.1 Ceramics

A total of 57 ceramic sherds were recovered across all five test units, n=49 from Units 1 and 3 in the embankment, n=3 from Unit 2 inside the enclosure, and n=5 from Unit 5 to the north of the enclosure (Table 5.1). Most of the embankment sherds (Fig. 5.11) were deposited in levels

with loaded fills, and none were larger than 5 cm², consistent with materials typically found in redeposited contexts. All sherds from Unit 2 were collected from the plow zone, and all of those from Unit 5 came from above 50 cmbs in the plow zone and colluvial sediments.

Table 5.1. Ceramics from Summer 2023 Eastern Enclosure archaeological investigations.

| Temper and Decoration | Provenience | | | | | | | | Total |
|---|-----------------------------|--------------------------|-------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|-----------------------------|-------|
| | Unit 3; Level 1, 0-100 cmbs | Unit 3; Level 2, 100-150 | Unit 1+3; Wall Cleaning | Unit 1; Level 1, 0-110 cmbs | Unit 2; Level 2, 15-25 cmbs | Unit 5; Level 1, 0-12 cmbs | Unit 5; Level 3, 20-30cmbs | Unit 5; Level 5, 40-50 cmbs | |
| Sandy Temper Cordmarked | 8 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 11 |
| Sandy Temper Plain | 18 | 0 | 0 | 2 | 3 | 0 | 1 | 3 | 27 |
| Pot. Sandy Temper Check stamped | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Sandy Temper Eroded Surface | 7 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 9 |
| Sandy Temper w/ Grog Inclusions Plain | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Sandy Temper w/ Bone Inclusions Plain | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Sandy Temper w/ Plant Inclusions Cordmarked | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Sandy Temper w/ Plant Inclusions Plain | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 38 | 2 | 4 | 3 | 3 | 1 | 1 | 3 | 55 |



Figure 5.11. Photograph of a selection of sherds from the embankment trench.

Most sherds are sandy tempered (n=52), with only n=2 examples of temper composed of mixed sand and grog, n=2 with mixed sand and bone, and n=1 sherd with mixed sand and plant material inclusions. Cordmarked surface decorations (n=12) are also most common after plain

sherds (n=33). There are n=2 potential examples of a possible check stamped decoration, with surfaces too eroded to be certain. The remaining sherds also have significantly eroded surfaces due to the susceptibility of sand tempered wares to weathering. Cordmarked decorations are legible through the degradation, but other styles may be less distinguishable, so it is unclear how many of the eroded sherds represent decorative styles not identified or identified at lower frequencies in this assemblage. Generally, these sherds reflect the trends of the larger Pinson assemblage, where sandy tempers and cordmarked decorations are most common.

5.3.2 *Lithics*

The most common lithic material across the units was a local siltstone, with a count of n=26 from the total lithic count of n=45 artifacts (Table 5.2). At a slightly lower frequency, with a count of n=18 was Fort Payne chert. While previous investigations have also identified Flint Ridge, Wyandotte, and Upper Mercer cherts at Pinson, several of these materials, especially Flint Ridge, are very difficult to distinguish from high quality Fort Payne chert without further testing beyond visual observations. Because Fort Payne sources are geographically much closer, these artifacts are assumed here to be made of Fort Payne chert. One quartzite flake was recovered from the embankment fill.

A total of n=31 lithic artifacts came from the embankment units, composed of about half siltstone and half Fort Payne chert. All n=4 recovered from the interior enclosure units were Fort Payne Chert, and a total of n=10 from Unit 5 were siltstone. Several examples of chert from the embankment were heat-treated, including one broken edge of a point or knife. An unidentified point base was also recovered from the embankment. The remainder of the lithics were either flakes or broken pieces of flakes.

Table 5.2. Lithics from Summer 2023 Eastern Enclosure archaeological investigations.

| Material and Type | Provenience | | | | | | Total |
|-------------------------------------|------------------------|-------------------------|------------------------|------------------------|------------------------|-------------------------|-------|
| | Unit 3; Level 1, 0-100 | Unit 1+3; Wall Cleaning | Unit 1; Level 1, 0-110 | Unit 2; Level 2, 15-25 | Unit 2; Level 4, 40-50 | Unit 5; Level 6, 50-140 | |
| Siltstone Flake | 6 | 0 | 3 | 0 | 0 | 1 | 10 |
| Partial Siltstone Flake | 7 | 0 | 0 | 0 | 0 | 9 | 16 |
| Fort Payne Flake | 0 | 1 | 0 | 2 | 0 | 0 | 3 |
| Partial Fort Payne Flake | 8 | 2 | 0 | 1 | 1 | 0 | 12 |
| Heat Treated Fort Payne Flake | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Fort Payne PPK Base | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Partial Heat-Treated Fort Payne PPK | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Quartzite Flake | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 25 | 3 | 3 | 3 | 1 | 10 | 45 |

5.4 Radiocarbon Dates

Charcoal samples were obtained from seven contexts in the Eastern Precinct for ¹⁴C radiocarbon dating. Two of these samples, UCLAMS-29169 and UCLAMS-29170, came from the Unit 5 paleosol in an attempt to understand when the surface may have been buried. The other five originated from the embankment trench, with sample UCLAMS-29168 from Zone V, samples UCLAMS-29166 and UCLAMS-29167 from Zone IV, sample UCLAMS-29165 from Zone III, and sample UCLAMS-29164 from Zone II. All samples from the embankment originate in loaded fills and not from features, which indicates that they do not directly date the embankment but the use of the area from which the fills were procured. These were collected with the goal of establishing a TPQ for embankment construction and a possible range for pre-

Table 5.3. Unmodeled ¹⁴C ages from samples collected during summer 2023 Eastern Enclosure archaeological investigations.

| UCIAMS # | Unit | Material | Provenience | fraction Modern | ± | D ¹⁴ C (‰) | ± | 14C age (BP) | ± | 68% prob. ¹⁴ C age (cal BCE-CE) | 95% prob. ¹⁴ C age (cal BCE-CE) |
|----------|------|---|--|-----------------|--------|-----------------------|-----|--------------|----|--|--|
| 290164 | 3 | charred wood; cf. <i>Carya ovata</i> (shagbark hickory); friable | N Wall, Zone IIa, 55-70cmbs. Flot Sample | 0.8055 | 0.0012 | -194.5 | 1.2 | 1735 | 15 | cal 255-365 CE | cal 250-385 CE |
| 290165 | 3 | charred wood; cf. <i>Quercus leucobalanus</i> (white oak) | S Wall, Zone III, 105cmbs. Collected in situ | 0.8383 | 0.0012 | -161.7 | 1.2 | 1415 | 15 | cal 605-655 CE | cal 600-655 CE |
| 290166 | 3 | heavily charred (vitrified) herbaceous dicot stem | S/E Wall, Zone IV, 110-120cmbs. Flot Sample | 0.7851 | 0.0011 | -214.9 | 1.1 | 1945 | 15 | cal 60-120 CE | cal 25-125 CE |
| 290167 | 3 | charred roundwood; cf. <i>Quercus</i> , very small | S/E Wall, Zone IV, 110-120cmbs. Flot Sample | 0.8026 | 0.0013 | -197.4 | 1.3 | 1765 | 15 | cal 245-330 CE | cal 240-345 CE |
| 290168 | 3 | heavily charred (vitrified) herbaceous dicot stem | N Wall, Zone Va, 125-130cmbs. Flot sample | 0.9129 | 0.0015 | -87.1 | 1.5 | 730 | 15 | cal 1270-1285 CE | cal 1265-1290 CE |
| 290169 | 5 | charred roundwood; UID hardwood | N Wall, Zone IV, 65-75cmbs. Flot Sample | 0.9781 | 0.0014 | -21.9 | 1.4 | 180 | 15 | cal 1665-[out of range] CE | cal 1660-[out of range] CE |
| 290170 | 5 | heavily charred (vitrified) wood; cf. <i>Quercus leucobalanus</i> (white oak) | N Wall, Zone IV, 65-75cmbs. Flot Sample | 0.9795 | 0.0015 | -20.5 | 1.5 | 165 | 15 | cal 1670-1945 CE | cal 1665-[out of range] CE |

enclosure use of the landform. Unmodeled calibrated and uncalibrated dates are reported in Table 5.3

Calibrated dates from the Unit 5 paleosol indicate a temporal range extending from the late 17th century to sometime in the 20th century, with several of the calibrated ranges extending past the threshold of what can be calibrated. They suggest either a very late pre-contact age for this surface or that it was buried soon after Europeans arrived in the area.

Two dates from the embankment appear unrelated to its construction. These include the sample from Zone V, which dates to the Mississippian period and another from the loaded fills in Zone III that is Late Woodland in age. KCCAMS lab personnel noted that the Zone V sample may be problematic, with notably less measurable carbon than other samples. Though there are Late Woodland and Mississippian activities elsewhere at Pinson, nothing indicates that any of its earthworks were built after the Middle Woodland period. Based on this evidence, and because these charcoal samples would have to be older than construction to be within embankment fills, they are considered outliers or intrusive to this context. The remaining dates are not ordered stratigraphically, they have been placed into a Phase with a modeled Start Boundary and End Boundary (see Appendix A).

This model results in Middle Woodland ages of *cal 245-330 CE (68% probability; R_Date UCLAMS-290167)* and *cal 65-120 CE (68% probability; R_Date UCLAMS-290166)* from Zone IV, and another from *cal 250-350 CE (68% probability; R_Date UCLAMS-290164)* in Zone II (Table 5.4; Fig. 5.12). These lie within the expected temporal ranges for earthmoving at Pinson based on other dates and material culture. Because of their context in fill and their out-of-order positioning, they probably do not directly date the construction of the Eastern Enclosure but may give us a range between *cal 100 BCE-115 CE (68% probability; Boundary StartPhase2)*

and *cal 280-515 CE (68% probability; Boundary EndPhase2)* for the use of the area excavated for materials, likely the enclosed landform itself. The long tails of the modeled beginning and end boundaries in Figure 5.12 provide further reason to use dates from the 68% rather than the 95% probability range. They stretch far beyond the boundaries before and after the Middle Woodland period that would be expected from material culture or even from these radiocarbon dates. This means that the End Boundary, between *cal 280-515 CE (68% probability; Boundary EndPhase2)* represents a TPQ for embankment construction.

Table 5.4. Modelled ¹⁴C dates from the Eastern Enclosure embankment (Unit 3).

| | Modelled (BCE/CE) | | | | | Indices: A _{model} 99.8 A _{overall} 99.8 | |
|-----------------------------|-------------------|-------------|--------|-------------|-----------|--|------|
| | μ | from 68% | to 68% | from 95% | to 95% | A | C |
| Boundary StartPhase2 | -65 | -100 | 115 | -555 | 125 | | 97.1 |
| R_Date Z2a UCLAMS-290164 | 305 | 250 | 350 | 245 | 380 | 99.9 | 99.7 |
| R_Date Z4 UCLAMS-290166 | 90 | 65 | 120 | 25 | 130 | 101.5 | 99.4 |
| R_Date Z4 UCLAMS-290167 | 290 | 245 | 330 | 235 | 340 | 98.2 | 99.5 |
| Boundary EndPhase2 | 470 | 280 | 515 | 260 | 925 | | 96.4 |

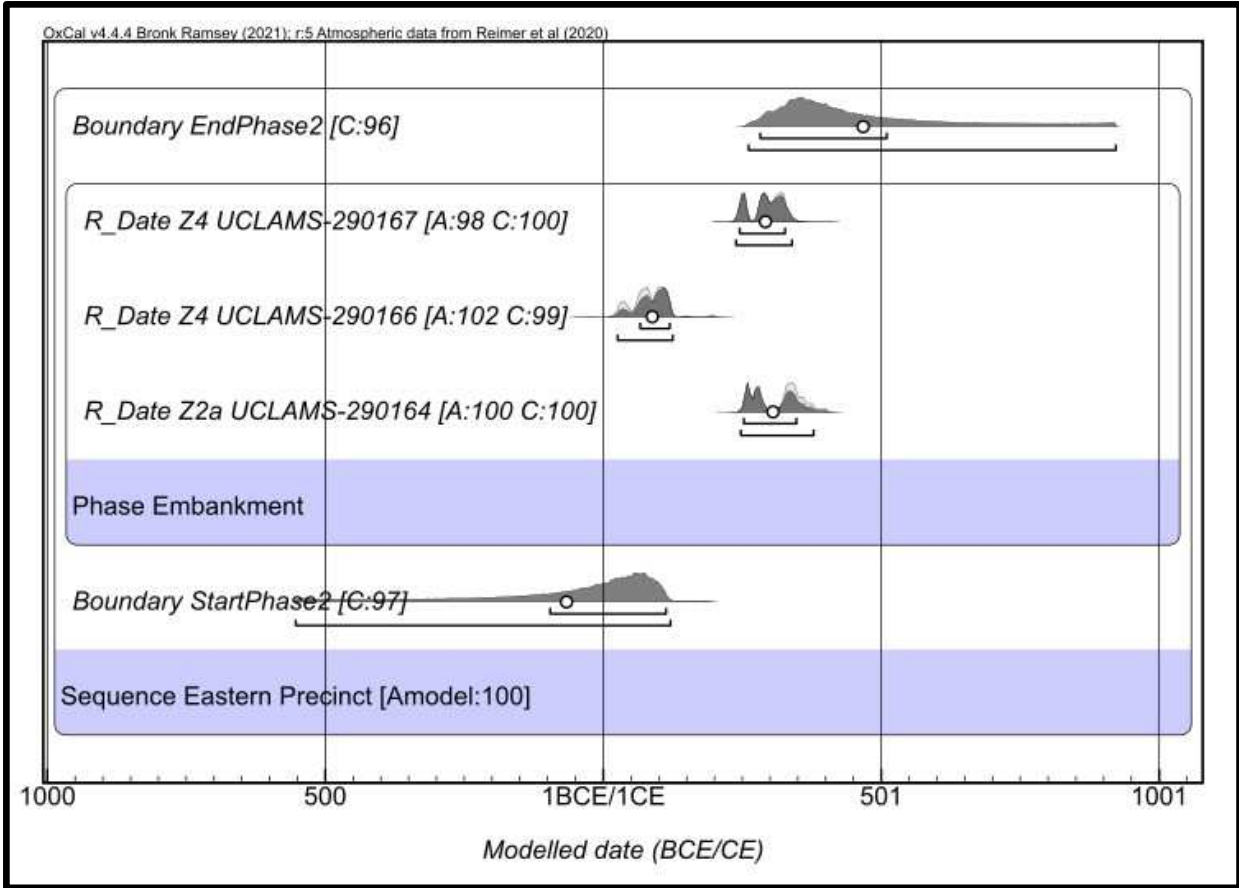


Figure 5.11. Modelled ^{14}C dates from embankment (Unit 3)

CHAPTER 6. ITINERARY, MOVEMENT, AND MEMORY: DISCUSSION IN AND BEYOND THE EASTERN PRECINCT

6.1. Moving and Seeing Throughout the Itinerary of the Eastern Precinct

It is clear that people created the Eastern Precinct not as a modification inscribed on top of the landscape, but as a construction built in concert with it, with concern for its slopes, edges, features, and histories of dwelling. Reciprocal exchanges between humans, non-human entities, and place across time have resulted in the still-living landscape that we experience today.

Through an investigation of stratigraphy and radiocarbon dating in the Eastern Precinct, we can begin to piece together the evolution of this landform to understand its itinerary, as well as the experiences that may be embedded in different points of that history. I hypothesize four loose “stages” in this itinerary: use of the landform prior to more intensive earthmoving, pre-embankment shaping, construction of the embankment and mounds, and finally, the ongoing use and visitation of this place up to the present day.

6.1.1. *Before Earthmoving*

Prior study of the Eastern Enclosure (Thunen 1990) makes it evident that this landform was not chosen randomly for its construction. Its arc stretches across a sloped portion of the landscape unlike most earthworks at Pinson, and a portion of its southern wall is built through a ravine and continues in the style of hilltop forts around the steep eastern bluff edge of the flat-topped ridge. Additionally, it is positioned perfectly to allow access to the smaller, secondary “peninsula” on which the Bird Effigy rests. Selection of the landform may also relate to activities that took place there before earthmoving occurred. However, it is difficult to tell what those activities may have been or their relationship to later monuments because of the landform’s truncated soil strata.

Stratigraphic analysis of my excavations indicates that either serious erosion has taken place in the enclosure's interior or that this space was stripped to provide material for the embankment. Given the lack of a ditch or borrow pits, it seems likely that, as Mainfort (2013) concludes, the materials are surface-scraped, and previous excavations, in conjunction with my own, make it clear that stripping did occur underneath the embankment and mounds. Based on this evidence, the artifacts recovered from the embankment fill likely relate to whatever activities were taking place in this area beforehand. The pottery and lithics are characteristic of other Middle Woodland assemblages at Pinson and suggest non-intensive use of the landform for unknown purposes, though we can still conclude that it “is devoid of artifacts that are clearly ritual or specialized objects” (Thunen 1990:157). Other anomalies in the geophysical data may be evidence of activities from the Middle Woodland period or earlier, though they would need to be tested to determine if they are instead remnants of modern activity, as was the case in Unit 4. Regardless, like the landform itself, it is unlikely that these materials were chosen purely for convenience's sake. The selection of surface scraped soils with evidence for previous activities woven throughout may be an intentional citation of the past by the engineers who wanted to incorporate that history as they created something new with the landscape. Alternatively, as Henry et al. (2021) discovered at the Winchester Farm enclosure in Kentucky, it may be that the Eastern Enclosure was used to “close off” the landform and *end* whatever people might have been doing there before, thus necessitating a “cleaning” of sorts.

6.1.2. Preparing the Landform

After selection of the landform for more intensive earthmoving, people evidently did not immediately start by constructing the embankment or mounds, but created preparatory surfaces, first by stripping to subsoil –probably across the landform as discussed above, but certainly

underneath planned earthwork areas— and then laying down a light yellowish brown to light gray (10YR 6/4-10YR 7/2) silt loam. This level has been observed under the Eastern Enclosure, below the Bird, and even, perhaps, in parts of the enclosure's interior. Zone V underneath the embankment is evident not only in my extensions of Thunen's trench, but also to the north in Morse's (1986:114) trench as a "light gray silty occupation zone". It is unknown if the same sequence exists underneath the western part of the enclosure, but it seems evident that it at least extends across its upper eastern portion. Underneath the Bird Effigy, Thunen (1990:131) has recorded a "gray clay floor [that] appears to rest directly on the cleared and flattened subsoil". Artifacts found in the fill of the mound were "small and generally appeared to be redeposited midden or encampment debris" (Thunen 1990:131), also mirroring the embankment assemblage.

Though Mound 30 has not been radiocarbon dated, both its spatial relationship to the embankment through the opening confirmed by magnetic gradiometry, and its similarities in preparatory methods and fill indicates contemporaneity with the embankment, or, at the very least, that the same group of people planned and constructed both monuments. Modeling of the radiocarbon dates indicates that the selected charcoal samples from the embankment fill lie within a range of time with a start boundary of *cal 100 BCE-115 CE (68% probability; start Embankment)* and an end boundary of *cal 280-515 CE (68% probability; end Embankment)*. When combined, the absolute dates and material culture reflect landscape use likely centering in the mid to late Middle Woodland period, with no evidence of artifacts from the Eastern Precinct from before the BCE-CE transition or from the Late Woodland period. Unlike Mound 30 (the bird effigy), Mound 29 was probably built either before or after the rest of the Eastern Precinct, by different people, or was planned with a separate function in mind.

The similar light material that appears at the base of the plow zone in Units 2 and 4 leads me to speculate that the Zone V surface perhaps stretched further into the interior of the enclosure, rather than placed only underneath the earthworks. This is supported by Zone V's continuity beyond the extent of the embankment trench, though it does appear to eventually taper off in Thunen's (1990) excavations. Intense bioturbation between Zones V and the subsoil, even under the apex of the embankment, indicates that this surface was left exposed for some length of time before construction continued. It may be that the material in the interior units has been eroded and spread from its original placement and further disturbed by plowing or, alternatively, that historic erosion and plowing may have cut into and disguised the original extent of the surface. More testing would be required to know for certain.

Regardless, current evidence tells us that people placed the Zone V material along the eastern edge of the landform as well as onto the small extension where the Bird would rest. It was constructed in the embankment area beyond the actual extent of the eventual earthwork and left exposed for some time before more earthmoving took place. The material for this initial surface was not sourced from the top of the landform as later loaded fills likely were but would have been intentionally selected from another area. Its consistently light color indicates that this was a major factor in its use, and also ties it to the place on the landscape where this sediment originated. Color symbolism is a common factor in earthworks across the southeast and Ohio River Valley, in constructions dating from as early as the Archaic period to those as late as the Mississippian period. Some examples include the Archaic Poverty Point site, the Shiloh Mounds Mississippian site, and the Middle Woodland earthworks at Newark, as well as other contexts at Pinson (Charles 2012; Kidder and Sherwood 2017; Mainfort 2013). At Shiloh Mounds in Tennessee, Kidder and Sherwood (2017) were able to track the deposits found in mound contexts

back to source areas. They found that the color red was specifically sought out, whereas at Poverty Point, the construction of Mound A began with the placement of a level of carefully selected light materials. Colored sediments at these and other sites are found to be “neither easily accessed, nor... found in appreciably large amounts in [their] pure form” (Kidder and Sherwood 2017:1091). The exact source of the Zone V material on the Eastern Precinct landform is still unknown. It may have originated from exposed parts of the McNairy formation mined along ravine edges, or from other upland areas of Pinson, like layers in Ozier Mound are hypothesized to be (Mainfort 2013:89). Further exploration of stratigraphy across the landscape would be useful for establishing potential source areas, but the sediments were likely selected not for convenience, but for their specific material and perhaps spatial qualities.

At both Poverty Point and in Pinson’s Eastern Precinct, light materials were laid down early in the process of earthmoving, but unlike Poverty point, the Eastern Precinct’s Zone V was left exposed for some time rather than covered rapidly. This white surface, situated along the edges of the flat-topped ridge and perhaps spread even further, would have completely changed the contours of the landscape to the eye. Even without creating the more intense morphology of walls or mounds that would come later, that visual modification of space would have been a major part of guiding whatever movement and activities took place in the interim.

6.1.3. Building the Embankment and Bird

Unlike the Zone V level, evidence points to Zones IV and the embankment being added continuously in a relatively short time frame. The Zone IV sediment occurs only underneath the embankments loaded fills and does not show any indications of a water-worn surface.

Admittedly, the surface of Zone V also does not display any weathering, but this may be evidence that it was maintained, kept free of vegetation, or simply cleaned before the

embankment was added. The unlikely alternative that Zone IV is an Ab horizon would suggest that *only* the area around the embankment was cleaned beforehand, a process unsupported by both the soil analyses and construction observed at other Middle Woodland earthworks, where additive rather than subtractive methods are most common after stripping to subsoil. I find it much more likely Zone IV is an anthropogenic level, perhaps acting as a guide for the placement of loaded fills. Engineers intentionally selected a dark sediment to lay down in the path of the eventual embankment, with contrasting colors to not only draw the eye and help with the planning process, but also likely implying certain meanings to those possessing the cultural knowledge to understand them. There is no reason that these sediments need to be either completely “ritual” or completely “functional,” as these two realms often overlap quite significantly in reality. It is not unreasonable to hypothesize that this dark sediment both held important cultural meanings and was used to assist logistically in the placement of the embankment.

After the placement of Zone IV, basketloading to create the final levels of the eastern embankment wall occurred in one uninterrupted event, though two zones were identified in its stratigraphy based on color. The first zone consisted of slightly darker loads of mostly yellowish brown (10YR 5/4), while the loaded fills overlying it were in ranges closer to light yellowish brown (10YR 6/4). Though there are darker and lighter loads scattered throughout the contrasting levels, a clear difference is obvious at the beginning and end of the process, at least in this portion of the wall. This may be coincidence, but lower levels make it evident that the people who built the Eastern Enclosure were very selective about the soils and sediments they used and the references those materials invoked. The change from dark to light loaded fills may

also be indicative of a “reverse stratigraphy” produced as the original A and B horizon of the mined area were inverted to build the monument.

Though the charcoal samples from the embankment may not directly relate to the construction of the Eastern Enclosure, they do provide a TPQ within the first standard deviation of our modeled end Boundary of *cal 280 to 515 CE (68% probability; end Embankment)*. Our second standard deviation stretches farther into the Late Woodland period, which we have no other lines of evidence for, making a late Middle Woodland construction episode most likely for both the Embankment and the evidently contemporaneous Mound 30 bird effigy. At some point, after magnetically enhanced A-horizon soils had already begun to develop on, erode, and outline the Bird, multiple modifications were made to reshape its tail. The temporal relationship of Mound 29 to other Eastern Precinct earthworks remains unclear.

As discussed before, earthworks are not just the application of preexisting information, but the intentional act of searching for new knowledge as unique experiences and interactions are facilitated by the construction process. Earthworks are movement *embodied*, and contain the memory of every basket load, every engineer and builder, the place on the landscape where materials originated from, and the paths taken to carry those materials to their destination. The act of creation mnemonically ties together place, person, and non-human persons like the earthworks themselves. In being selective about materials, connections to specific parts of the landscape and the cultural knowledge embedded in each of those becomes ingrained in the fabrics and layers of these entities. Sediments collected from bottomland areas carry Lower World connotations to be woven into the memory and character of an earthwork, just as surface scraped soils from upland areas or carefully selected light sediments may connote Upper World

affiliations (Mainfort 2013). The movements of creation instill those meanings not only into the earthworks, but into the memories and bodies of the people who built them.

Meaning is also incorporated on the landscape through morphology, as is clearly the case with the bird effigy. Allen describes effigy mounds as earthworks that align with the concept of “crossing worlds” and with the spatial positions “above and below” (Allen 2022:31). The very placement and orientation of Mound 30 reflects this purpose. It flies northward, emerging from the floodplain of the SFFDR, and into the upland areas of Pinson, perched on the highest point of the site. As a bird, it is an animal with the ability to move between these worlds, and in flying into the Eastern Enclosure, it also moves into an area that has been enclosed by what seem to be Upper World materials. Though it is hard to say where all of the sediments that create the bird originate from, loaded fills appear to be the same surface scraped materials that make up the embankment (Thunen 1990). It is possible that some of them are also floodplain soils, replicating the movement of the bird to the people who built it as they carried Lower World materials up into the Eastern Precinct and combined them with Upper World soils, creating something that possessed the qualities of both places (Mainfort 2013:187). In this way, stories are incorporated on the landscape not through static inscription of pre-existing meaning, but dynamic experience as the creation of earthworks themselves becomes a performance embedded in memory and embodied in soil.

6.1.4. Movement through the Landscape After Earthmoving

In some cases, as at Winchester Farm (Henry et al. 2021), enclosures signal the end of use of an activity area. However, though we may not have archaeological evidence that people continued visiting the interior of the Eastern Enclosure, its spatial design and relationships do not seem to support the idea that it was constructed to prevent further interactions. Rather, its low

artifact densities and isolated nature indicates that *different* experiences were intended from the rest of Pinson, not that its itinerary ended with the completion of earthmoving.

If Mainfort (2013) is correct about erosion rates in the Eastern Precinct, especially in the steeper areas which still retain earthworks, then vegetation was allowed to regrow and remain in the area. This would have covered any sediment colors, but also created a stable surface that minimized erosion and ensured the longevity of the Eastern Precinct earthworks. Middle Woodland people did not build these monuments to be experienced only in the moment of creation, but as a meaningful manipulation of space meant to guide the future generations through the landscape.

Already an isolated space due to its peninsula-like morphology, the Eastern Precinct was further sequestered by the Eastern Enclosure, which makes use of the sloping terrain to enhance the earthwork's sense of scale. This intensifies not only the landform's preexisting character, but also affords it a sense of directionality which shapes the way that people move through it. Past researchers (Mainfort 2013; Thunen 1990) have largely assumed that people would enter the enclosure from the North by way of the rest of Pinson because of its more accessible, flat terrain. Our own sense of movement in the present is heavily influenced by the current footpaths of the park, so we must rely on what has been proven about its *past* topography. With current evidence, the southeastern and likely the south-central opening of the enclosure have been confirmed as intended, part of the original design. The gravel path running through the northeast obfuscates magnetic data, and testing has not been performed on any of the western entrances to determine how they have been influenced by erosion or plowing. Even if all entrances are assumed to be original, the enclosure still constricts how people might move through this landform, and it is worthwhile to investigate alternate paths.

One likely route into the enclosure may be through the southeastern entrance, requiring people to approach through steeper terrain from the river. Allen (2022) even describes how modern visits to earthwork centers often begin with water as a starting point, as that is where people of the past would have begun as well (2022:218). This path reflects the journey of the bird effigy, passing between Lower and Upper World spaces, and compels people to move past and *with* it as it flies into the enclosure. Just as the lines of material transport sometimes encourage the reenactment of stories, so too might the earthworks themselves facilitate access to knowledge through movement. It is certainly a more difficult path than the northern entrance, but it is obvious that people were not building or visiting Pinson for convenience's sake. The difficult terrain may even have intentionally restricted access seasonally, determining when the knowledge embodied in these earthworks through these routes could be accessed, though it also may have restricted *who* was able to take such routes. The idea that Eastern Enclosure was entered differently than the rest of Pinson, or even that it might act as the entrance to the rest of the site makes some sense, as it is clearly a space set aside, preserved, and treated differently. It would perhaps be useful to see what evidence is left of activity near the remnant channels on the SFFDR floodplain below to gain insight into where and what people did before travel to the upland part of the site.

The engineers of these monumental sites intentionally curated experiences to facilitate slow seeing with “methodologies... embodied and performative” (Allen 2022:25). A south-to-north directionality, either with the Bird as hypothesized above, or from the southwest over slightly milder terrain, alters the perception of the earthworks. Their scale, already complemented by the landform, would be further enhanced if approached from below, where the walls would first tower over visitors. Beyond this, earthworks already possess a kinetic demand,

and are naturally designed to facilitate “slow seeing”. To walk around them, or up them if appropriate, or even to lay one's body against them to feel their movement and warmth as Allen (2022) describes, is how people would have to have experienced them. Many of these methodologies are only available to Indigenous people who understand the context and meaning of earthworks through their own cultural knowledge and have access to the mnemonic traditions attached to these places. However, it should be obvious to most people that the constructions cannot be fully understood from a static point of view, such as a photo or map. The bird effigy is an excellent example of this. Its contours may be disguised from a still position but become very clear as one moves around it. Even before confirmation of its shape through geophysics, and after years of erosion brought on by vegetation, burrowing animals, and historic use, it was easy to understand why people have continued to describe it as a bird. I do not advocate for a phenomenological approach or mean to suggest that my own perspective can inform us of past Indigenous experiences, but I do wish to highlight just how clear the effigy is from a kinetic perspective.

Visitors returned to Pinson throughout the Middle and up to the Late Woodland period. Those people, visiting continuously and still connected to larger Hopewell traditions in the region may have experienced and moved about the site in similar ways. We also know that people were at Pinson during the Mississippian period, and interacted with it a little differently, opting to build a structure. However, artifactual evidence thus far also indicates that they did not at all modify or leave physical remnants of activities in the Eastern Enclosure. In contrast, the Cochran site, which *was* repeatedly used throughout the Woodland Period, has features dating to the Mississippian Period as well. These two points do not comprise enough evidence to make conclusive judgements on the nature of Mississippian people's relationship to Woodland spaces.

However, it seems as though they had knowledge of the way that past peoples interacted with places on the landscape and respected those traditions while also bringing their own unique identities and experiences to the history of Pinson.

6.2. Interconnected Landscapes in the Southeast and Ohio River Valley

As Allen (2022) attests, earthwork sites are not meant to be seen as isolated travel destinations, but as places interconnected with one another across the landscape. Though the Eastern Enclosure may be intentionally constructed as a space set apart, and the SFFDR corridor may appear isolated on a map, it is in fact deeply connected both physically and ideologically to the landscapes of the Southeast and Ohio River Valley.

Rivers acted as the highways of the Indigenous world, allowing quick travel between settlements and the many Middle Woodland earthwork centers. The SFFDR landscape lies conveniently between two major river corridors, the Tennessee and Mississippi, and may have acted as a point of connection between them. Travel by boat up the SFFDR from the Mississippi would have covered a distance of a little over 130 km, while the nearest overland route to the Tennessee river from the SFFDR is only about 40 km, not including any smaller tributaries that may have sped up the journey. In contrast, the distance to travel between the Mississippi, Ohio, and Tennessee rivers if one were to bypass this potential shortcut would be over 550 km. Crossing from the Mississippi to the Tennessee while moving northward would have also put travelers on a less laborious downstream route. There are confirmed Middle Woodland mound centers like the Savannah and Florence sites along the Tennessee River, with the Savannah site located only about 42 km southeast of Elijah Bray. Pinson's status as the largest earthwork center outside of Ohio is further explained by this context, acting not as a secluded place, but as a crossroads between two major highways. More investigation, such as a least cost path analysis in

GIS, a survey of land between the two corridors, or a better understanding of the origin of materials found at the SFFDR sites such as chert or temper thought to be from eastern Tennessee, could provide further evidence for this theory.

Pinson's enclosures and effigy mound possess similarities to both those located to the south, in the Yazoo and Red River basins, those to the north in the Ohio River Valley, as well as a few sites to the east in the Tennessee River Valley and adjacent areas. Some of these have already been discussed. Forms matching the Cochran site "squircle" have been found at the Garden Creek Mound in the Appalachians as well as one buried at the nearby Johnston site (Wright 2014; Henry 2020). Construction phases of Twin mounds, in which it was first built as a circular causeway, may parallel other mounds such as Adena Mound in Ohio, the Nelson-Gay Mound in Kentucky, or the Grave Creek Mound in West Virginia where an enclosure is also part of mound construction (Clay 1987; Henry et al. 2014). Lastly, the Ducks nest and Ducklings Nest features of Johnston and Pinson are small geometric circles, with similarities to Adena "sacred circles" like those at the Mt. Horeb, Winchester Farm, LeBus Circle, and Biggs sites in Kentucky (Clay 1987; Henry 2011; Henry et al. 2021), but also the numerous circular earthworks of the Marksville site to the south (McGimsey 2003). Despite these similarities, the Ducks and Ducklings Nest features are not yet understood well enough to be certain of any actual relationship to these other sites. Comparisons can be drawn between Pinson's own Eastern Enclosure and elements from several of these traditions as well. The Eastern Enclosure conforms to the topography of the eastern side of its "peninsula" as hilltop enclosures in the Ohio Valley and semi-circular enclosures in the Yazoo Basin sometimes do, but also follows a geometric arc across more sloped terrain on its western side, indicating that while the geometry seen in Ohio Hopewell designs was important, it was not a limiting factor. Rather, the priority of the builders

was to create an enclosure on this landform specifically, with geometric planning applied only where topography allowed (Thunen 1990).

When including Mound 30 in comparisons of the Eastern Enclosure to other Middle Woodland earthwork centers, the Great Circle and Eagle Mound at Newark Earthworks in Ohio bear the most immediate similarity. The Great Circle enclosure is nearly 365 m in diameter, and in its center is Eagle Mound. Originally named for its resemblance to a bird, the actual intent behind its morphology is debated (Lepper 2016). Regardless, the mound's "three-lobed" form gives it directionality, pointing towards the entrance/exit to the Great Circle just as Mound 30 is oriented towards an opening in the Eastern Enclosure (Fig. 14). Though it is doubtful these earthworks shared the exact same meaning or purpose, their cultural connections and similar forms indicate they were likely tied to shared cosmologies and beliefs.

6.2.1. Comparison of Middle Woodland Enclosure Temporal Ranges

Appendix B discusses dates related to enclosure construction at some of the other Middle Woodland sites referenced in Chapter 2 of this thesis. With the ranges produced by modeling these dates, we can also begin to look for patterns in the timing of Middle Woodland enclosures across different regions and with different morphologies, as well as where Pinson's Eastern Enclosure may fall within them (Fig 6.1). All dates used in the text are those within a 68% confidence interval for expediencies sake, but their 95% confidence intervals are also reported in Table B.2 in Appendix B.

Construction of all Middle Woodland enclosures starts around *cal 105 BCE-90 CE (68% probability; start Eastern US Enclosures)* and ends around *cal 310-400 CE (68% probability; end Eastern US Enclosures)*. The end date is contemporaneous with the projected end of the Middle Woodland Period; however, the projected Start Boundary lies in the middle of the

period. No immediate patterns appear to separate either spatial or morphological groupings of enclosures in time, but a closer examination is needed to understand what this means.

No patterns are evident for any areas where enclosures begin construction first. Little Spanish Fort, Newark Earthworks, and Peter Village, for example, all lie in similar timeframes in the 100s BCE-100's CE range despite their separate locations in the Lower Mississippi River Valley, and the Ohio and Kentucky sides of the Ohio River Valley respectively. There is a spatial grouping of enclosures that all seem to occur later in time around the early 200's to late 300's CE. These are the High Bank and Turner Groups in Ohio; the Hopeton Earthworks are also

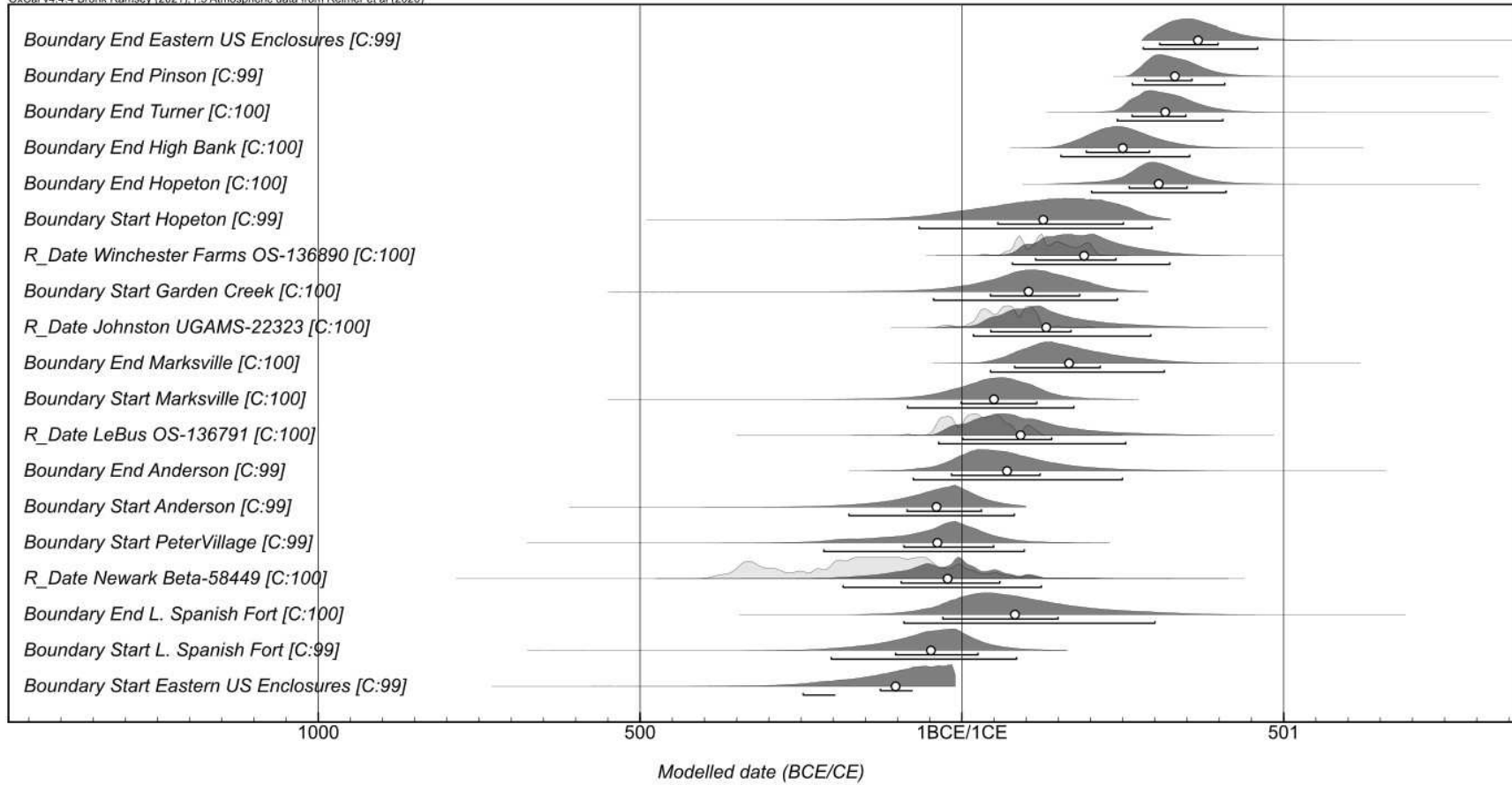


Figure 6.1. Modelled ¹⁴C dates from Middle Woodland Enclosures

possibly built in this time, but due to unclear contexts (see Appendix B) have been modeled with a very wide range between *cal 55-255 CE (68% probability; start Hopeton)* and *cal 260-355 CE (68% probability; end Hopeton)*. This may indicate that, while enclosure construction began across multiple regions around the same time, groups of enclosures were still being built in the later Middle Woodland period in Ohio while construction had perhaps slowed or stopped elsewhere. A notable exception to this rule is Pinson's Eastern Enclosure, which lies in a similar range to the Ohio earthworks of *cal 285-365 CE (68% probability; end Pinson)*, and possibly even slightly later. This pattern may also be indicative of a sampling bias caused by the history of greater archaeological focus in the Ohio Hopewell "center."

The dates of enclosures with similar morphology parallel the regional patterning; a lot of the large geometric forms are built in the later time ranges because that is when the Ohio enclosures are clustered. Pinson's Eastern Enclosure again corresponds to those dates but possesses a morphology unique to its own setting, perhaps inspired by, but not contingent on, Ohio Hopewell forms. Other large irregular enclosures like Peter Village date in the earlier time range from *cal 90 BCE-55 CE (68% probability; start Peter Village)*, as does the semi-circular Little Spanish Fort enclosure, which dates between *cal 105 BCE-30 CE (68% probability; start L. Spanish Fort)* and *cal 30 BCE-150 CE (68% probability; end L. Spanish Fort)*. Curiously, despite their distance from one another, both the Marksville Rings and the small geometric LeBus Circle date to similar time ranges with dates between *cal 5 BCE-120 CE (68% probability; start Marksville)* and *cal 80-220 CE (68% probability; end Marksville)* and after *cal 1-145 CE (68% probability)* respectively. The squircles at Johnston and Garden Creek follow this pattern, dating before roughly *cal 45-175 CE (68% probability)* and from *cal 45-185 CE (68% probability; start Garden Creek)* respectively.

As expected of an extensive network through which materials and ideas could move rapidly, similar forms seem to be constructed contemporaneously in different regions connected by river highways during the Middle Woodland Period. However, these similar forms also exhibit their own regional differences and associations with other local earthworks and places. For example, though the rings of Marksville and the sacred circles of Kentucky are alike in morphology, the Marksville site also contains the large semicircular enclosures characteristic of sites in the lower Mississippi River Valley. Pinson appears to be unique among the enclosures available for comparison in this model, built in conjunction with many of the later large geometric Ohio Hopewell enclosures. At the same time, other enclosures that may be considered more similar in morphology, like the irregular Peter Village or the semi-circular Little Spanish Fort, are built earlier. This indicates that, as suspected, morphology is more dependent on spatial than temporal factors.

In a recent publication, Seeman and Nolan (2023) modeled carefully selected dates from what they called the “Big Six” Ohio Hopewell sites, the Hopewell, Liberty, Mound City, Seip, Tremper, and Turner earthwork centers. This resulted in a temporal range for Ohio Hopewell between *90-120 CE* and *395-430 CE* (Seeman and Nolan 2023:158). The majority of the Middle Woodland enclosures discussed here fall within this time, with only a few, like Little Spanish Fort, Peter Village, and Newark Earthworks, potentially undergoing earlier construction. The possible appearance of these sites before the Ohio Hopewell “boom” points to the need for enclosure construction in Middle Woodland societies across wide swaths of this interconnected landscape. This is contrary to the notion that these ideas were appearing in a centralized location from which they then diffused. More sampling of sites outside of Ohio Hopewell would be necessary for a complete understanding of this genesis.

CHAPTER 7. CONCLUSION

When interrogating the rationale behind the Eastern Precinct, it bears remembering that Pinson is considered a pilgrimage site that hosted travelers from across the Eastern Woodlands for hundreds of years. It is unlikely that one final vision of this built landscape was shared throughout the entirety of this process. The ultimate meaning and reasoning behind the enclosure, mounds, and other activities that unfolded at Pinson was contingent on the experiences and beliefs of different participants in the creation of this place. Archaeologists may never know the exact intent behind their actions, but geoarchaeology offers ways to observe decisions that unfolded along the path of creating the landscape, where each encounter with the Eastern Precinct helped inform though did not predetermine landscape modifications that came later.

Through implementing geophysical surveys and close stratigraphic examinations, I propose that the Eastern Precinct landform must have been used for some time before earthmoving, as evidenced by the material culture left in sediments stripped from its surface and used to build the Eastern Enclosure, the Bird Effigy, and also likely Mound 29. Before this construction could proceed, the light material of the embankment's Zone V was selected and spread across various areas of the landform. It extended underneath the embankment's eastern wall, the Bird, and perhaps even further into the enclosure's interior, where it was left exposed for some time before the last stages of embankment construction were completed in quick succession. Additionally, a shared construction history and spatial relationships made apparent by geophysical survey have helped to link the itineraries of the Embankment and Bird in time.

Interpretation of the experiences cultivated in the creative process of planning, sourcing materials, building, and experiencing the Eastern Precinct throughout its itinerary is informed by a consideration of both Indigenous and Western perspectives on memory and its relationship to place. Through the resulting framework, we can come to understand Pinson's Eastern Precinct as a place where experiences were intentionally cultivated by its engineers. During the construction process, the selection of material guided how people moved through the landscape, creating surfaces, paths, and contours that were also molded into the bodies and memories of the builders. Once earthworks were in place, they continued to guide perception and movement in space as entities that could enhance the impression of their scale, create a sense of isolation, and encourage the kinetic experience and "slow seeing" of their shapes. They create a directionality on the landscape, steering people through it in a way that also likely had cosmological implications and mnemonic purpose.

Pinson and its Eastern Precinct continue to present evidence, morphologically, spatially, and temporally, for their connection to other Middle Woodland sites across the Tennessee, Mississippi, and Ohio River Valleys. The SFFDR corridor is intrinsically connected to these other places through the river systems that carried people throughout the Southeast and Midwest, perhaps even acting as a point of connection itself between the Tennessee and Mississippi River Valleys. Pinson and Johnston both contain enclosure forms with similarities to large geometric enclosures as well as irregular hilltop enclosures in Ohio, small "sacred circle" enclosures in Kentucky and Louisiana, the semi-circular shapes found in Louisiana, Mississippi, and perhaps other parts of Tennessee, and the "squircles" of Ohio, Kentucky, and even North Carolina. The Eastern Enclosure appears to have been built in the late Middle Woodland period, *after* many of

these other enclosures, but during a time when large geometric forms were still being constructed in Ohio.

There are still many questions requiring further investigation that have been left unanswered or ambiguous. The original extent of the Zone V surface, as well as the source of its material is unknown and could perhaps be tested with targeted coring across the landform and an exploration of stratigraphy in upland, sloping, and floodplain portions of the site. The entirety of the western half of the Eastern Enclosure remains unexplored by either geophysical techniques or excavation, leaving its relationship to its eastern wall and mounds conjecture. Further study of the bird effigy's shape may reveal more about its meaning and relationship to other iconography, as many bird effigies elsewhere have been identified to certain species with different cosmological implications (Birmingham 2009). Testing at other sites in close proximity to Pinson like Elijah Bray or the Savannah site could provide a better idea of inter-site relationships. Also crucial to this understanding would be a survey of Pinson's floodplain, the land between sites along river corridors, as well as other adjacent upland areas to widen the scope for finding travel corridors and the thus-far elusive occupation areas. GIS analysis of least-cost-paths could help to guide the selection of these areas. Where and how people lived near Pinson remains a critical gap in our understanding of the SFFDR earthwork sites.

Despite ongoing questions, this research has been able to effectively reconstruct the itinerary of an understudied portion of the largest Middle Woodland earthwork site outside of the Ohio River Valley. Though it does not engage with communities to the extent suggested by the tenets of Indigenous archaeologies, it does provide a valuable first step towards integrating Indigenous perspectives into a body of literature that had previously largely excluded them. This research provides a valuable contribution exploring the past of this place, but it is important to

remember that the itinerary of Pinson has not ended but continues as a living landscape with ongoing significance to Indigenous people in the present and into the future.

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APPENDIX A: EASTERN ENCLOSURE BAYESIAN CODE

Code from OxCal for Bayesian model *Eastern Enclosure*

```
Plot()
{
  Sequence("Eastern Enclosure")
  {
    Boundary("StartPhase2");
    Phase(Embankment)
    {
      R_Date("Z2a UCLAMS-290164",1735,15);
      R_Date("Z4 UCLAMS-290166",1945,15);
      R_Date("Z4 UCLAMS-290167",1765,15);
    };
    Boundary("EndPhase2");
  };
};
```

APPENDIX B: MODELLING OTHER MIDDLE WOODLAND ENCLOSURE SITES

Several of the sites discussed in this thesis have radiocarbon dates either indirectly or directly dating the construction of their enclosures. These include Johnston, Marksville, Little Spanish Fort, Garden Creek, Winchester Farm, Peter Village, High Bank, Hopeton, Turner, Newark, Anderson, and Lebus Circle. By modeling these dates in OxCal, we can search for general patterns in the history of Middle Woodland enclosure construction across the Mississippi and Ohio River valleys, as well as in the Appalachians.

Dates to model interregional enclosure construction were selected using the Canadian Archaeological Radiocarbon Database (CARD) which has recently added data from the U.S. (Martindale et al. 2016). These dates needed to be from Middle Woodland enclosures and relate to embankment construction. Those selected have been compiled in Table B.1.

Table B. 1. Unmodeled ¹⁴C ages from Middle Woodland Enclosures

| Site Name | Site # | Provenience | Radiocarbon Lab No. | Material Dated | Uncalibrated Age (BP) | Source |
|---------------------|---------|-----------------------------------|---------------------|-------------------|-----------------------|--------------------|
| Johnston site | 40MD3 | F2 | UGAMS-22323 | UID wood charcoal | 1954+/-22 | Wright et al. 2022 |
| Marksville site | 16AV1 | Ring 2; F5 | UGa-9167 | UID wood charcoal | 2030+/-50 | McGimsey 2003 |
| Marksville site | 16AV1 | Ring 2; Sq 15-08 | UGa-9885 | UID wood charcoal | 1930+/-50 | McGimsey 2003 |
| Marksville site | 16AV1 | Ring 6; basal charcoal | UGa-9168 | UID wood charcoal | 1970+/-30 | McGimsey 2003 |
| Marksville site | 16AV1 | Ring 6; Zone 2B | UGa-10996 | UID wood charcoal | 1950+/-40 | McGimsey 2003 |
| Little Spanish Fort | 22Sh522 | Embankment fill; N912E900, -35cm | Beta-70699 | UID wood charcoal | 2010+/-60 | Jackson 1998 |
| Little Spanish Fort | 22Sh522 | Embankment fill; N912E900, -120cm | Beta-70700 | UID wood charcoal | 2110+/-60 | Jackson 1998 |
| Little Spanish Fort | 22Sh522 | Embankment fill; N916E900, -135cm | Beta-70701 | UID wood charcoal | 2170+/-60 | Jackson 1998 |
| Garden Creek | 31Hw1 | Enclosure 1, base of ditch fill | AA-99138 | UID charcoal | 1919+/-46 | Wright 2014 |

| | | | | | | |
|----------------------|----------|--|-------------|---------------------------|------------|--------------------------|
| Garden Creek | 31H w1 | enclosure 1, middle of ditch fill | AA-99139 | UID charcoal | 1911+/-40 | Wright 2014 |
| Garden Creek | 31H w1 | enclosure 1, rock filled post hole | AA-99141 | UID charcoal | 1952+/-40 | Wright 2014 |
| Winchester Farms | 15F a153 | Trench 1; embankment Ab interface | OS-136890 | UID charred wood | 1910+/-20 | Henry et al. 2021 |
| Peter Village | 15F a166 | ditch fill | Beta-7756 | UID charcoal | 2140+/-110 | Mainfort 1988 |
| Peter Village | 15F a166 | Ditch 100-110 cm | 243199 | UID wood charcoal | 2000+/-15 | DeSanto 2021 |
| Peter Village | 15F a166 | Ditch Core 7 125-130 cm | 243200 | UID wood charcoal | 2155+/-15 | DeSanto 2021 |
| High Bank Earthworks | 30R o24 | Trench 3; F2, slide trench | Beta-170562 | Charred oak | 1930+/-40 | Lynott and Ruby 2009 |
| High Bank Earthworks | 30R o24 | Trench 3; F2, slide trench | Beta-170564 | Charred oak | 1890+/-40 | Lynott and Ruby 2009 |
| High Bank Earthworks | 30R o24 | Trench 2; F20D | Beta-109207 | Charred oak | 1790+/-70 | Lynott and Ruby 2009 |
| High Bank Earthworks | 30R o24 | Trench 2; F20D | Beta-109208 | Charred oak | 2020+/-40 | Lynott and Ruby 2009 |
| High Bank Earthworks | 30R o24 | Trench 2; F20D | Beta-110640 | Charred oak | 1860+/-30 | Lynott and Ruby 2009 |
| High Bank Earthworks | 30R o24 | F18, slide trench | Beta-124044 | Charred oak | 1880+/-40 | Lynott and Ruby 2009 |
| Hopeton Earthworks | 33R o26 | Hopeton Square; trench 1, F6 | Beta-176576 | - | 1990+/-130 | Lynott and Ruby 2009 |
| Hopeton Earthworks | 33R o26 | Hopeton Square; trench 3, F14 | Beta-176579 | - | 1900+/-40 | Lynott and Ruby 2009 |
| Hopeton Earthworks | 33R o26 | Hopeton Square; trench 2, F11 | Beta-176577 | - | 1710+/-80 | Lynott and Ruby 2009 |
| Hopeton Earthworks | 33R o26 | Hopeton Square; Trench 1, F6 | Beta-177506 | - | 2040+/-80 | Lynott and Ruby 2009 |
| Hopeton Earthworks | 33R o26 | Hopeton Square; Trench 1, F6 | Beta-177507 | - | 1990+/-70 | Lynott and Ruby 2009 |
| Hopeton Earthworks | 33R o26 | Hopeton Square; Trench 1, F6 | Beta-159033 | - | 1740+/-50 | Lynott and Weymouth 2001 |
| Hopeton Earthworks | 33R o26 | Hopeton Square; Trench 3, F17 | Beta-176580 | - | 1890+/-40 | Lynott and Ruby 2009 |
| Turner Earthworks | 33H a26 | Great enclosure; ash bed under embankment wall | Beta-133995 | <i>Vitis</i> sp. charcoal | 1710+/-50 | Greber 2003 |
| Turner Earthworks | 33H a26 | Great enclosure; ash bed under embankment wall | Beta-133996 | <i>Vitis</i> sp. charcoal | 1790+/-50 | Greber 2003 |
| Newark Octagon | 33Li 10 | Burned soil horizon under Great circle wall | Beta-58449 | soil | 2110+/-80 | Lepper 1998; Lynott 2014 |
| Anderson Group | 12M 2 | fiddleback embankment | Beta-133452 | UID charcoal | 2030+/-40 | McCord 2008 |
| Anderson Group | 12M 2 | Great mound embankment | Beta-22129 | - | 2170+/-90 | McCord 2008 |
| Anderson Group | 12M 2 | fiddleback embankment | Beta-22130 | - | 2090+/-90 | McCord 2008 |
| Anderson Group | 12M 2 | circle mound embankment | Beta-24115 | UID charcoal | 1560+/-80 | McCord 2008 |

| | | | | | | |
|----------------|---------|-------------------------|------------|--------------|-----------|-------------|
| Anderson Group | 12M 2 | Great mound, post 2 | Beta-45955 | UID charcoal | 2200+/-70 | McCord 2008 |
| Anderson Group | 12M 2 | circle mound embankment | I-11848 | - | 1955+/-75 | McCord 2008 |
| Lebus | 15B B01 | Buried ground surface | OS-136791 | - | 1990+/-30 | Henry 2018 |

With the exception of sites that contained only a single relevant date, which were modeled individually as `R_Date`'s within the overall `Sequence`, I placed the dates from each of these sites into an overlapping `Phase` model, reflecting their often contemporaneous rather than sequential temporal ranges (see Appendix B). Each site was then modeled within its `Phase` based on available information about the context of its radiocarbon samples.

A `charcoal Outlier_Model` was added to each date, with the exception of four; these were sample UCLAMS-29166 from Pinson, which was identified as a short-lived herbaceous dicot stem, two samples from Turner, Beta-133995 and Beta-133996, which were both from short-lived *Vitis* sp. plants, and Beta-58449 from Newark, which was a soil sample. A general `Outlier_Model` was applied to these dates (Bronk Ramsey 2009).

This resulted in one `Outlier` in the charcoal model, sample Beta-24115 from Circle Mound at the Anderson mound group, which has a low agreement of $A=20.1$. I have left it marked as an `Outlier` so that it can be seen but not affect other modeled dates.

A description of the decisions made for modeling and the selection of a range to represent enclosure construction at each site is reported below as well as in Table B.2.

Table B. 2. Date Ranges Representative of Middle Woodland Enclosure Construction

| Site | Representative Data | TAQ/ Bracketed/ TPQ | Modelled Construction Date (68% prob.) | Modelled Construction Date (95% prob.) | Enclosure Type Dated | Location |
|----------------------------|---------------------|---------------------------|---|---|-------------------------|-----------------------|
| Middle Woodland Enclosures | End Boundary | - | 310-400 CE | 280-470 CE | - | - |
| Pinson | End Boundary | TPQ | 285-365 CE | 265-410 CE | Large Irregular | SFFDR corridor, TN |
| Turner | End Boundary | TPQ | 260-350 CE | 240-410 CE | Large Geometric | Ohio River Valley, OH |

| | | | | | | |
|----------------------------|------------------------|-----------|---|--|---|------------------------------------|
| High Bank | End Boundary | TPQ | 190-295 CE | 150-355 CE | Large Geometric Circle | Ohio River Valley, OH |
| Hopeton | Start and End Boundary | Bracketed | between 55-255 CE and 260-355 CE | between 70 BCE- 300 CE and 200-415 CE | Large Geometric Square | Ohio River Valley, OH |
| Winchester Farms | R_Date | TPQ | after 115-240 CE | after 75-325 CE | Small Geometric Circle | Ohio River Valley, KY |
| Garden Creek | Start Boundary | TAQ | 45-185 CE | 45 BCE-240 CE | Squirecle | Appalachian Mts., NC |
| Johnston | R_Date | TAQ | before 45-175 CE | before 15-295 CE | Squirecle | SFFDR corridor, TN |
| Marksville | Start and End Boundary | Bracketed | between 5 BCE-120 CE and 80-220 CE | between 85 BCE-175 CE and 45-320 CE | Small Geometric Circle | Lower Mississippi River Valley, LA |
| LeBus | R_Date | TPQ | after 1-145 CE | after 40 BCE-255 CE | Small Geometric Circle | Ohio River Valley, KY |
| Anderson | Start and End Boundary | Bracketed | between 90 BCE-35 CE and 20 BCE-130 CE | between 190 BCE- 90 CE and 80 BCE-250 CE | Conjoined Geometric Square and Circle; Geometric Circle | Ohio River Valley, OH |
| Peter Village | Start Boundary | TAQ | 90 BCE-55 CE | 210 BCE- 95 CE | Large Irregular | Ohio River Valley, KY |
| Newark | R_Date | TPQ | after 100 BCE-60 CE | after 190 BCE-125 CE | Large Geometric Circle | Ohio River Valley, OH |
| Little Spanish Fort | Start and End Boundary | Bracketed | between 105 BCE-30 CE and 30 BCE-150 CE | between 200 BCE-85 CE and 95 BCE-295 CE | Semicircular | Lower Mississippi River Valley, MS |
| Middle Woodland Enclosures | Start Boundary | - | 105 BCE-90 CE | 250 BCE- ? | - | - |

Pinson

As already discussed, the dates from within Pinson's Eastern Enclosure embankment are unordered and representative of fill from earlier use of the site. These are modeled, then, in an unordered Phase with the understanding that its End Boundary, from *cal 285-365 CE (68% probability; end Pinson)*, represents the TPQ for embankment construction.

Johnston

Only one sample from the Johnston site dates an enclosure feature, the squircle ditch below Mound 5 (Wright et al. 2022). It is from a burned sediment lens near the bottom of the ditch, which could only have been created after it had been dug to source material for an embankment. As such, it is individually modeled as an `R_Date` that represents a TAQ of *cal 45-175 CE (68% probability)* for the enclosure construction.

Marksville

Four dates derive from two relevant contexts at Marksville, the small circular enclosures, Rings 2 and 6. Limited information is given in CARD for their context, and I do not currently have access to the original publication reporting them (McGimsey 2003). From Ring 2, the samples come from Feature 5 and Square 15-08, and from Ring 6, Zone 2B and from basal charcoal. Because a guess at what these contexts imply about the relationship of the samples to the timing of construction would be conjecture, they are grouped all into one `Phase` that is assumed to give a general timeframe for their construction between both its `Start` and `End Boundary` of *cal 5 BCE-120 CE (68% probability; start Marksville)* and *cal 80-220 CE (68% probability; end Marksville)*.

Little Spanish Fort

Three dates from Little Spanish Fort relate to enclosure construction, collected sequentially from the pre-embankment A-horizon, an initial embankment fill level, and a second building stage in the upper embankment fill (Jackson 1998). Unlike Pinson's Eastern Enclosure, these dates are ordered as might be expected from their stratigraphic positioning and so are modeled in a `Sequence` with the understanding that its `Start` and `End Boundary` likely bracket construction between *cal 105 BCE-30 CE (68% probability; start L. Spanish Fort)* and *cal 30 BCE-150 CE (68% probability; end L. Spanish Fort)*.

Garden Creek

Three dates from one of the square enclosure ditches at Garden Creek are from contexts at the base and middle of ditch fill, as well as from a posthole intrusive into the ditch fill (Wright 2014). They are then modeled with those from the ditch in a `Phase` of their own, placed in a larger `Sequence` with the posthole date following. Because these samples date a period after embankment construction as the ditch was being refilled and repurposed, their `Start Boundary` is understood as a TAQ of *cal 45-185 CE (68% probability; start Garden Creek)* for the embankment itself.

Winchester Farm

Winchester Farm has a single reliable date from the Ab horizons interface with fill below the embankment (Henry et al. 2021). This is modeled individually as an `R_Date` representing a TPQ of *cal 115-240 CE (68% probability)* for embankment construction.

Peter Village

Peter Village has three dates from the ditch fill of its large irregular enclosure (DeSanto 2021). These are unordered, dating a period after embankment construction as the ditch was being refilled, and are accordingly modeled in a `Phase` with a `Start Boundary` that represents a TAQ of *cal 90 BCE-55 CE (68% probability; start Peter Village)* for construction.

High Bank

Six dates from High Bank Earthworks are from contexts predating enclosure construction, collected from slide trenches and posts burnt *in situ* beneath the embankment fill (Lynott and Ruby 2009). As such, all are grouped into a `Phase` together, with an `End Boundary` that represents a TPQ of *cal 190-295 CE (68% probability; end High Bank)* for embankment construction.

Hopeton

Seven dates in total relate to the construction of Hopeton Square at the Hopeton Earthworks site (Lynott and Ruby 2009). Four of these dates are from burned logs lying horizontally within the embankment fill, and the three others appear to be from *in situ* burning events, all “directly associated with the construction of segments of earthen wall that form the rectangular enclosure” (Lynott and Ruby 2009:170). These are modeled with the four log dates in a Phase within the Phase also containing the burning events. Because these dates may actually be directly representative of events occurring during construction, the Phase’s Start and End Boundary are understood to bracket the creation of the embankment between *cal 55-255 CE (68% probability; start Hopeton)* and *cal 260-355 CE (68% probability; end Hopeton)*.

Turner

Two dates from Turner Earthworks come from an ash bed underneath the Great Enclosure embankment wall (Greber 2003). They are modeled together in a Phase with its End Boundary of *cal 260-350 CE (68% probability; end Turner)* representing a TPQ for embankment construction.

Newark

One date from Newark comes from a soil sample in a burned soil horizon under the site’s Great Circle embankment wall (Lynott 2009). This is modeled individually as an R_Date representing a TPQ of *cal 100 BCE-60 CE (68% probability)* for embankment construction.

LeBus Circle

One date from LeBus comes from the buried ground surface underneath its embankment wall (Henry 2018). This is modeled individually as an R_Date representing a TPQ of *cal 1-145 CE (68% probability)* for embankment construction.

Anderson

Six dates derive from three contexts at Anderson; two come from its Fiddleback Embankment, two from its Great Mound embankment, and two from its Circle Mound Embankment (McCord 2008). Like the Marksville dates, the only contexts for these samples available to me are from CARD, leaving their ordering unclear. Each pair from the different earthworks were grouped in their own Phase within the Anderson Phase that is assumed to give a general timeframe for enclosure construction between both its Start and End Boundary of *cal 90 BCE-35 CE (68% probability; start Anderson) to cal 20 BCE-130 CE (68% probability; end Anderson)*.

APPENDIX C: MIDDLE WOODLAND ENCLOSURES BAYESIAN CODE

Code from OxCal for Bayesian model *Middle Woodland Enclosures*

```
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Outlier_Model("General",T(5),U(0,4),"t");
  Sequence("Eastern US Enclosures")
  {
    Boundary("Start Eastern US Enclosures");
    Phase()
    {
      Sequence(L. Spanish Fort)
      {
        Boundary("Start L. Spanish Fort");
        Sequence("L. Spanish Fort")
        {
          R_Date("Beta-70701",2170,60)
          {
            Outlier("Charcoal",1);
          };
          R_Date("Beta-70700",2110,60)
          {
            Outlier("Charcoal",1);
          };
          R_Date("Beta-70699",2010,60)
          {
            Outlier("Charcoal",1);
          };
        };
      };
      Boundary("End L. Spanish Fort");
    };
    R_Date("Newark Beta-58449",2110,80)
    {
      Outlier("General",.05);
    };
    Sequence("PeterVillage")
    {
      Boundary("Start PeterVillage");
      Phase("PVillage")
      {
        R_Date("Beta-7756",2140,110)
        {
          Outlier("Charcoal",1);
        };
        R_Date("243199",2000,15)
      }
    }
  }
}
```

```

{
  Outlier("Charcoal",1);
};
R_Date("243200",2155,15)
{
  Outlier("Charcoal",1);
};
};
Boundary("End PeterVillage");
};
Sequence(Anderson)
{
  Boundary("Start Anderson");
  Phase("Anderson")
  {
    Phase("Fiddleback")
    {
      R_Date("Beta-133452",2030,40)
      {
        Outlier("Charcoal",1);
      };
      R_Date("Beta-22130",2090,90)
      {
        Outlier("Charcoal",1);
      };
    };
    Sequence("Great Mound E.")
    {
      R_Date("Beta-45955",2200,70)
      {
        Outlier("Charcoal",1);
      };
      R_Date("Beta-22129",2170,90)
      {
        Outlier("Charcoal",1);
      };
    };
    Phase("Circle Mound E.")
    {
      R_Date("Beta-24115",1560,80)
      {
        Outlier();
        Outlier("Charcoal",1);
      };
      R_Date("I-11848",1955,75)
      {
        Outlier("Charcoal",1);
      };
    };
  };
};

```

```

};
};
};
Boundary("End Anderson");
};
R_Date("LeBus OS-136791",1990,30)
{
  Outlier("Charcoal",1);
};
Sequence(Marksville)
{
  Boundary("Start Marksville");
  Phase("Marksville")
  {
    R_Date("UGa-9167",2030,50)
    {
      Outlier("Charcoal",1);
    };
    R_Date("UGa-9885",1930,50)
    {
      Outlier("Charcoal",1);
    };
    R_Date("UGa-9168",1970,30)
    {
      Outlier("Charcoal",1);
    };
    R_Date("UGa-10996",1950,40)
    {
      Outlier("Charcoal",1);
    };
  };
};
Boundary("End Marksville");
};
R_Date("Johnston UGAMS-22323",1954,22)
{
  Outlier("Charcoal",1);
};
Sequence("Garden Creek")
{
  Boundary("Start Garden Creek");
  Sequence("GardenCreekDitch")
  {
    Phase("GardenCreek")
    {
      R_Date("AA-99138",1919,46)
      {
        Outlier("Charcoal",1);
      };
    };
  };
};

```

```

};
R_Date("AA-99139",1911,40)
{
  Outlier("Charcoal",1);
};
};
R_Date("AA-99141",1952,40)
{
  Outlier("Charcoal",1);
};
};
Boundary("End Garden Creek");
};
R_Date("Winchester Farms OS-136890",1910,20)
{
  Outlier("Charcoal",1);
};
Sequence(Hopeton)
{
  Boundary("Start Hopeton");
  Phase("Hopeton Square")
  {
    Phase("Logs")
    {
      R_Date("Beta-176576",1990,130)
      {
        Outlier("Charcoal",1);
      };
      R_Date("Beta-177506",2040,80)
      {
        Outlier("Charcoal",1);
      };
      R_Date("Beta-177507",1990,70)
      {
        Outlier("Charcoal",1);
      };
      R_Date("Beta-159033",1740,50)
      {
        Outlier("Charcoal",1);
      };
    };
  };
  R_Date("Beta-176579",1900,40)
  {
    Outlier("Charcoal",1);
  };
  R_Date("Beta-176577",1710,80)
  {

```

```

    Outlier("Charcoal",1);
};
R_Date("Beta-176580",1890,40)
{
    Outlier("Charcoal",1);
};
};
Boundary("End Hopeton");
};
Sequence(High Bank)
{
    Boundary("Start High Bank");
    Phase("High Bank")
    {
        R_Date("Beta-170562",1930,40)
        {
            Outlier("Charcoal",1);
        };
        R_Date("Beta-170564",1890,40)
        {
            Outlier("Charcoal",1);
        };
        R_Date("Beta-109207",1790,70)
        {
            Outlier("Charcoal",1);
        };
        R_Date("Beta-109208",2020,40)
        {
            Outlier("Charcoal",1);
        };
        R_Date("Beta-110640",1860,30)
        {
            Outlier("Charcoal",1);
        };
        R_Date("Beta-124044",1880,40)
        {
            Outlier("Charcoal",1);
        };
    };
};
Boundary("End High Bank");
};
Sequence(Turner)
{
    Boundary("Start Turner");
    Phase("Turner")
    {
        R_Date("Beta-133995",1710,50)

```

```

    {
      Outlier("General",.05);
    };
    R_Date("Beta-133996",1790,50)
    {
      Outlier("General",.05);
    };
  };
  Boundary("End Turner");
};
Sequence(Pinson)
{
  Boundary("Start Pinson");
  Phase("Pinson")
  {
    R_Date("Z2a UCLAMS-290164",1735,15)
    {
      Outlier("Charcoal",1);
    };
    R_Date("Z4 UCLAMS-290166",1945,15)
    {
      Outlier("Charcoal",1);
    };
    R_Date("Z4 UCLAMS-290167",1765,15)
    {
      Outlier("Charcoal",1);
    };
  };
  Boundary("End Pinson");
};
};
Boundary("End Eastern US Enclosures");
};
};

```