

NOMINATION TO THE WORLD HERITAGE LIST BY THE  
UNITED STATES OF AMERICA

# MONUMENTAL EARTHWORKS OF POVERTY POINT



— JANUARY 2013 —



Nomination to the World Heritage List by the  
United States of America

**Monumental Earthworks  
of Poverty Point**

January 2013



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JAY DARDENNE  
LIEUTENANT GOVERNOR

**State of Louisiana**  
OFFICE OF THE LIEUTENANT GOVERNOR  
DEPARTMENT OF CULTURE, RECREATION & TOURISM  
OFFICE OF STATE PARKS

CHARLES R. DAVIS  
DEPUTY SECRETARY  
STUART JOHNSON, PH.D.  
ASSISTANT SECRETARY

### Foreword

The Monumental Earthworks of Poverty Point are a testimony to the creativity, engineering, and organizational skills of people who lived in northeast Louisiana more than 3,000 years ago. It is a great tribute for Poverty Point to be nominated to be a UNESCO World Heritage site. The nominated property is owned by the state of Louisiana and is managed by the Office of State Parks as Poverty Point State Historic Site (SHS).

The Office of State Parks takes great pride in this extraordinary archaeological site and recognizes the honor and responsibility of managing the property. The nominated site includes earthen mounds, concentric earthen ridges, and a massive interior plaza that once held circles of huge posts. The Office of State Parks pledges to protect and preserve the 3,400-year-old earthworks and the below-ground archaeological resources at Poverty Point SHS while interpreting the site to the public.

The management plan for the property outlines strategies in place to conserve, maintain, and interpret the unique and exceptional characteristics of the Monumental Earthworks of Poverty Point. The Office of State Parks is committed to operating the state historic site according to the highest standards of management in order to protect its outstanding universal value while promoting public understanding of the site.

I enthusiastically support the nomination of the Monumental Earthworks of Poverty Point.

Sincerely,

Stuart Johnson, Ph.D.  
Assistant Secretary  
Louisiana Office of State Parks







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### USET Resolution No. 2012:026

#### **SUPPORT FOR THE NOMINATION OF THE POVERTY POINT STATE HISTORIC SITE AS A WORLD HERITAGE SITE**

- WHEREAS,** United South and Eastern Tribes Incorporated (USET) is an intertribal organization comprised of twenty-six (26) federally recognized Tribes; and
- WHEREAS,** the actions taken by the USET Board of Directors officially represent the intentions of each member Tribe, as the Board of Directors comprises delegates from the member Tribes' leadership; and
- WHEREAS,** the Poverty Point State Historic Site is an archaeological site preserved and maintained by the Louisiana Office of State Parks and the Louisiana Division of Archaeology; and
- WHEREAS,** Poverty Point is currently listed as a National Historic Landmark and as a National Monument; and
- WHEREAS,** Poverty Point was constructed and occupied approximately 3,500 years ago, with a monumental architecture in the form of five earthen mounds, six earthen concentric ridges and a 35 acre interior plaza; and
- WHEREAS,** Poverty Point was the center of an extensive exchange network that obtained more than 70 tons of stone from up to 1,000 miles away, and represents a complex society based on a hunting, fishing and gathering economy; and
- WHEREAS,** Poverty Point represents a unique archaeological site that has significantly shaped our understanding of Native American cultural development and heritage in North America; and
- WHEREAS,** the World Heritage List recognizes those sites that are of outstanding universal value and represent a unique and exceptional testimony to a past cultural tradition and civilization; and
- WHEREAS,** Poverty Point is being nominated as a World Heritage Site in recognition of its significant characteristics and Native American cultural achievements; and
- WHEREAS,** the Louisiana Office of State Parks and Louisiana Division of Archaeology have consulted with the federally recognized Indian Tribes in Louisiana concerning the development of this nomination; and
- WHEREAS,** the Louisiana Office of State Parks and Louisiana Division of Archaeology conferred with the United South and Eastern Tribes' Culture and Heritage Committee concerning the development of this nomination; therefore, be it

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**United South and Eastern Tribes, Inc.****USET Resolution No. 2012:026**

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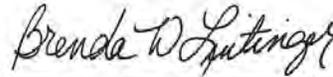
**RESOLVED** The USET Board of Directors supports the nomination of the Poverty Point State Historic Site as a World Heritage Site.

**CERTIFICATION**

This resolution was duly passed at the USET Impact Week Meeting, at which a quorum was present, in Arlington, VA, on Thursday, February 16, 2012.



Brian Patterson, President  
United South and Eastern Tribes, Inc.



Brenda Lintinger, Secretary  
United South and Eastern Tribes, Inc.

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*"Because there is strength in Unity"*

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## Executive Summary

### State party

United States of America

### State

State of Louisiana, West Carroll Parish

### Name of property

Monumental Earthworks of Poverty Point

### Geographical coordinates to the nearest second

The geographical center point for the Monumental Earthworks of Poverty Point is UTM Zone 15N (WGS 1984 datum) Easting: 649450, Northing: 3612170

### Textual description of the boundaries of the nominated property

The nominated property, Monumental Earthworks of Poverty Point, is the publicly owned and managed archaeological park known as Poverty Point State Historic Site (SHS). Poverty Point is situated in the northeastern quarter of the state of Louisiana, located in the southeastern quarter of the United States. The eastern boundary of the site is defined by the western bank of Bayou Maçon, while the northern, western, and southern boundaries are based on fixed survey points. The northern boundary extends from Bayou Maçon westward 1,705 m. From the northwestern corner, the western boundary extends southward 1,264 m. From the southwestern corner, the southern boundary extends eastward 1,321 m to Bayou Maçon; there is a jog in the southern boundary line created by the donation of about 1 ha of land to the park in 1993.

### Criteria under which property is nominated

Criterion (iii): to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization, which is living or which has disappeared.

### Draft statement of Outstanding Universal Value

#### Brief Synthesis

The Monumental Earthworks of Poverty Point are located in northeastern Louisiana on elevated land overlooking the Mississippi River floodplain. The site consists of a vast, integrated complex of earthen monuments, constructed 3,700-3,100 years ago. The original configuration – which is still intact – includes four earthen mounds; six enormous, concentric, semi-elliptical earthen ridges with an outer diameter of 1.14 km; a large flat interior plaza containing large post circles; and extensive borrow areas. A fifth mound was added roughly 1,700-2,000 years later. The massive Mound A, one of the largest artificially constructed earthen mounds in North America, dominates the site. Not only

was this culturally created landscape the largest and most elaborate settlement of the entire 7,500-year Archaic period in North America, it was, more significantly, built by settled hunter-fisher-gatherers, not agricultural people.

### Justification for Criteria

Criterion (iii): This site bears exceptional testimony to a vanished cultural tradition, the Poverty Point culture, centered in the Lower Mississippi Valley during the Late Archaic period 4,000-2,500 years ago. Poverty Point is an outstanding example of landscape design and monumental earthwork construction by a population engaged in a hunting-fishing-gathering subsistence system. The mound complex, which dates to 3700-3100 BP, is a singular achievement in earthen construction in North America, one that was not surpassed for at least 2,000 years (and only then by people supported by a farming economy). The particular form of the complex—six concentric, semi-elliptical earthen ridges, a linear arrangement of mounds, and post circles in the interior plaza—is not duplicated anywhere else in the world. The natural setting of this inland settlement was an important factor in the site's establishment and longevity. The location provided easy access to the Mississippi River valley and the hardwood forests along its margins. Although rich in edible resources, the setting lacked stone, a critical raw material for tools and other objects. Thus, an extensive network that imported rocks and minerals in great quantities over hundreds of kilometers played a key role in the Poverty Point phenomenon. Taken as a whole, the scale and design of the earthwork complex, the inland riverine hunting-fishing-gathering subsistence economy, and the raw material acquisition network of Poverty Point testify to an exceptional cultural tradition not duplicated in time or across space.

### Statement of Integrity

The boundaries of the property contain all of the monumental and architectural elements of Poverty Point. Although the ridges and some of the mounds have been diminished somewhat by natural processes, cultivation, and other Euro-American activities, the site remains intact and readily appreciated. Its relation to the surrounding landscape is preserved within an agricultural setting. Erosion is the largest threat to the integrity of the site, and the Louisiana Office of State Parks is monitoring and minimizing its impact.

### Statement of Authenticity

That the earthen monuments of Poverty Point survive to be appreciated by modern visitors is a testament to the engineering skills of their builders. The earthworks are all original constructions – there has been no reconstruction at the site. The rural agricultural setting provides an open landscape. Most of the property is in grassland, as it likely was about 3,400 years ago; swatches of hardwood forest are preserved along the bayous and the outer edges of the property.

### Requirements for Protection and Management

Since 1972, the site has been owned and managed by the state of Louisiana as a historic site. A professional staff manages the property and interprets it for the public, and the station

archaeologist oversees archaeological matters. The heritage management plan for Poverty Point summarizes protocols and protections currently in place at the site. It describes the processes of management, monitoring, interpretation, and archaeological investigation of the property. It is the public policy of the state of Louisiana to protect and preserve historic properties. Accordingly, the state constitution, state laws, and administrative rules carefully control access to, and activity on, the site. Designated as a National Historic Landmark in 1962, Poverty Point receives the additional benefit of overlapping layers of federal statutory protection.

### **Name and contact information of official local institution/agency**

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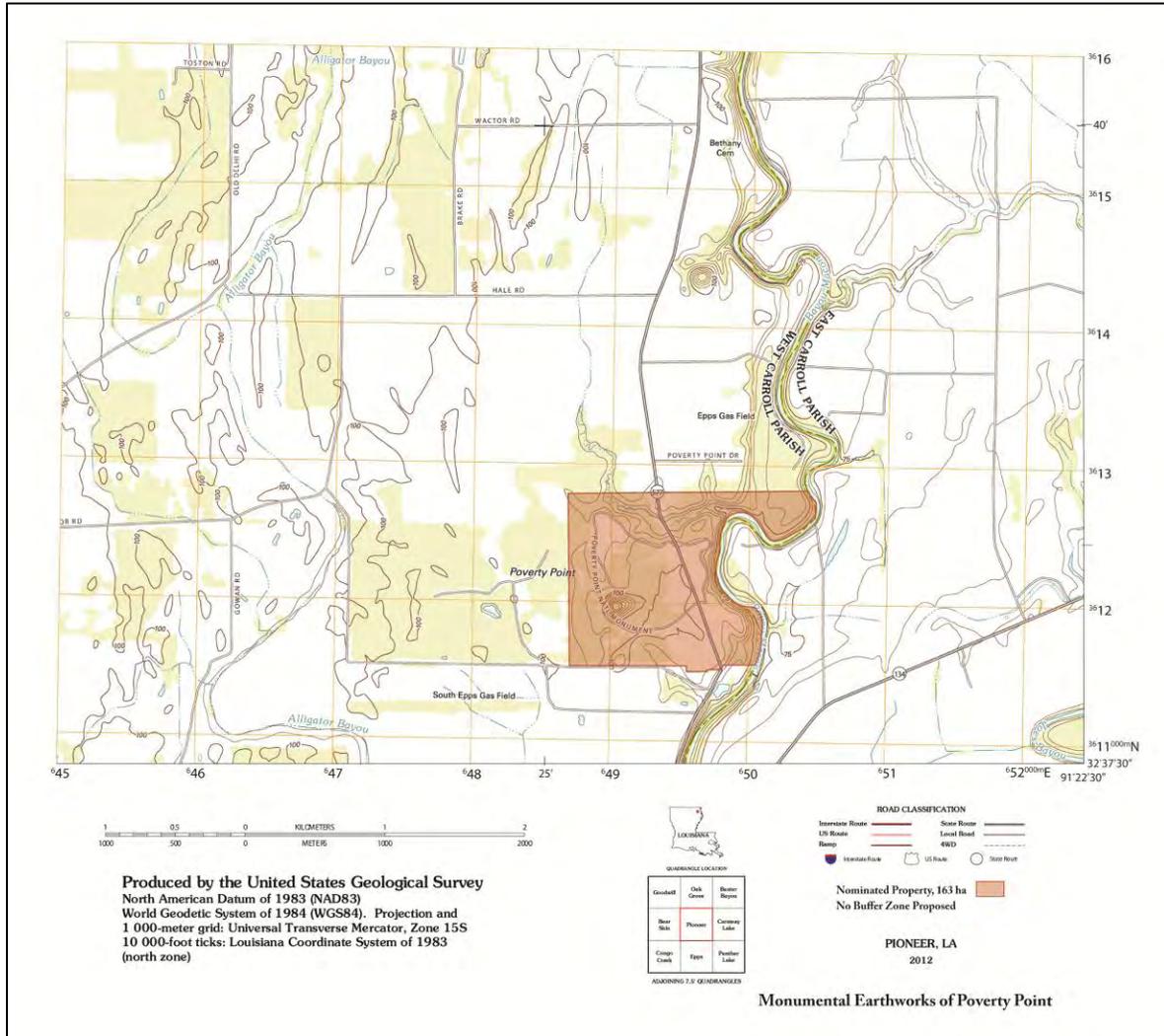
Fax: 202-371-1446

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### Letter size map of the nominated property

Please see Appendix A (separate map roll) for original full-scale topographic map.

The Monumental Earthworks of Poverty Point (Poverty Point State Historic Site) are shown below. The base map is the 2012 United States Geological Survey (USGS) 7.5' Pioneer Quadrangle.





Entrance to the visitors' center. Photo © Jenny Ellerbe

# 1. IDENTIFICATION OF THE PROPERTY

- 1.a State party
- 1.b State
- 1.c Name of property
- 1.d Geographical coordinates to the nearest second
- 1.e Maps and plans, showing the boundaries of the nominated property and buffer zone
- 1.f Area of nominated property (ha) and proposed buffer zone (ha)



Figurine head.  
Photo © Jenny Ellerbe

## 1. Identification of the Property

### 1.a State party

United States of America

### 1.b State

State of Louisiana, West Carroll Parish

### 1.c Name of property

Monumental Earthworks of Poverty Point

### 1.d Geographical coordinates to the nearest second

The geographic center point for Monumental Earthworks of Poverty Point is:

UTM Zone 15N (WGS 1984 datum) Easting: 649450, Northing: 3612170

UTM coordinates for boundary points (Figure 1.2):

Point	Easting	Northing	Point	Easting	Northing
1	650392.2	3612812.9	6	649701.1	3611503.5
2	648688.9	3612794.9	7	649701.1	3611516.1
3	648701.5	3611531.4	8	649795.7	3611516.9
4	649548.5	3611543.5	9	649818.8	3611548.7
5	649549.3	3611501.5	10	650019.8	3611550.5

### 1.e Maps and plans, showing the boundaries of the nominated property and buffer zone

#### (i) Location map

The nominated property is in the southeastern United States, in the northeastern corner of the state of Louisiana (Figure 1.1).



Figure 1.1. Location of Poverty Point.

## (ii) Topographic maps

Please see Appendix A for a map of the property on an original 7.5' United States Geological Survey (USGS) topographic quadrangle map. Figure 1.2 shows the property boundaries. Note that, whereas the northern, western, and southern boundaries are based on fixed survey points, the eastern border of the property is defined by the western bank of Bayou Maçon. Figure 1.3 shows the location of Poverty Point in a setting extending 10 km in the four cardinal directions from the property's approximate center point. Clearly, this is a rural locale, with no large cities or interstate highways nearby.

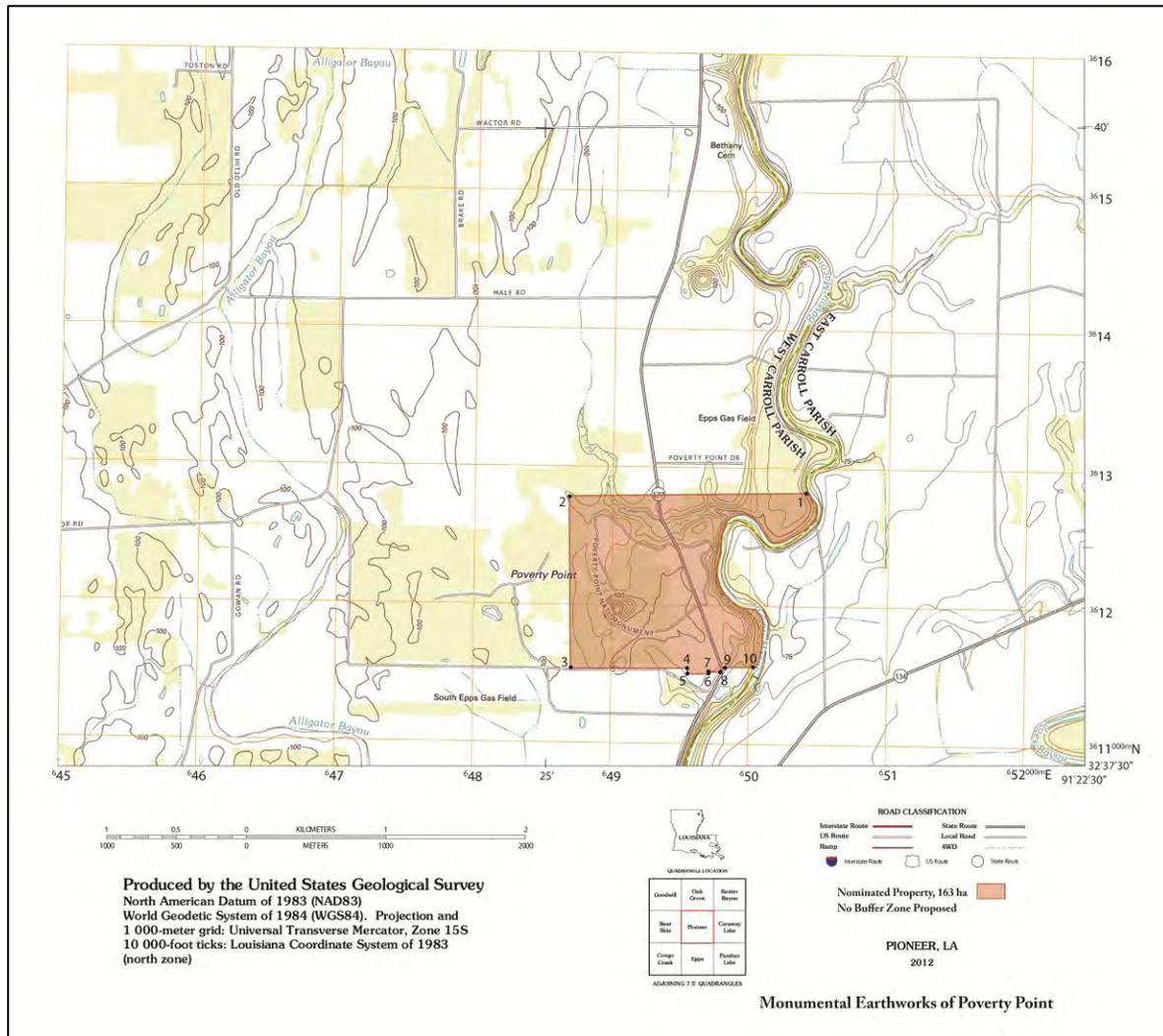


Figure 1.2. Poverty Point State Historic Site, with property shaded in rust, on USGS 7.5' Pioneer Quadrangle. Numbers 1-10 correspond to coordinates in Section 1.d.



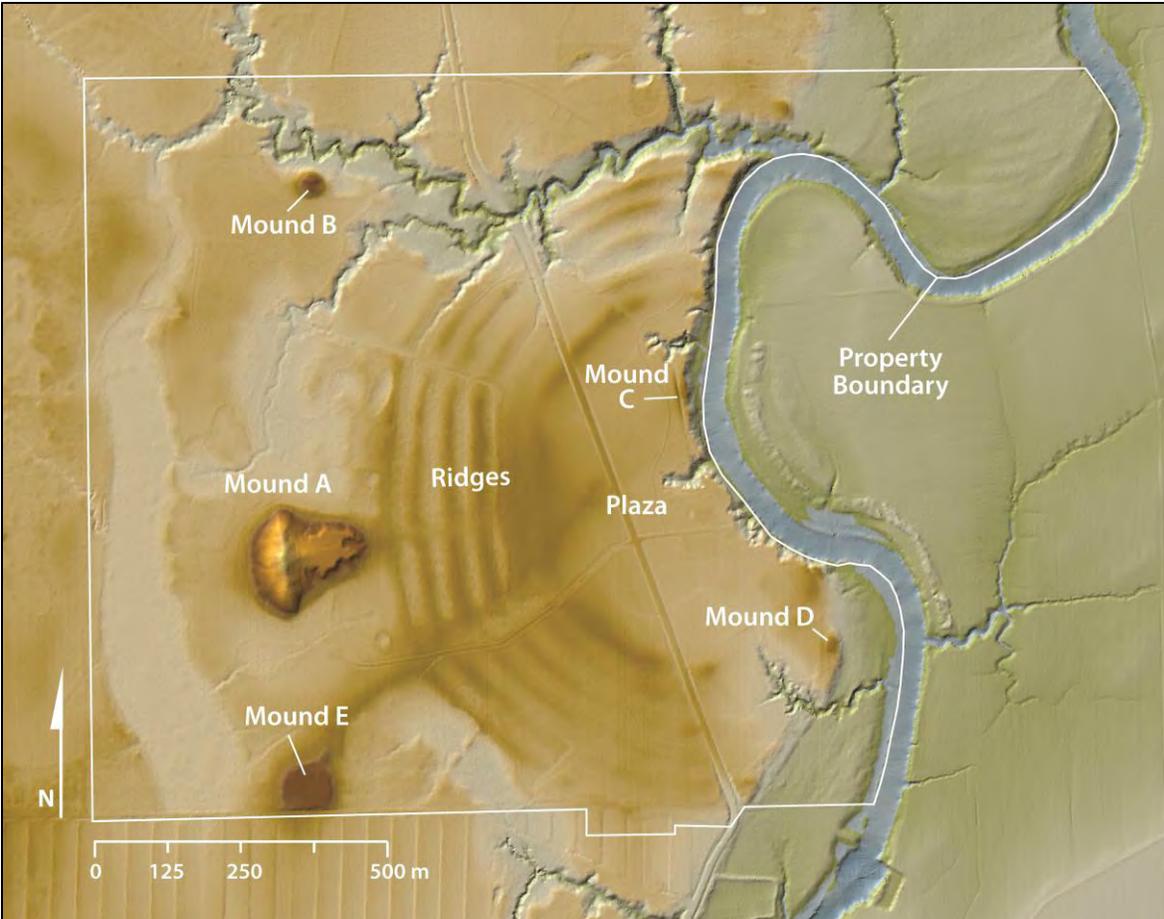


Figure 1.4. LiDAR image showing the earthen monuments of Poverty Point. Topographic data distributed by “Atlas: The Louisiana Statewide GIS,” LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

No buffer zone beyond the limits of the property is proposed. Physical buffers on the property and local development patterns together provide a strong visual protection. As Figure 1.5 shows, trees within the property boundaries provide a visual buffer to the east, west, and north. Only four segments of the boundary (indicated by red lines in Figure 1.5) lack a physical buffer to the outside. Figure 1.6 shows the current view for each segment looking beyond the property boundary as viewed from the corresponding red dot location (shown on Figure 1.5).

The agricultural character of the surrounding area is not expected to change (Figure 1.7). The area has a long farming tradition, dating back to the first Euro-American settlers in the 1810s and 1820s. For many families, land has been handed down, from one generation to another, and there are deep ties to that land. The crops may change and the technology may change, but this way of life is likely to persist. Also, visitor services are available nearby, and the expectation is that existing parks, motels, and restaurants have the capacity to meet the increased demand that World Heritage listing may stimulate.

The viewshed from Poverty Point is subject to legislative protection, as well. Section 106 of the National Historic Preservation Act offers buffer protection for National Historic Landmarks like

Poverty Point (refer to Sections 5.b and 5.c). This legislation protects the site from projects that will change the character of the visual setting or that will introduce incompatible visual, atmospheric, or audible elements to the property. The Section 106 review process is initiated whenever a federally funded, permitted, or licensed project is proposed. The Louisiana State Historic Preservation Office would recommend that potential impacts to the site's viewshed be avoided, minimized, or mitigated, and would work with project developers to achieve these goals (Charles McGimsey, personal communication 2012). Further, the Advisory Council on Historic Preservation would be invited to participate in consultation if such a project would adversely affect Poverty Point. The federal agency could withhold the funds, permit, or license for the proposed project if the adverse effect could not be avoided, minimized, or mitigated.

Given the above circumstances, no additional buffer zone is necessary or proposed.

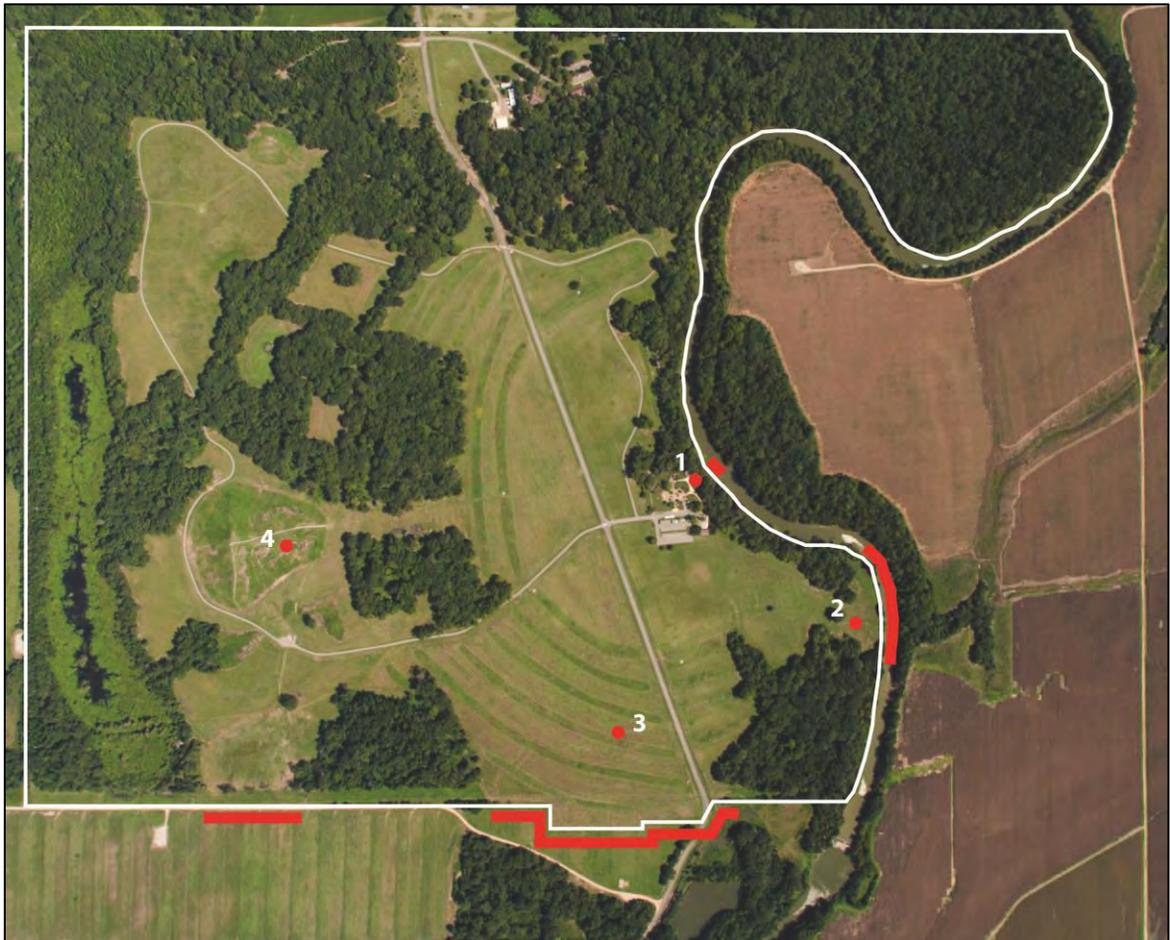


Figure 1.5. 2012 aerial photograph of Poverty Point. Property boundaries are traced by the white line. Thick red lines indicate areas where there are currently no trees to provide a physical visual buffer. Corresponding red dots indicate the locations from which the photographs in Figure 1.6 were taken.  
*Photo © Susan Guice*



Figure 1.6. Views beyond the Poverty Point SHS property boundaries. Numbers 1-4 refer to numbered locations on Figure 1.5. *Photos 1-3 © Jenny Ellerbe; Photo 4 © C.C. Lockwood*



Figure 1.7. 2004 Digital Orthophoto Quarter Quadrangle (DOQQ) of Poverty Point SHS and the surrounding area. DOQQ distributed by "Atlas: The Louisiana Statewide GIS," LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

### 1.f Area of nominated property (ha) and proposed buffer zone (ha)

Area of nominated property:	163 ha
Buffer zone:	0 ha
Total:	163 ha





Aerial view of south and southwest ridges. *Photo © C.C. Lockwood*

## 2. DESCRIPTION

- 2.a Description of the property
- 2.b History and development



Celts.  
*Photo © Jenny Ellerbe*

## 2. Description

### 2.a Description of the property

The nominated property, Monumental Earthworks of Poverty Point, is a 163 ha state-owned and -managed archaeological park (Poverty Point State Historic Site) in northeastern Louisiana. The park is currently open to the public 362 days per year. Although the property is named for a nineteenth century farm, Poverty Point Plantation, its cultural significance derives from an ancient monumental earthen complex of five mounds; six concentric, semi-elliptical earthen ridges; a 17.4 ha central plaza; and associated borrow areas. Poverty Point is not just an archaeological site with several earthworks, but rather it is an integrated, created landscape designed and constructed by a population engaged in a hunting-fishing-gathering way of life from ca. 3700 to 3100 BP. Because the natural environment was a critical factor in the development of Poverty Point, the site is placed within its natural setting first. Then the broader cultural landscape is described. Finally, the different cultural elements of the property are detailed.

#### Natural Setting

Poverty Point is located on the eastern edge of a narrow elevated landform, Macon Ridge, which forms the western border of the Upper Tensas Basin in the Lower Mississippi Valley (Figure 2.1). Today, the Mississippi River is about 25 km east of Macon Ridge, but where it flowed during Poverty Point times is uncertain. There is evidence for two river channels (meander belts) during the period 4800-2600 BP, one along the eastern edge of the valley and one closer to the location of the modern channel. Lenzer (1978) suggests the river may have flowed marginally closer to the site, possibly within 18-20 km, during Poverty Point times.

Macon Ridge is a 180 km long by 40 km wide Pleistocene-age valley train (glacial outwash) deposit that was subsequently covered with 3-5 m of windblown silt, or loess (Autin et al. 1991; Heinrich 2008). It is topographically higher on the east because the loess mantle is thicker there, sloping down and thinning gradually to the west. The natural surface of Macon Ridge has a gently undulating topography, with broad, shallow channels oriented north to south. Excess rainwater tends to pond in mild depressions, creating swamps and boggy areas. Along the eastern edge of the ridge, runoff into Bayou Maçon has excised deep gullies through the easily eroded loess.<sup>2</sup>

At Poverty Point, Macon Ridge is about 7-9 m higher than the adjacent lowlands to the east. Prior to eighteenth through twentieth century construction of the artificial levee systems along the Mississippi River and its tributaries, the bottomlands around Macon Ridge were subject to frequent seasonal flooding (Winters et al. 1938; Worthen and Belden 1911). The elevation difference between the top of Macon Ridge and the floodplain below was apparently enough to keep Poverty Point out of water. Not even the catastrophic flood of 1927, which broke levees and inundated

<sup>2</sup> It is tradition that Macon Ridge is spelled “Macon” (although pronounced \ˈmās-ən\ or sometimes \ˈmā-kən\), while Bayou Maçon is spelled “Maçon” (and pronounced \ˈmās-ən\). The bayou supposedly takes its name from a river pirate named Samuel Mason who, with his gang of ruffians, preyed upon travelers in the area in the 1790s and early 1800s (McKoin 1971). Incidentally, a bayou is a sluggish stream with a poorly defined shoreline, typically found in flat lowlands.

much of the Lower Mississippi Valley (Barry 1997), impacted the site (Gibson 1990c). Lenzer (1978) noted that an even more severe flood in 1828 inundated land on Macon Ridge west of Poverty Point, but not the site itself. This also means that there has been no significant sedimentation on Macon Ridge over the past 15,000 years, and thus the archaeological record on that landform is at the surface, not deeply buried.

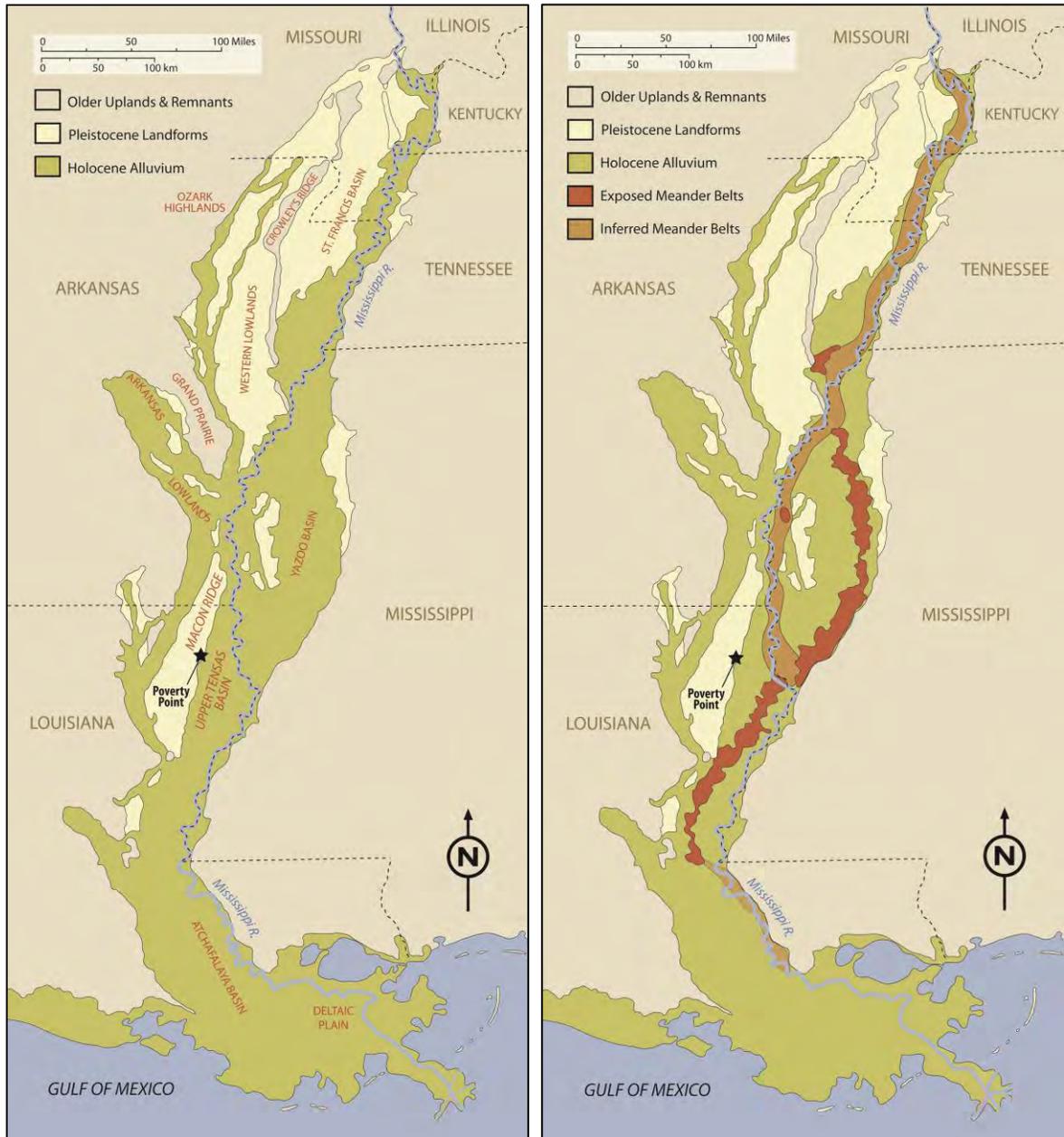


Figure 2.1. Left: landforms of the Lower Mississippi Valley. Right: positions of the Mississippi River channel, at 4800-2600 BP. Based on Saucier (1981).

Another important implication of Poverty Point's location on Macon Ridge is the absence of locally available stone that could be used for construction, cooking, or tool production. Neither Macon Ridge nor the adjacent bottomlands contain stone at or near the surface that is larger than

the size of sand grains.<sup>3</sup> Thus, all of the lithic material at Poverty Point, estimated at over 71 metric tons (Gibson 1994c), must have been brought here by people (Sidebar 2.1; Figures 2.2 and 2.3).



Figure 2.2. Diversity of stone used for spear points.  
Photo © Jenny Ellerbe

The absence of local stone had a second important influence on the culture at Poverty Point that warrants mentioning. The people of Poverty Point (like those at other sites in rockless environments) manufactured “artificial cooking stones” (Ford and Webb 1956; Hunter 1975) to use in place of rocks for “hot rock cooking” (Sidebar 2.2). Poverty Point has so many of these artifacts, in a variety of distinctive forms, that they are known as Poverty Point Objects, or PPOs.

The difference in landform between Macon Ridge and the adjacent alluvial bottomlands is reflected in the characteristics of the soil groups that have formed in those places (Allen 1990; Allen et al. 1988; Weems et al. 1977; Worthen and Beldon 1911). In general, the Macon Ridge loess soils tend to

#### Sidebar 2.1. Stone from Distant Places

The nearest “local” sources of stone are exposures of chert (a stone similar to flint) gravels found more than 40 km from Poverty Point (Ford and Webb 1956). More distant nonlocal or “exotic” stone may have been imported from as far as 1,600 km away. Some materials, like steatite (soapstone) and galena (lead sulfate ore), have been traced to their geological sources based on their chemical compositions; other source identifications are less secure.

There is great diversity in the rocks and minerals found at Poverty Point. In addition to steatite, galena, and chert (of which there are several varieties), quartz crystal, quartzite, magnetite, hematite, sandstone, granite, schist, slate, shale, greenstone, ironstone, limonite, cannel coal, and copper were brought to the site. Except for the steatite, which was carved into bowls prior to transport, these materials did not arrive as finished products (Gibson 2007). The imported materials were used to make utilitarian tools and decorative items, rather than having been reserved for prestige or burial goods.

The acquisition of nonlocal raw materials is typically envisioned as an extensive trade network. However, there is no evidence for what the people of Poverty Point may have provided in exchange. Were they items that did not survive over thousands of years? Or, as Gibson (1999b) has suggested, was there some intangible value to be gained by other groups or individuals who participated in such a system with Poverty Point?

<sup>3</sup> An inaccessible mixed sand and gravel substratum, with 8 cm maximum clast diameter, is buried beneath 8-15 meters of sediments (Fisk 1944; Lenzer 1978).

be siltier and better drained than the more clayey soils of the Mississippi floodplain. Both kinds of soils, however, are good agricultural soils. Not surprisingly, Macon Ridge is today largely an agricultural area, as it has been since Euro-Americans began settling there in the 1810s and 1820s (Reonas 2012; Worthen and Beldon 1911). Because of intensive cultivation, only remnants of the natural vegetation remain and these are mostly restricted to those areas too wet, or with slopes too steep, to farm.



#### Sidebar 2.2. Earth Ovens

The inhabitants of Poverty Point cooked their food in earth ovens. Lacking an abundant supply of local stone, the people of Poverty Point hand-molded moistened silt loam soil into different forms as replacements for cooking stones. These artificial cooking stones, or Poverty Point Objects (PPOs), became ceramic upon heating. In brief, a pit was dug, PPOs were placed in the bottom, and a fire was built; after the fire died, food would be placed with the heated PPOs, covered with dirt, and left to roast or steam. PPOs may also have been used as “boiling stones” to heat food in containers.

It has been suggested that the different forms of PPOs may have had distinctive heating properties (Gibson 1975b). There may have been a stylistic component to the distribution of the different forms, as well (Pierce 1998).



PPOs from Poverty Point. Photo © Jenny Ellerbe

Figure 2.3. Sources of raw materials. Based on Gibson (1994c).

The natural flora of the Lower Mississippi Valley has been dominated by a bottomland hardwood forest for the past 5,000 to 6,000 years (Delcourt and Delcourt 2000). The forest is a mosaic, wherein different combinations of plants prevail under different conditions of geomorphology and hydrology (Chapman et al. 2004; Foti et al. 2011; Louisiana Natural Heritage Program 2009; Winters et al. 1938). Macon Ridge and the lowlands of the Upper Tensas Basin are topographically and biotically different, enough so that they are classified as distinct ecoregions by the United States Environmental Protection Agency (Chapman et al. 2004; Daigle et al. 2006) (Table 2.1; Figure 2.4).<sup>4</sup> Poverty Point was thus positioned to exploit multiple ecosystems, a circumstance which would have provided stability in the availability of natural resources (Sidebars 2.3 and 2.4).

Table 2.1 Ecoregions of the Poverty Point vicinity (Daigle et al. 2006:2).

No.	Ecoregion	Physiography and Vegetation
73a	Northern Holocene meander belts	<p>Flat plains and river meander belt with levees, point bars, oxbows, and abandoned channels. Large rivers and some smaller low-gradient streams, channelized in many places.</p> <p>In wettest areas, cypress-gum swamps (bald cypress [<i>Taxodium distichum</i>], water tupelo [<i>Nyssa aquatica</i>]); on less flooded zones, overcup oak (<i>Quercus lyrata</i>), Nuttall oak (<i>Q. nuttallii</i>), willow oak (<i>Q. phellos</i>), water hickory (<i>Carya aquatica</i>), elm (<i>Ulmus</i> spp.), green ash (<i>Fraxinus pennsylvanica</i>), sweetgum (<i>Liquidambar styraciflua</i>); on point bars and natural levees, sweetgum, ash (<i>Fraxinus</i> spp.), cottonwood (<i>Populus</i> spp.). Some forested canebrakes with open, mixed deciduous trees and giant cane (<i>Arundinaria gigantea</i>).</p>
73d	Northern backswamps	<p>Flat plains with floodplain depressions containing ponded wetlands, swamps, and lakes. Some low-gradient streams with silty substrates.</p> <p>In wettest areas, cypress-gum swamps (bald cypress, water tupelo); on less flooded zones, overcup oak, Nuttall oak, willow oak, water hickory, elm, green ash, swamp privet (<i>Forestiera acuminata</i>), planertree (<i>Planera aquatica</i>), and sweetgum.</p>
73j	Macon Ridge	<p>Wide, flat to irregular alluvial terrace with relict patterns of branching channels, irregular braided bars, and interfluves. Low-gradient, channelized streams and canals with silty substrates.</p> <p>Bottomland hardwoods and hardwood flatwoods of willow oak, water oak (<i>Q. nigra</i>), Nuttall oak, swamp chestnut oak (<i>Q. michauxii</i>), sweetgum and hickory (<i>Carya</i> spp.); some upland hardwood forests of white oak (<i>Q. alba</i>), southern red oak (<i>Q. falcata</i>), and on drier sites, some post oak (<i>Q. stellata</i>). In wettest areas, cypress-gum swamps (bald cypress, water tupelo). Small areas of tallgrass prairie or loblolly pine (<i>Pinus taeda</i>) may have occurred.</p>

<sup>4</sup> Ecoregions are “areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources” and they are “identified through the analysis of the spatial patterns and the composition of biotic and abiotic phenomena that affect or reflect differences in ecosystem quality and integrity (Wiken 1986; Omernik 1987, 1995). These phenomena include geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology” (Chapman et al. 2004:1).

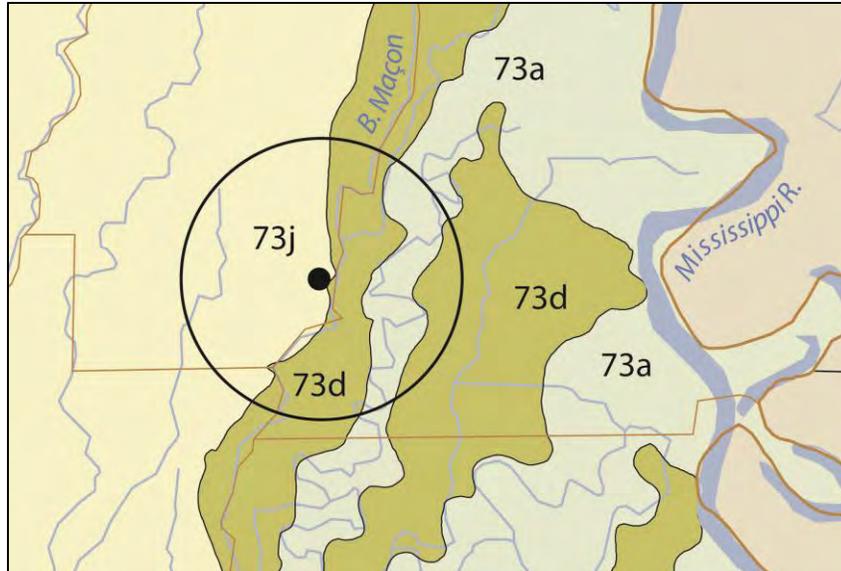


Figure 2.4. Ecoregions in the Poverty Point vicinity (circle has 10 km radius) as defined by Daigle et al. (2006). See Table 2.1 for key.

When driving kilometer after kilometer through farmland in the Lower Mississippi Valley, it is easy to appreciate that the landscape has been altered since Euro-Americans settled there in the eighteenth century. Only remnants are left of the pre-settlement forests they encountered, and even that vegetation was not pristine. Native Americans had a significant presence in Louisiana for 10,000 to 12,000 years and so the idea of an “undisturbed” natural forest community prior to Euro-American settlement is illusory (cf. Delcourt and Delcourt 2000; Gardiner and Oliver 2005; Hamel and Buckner 1998). When Poverty Point was occupied, the local landscape was likely an open one,<sup>5</sup> especially given demands for wood as fuel and construction material (Cummings 2003; Gardiner and Oliver 2005; Greenlee and Seltzer 2009). Thus, the openness provided by the current agricultural use of the region (Figure 2.5) provides a relatively authentic setting, even if the particular plants (e.g., cotton [*Gossypium hirsutum*], soybeans [*Glycine max*], corn [*Zea mays*], and wheat [*Triticum* spp.]) were not there approximately 3,400 years ago. The present-day rural landscape is a more appropriate one for appreciating and preserving Poverty Point than a wooded or an urban one would be.

#### *Natural Elements of Poverty Point*

The nominated property (Figure 2.6) is not confined to Macon Ridge; about 10% (16.4 ha) of the property is bottomland where Bayou Maçon strays from the eastern edge of the ridge. That land, which floods during times of sustained rainfall, is not managed or developed. The northeastern section of bottomland is not currently accessible to the public; visitors can access the lowland in the southeastern sector of the site.

<sup>5</sup> Pollen obtained from sediments underlying and in one of the constructed earthen ridges represent mostly grasses and weedy plants, indicating that a grassland or meadow-like environment prevailed in the vicinity at the time of the Poverty Point occupation (Cummings 2003).



Figure 2.5. Aerial view (looking west northwest) of Poverty Point, situated among croplands and woods. Photo © Susan Guice

### Sidebar 2.3. Exploiting the Plant Resources

The native plants of the Lower Mississippi Valley were a diverse and productive suite of resources for the people of Poverty Point (Gibson 1970a; Jackson 1989; Shea 1978). Plants supplied food, and they provided the raw materials for tools, baskets, houses, and other structures. They also provided fuel.

Canopy trees like the hickories (*Carya* spp.), black walnut (*Juglans nigra*), and oaks (*Quercus* spp.) provided nuts and acorns. Fruits like pawpaw (*Asimina triloba*), persimmon (*Diospyros virginiana*), mayhaw (*Crataegus apaca*), and huckleberry (*Vaccinium arboretum*) were available on understory trees/shrubs; one of the most important woody vines was the muscadine grape (*Vitis rotundifolia*). Herbaceous plants like chenopodium (*Chenopodium berlandieri*), marsh elder (*Iva annua*), and smartweed (*Polygonum arifolium*) would have been available on natural levees and mudflats. Tubers and shoots could be obtained from plants like lotus (*Nelumbo lutea*), water lily (*Nymphaea* spp.), cattail (*Typha* spp.), and groundnut (*Apios americana*).

Cane (*Arundinaria* spp.) appears to have been used in a variety of ways, including as a drilling tool, as a construction material, as a raw material for baskets, and as a fuel.



Persimmon, *Diospyros virginiana*. Photo © C.C. Lockwood



Pecan, *Carya* spp. Photo © C.C. Lockwood



Pawpaw, *Asimina triloba*. Photo © Jenny Ellerbe

#### Sidebar 2.4. Exploiting the Animal Resources

The bottomland hardwood forests supported a rich and diverse wildlife (Gardiner and Oliver 2005; Jackson 1989). Just as the plants differed between Macon Ridge and the adjacent lowlands, so did the animals.

The greatest difference among ecosystems would have been in the availability of fish and other aquatic animals (amphibians, reptiles, birds, and molluscs) in the oxbow lakes, bayous, backwater sloughs, and small channels positioned on the floodplain. Indeed, fish of the sloughs and oxbows (e.g., bowfin [*Amia calva*], freshwater drum [*Aplodinotus grunniens*], gar [*Lepisosteus* spp.]), and turtles would have provided a particularly abundant, predictable, easily exploited resource for prehistoric populations. Among the terrestrial mammals, white-tailed deer (*Odocoileus virginianus*), rabbits (*Sylvilagus* spp.), and squirrels (*Sciurus* spp.) would have been common.

In addition to large resident bird populations, millions of waterfowl and other birds migrating along the Mississippi Flyway would have been available in spring and fall seasons. The fauna supplied not only food, but also the raw material for tools, containers, clothing, and other items.

All photos © C.C. Lockwood



White-tailed deer, *Odocoileus virginianus*.



Wood duck, *Aix sponsa*.



Alligator snapping turtle, *Macrolemys temminckii*.

Because loess is so easily eroded, especially in areas that experience heavy rainfall, deep gullies are common along the edges of loess uplands like Macon Ridge (Heinrich 2008). Indeed, there are today several prominent gullies along the eastern edge of the ridge. Gully formation was an issue for the Native American inhabitants of Poverty Point, as well, and some of the gullies that are visible today were problem areas when the site was occupied roughly 3,400 years ago. Archaeological excavations, sediment cores, and naturally exposed profiles have revealed past efforts to halt the spread of gullies and reclaim land along the eastern edge of the ridge (Connolly 2001; Gibson 1984, 1997; Greene 1990b; Ortmann 2005). Deep cuts in the ridge, some extending to 4.6 m below the current ground surface, were filled with midden and basket-loaded soil; in some cases, earthworks were subsequently constructed on top of those filled gullies.

Harlin Bayou, a deeply entrenched channel on the north end of the site, represents the largest drainage on the property. Although there is documentation that it has increased greatly in magnitude and changed its main course during the past 165 years, the distribution of archaeological remains north and south of that channel is consistent with the notion that it served as the northern

boundary of the site about 3,400 years ago. The density of artifacts is dramatically lower north of Harlin Bayou (Greenlee 2008).

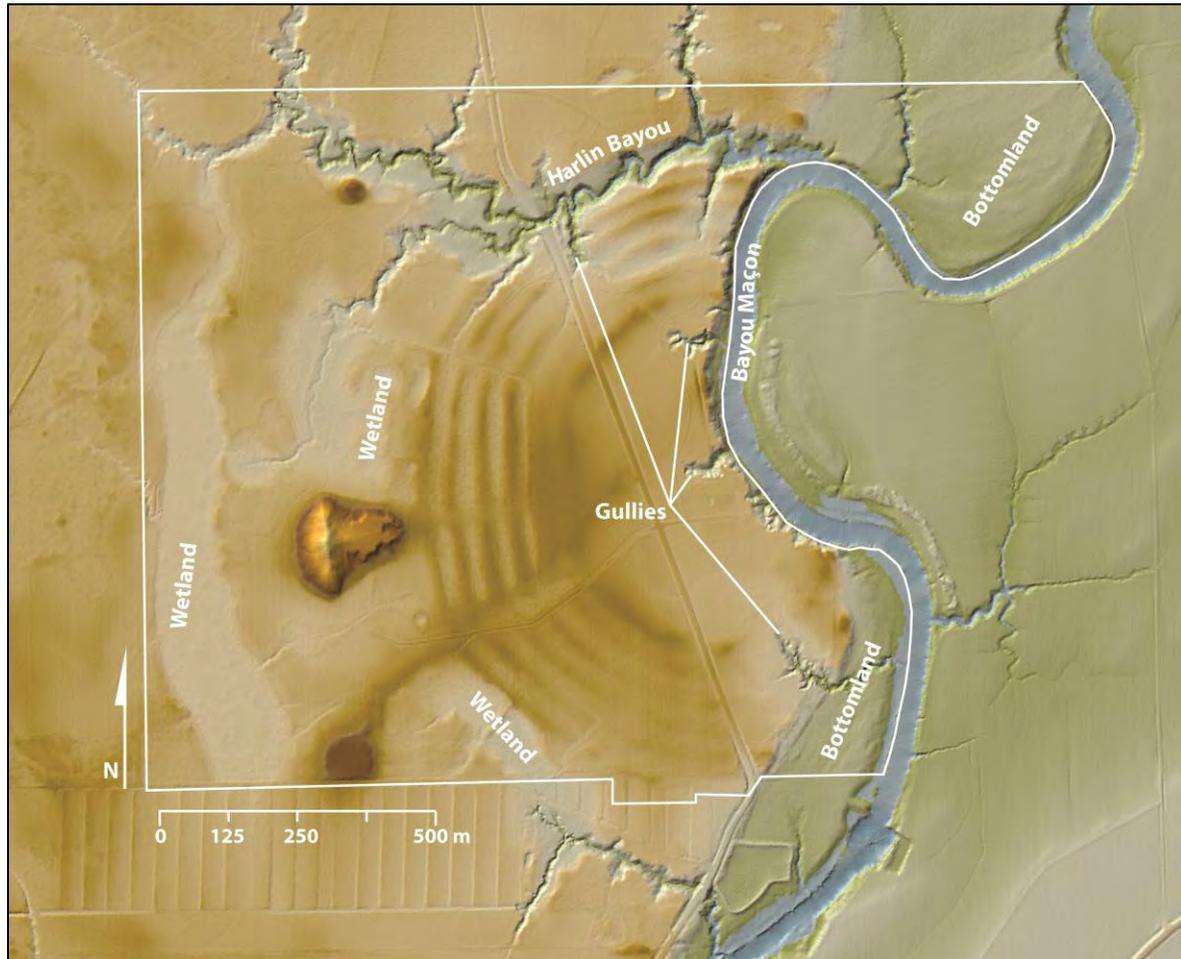


Figure 2.6. LiDAR image of Poverty Point, showing natural elements of interest. Data distributed by “Atlas: The Louisiana Statewide GIS,” LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

A long shallow basin is oriented north-south along the western border of the property. Covering about 12 ha in total, sections of this palustrine wetland are deep enough that they are only exposed intermittently, during times of severe drought.<sup>6</sup> The basin may have originated as a borrow pit (from which soil was removed to build the earthworks), as a naturally occurring depression that drained into Harlin Bayou, or as an area of subsidence due to historic activities (Thomas 1996). Sediment cores have been collected recently and are being analyzed to determine the origin of this depression and the swamp vegetation (Scharf 2011). Although two of the proposed scenarios claim human origins for the basin, it is occupied today by bald cypress (*Taxodium distichum*) (Figure 2.7), water tupelo (*Nyssa aquatica*), beaver (*Castor canadensis*), and alligator (*Alligator mississippiensis*). The

<sup>6</sup> Palustrine ecosystems are “non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens...traditionally called by such names as marsh, swamp, bog, fen, and prairie which are found throughout the United States. It [the palustrine system] also includes the small, shallow permanent or intermittent water bodies often called ponds.” (Cowardin et al. 1992:10).

basin is not currently part of the visitor experience. There are other, more accessible, depressions (also indicated as wetlands on Figure 2.6) that were likely ancient borrow pits, but they tend to be only seasonally wet.



Figure 2.7. Swamp habitat with bald cypress. Photo © C.C. Lockwood

The dominant vegetation on the property today is grass, with woods along gully margins, in intermittently wet areas, including the bottomlands along Bayou Maçon, and on some segments of the ridges (Figure 2.8). A higher and drier (upland) association of bottomland hardwood forest than those typical of the Lower Mississippi Valley is represented here, one that is no longer common in the area (Kelby Ouchley, personal communication, 2011; Reed 2000; Thomas et al. 1980). The mixture of grassy areas, woodlands, and wetlands provides habitat for a great diversity of native fauna. Additionally, two non-indigenous species, the nine-banded armadillo (*Dasypus novemcinctus*) and the red fire ant (*Solenopsis invicta*), are common on the site today (refer to Section 4.b).

### Summary

Poverty Point was located in an ecologically rich and diverse natural setting, an inland riverine environment that could support a relatively large, sedentary, exclusively hunting-fishing-gathering population. The Macon Ridge setting was above the flood zone, yet provided easy access to water for resource acquisition and transportation needs. Because stone was not available at that locale, tons of rock were imported from distant sources, and alternative cooking techniques, using PPOs, were developed. As the residents exploited the resources, they would have had an increasingly significant impact on the local ecology. The natural landscape of the ridge top presented a challenge to its Native American occupants in terms of site maintenance, but also an opportunity for artificial enhancement. The next section describes the cultural setting and the created landscape.

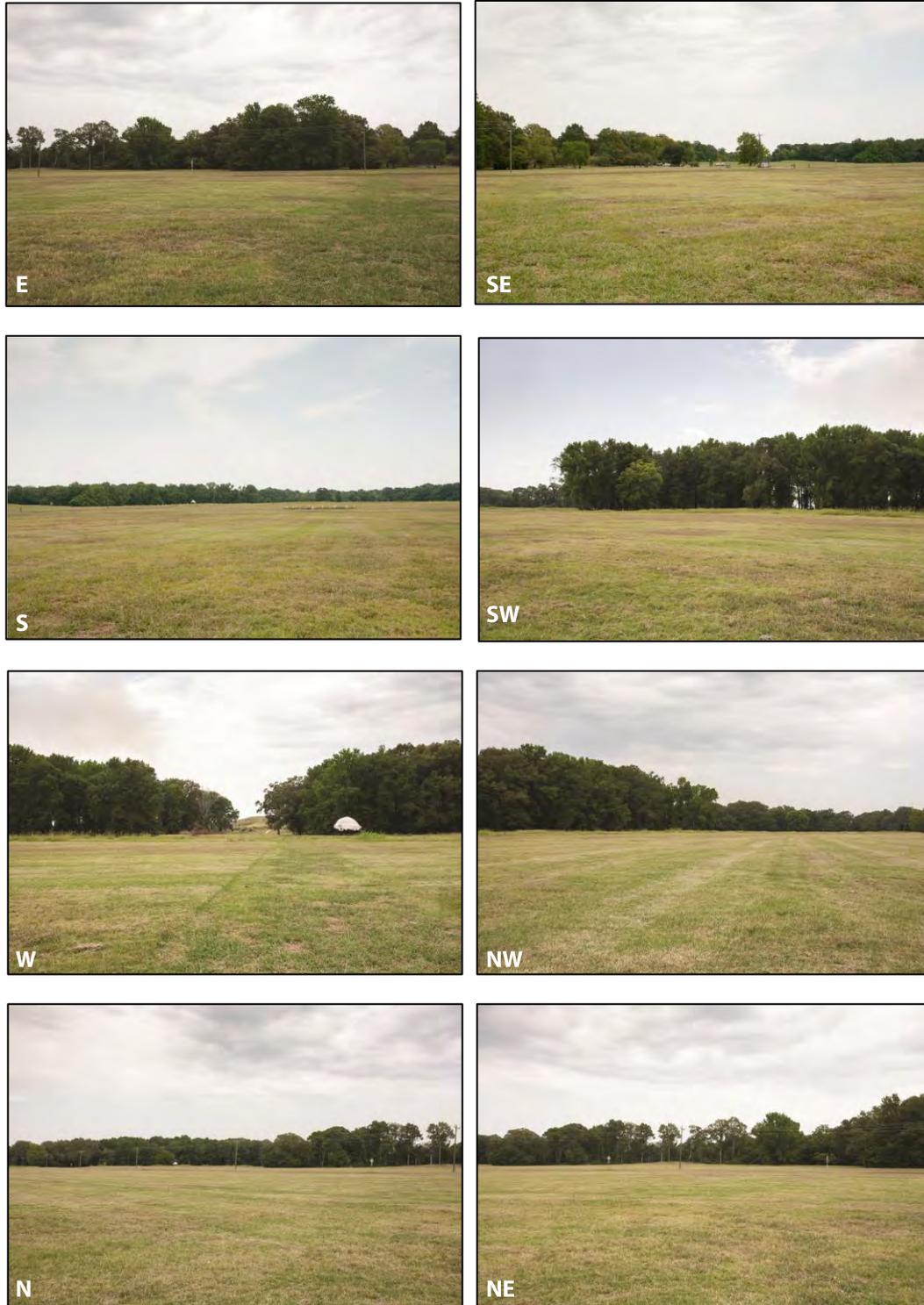


Figure 2.8. Photographs taken from the center of the plaza looking in the indicated directions. Much of the property is in open grassland. *Photos © Jenny Ellerbe*

## Cultural Setting

People have been living on and using Macon Ridge for the past 11,000 years (Hillman 1990b). They did not restrict their activities to discrete “sites,” and thus there is a more or less continuous, but variable, distribution of artifacts and features on the landscape.<sup>7</sup> For management and research purposes, archaeologists define site boundaries based on the presence of, or perceived increases and decreases in the frequencies of, those phenomena (Dunnell 1992). How those boundaries are assigned varies, too, according to the interests of the archaeologists involved. Poverty Point’s site boundaries are here based on the elements that give it Outstanding Universal Value. The Poverty Point site is also known as 16WC5 in the state of Louisiana’s files.

Poverty Point is not the only earthworks site on Macon Ridge (Figure 2.9). Indeed, there are three other mound sites within 3 km of Poverty Point: Lower Jackson mound (16WC10), Jackson Place mounds (16WC6), and Motley mound (16WC7). To provide a sense of local context, those mounds are briefly described.

Lower Jackson mound, located about 2.9 km south of the geographic center of Poverty Point, is a small earthen mound, measuring approximately 35 m in diameter by 3 m high (Moore 2003). Because three of the mounds at Poverty Point are aligned on a generally north-south axis with Lower Jackson mound, Lower Jackson was for many years believed to be a Poverty Point construction. Saunders et al. (2001) dated charcoal from an A horizon (Sidebar 2.5) that was covered by the mound to 5900-5600 BP, establishing that Lower Jackson mound predates Poverty Point by as much as 1,500 to 2,000 years.

Although it was not part of the Poverty Point construction effort, the builders of Poverty Point were presumably aware of its existence. Today, one can look southward across the fields and see Lower

### Sidebar 2.5. Soil Horizons

Knowing the local soils is critical to making sense of the complex stratigraphy of earthworks (Allen 1990). Soil horizons are products of soil-forming processes that work from the ground surface downward:

**A horizon:** the uppermost horizon; it is dark in color because it contains accumulated organic matter mixed with mineral material.

**E horizon:** when present, found below the A horizon; it is light in color and texture because organic matter and clays have been stripped from it and moved downwards in the profile.

**B horizon:** found below the A or E horizon; this mineral layer typically has more clay and is redder or browner than the A horizon.

**C horizon:** found below the B horizon; this mineral layer shows little evidence of transformation by soil-forming processes.

These horizons in the natural soils on Macon Ridge are sufficiently distinct that they can be recognized when they are used as fill in earthwork construction. The sediments used in construction are subject to the same soil forming processes. Thus, with the passage of time (e.g., when there has been a lengthy pause during construction or when an earthwork has been completed), soil horizons will develop.

<sup>7</sup> For archaeologists, features are non-portable artifacts (i.e., items made by people, but that are too large or too fragile to move) like mounds, hearths, pits, house floors, and postholes.

Jackson mound from Poverty Point. Still, it does not owe its form or its location to the people of Poverty Point, and thus, appropriately, it is not included within the site boundaries.

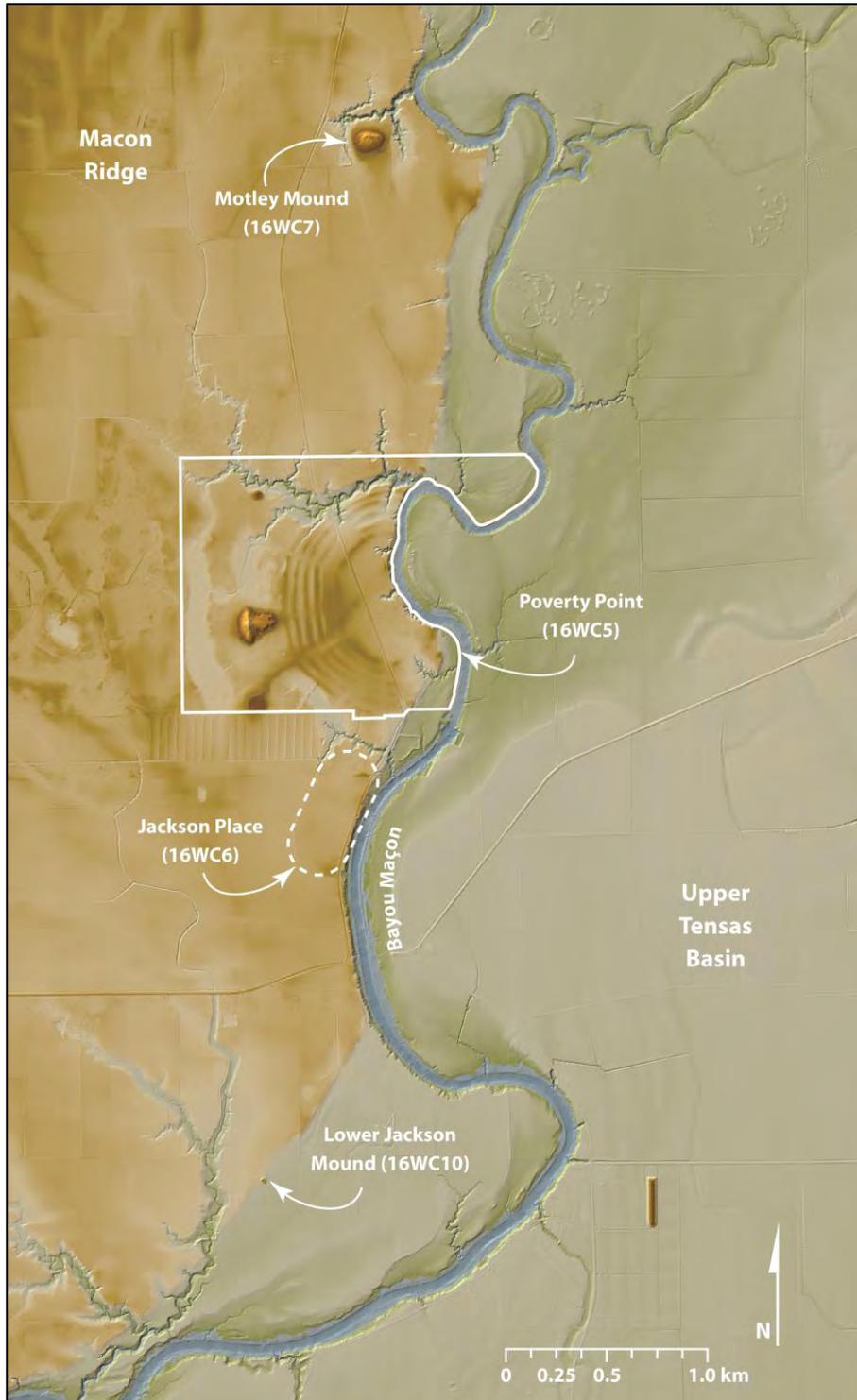


Figure 2.9. LiDAR image showing Poverty Point and nearby mound sites on Macon Ridge. LiDAR data distributed by “Atlas: The Louisiana Statewide GIS,” LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

The earthworks at Jackson Place were located just south of the Poverty Point complex. Originally including six mounds and a crescent-shaped ridge, it was mostly destroyed in the early 1960s and only remnants remain. Temporally-sensitive artifacts from the site cover a broad range of time, ca. 4000-1000 BP (Greengo 1964; Moore 2003). Archaeologists believe that most, if not all, of the earthworks in this complex belonged to the Late Woodland period (1500-1000 BP) and thus postdate Poverty Point by about 2,000 years. Since these earthworks would not have been part of the created landscape at the time Poverty Point was constructed, they are not included within the site boundaries.

The third earthwork site, Motley mound, is located about 2.2 km north of the geographic center of Poverty Point. With dimensions approximating 170 x 125 m and 15.5 m tall, it resembles, to some, Mound A at Poverty Point, albeit smaller, apparently unfinished, and differently oriented (Ford and Webb 1956). Motley mound has not been well documented, so interpretations of its age, function, and relationship to Poverty Point are preliminary at this time. Its construction has not been securely dated; however, a single radiocarbon date obtained on a buried A horizon under the mound provided a maximum age of about 4500 BP, not old enough to make it a Middle Archaic mound like Lower Jackson (Saunders et al. 2008). Webb (1982) reported PPO fragments in an exposed gully in the mound, indicating the mound is at least Late Archaic in age. The most systematic attempt to recover artifacts that might assist in clarifying the age of Motley mound involved fifty auger holes, fifteen shovel tests, and seven 1 x 1 m test pits placed in an area just south of the mound. Only Euro-American and temporally nondiagnostic Native American artifacts were recovered (Thomas and Campbell 1978a).<sup>8</sup> Thus, while Motley mound is often assumed on the basis of similarity and proximity to have been part of the landscape during Poverty Point's occupation, it hasn't been clearly demonstrated to be of a comparable age. Motley mound has been assigned its own site number, different from Poverty Point's, indicating that archaeologists, as well as the state of Louisiana, recognize it as a separate site. The distribution of artifacts between the Poverty Point complex and Motley mound is apparently discontinuous, which further suggests that the latter is a separate site.

In addition to the earthworks in the area, clusters of artifacts associated with the Poverty Point culture have been identified on Macon Ridge outside of the main complex (Gibson 1998b; Thomas and Campbell 1978b). Most are relatively small, low density sites. Two artifact clusters located immediately south of the property line (Gibson 1993a), were destroyed in 1993 during land leveling by the adjacent landowner (Gibson 1994b; Gibson and Saunders 1993; Saunders 1994). Although the people of Poverty Point certainly used the entire landscape, and did not restrict their activities to just the mound complex, it is the earthen architecture – its monumentality, its design, and its construction by hunter-fisher-gatherers – that is the basis for the site's Outstanding Universal Value.

<sup>8</sup> Moore (2003) reported plummets, earthenware fragments, and arrow points from the vicinity of the site; a later survey documented two sherds of Coles Creek pottery, twelve sherds of Baytown pottery (both are Late Woodland types), and a celt (Lower Mississippi Valley Survey 1963).

### *Cultural Elements of Poverty Point*

The Poverty Point archaeological site is an integrated architectural complex, constructed and occupied ca. 3700-3100 BP. Its original configuration included four earthen mounds (Mounds A, B, C and E); six concentric, semi-elliptical earthen ridges; a large, flat interior plaza; and several borrow areas (Figure 2.10). Other earthworks built during that time include an elevated causeway that crosses the southwestern borrow area and a ridge along the top of the dock (the gentle slope down to Bayou Maçon). A fifth mound, Mound D, was added to the complex by a later culture; it was built on top of one of the Poverty Point ridges approximately 1,700-2,000 years later. To give a sense of how the Poverty Point landscape developed over time, the earthworks are discussed below in the relative order in which they were constructed.

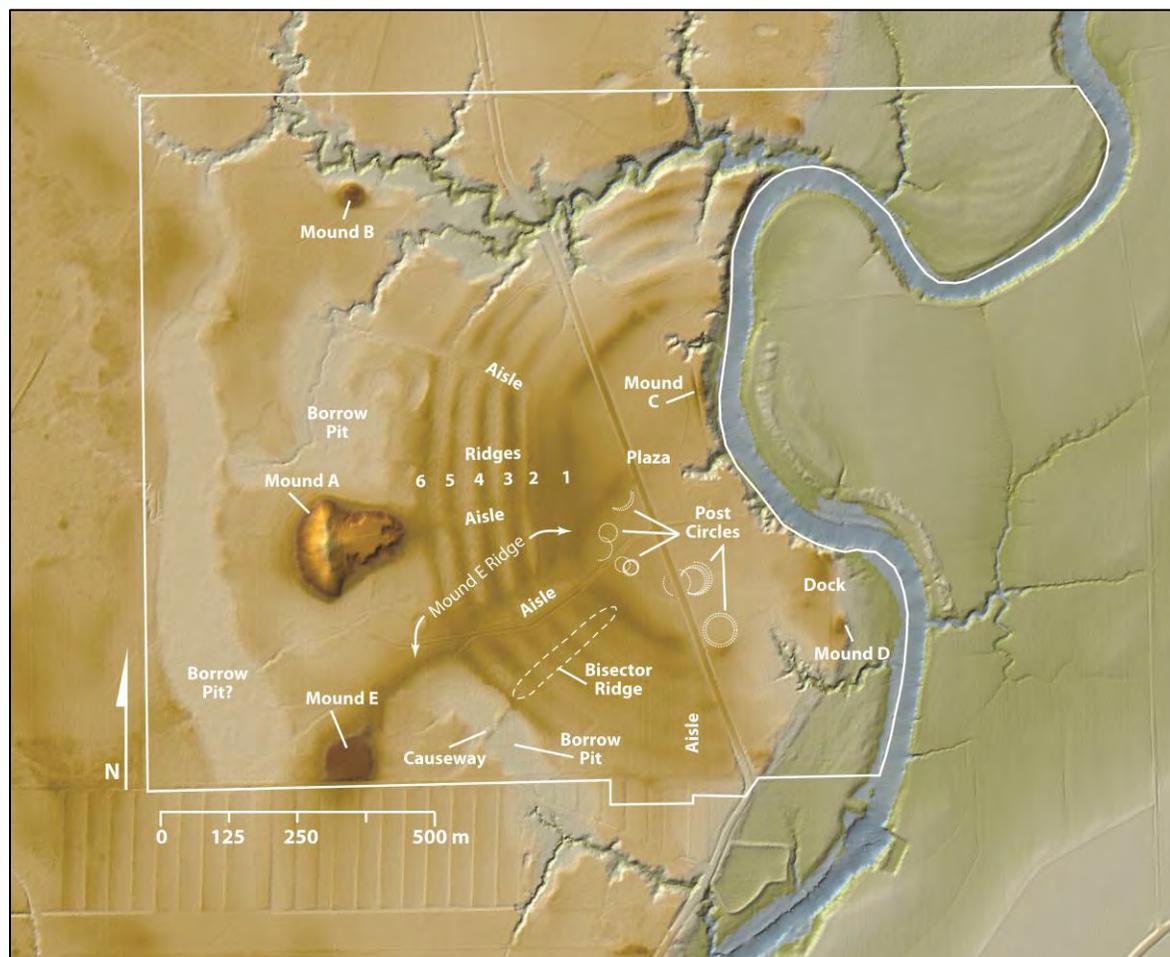


Figure 2.10. LiDAR image of Poverty Point, with cultural elements identified. LiDAR data distributed by “Atlas: The Louisiana Statewide GIS,” LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

### **Mound B**

Mound B (Figures 2.11 and 2.12) is a small (roughly 6.5 m high and 55 m basal diameter), subconical earthen mound located in the northwestern sector of the site. Situated about 625 m north (approximately center to center) of Mound A, Mound B aligns with Mounds A and E. It was originally conical in form, but imperfect backfilling following excavation of a series of trenches in

1955 (Ford and Webb 1956) and subsequent slumping of the backfill have produced its current subconical appearance. As a result of the recent tree removal program (Sidebar 2.6), it is now grass-covered; efforts to stabilize Harlin Bayou (refer to Section 2.b) have halted the encroachment of that channel toward the mound. Thus, it and the landform upon which it sits are stable.



Figure 2.11. Mound B, from the south. Photo © Jenny Ellerbe

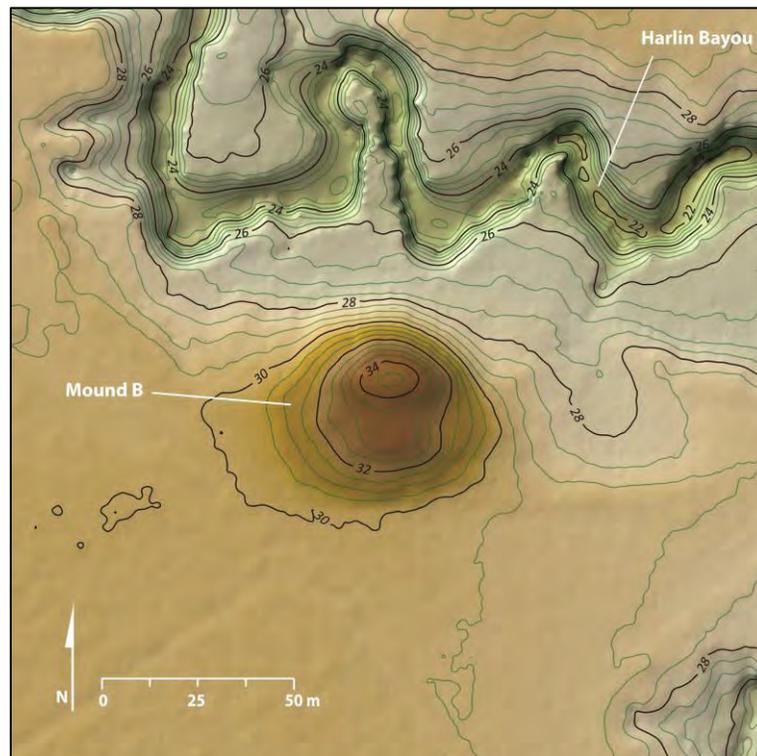


Figure 2.12. Mound B, 3D surface map with contours. Contour interval is 50 cm. LiDAR data distributed by "Atlas: The Louisiana Statewide GIS," LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

The internal structure of the mound (Sidebar 2.7) is known from both excavated trenches and from more recently pulled soil cores (Ford and Webb 1956; Gibson 1994b, 1997; Kidder et al. 2004). The initial step in building Mound B involved stripping the natural A horizon from most of what would become the submound surface; this was followed by seven construction stages. The first stage was the placement of a layer of grayish-brown silt loam. The second stage was a layer of fine gray material reported to contain bits of charred cane and burned bone; this stage was originally interpreted to be a crematory “ash bed” at the base of the mound (Ford and Webb 1956). Re-examination of that stratum has failed to find evidence for burning beneath the layer or ash within it. Kidder et al. (2004) concluded that the “ash bed” may not be ash at all, but instead a fine gray silt common to E horizons in the soils on Macon Ridge. Each of the next four mound stages was constructed of basketloaded silt loam, formed into flat-topped platforms, each on top of a compact surface or floor. The floors contained charcoal, fire pits, and possible postholes (although there was no recognizable pattern to the latter). Basket impressions were preserved within the basal fill of the sixth stage, providing evidence for the shape, size, and material of the soil-hauling containers (Ford and Webb 1956). The final, seventh, event was the placement of a conical silt loam mantle over the entire construction.

Six radiocarbon determinations (refer to Section 7.f) are available for Mound B; however, only one is considered to be a high confidence estimate (Sidebar 2.8). That date is from charred material recently obtained from the “ash bed,” which Kidder et al. (2004) identified as being the second stage in the seven stages of the mound’s construction. The most likely age (Sidebar 2.9) for this stage is 3700-3470 BP (Figure 2.13). Ortmann (2010) notes that a lack of evidence for erosion or soil formation in all but one of the subsequent construction stages indicates that they were not exposed for long periods of time, and, thus, the rest of the mound was probably completed within a relatively short period of time. Mound B was one of the first mounds built at Poverty Point.

Conical mounds throughout the southeastern United States were generally recognized as cemeteries when Mound B was excavated. Thus, the interpretation that Mound B was covering a crematory conformed to the accepted science of the time. Mound B as a burial mound is no longer

#### Sidebar 2.6. Tree Removal Program

The earthworks did not have trees on them at the time of their construction, and the ones now present represent an aging stand. As trees age they become less resistant to strong winds. Wind-toppled trees often bring up their root systems, exposing artifacts and disturbing the archaeological deposits.

In 2010, the Office of State Parks began a program to remove trees from the earthworks and convert the ground cover to grass. This should be a more stable condition for the long-term preservation of the earthworks.

As of June 2012, the trees have been removed from Mounds A, B, C, and E. As funding becomes available, trees will be removed from Mound D and the ridge system. Trees that serve as a visual buffer along the property boundaries and that are located along stream channels and in areas that do not have significant cultural deposits will remain.

an accepted interpretation, and its function is currently unknown. Most of the artifacts recovered from the mound were in the fill and are probably unrelated to the mound's use. Detailed examination of the features on the floors may yet provide important information about the mound.

### Mound E

Mound E is located in the southwestern sector of the site, 405 m south (approximately center to center) of Mound A. It is a flat-topped, semi-rectangular mound with a ramp-like projection extending from its northeastern corner (Figures 2.14 and 2.15). The mound is nearly 4 m tall, with current dimensions for the main construction of about 110 m by 90 m; the protuberance is roughly 25 m long and 15 m wide. Land-leveling in the 1970s and 1990s destroyed the southernmost 30 m or so of the mound that was not owned by the state of Louisiana. The northeastern projection has been suggested to be an historic-era modification (Gibson 1990a), presumably associated with a nearby natural gas well, which is no longer in use and has since been plugged with concrete. All but five trees (on the south end of the mound) have been removed from the mound and its surface is now in grass.

Even though Mound E was initially identified as an earthwork in 1913 (Moore 2003), that status was not accepted by all archaeologists. Artifacts were not found in the fill, nor were there any around the mound (except a scattering to the south [Gibson 1993a]). Soil cores failed to show distinctive evidence for basketloading like that found in the other mounds at Poverty Point. The soil profile looked natural. Indeed, for many years, Mound E was thought to be a natural knoll (Haag 1990), perhaps sculpted into shape by people (Gibson 1990a). In 1993, basketloading was recognized in a soil core from Mound E, confirming it to be an artificial construction (Gibson 1994b).

A single excavation unit along the southern edge of the mound exposed a profile in which five construction stages were recognized and then further corroborated by several widely spaced soil cores (Kidder et al. 2004). Excavation showed that, similar to Mound B, the first step in Mound E's construction involved removing the A horizon from what would become the submound surface. A series of three basketloaded, silt loam, flat platforms with floors or prepared surfaces in between

#### Sidebar 2.7. Earthwork Construction

Frequently, the first step in earthwork construction was preparing the ground surface. Sometimes this involved filling depressions, sometimes the natural A horizon was stripped from the ground surface, and sometimes a thin layer of E horizon silt was laid down. Sometimes there are no signs of preparation prior to construction.

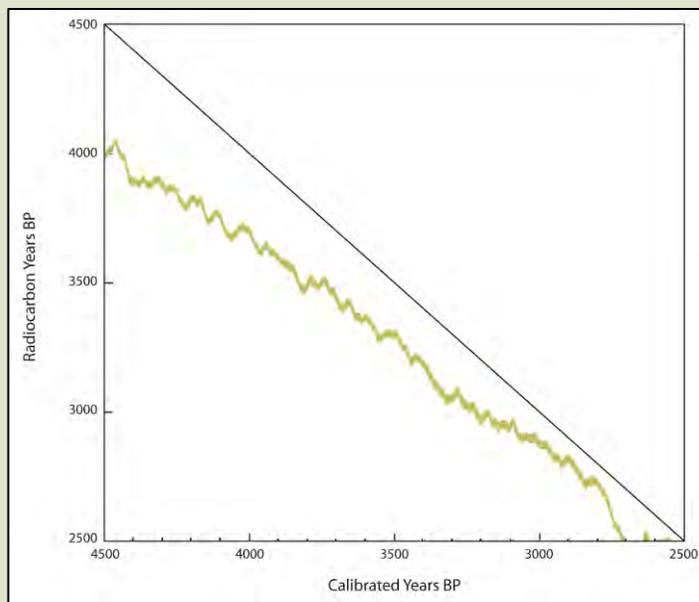
The earthen mounds and ridges were built by hand, with soil carried in baskets and, perhaps, leather bags. At Poverty Point, there is evidence for two different construction techniques: dirt is either dumped as a pile or spread in a lens. Sometimes discrete piles, or basketloads, can be identified. Both techniques were often used within a single earthwork.

When there was a sufficiently long pause in construction, the sediments exposed to the elements show evidence of weathering. Heavy rain will cause erosion of the fill, leaf litter and other organic materials may stain the exposed surface, and animal activities may mix near-surface sediments.

was then placed over the exposed ground surface. Unlike Mound B, there was no final capping stage.

#### Sidebar 2.8. Radiocarbon Dating

All living organisms constantly add radioactive carbon ( $^{14}\text{C}$ ) to their tissues from their surrounding environment. When they die, no more  $^{14}\text{C}$  is added and the existing radiocarbon begins to decay at a known rate. Radiocarbon dating measures the amount of  $^{14}\text{C}$  remaining in a biological sample and calculates the time since death (the “dated event”). This estimate is made, with an error term, in  $^{14}\text{C}$  years which do not correspond exactly to calendar years because of variation in the amount of  $^{14}\text{C}$  produced in the atmosphere through time. So, a procedure known as *calibration* is required to translate  $^{14}\text{C}$  years into calendar years. When stated in years Before Present (BP), “Present” = AD 1950.



This graph shows how  $^{14}\text{C}$  years vary with calibrated (calendar) years BP for the period 4500-2500 BP. The black straight line shows the ideal 1:1 relationship between radiocarbon years and calendar years. The olive jagged line is the actual relationship.

The best dates come from charred seeds, nutshells, or single fragments of short-lived tree/shrub species from *in situ* subsurface contexts (e.g., hearths). When those samples have been corrected for fractionation (which is a relative bias against heavy isotopes of carbon), they are even better age estimates. Dates are less reliable when plant samples are not corrected for fractionation, are from more than a single piece of charred material, or are wood from long-lived trees. Dates from bone (unless pretreated properly) and soil also are potentially error-prone.

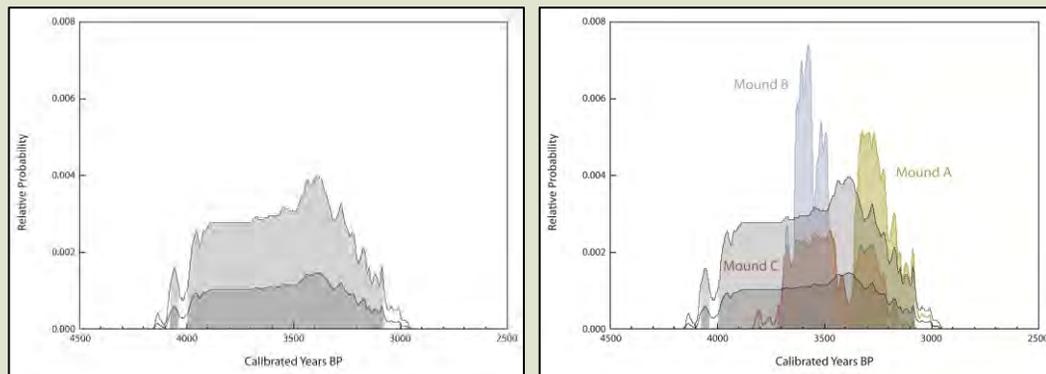
Sixty-one radiocarbon dates have been generated over the decades of archaeological research at Poverty Point. When taken as a set, they do not present a consistent, useful picture of the site’s history (cf. Connolly 2006; Ortmann 2010). Several factors may make age estimates inaccurate, but it is sometimes difficult based on existing records to determine which, if any, of the dates should be excluded. In some cases, there may be no reason to exclude a date beyond that it has such a large error term that it does not provide useful information.

In order to produce the most coherent site history possible, each date was evaluated according to basic quality standards. Only the ones identified as high-confidence dates in Section 7.f are used.

### Sidebar 2.9. Summed Probability Distributions

Fluctuations in the amount of radiocarbon in the atmosphere over time mean that there is not a 1:1 correspondence between  $^{14}\text{C}$  years and calendar years. This is why calibration is necessary, but also why the results can be difficult to understand. Calibrated dates are actually presented as a range of ages, and there may be multiple age ranges for a single date, each with a different probability, or likelihood, of reflecting the “true” age of the sample (Section 7.f). The greater the probability, the more likely it is that the true age falls within that range. Plotting the probabilities on a graph provides a visual demonstration of the likely calendar age range for that date. The higher the peak, the more likely the true age is represented in the years covered by that peak. The probability ranges for multiple dates of an event can be combined into one composite, or summed, probability graph; overlaying them makes it easier to see relative patterns among the dated events.

Fluctuations in  $^{14}\text{C}$  can impose patterns on summed probability plots in the form of “peaks” and “valleys.” To show this, a dummy set of dates between 3675 and 2950  $^{14}\text{C}$  years BP (covering the spread seen in the high-confidence radiocarbon dates), spaced 25 years apart with 50 year error terms, was calibrated. That summed probability plot is shown below on the left. The dark gray curve reflects the age range within which there is a 95% chance that the true date is contained, and the actual results are scaled according to the y-axis; the light gray curve has been stretched vertically to better accentuate peaks and valleys. There should be no patterning because each date should be equally likely to be represented, but peaks are clearly present.



The plot on the right compares the dummy curve to the summed probability distributions generated for Mounds A, B, and C using the high-confidence radiocarbon dates. Some of the minor peaks in the dummy set correspond with minor peaks in the actual data, indicating the latter are likely artifacts of the calibration process. But, the broad patterns appear to be robust indicators of sample age.

Efforts to radiometrically date the construction of Mound E have not been successful. No charred material was recovered from primary contexts (e.g., floors or hearths) for radiocarbon dating. Sediment samples from two of the construction stages were submitted for luminescence dating (Sidebar 2.10). The dates returned (refer to Section 7.f) were both older than expected for a Poverty Point mound (Kidder et al. 2004). Unfortunately, they were not in stratigraphic order, suggesting that one or both of the sediment samples had not been sufficiently exposed to sunlight when they were placed in the mound. If one of the dates is accurate, Mound E is older than the

other Poverty Point constructions; at this time, there is no way to determine if that is the case. Kidder et al. (2004) and Ortmann (2010) have suggested that Mound E's construction similarities with Mound B could reflect a similarity in age.

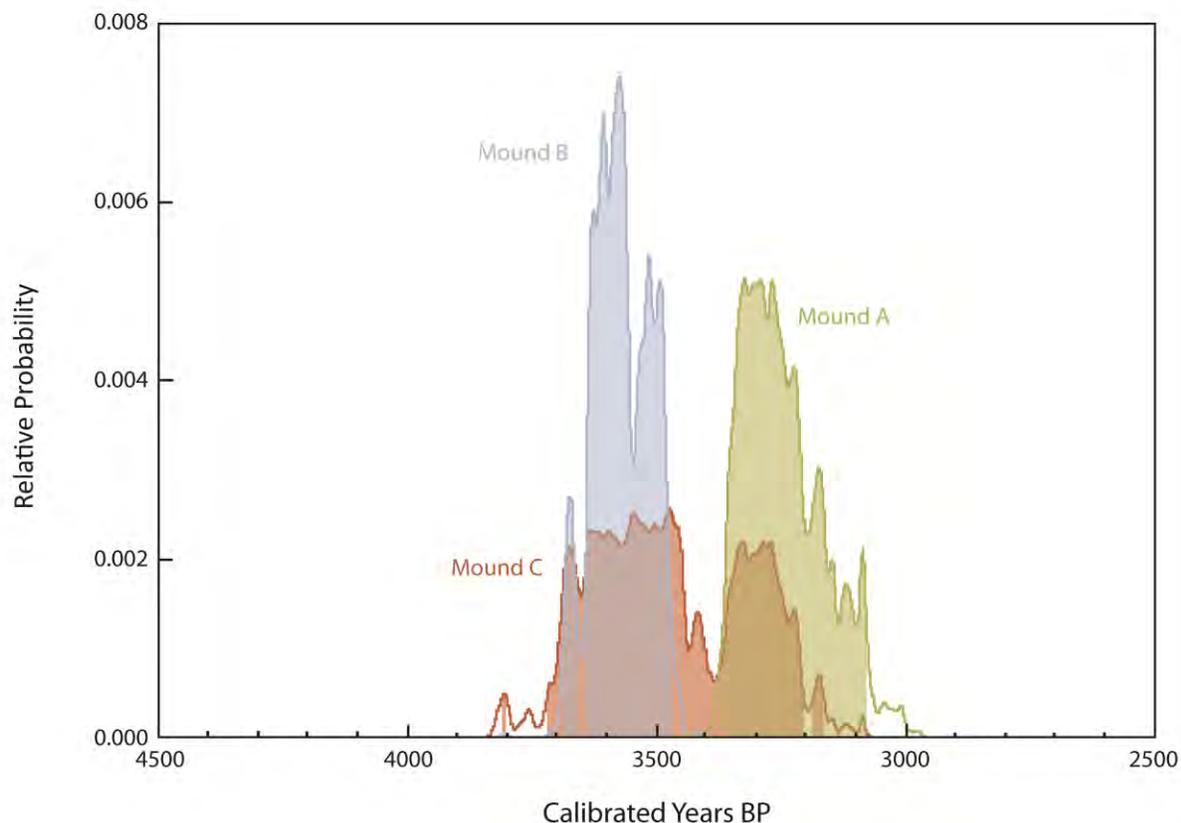


Figure 2.13. Summed probability distributions for high-confidence radiocarbon determinations from the Poverty Point mounds: Mounds B ( $n=1$ ), C (summed,  $n=3$ ) and A (summed,  $n=3$ ). Colored areas indicate the  $2\sigma$  distribution associated with the probability curves. Simply put, there is a 95% chance that the dated events fall within the color-coded area(s) beneath each curve.

The relative age of Mound E has been established by comparing the degree of soil development with other mounds of known age: the Middle Archaic Lower Jackson mound and Poverty Point Mounds B, A, and D (Greenlee 2011). This approach relies on the observation that under similar conditions of climate, slope, parent material, and biota, soils in different locales will develop at about the same rate (Sidebar 2.11). When soil horizons and texture within the upper sediments of Mound E are compared with the other mounds, Mound E is definitely Late Archaic in age. The following order was produced (from most- to least-developed, or oldest to youngest): Mound B, Mound E, Mound A, and Mound D. Soil development within Mound E was only slightly less mature than in Mound B, consistent with the suggestions of Kidder et al. (2004) and Ortmann (2010) that Mounds B and E are likely similar in age due to their similarity in construction.

No features were identified in the excavation unit in Mound E, and only nine artifacts, all nondiagnostic, were recovered. However, two of the flakes recovered in the excavation were of

novaculite, a nonlocal chert. Of four tiny (< 0.32 cm) pieces of chipped stone debris recovered from a sediment core recently pulled from Mound E, three were nonlocal cherts (Greenlee 2011). Since the importation of nonlocal stone is a characteristic of the Late Archaic period, the mound is likely to be that age or younger. No evidence regarding the function of the mound has been recovered.

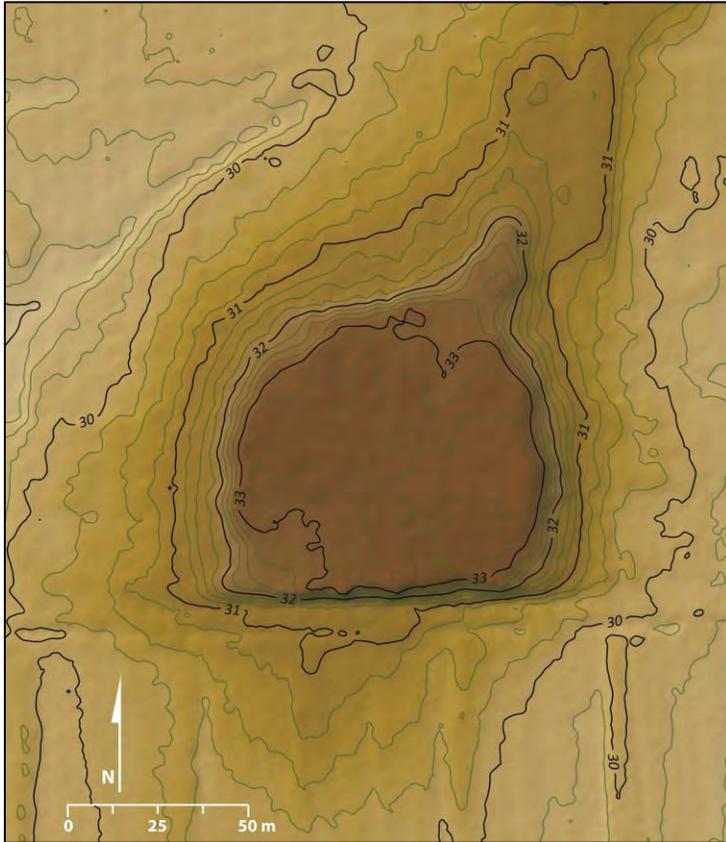


Figure 2.14. Mound E, 3D surface map with contours. Contour interval is 25 cm. LiDAR data distributed by "Atlas: The Louisiana Statewide GIS," LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.



Figure 2.15. Mound E, looking south. Photo © C.C. Lockwood

## Mound C

Mound C is an oval mound located within the plaza near the eastern edge of Macon Ridge. Suspected to have been conical in profile originally, this mound has been bisected by a historic era road (Figures 2.16 and 2.17). The mound is about 80 m long; although now about 25 m wide, its original width is unknown because it has suffered from erosion and slumping along its eastern edge. The top of Mound C rises about 2 m above the adjacent plaza, but this is a misleading estimate of the mound's true height, as its base is situated 50-60 cm below the current adjacent plaza (Anthony Ortmann, personal communication 2012). Thus, the level of the plaza in this area was presumably raised concurrent with, or after construction of, the mound (Ortmann 2011). Trees have been removed from all but the eastern edge of the mound, with grass now providing ground surface cover.

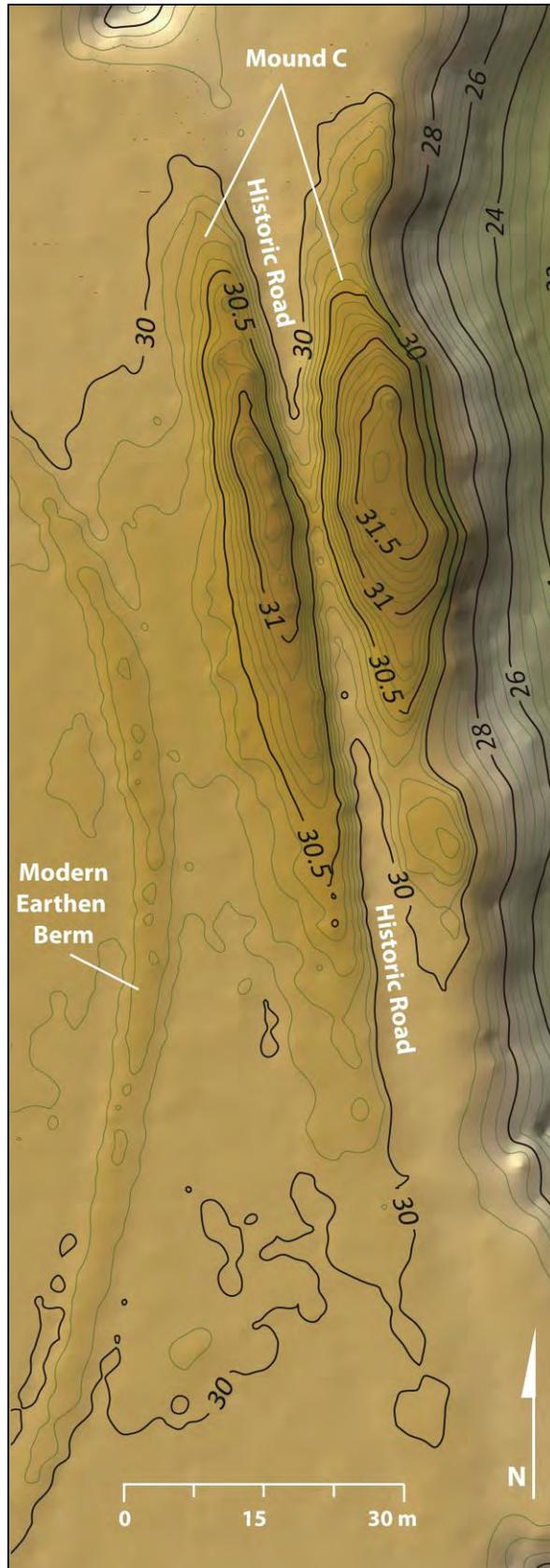
Excavations in 1983, 2001, and 2011 have revealed that the internal structure of Mound C is unlike any of the other mounds at Poverty Point (Gibson 1984; Ortmann 2005, 2007; Ortmann and Arco 2012). The mound was apparently built directly on the natural A horizon, rather than removing it prior to construction. Numerous construction steps, evidenced by a sequence of nine to sixteen thin (2-16 cm thick), flat, prepared surfaces of distinct textures and colors, have been documented (Ortmann 2007). Several of those surfaces have a thin (0.5-9 cm thick) layer of cultural debris on top. These layers, interpreted as possible occupational midden, include charcoal, PPO fragments, and lithic debris. Hearths, ochre-filled pits, and postholes have been documented in the mound, as well. A final, roughly 1.5 m thick, conical cap of mixed, heterogeneous sediments, containing abundant artifacts, was placed over the mound.

### Sidebar 2.10. Luminescence Dating

Luminescence dating can be applied to materials containing crystalline minerals (e.g., quartz) and which have been heated in the past, either in a fire or when exposed to sunlight. The heating event “zeroes” the clock. After that, electrons from radioactive atoms within the sample matrix become trapped within the crystalline lattices. The number of trapped electrons increases over time. When the sample is heated or exposed to light in the laboratory, the trapped electrons are released and, in the process, they emit light; the measured light is then used to calculate the time since the sample was last heated.

At Poverty Point, twenty-three luminescence dates have been generated using PPOs, pottery sherds, and soils over the past forty-two years. During this time, measurement techniques and models to estimate sample age have improved significantly. But, even more so than the radiocarbon data, the luminescence dates do not present a coherent picture of site chronology.

Inconsistent dates on ceramic (PPO and pottery) fragments are probably due to the low temperatures at which they were fired. Problematic soil dates likely reflect incomplete bleaching (insufficient exposure to sunlight to “zero the clock”) when they were placed in the earthworks.



#### Sidebar 2.11. Pedogenic Dating

Pedogenesis is the process by which changes in soil color, texture, and composition occur through time, leading to the development of distinctive soil horizons. Soil development involves weathering and the downward movement of clay-sized particles, minerals, and organic matter from surface and near-surface sediments, and their deposition deeper within the soil profile.

Archaeologists have shown that the relative age of an earthen mound can be estimated based on comparing the thickness and other characteristics (e.g., concentration of clay-sized particles with depth) of soil horizons with those in nearby mounds of known age (Saunders et al. 2001).

One of the keys to pedogenic dating in northeast Louisiana is the differentiation of the B horizon into Bw (cambic) and Bt (argillic) horizons. These two horizons differ in their relative amounts of clay-sized particles. A Bw horizon has accumulated less clay than a Bt horizon. Under similar circumstances, this is a function of time. Archaic period mounds can be distinguished from later ones because they will have a Bt horizon, whereas later ones will not (Saunders et al. 1994). As soils age and continue to weather, Bt horizons will get thicker and more strongly developed.

Figure 2.16. Mound C, 3D surface map with contours. Contour intervals are 50 cm (20-30 m) and 10 cm (30-32 m). LiDAR data distributed by "Atlas: The Louisiana Statewide GIS," LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.



Figure 2.17. Mound C, looking north. The historic-era road cuts across the upper left corner of the image. *Photo © Jenny Ellerbe*

Mound C's three radiocarbon determinations (Section 7f; Figure 2.13) place it squarely within the Poverty Point occupation, and the recovered artifacts are consistent with that assignment. There is, however, a stratigraphic inconsistency among the dates that is troubling. The 95% confidence intervals for dates from the submound A horizon/midden and the uppermost prepared surface overlap and both are significantly older than the date from a surface in the middle of the mound. There is no reason to eliminate any one of the dates as being inaccurate, but at least one must not be a valid estimate. Depending upon which date (or dates) is accurate, Mound C could be one of the oldest mounds or one of the youngest ones at Poverty Point. Thus, it is not possible to establish an age for Mound C, beyond that it is a Poverty Point construction.

Additional excavation and coring were undertaken in 2011 in order to address questions about Mound C's function and to refine its position within the site's chronology (Ortmann 2011). The fact that it is the only Poverty Point-aged mound located within the plaza suggests it was a special construction. Further, possible evidence for activities, or even habitation, on the prepared platforms is intriguing. Micro-artifact samples were acquired in 2011 from some of the prepared surfaces to better ascertain what kind of activities took place on those surfaces (Ortmann and Arco 2012).

### Mound A

Standing 22 m tall and about 215 m long by 200 m wide, Mound A is the largest mound at Poverty Point (Figures 2.18 – 2.20). With an estimated volume of 238,000 m<sup>3</sup> (Kidder et al. 2009), it is the largest mound of its age and one of the largest earthen structures in North America. In addition to being known as the "Poverty Point Mound," it is often called the "Bird Mound" or the "Bird Effigy Mound" because its unusual cross shape is reminiscent of a bird in westbound flight. There is no empirical evidence that that was the intention of the builders.

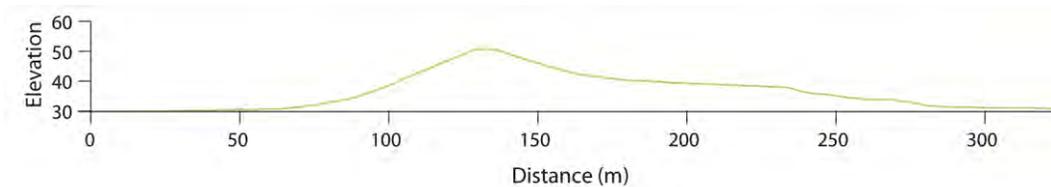
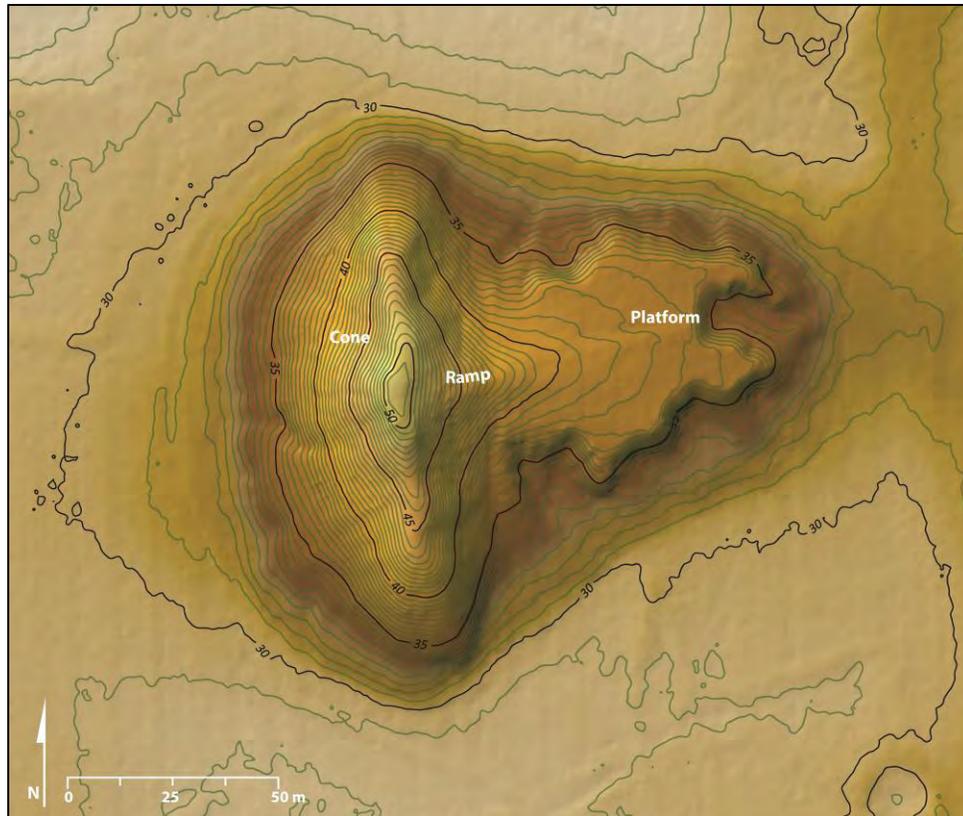


Figure 2.18. Mound A, 3D surface map with contours (above) and profile (below). Contour interval is 50 cm. LiDAR data distributed by “Atlas: The Louisiana Statewide GIS,” LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

With the recent removal of its trees, Mound A is covered in grass, which should provide a more stable surface. Its great surface area, steep slopes, and silt loam composition make it especially vulnerable to erosion. The uneven margins around the platform section, in particular, are a consequence of both erosion and soil removal by road construction crews in 1915 (Haag 1990). A veneer of soil has been placed in some of the active gullies to protect the intact deposits from further damage. A wooden boardwalk that begins at the eastern end of the platform, follows the ramp, and reaches the top of the cone was constructed over a long-used path; this has greatly reduced the impact of visitors on the mound. A similar walkway up the southern “wing” of the cone has been decommissioned.



Figure 2.19. Mound A, looking northwest. Note people at top, heading up ramp, and in foreground. *Photo © Jenny Ellerbe*



Figure 2.20. The boardwalk on Mound A, heading west across the platform toward the ramp up the cone. *Photo © Jenny Ellerbe*

Excavations have been limited to the edges of this enormous earthen monument (Haag 1990; Kidder et al. 2009; Moore 2003), and thus much of what is known about the overall construction of the mound has come from sediment cores (Ford and Webb 1956; Gibson 1997; Kidder et al. 2009; Ortmann 2005, 2007). Mound A was built in three distinct components (Figure 2.18): the western cone (the “head” and “wings”), the eastern platform (the “tail”) and the ramp leading from the

platform to the top of the cone, in that order. Each component was built using different sediments and construction techniques, and ground surface preparation under the mound was variable (i.e., in some places, submound A horizon and midden material remain; in others, the Macon Ridge loess was stripped off, down to the underlying clays) (Ortmann 2007).

The cone section of Mound A, which is only known from sediment cores, appears to have been constructed using mostly reddish-brown silt loams, with some light gray silts, taken from the surface of Macon Ridge (Ford and Webb 1956; Ortmann 2007). There is some evidence for multiple construction stages, although no prepared platforms or floors have been detected. The sediments appear to be highly weathered and basketloading is not apparent in the fill. Episodes of slope wash were identified as having occurred during the cone construction process. In some cores, it appears that there was sufficient time between completion of the cone and the subsequent construction of the adjoining platform section for a weak A horizon to develop.

Two excavations (Haag 1990; Kidder et al. 2009) and many cores into the platform section of the mound show clear evidence of both basketloading and broadcast construction techniques. Above a thin, light gray, silty layer (E horizon material) that represents the initial stage of platform construction, the silt and silt loam sediments used are highly variable in color, including blacks, grays, browns, yellows, and reds (Figure 2.21). These sediments had to have come from different depths and locations on the site and were mixed together prior to dumping. No discrete stages or evidence for weathering were identified within that multi-colored fill – it appears that the construction was continuous until the top of the approximately 9 m high platform was reached and then leveled (Arco 2006; Kidder et al. 2009).



Figure 2.21. Detail of fill within the Mound A platform. *Photo: T.R. Kidder*

The ramp was constructed after the cone and platform sections were completed. Enough time had elapsed for sediments to erode off of the cone and onto the platform, but not enough time had passed for an A horizon to develop in the sediments over which the ramp was built. A thin layer of fine sand was found in places between the ramp and platform sediments, presumably representing the initial stage in ramp construction (Ortmann 2007).

Mound A is believed to be the last Poverty Point-aged mound built at the site (Section 7f; Figure 2.13). Three submound dates provide a maximum age estimate for the mound (a fourth date, Beta-207441, is significantly older and has no bearing on the age of the mound). The summed probabilities for the three relevant submound dates indicate that the most likely start time for Mound A's construction was sometime after ca. 3400 BP. Because the basketloaded sediments within the platform show no evidence of construction stages, erosion, or mixing by insects or earthworms, Kidder et al. (2008, 2009) conclude that Mound A's platform was built over a very short span of time, probably less than three months.

Shallow excavations into the top of the platform failed to find any evidence for buildings (James Ford, letter to Clarence Webb and Michael Beckman dated 17 November, 1955 [archives of the American Museum of Natural History, New York]; Webb 1982), although weathering could have erased most of the evidence (Kidder et al. 2009). Likewise, there are no artifact accumulations on the platform or surrounding slopes that would indicate what sorts of activities occurred on the mound. Very few artifacts have been recovered from the fill, and those that have been found appear to have been accidentally incorporated into the mound (Kidder et al. 2009). In addition, no features or burials have been discovered within the mound. Thus, the function of Mound A remains unknown.

### Earthen Ridges

The six concentric, semi-elliptical, artificially-constructed earthen ridges at Poverty Point are a unique design not seen anywhere else in the archaeological or ethnographic records. They are so large that their true dimensions and spatial configuration are not easily perceived at ground level. In fact, it was not until 1952, when archaeologist James Ford examined aerial photographs (Figure 2.22) of the Lower Mississippi Valley, that he discovered the geometric arrangement of the ridged earthworks (Ford 1954). The ridges form a C-shaped enclosure, with the bluff edge of Macon Ridge "closing" the opening (Figure 2.23).

Initially, Ford (1954; Ford and Webb 1956) believed that the original ridge construction was a complete ring, an octagon, that was subsequently eroded into its modern form. This is now known not to be the case (Gibson 1987a, 1990a; Webb 1982). Excavations along the bluff edge have revealed deep, filled gullies beneath the constructed ridges, indicating that the current bluff edge could not have been the middle of the site at the time of occupation (Greene 1990b). In addition, at least two swales in the northern sector were plugged at their east ends to prevent water from pouring over the bluff edge and creating gullies (Gibson 1997). Finally, there has not been a stream with sufficient erosive power to have removed such a significant portion of Macon Ridge in the time since the site's occupation (Saucier 1981). The configuration of the ridges is thus essentially intact.

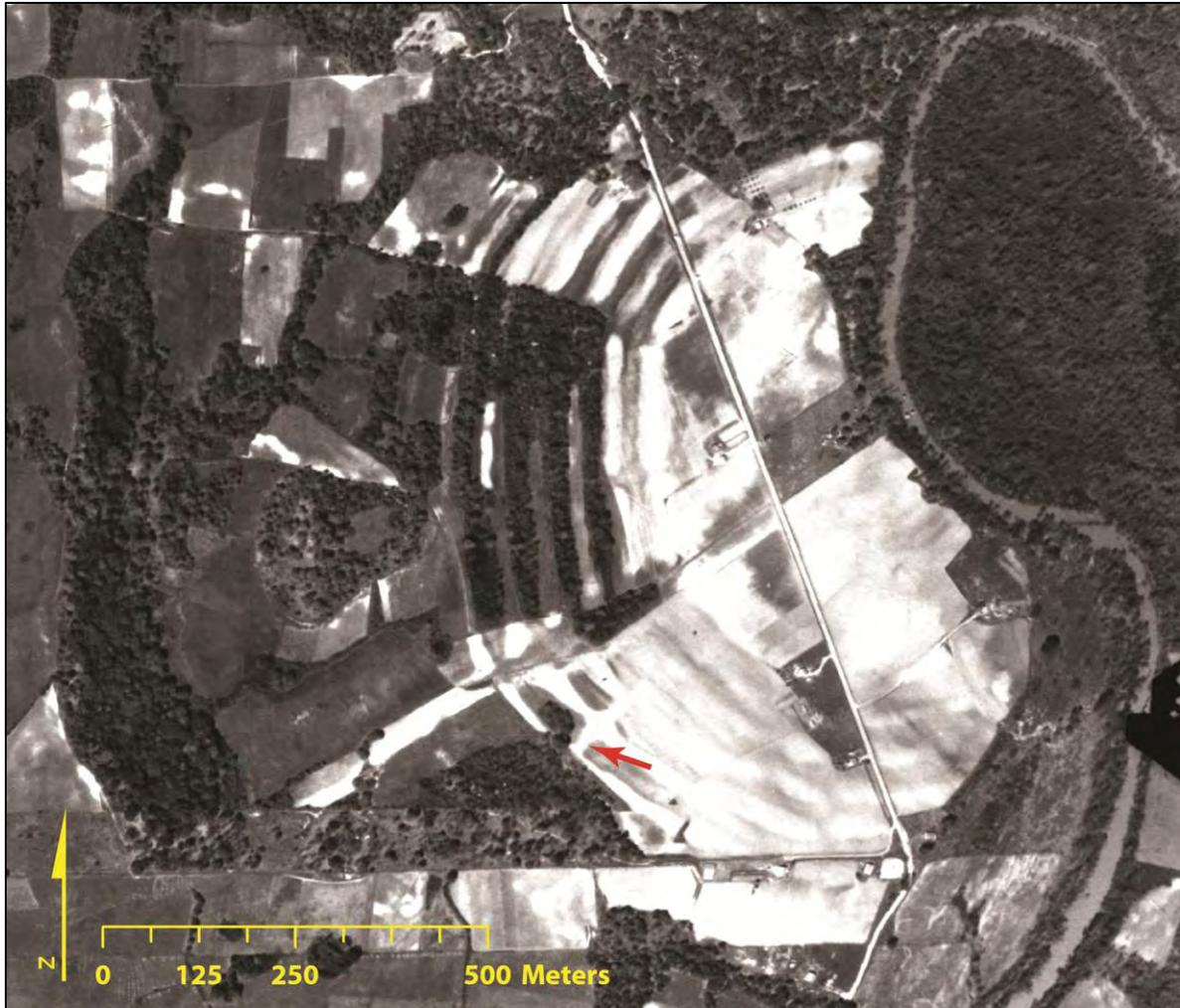


Figure 2.22. 1941 aerial photograph of Poverty Point. The red arrow points to the “bisector ridge” that cuts across the ridge system. *Photo: United States Army Corps of Engineers*

The ridges are numbered 1-6, with the innermost ridge being Ridge 1 and the outermost one being Ridge 6. Standing 1-2 m high in some areas and only 10-30 cm high in others, the ridges have slightly rounded crests that are about 15-25 m wide. They are separated by 20-30 m wide depressions called swales. The swales were created by removing sediments and using them to build the adjacent ridges (Ford and Webb 1956). In some areas, the ridges are topographically distinct (Figure 2.24), but in others they are more subtle (Figure 2.25). At one time, it had been suspected that a combination of agricultural activities and erosion had virtually eliminated a portion of the ridges within the southern part of the site. However, the topographic detail provided by the LiDAR data (Figure 2.26) and recent geophysical survey (Figure 2.27) both confirm that these ridges are indeed still present (Hargrave et al. 2007, 2010). Excavation data suggest that the ridges in the southern and southwestern sectors may not have been built up to the degree that they were in the northern and western sectors (Gibson 1990a).

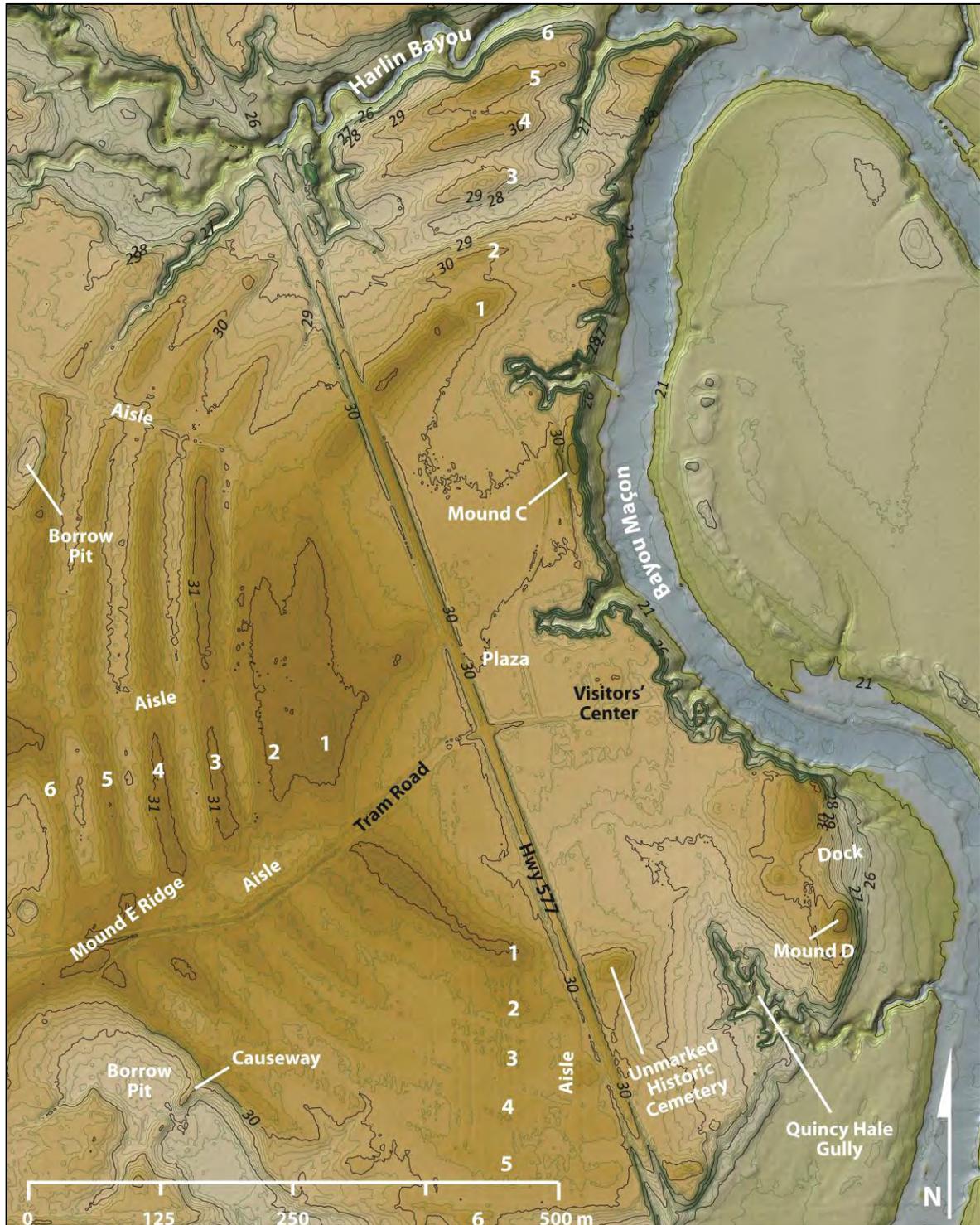


Figure 2.23. Earthen ridges and plaza, 3D surface map with contours. Contour intervals are 1 m (16-26 m) and 20 cm (26-34 m). LiDAR data distributed by “Atlas: The Louisiana Statewide GIS,” LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.



Figure 2.24. Ridges in the northern sector. *Photo © Jenny Ellerbe*



Figure 2.25. Ridges in the southwestern sector. *Photo © Jenny Ellerbe*

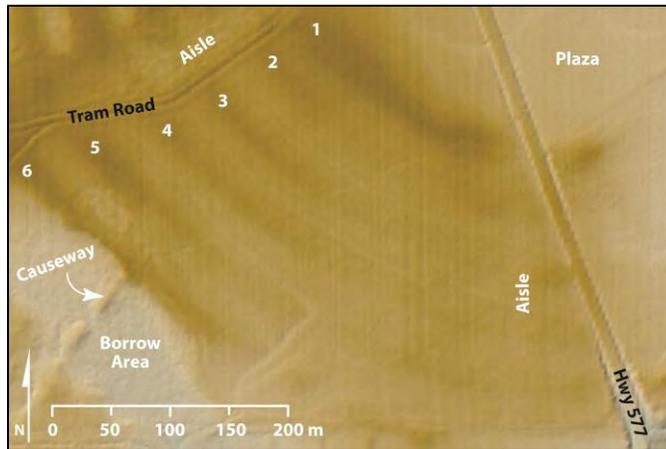


Figure 2.26. Detailed 3D surface map of ridges in the southwestern sector of the site. LiDAR data distributed by "Atlas: The Louisiana Statewide GIS," LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.



Figure 2.27. Magnetic gradient image, showing part of the ridge system and interior plaza on LiDAR background. Note circular patterns in the southern plaza area (red arrows). Black areas are magnetically stronger than the gray background average; white areas are magnetically weaker than the average. Magnetic data courtesy of Michael Hargrave and R. Berle Clay. LiDAR data distributed by "Atlas: The Louisiana Statewide GIS," LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

The ridges are not continuous linear constructions. They have been divided into sectors by as many as four low alleyways, or aisles, that cut perpendicularly through the system (Figure 2.23). The aisles presumably provided corridors for access (Gibson 1990a), although it has been suggested that they also served as astronomical markers (e.g., Brecher and Haag 1983). Because historic-era farm roads and drains tended to coincide with the aisles, it is not certain that all aisles were aboriginal constructions (Gibson 1990a; Kidder 2002). Geophysical survey of the southern and western (Mound A) aisles (Figure 2.28) has shown that they, at least, are part of the original construction (Hargrave et al. 2010).

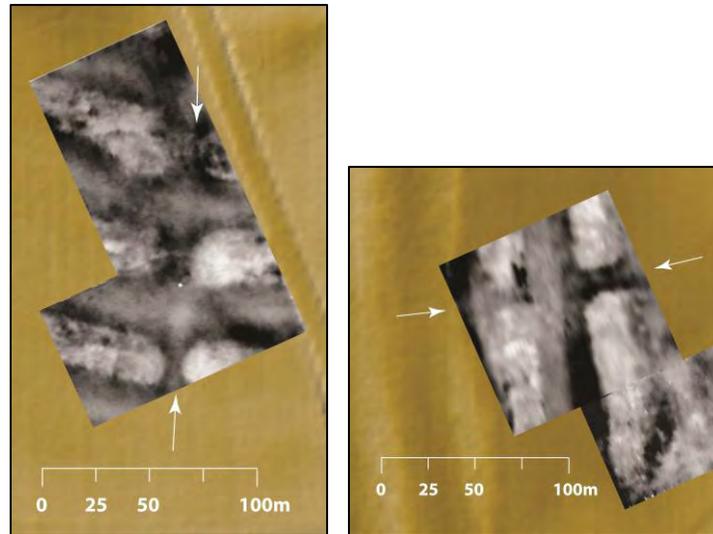


Figure 2.28. Electrical resistance images, showing the (left) southern and (right) western (Mound A) aisles. Aisles are indicated by arrows. Note the rounded, “finished” ridge ends on either side of the aisles. Data courtesy of Michael Hargrave and Lewis Somers.

The ridges are in stable condition at present, but erosion has damaged them over the years. One gully, Quincy Hale Gully, removed part of the southern ridges (Figure 2.23), but has been stable since a berm and drop basin were installed in that area in 1981. Harlin Bayou (Figure 2.29) presents a continuing threat to the northern ridges that is being monitored (refer to Section 4.b). In the past, agricultural activities decreased the height of the ridges and seriously damaged Ridge 6 South, but that can no longer happen, with the entire ridge system now within the park boundaries. Approximately half of the ridge system is currently in trees and half is in grass (Figure 1.5). Much of the grassy portion was in cultivation at the time the property was purchased by the state; during the initial development of the park, sufficient trees were removed from Ridges 2-6 in the western sector to allow Mound A to be seen from the visitors’ plaza. Phase 2 of the current tree removal project will remove the remaining trees from the ridges and swales in the western and northern sectors of the site.

This system of ridges and swales represents a massive construction effort. In terms of size, the north-south diameter of the enclosure at Ridge 6 is roughly 1.14 km and, at Ridge 1, is about 650 m;

their total cumulative end-to-end length is about 9.5 km. Excavations and soil cores indicate that ridge construction was carried out unevenly. Some ridge segments were apparently the product of a single building episode. Others have revealed mid-construction building hiatuses, with accumulated



Figure 2.29. Harlin Bayou. Photo © C.C. Lockwood

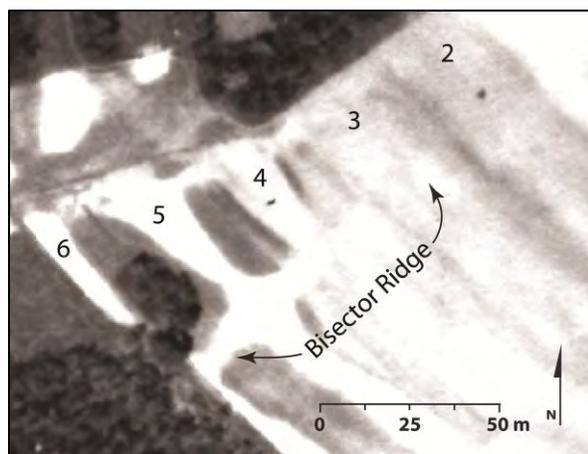


Figure 2.30. The bisector ridge crosscuts ridges in the southwestern sector on the 1941 aerial photograph. Photo: United States Army Corps of Engineers, Vicksburg District

cultural debris indicating they were occupied during the interlude. Multiple building stages have been identified in some ridge areas (Ford and Webb 1956; Gibson 1993b, 1994b, 1998b). Efforts to establish a construction sequence for the ridge segments have not produced compelling results (e.g., Connolly 2003b, 2006; Gibson 1992, 1994a, 2001).

While initial portrayals of the ridge system focused on symmetry and design simplicity, over time it has become clear that those characterizations are not entirely accurate (Gibson 1990a; Kidder 2002):

1. The ridge system's apparent symmetry was emphasized, in part, by the preconception that aisles were arranged like "spokes on a wheel." Some aisles were obvious topographically and in aerial photographs; others less so. A northern aisle has long been assumed, simply for symmetry's sake, but no demonstrable northern aisle is apparent in aerial photographs (e.g., Figure 2.22) or in topographic maps (Kidder 2002). Various locations and orientations for an aisle through the northern ridges have been proposed over the years, and schematic drawings of the site always include a northern aisle. Recent geophysical survey in the northern ridge sector has failed to reveal a constructed northern aisle, suggesting that there wasn't one (Greenlee 2011).

2. The *bisector ridge*, known from early aerial photographs (Figures 2.22 and 2.30), runs perpendicular to the ridges in the southwestern sector of the site and connects with the causeway outside the ridge and swale system. A

soil core taken from where the bisector crosses one of the inter-ridge swales confirmed the presence of culturally-deposited sediments (Gibson 1987a). The bisector has no identifiable topographic expression today, nor has it been detected in geophysical surveys of the area.

3. The *causeway* is a southwestern-oriented elevated structure that crosses a 1.5-2.0 m deep depression just outside of Ridge 6 in the southwestern sector of the ridge system (Figures 2.23, 2.26, and 2.31). With dimensions of about 90 m long and 15 m wide, it likely stretched across the entire depression when constructed, but has been breached since. Excavations have shown that the causeway is a constructed feature and its artifacts are



Figure 2.31. The causeway. Photo © Jenny Ellerbe

consistent with a Poverty Point age (Gibson 1984). The depression probably originated as a borrow area, but the possibility that it was a natural basin has not been discounted.

4. The *dock* is located in the southeastern sector of the site (Figure 2.23). This gentle slope (Figures 2.32 and 2.33) from the top of Macon Ridge down to Bayou Maçon has long been of interest to archaeologists as an easy access to the site from the bayou. Excavations and sediment cores (Gibson 1987a, 1989; Hillman 1987, 1990a) have established that the upper crest of the slope was artificially enhanced, and, despite the great potential for soil loss due to slope wash, features, including postmolds, have been identified on the slope below the ridge. Geophysical survey has also documented magnetic anomalies that reflect cultural activity (Figure 2.27) on the slope.

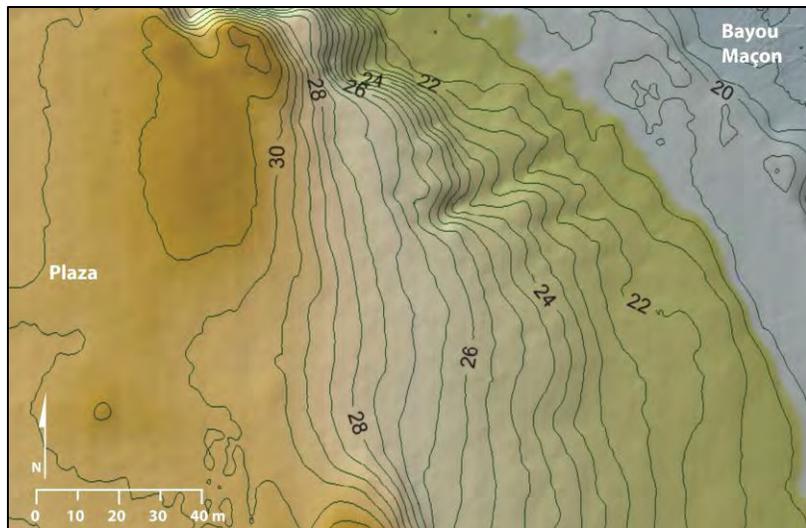


Figure 2.32. Surface map of the dock, the gentle slope between Bayou Maçon and the plaza. Contour interval is 50 cm. LiDAR data distributed by "Atlas: The Louisiana Statewide GIS," LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.



Figure 2.33. The dock. Left, Bayou Maçon at the base of the slope; Photo © C.C. Lockwood. Right, looking upslope, with Mound D on the left side of the image; Photo © Jenny Ellerbe.

5. The *Mound E ridge*. The Mound E ridge is an elevated ridge that runs parallel to the southwestern aisle from Mound E to the middle of the plaza (Figure 2.34). The nature and origin of this feature has not yet been determined. It appears to have been impacted on the west end by the installation of an old, now-abandoned gas well.

The probability distribution of high-confidence radiocarbon dates from the concentric ridges (Figure 2.35) indicates a use history of nearly 400 years, from about 3480-3100 BP. Although it appears that ridge construction may have been a fairly continuous project over that time span, some archaeologists have suggested a much shorter period. They note that the longer chronology offered by the radiocarbon record could be a function of imprecision inherent in the technique and the difficulties of dating such a complex construction (e.g., Gibson 1994a). The probability distribution for the subridge radiocarbon dates covers a slightly longer time span of about 3650-3100 BP. As expected, dates representing the pre-ridge occupations are older than those from the ridges, confirming that people lived on the ground surface before they placed the ridges over their habitation debris. What is somewhat unexpected is

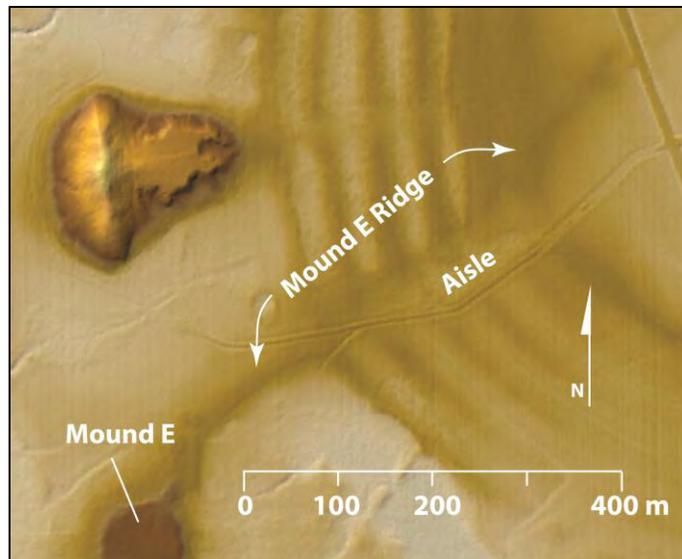


Figure 2.34. LiDAR map showing the Mound E ridge. LiDAR data distributed by "Atlas: The Louisiana Statewide GIS," LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

that the late end of the probability distribution for subridge dates is nearly as recent as that of the ridges – implying that new ridge construction could have been ongoing until the end of the occupation. Clearly, this issue requires additional research.

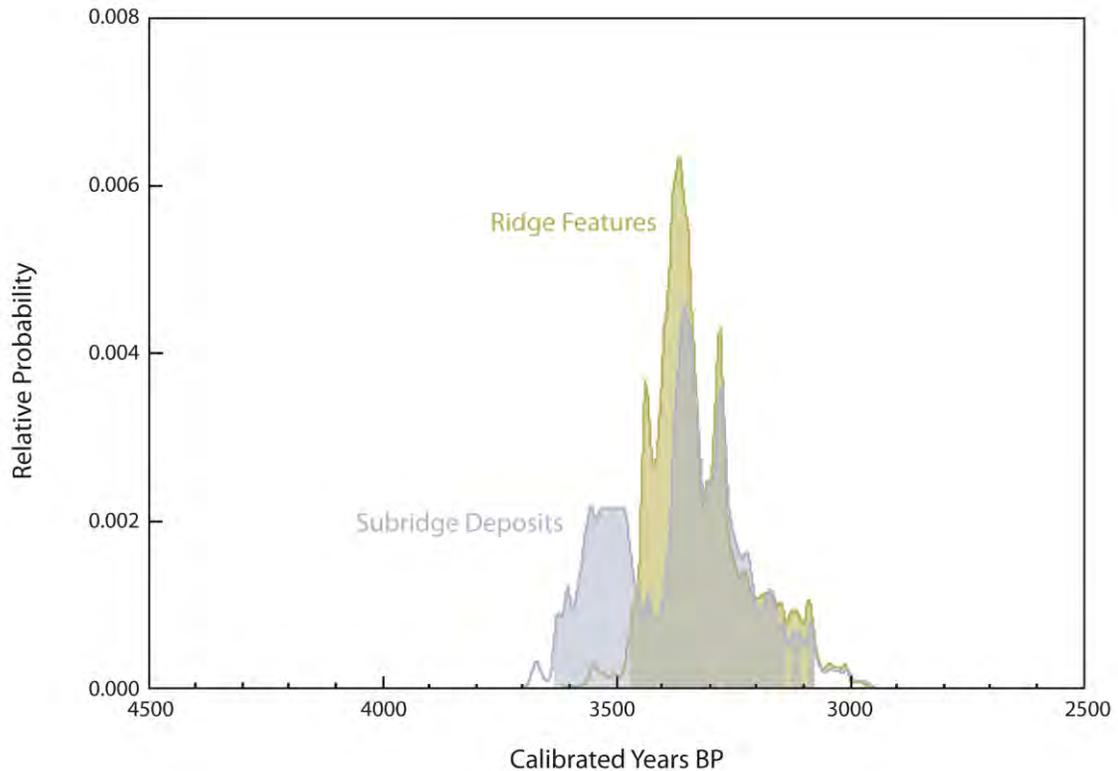


Figure 2.35. Summed probability distributions for high-confidence radiocarbon determinations from Poverty Point subridge (summed,  $n=3$ ) and ridge feature (summed,  $n=6$ ) contexts. Colored areas indicate the  $2\sigma$  distribution associated with the probability curves. Simply put, there is a 95% chance that the dated events fall within the color-coded area(s) beneath each curve.

Excavations, soil cores, and artifact collections all indicate that the ridges were the likely habitation areas at Poverty Point (Ford and Webb 1956). The greatest density of artifacts and features (e.g., hearths, earth ovens, postmolds) is associated with the ridges - underneath them, within them, on top of them, and along their flanks. Unfortunately, no houses have yet been discovered. This may be because some combination of farming and weathering has destroyed any prepared floors, because the Poverty Point houses were so transitory that they are simply too difficult to recognize, or because archaeologists have not excavated large enough areas in the right places. Based on the richness and diversity of the artifacts recovered, the size of the site, and the number of laborers required to move such a vast quantity of dirt, a substantial population of hunter-fisher-gatherers is believed to have lived at the site.

The ridges were also the location for at least five historic-era tenant-farmer houses and a church. None of those buildings exist today, but it has been noted that these structures helped preserve the ridges in those places, as they are marked by topographical high spots that were not

plowed. There is also an unmarked historic cemetery in Ridge 1 South, just east of the highway, which has been identified as an early nineteenth-century slave burial ground (Haag 1990).

### Plaza

The 17.4 ha plaza defined by the inner slope of Ridge 1 and the eastern edge of Macon Ridge (Figure 2.23) at first appears to be a natural, empty, flat area. It is now known, however, that the plaza was not empty nor was its flatness a natural characteristic of the landscape. Soil cores and excavations have revealed that there were originally gullies and low spots in the plaza that the builders of the earthworks filled and leveled with up to 2.5 m of dirt and midden (Greenlee 2009, 2011; Haag 1990; Ortmann 2007; Woodiel 1990), while other areas apparently were not altered (Gibson 1984). Clearly, the plaza is an architectural feature, a part of the created landscape.

The ground surface of the plaza is covered with grass and is in stable condition. It is not, today, as flat as archaeologists presume that it once was. Erosion, cultivation, road construction, and building construction have all had an impact on the plaza's topography (Figure 2.23). A system of berms and drains has stopped gullies from further encroaching into the plaza from Bayou Maçon. Although modern intrusions are visible within the plaza, they do not distract visitors from appreciating the immensity of this area (Figures 2.8 and 2.36).



Figure 2.36. The plaza, looking north. *Photo © C.C. Lockwood*

Artifacts in surface collections from the plaza are scarce, but excavations in the western sector in 1973 and 1975 revealed over 100 subsurface pits that were interpreted as filled postholes (Haag

1990). There were three types of posts that differed in size, shape, fill, and stratigraphic origin. The largest postholes, which were flat-bottomed, 0.45-0.75 m in diameter, 2-3 m deep and filled with nearly sterile fill, appeared to be the oldest; the mid-sized postholes, which were about 0.3 m in diameter and 1 m deep, were intermediate in origin; the smallest postholes, which were 0.3 m in diameter, 0.25 m deep, and included PPOs as chinking material (around 0.1 m diameter posts), were the most recent. The purpose of the posts was unclear, as no alignments were recognized at that time, but it was suggested that they may have served an astronomical function.

Geophysical surveys conducted in the plaza since 2001 (Hargrave et al. 2010) have revealed twenty-five to thirty large ring-shaped magnetic anomalies (Figures 2.10 and 2.27). These rings, many of which intersect and/or overlap, range from 25 m to 65 m in diameter (Figures 2.37 and 2.38). Targeted excavations over a sample of the ring-shaped anomalies (Greenlee 2009, 2011) revealed postholes very much like the large ones found in the 1970s, up to 0.65 m in diameter, extending about 2.7 m below current ground surface, with the posts appearing to have been pulled (rather than having decomposed in place) and the holes refilled with nearly sterile soil. Intersecting and closely-spaced features indicate considerable resetting of posts, as if the post circles were not permanent structures. It is not known if more than one circle was standing at any given time.

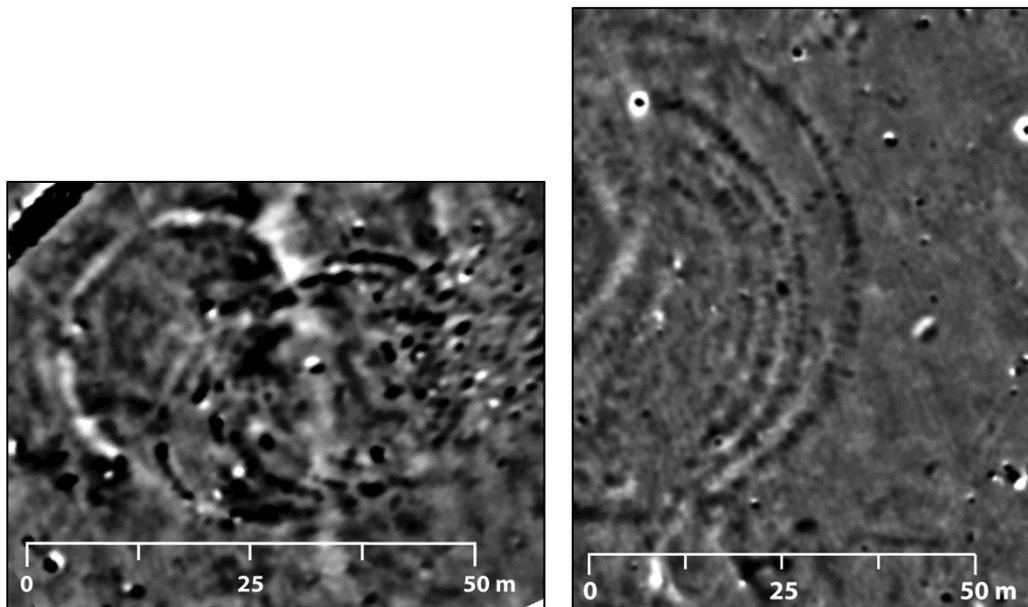


Figure 2.37. Examples of ring-shaped magnetic anomalies. Black areas are magnetically stronger than the background average; white areas are magnetically weaker than the average. Courtesy of Michael Hargrave and R. Berle Clay.

The probability distribution for the high-confidence radiocarbon determinations (refer to Section 7.f) from a sample of post circles (Figure 2.39) suggests they were part of the landscape ca. 3400-3100 BP, even as the ridges were still under construction and while Mound A was being built. Culturally-deposited fill that raised the level of the plaza by as much as 90 cm in some places was stratigraphically above the tops of these postholes, and thus landscaping of at least parts of the plaza area occurred relatively late in the Late Archaic occupation at Poverty Point.



Figure 2.38. Barrels marking the location and dimensions of a post circle in the plaza.

Photo © Jenny Ellerbe

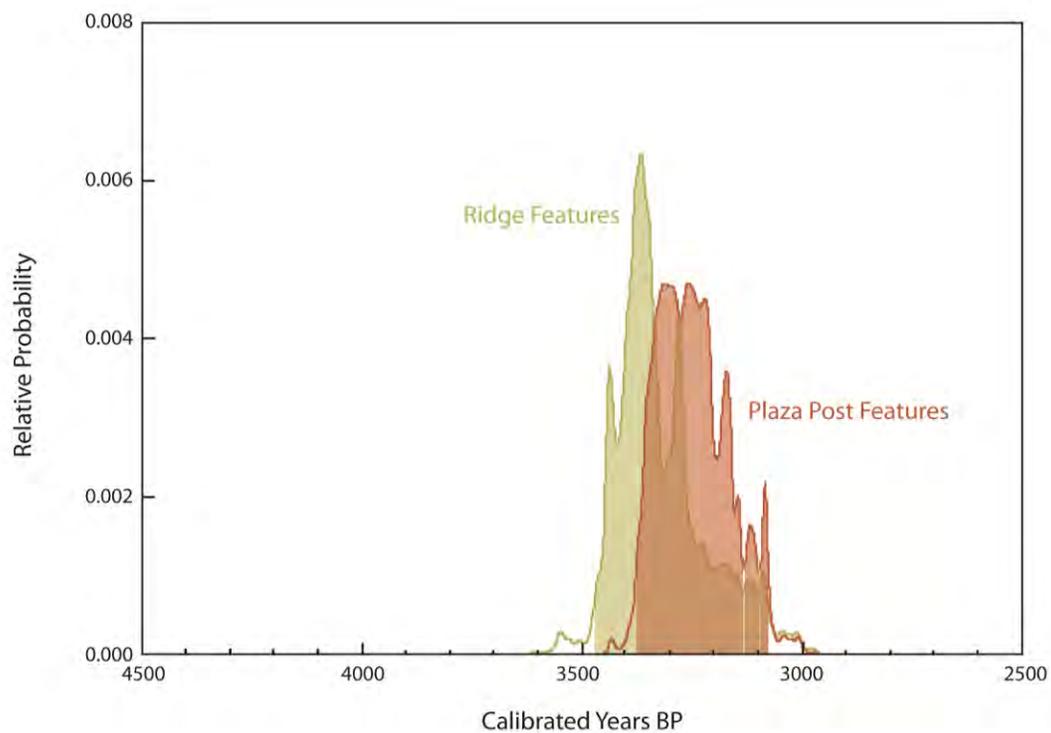


Figure 2.39. Summed probability distributions for high-confidence radiocarbon determinations from Poverty Point plaza (summed,  $n=4$ ) and ridge (summed,  $n=6$ ) features. Colored areas indicate the  $2\sigma$  distribution associated with the probability curves. Simply put, there is a 95% chance that the dated events fall within the color-coded area(s) beneath each curve.

### Other Areas

Portions of the Poverty Point site outside of the ridges, such as the areas west and southwest of Mound B or around Mound A, have not been as thoroughly explored. Records from unsystematic surface collections acquired while the site was still under cultivation (before it was purchased by the state of Louisiana) indicate that typical Poverty Point artifacts were picked up in those areas (Gibson 1970b; Webb 1970). However, the frequencies of different artifact types appear to differ between areas around the mounds and the ridged areas. No excavations have been conducted there, but geophysical exploration is ongoing. Thus far, remote sensing has not produced evidence for large structures or earthen constructions, but there are geophysical anomalies that merit further research (Greenlee et al. 2012).

### Volume of Late Archaic Monuments

Various estimates of the volume of dirt moved during the Late Archaic occupation at Poverty Point have been offered over the years (Ford and Webb 1956; Gibson 1987b; Ortmann 2007). Recent estimates suggest that about 750,000 m<sup>3</sup> of soil were moved in earthwork construction and that about as much was probably moved in landscape preparation (e.g., filling gullies, removing A horizons, flattening). Thus, it has been estimated that as much as 1.5 million m<sup>3</sup> of earth was moved to create the monumental earthen landscape of Poverty Point.

### Mound D

Mound D, in the southeastern part of the site, provides the most significant evidence for Native American use of the locale after the Poverty Point occupation. Measuring roughly 30 m by 40 m at its base and rising about 2 m above the plaza (Figure 2.40), this semi-rectangular, flat-topped mound is located on top of one of the original Poverty Point earthen ridges (Ortmann 2007, 2010).

The mound is mostly in grass, with small trees and shrubs along its eastern edge (Figure 2.41). Two headstones and some brickwork have been placed on its summit, indicating its use as a cemetery in the nineteenth century (Figure 2.42).

The mound fill contains both diagnostic Poverty Point and Coles Creek (Late

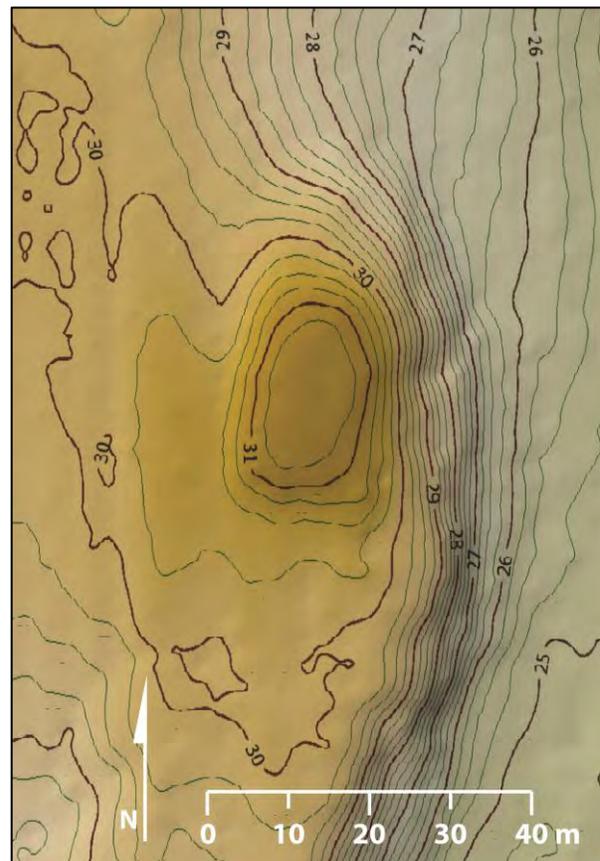


Figure 2.40. Mound D, 3D surface map with contours. Contour interval is 25 cm. LiDAR data distributed by “Atlas: The Louisiana Statewide GIS,” LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.

Woodland/early Late Prehistoric period) artifacts and exhibits minimal soil development (Greenlee 2011). Luminescence dates (refer to Section 7.f) have been obtained from the Poverty Point ridge fill, the buried A horizon on top of the ridge, and the overlying mound fill (Feathers and Sheikh 2012). Based on the last exposure of the buried A horizon, the mound is no older than  $1390 \pm 180$  BP; the two dates from Mound D's fill are  $1060 \pm 190$  BP and  $1100 \pm 170$  BP. These dates are consistent with Mound D as a Coles Creek construction. Located about 700 m northeast of the contemporaneous Jackson Place site, the mound has long been considered by some to be associated with that complex.



Figure 2.41. Mound D, looking southeast. *Photo © C.C. Lockwood*



Figure 2.42. Headstones on Mound D. *Photo © Jenny Ellerbe*

## 2.b History and development

Changes in the appearance and use of Poverty Point from the time of the earliest human presence in the area until the present are described following an established temporal scheme (Figure 2.43). This framework provides the setting for elaborating on the extraordinary Poverty Point cultural tradition represented by this site.

### Paleoindian (ca. 13,000-10,000 BP) and Early Archaic (10,000-7000 BP) Periods

The first evidence for people in the area dates back to the Paleoindian period (Rees 2010a). Stone spear points and other stone tools are the only evidence of the first human use of Macon Ridge (Hillman 1990b; Saucier 1994). The points (e.g., Clovis, Plainview and Pelican types) typically occur singly, as isolated finds, in northeastern Louisiana and they are present in low numbers in the surface collections from Poverty Point (Figure 2.44) (Connolly 2003b; Hillman 1990b; Webb et al. 1970). Hillman (1990b) suggests that a temporary Paleoindian camp may have been located on the Poverty Point property. Many of the Paleoindian points found in northeastern Louisiana are fashioned from nonlocal cherts similar to those found farther west in central Texas. The source of the stone, together with the low density of artifacts, is consistent with a highly mobile population of foragers. The classic characterization of Paleoindian populations is that they were specialized big-game hunters, but that portrayal is being replaced by one reflecting a more generalized hunting-gathering adaptation (Rees 2010a).

The Early Archaic period is marked by different shapes of stone points, a greater variety of other stone tools (e.g., scraping and grinding tools), and a higher density of artifacts, as compared with the previous Paleoindian period. In northeastern Louisiana, the Early Archaic is known only from stone artifacts; no earthworks, houses, or other Early

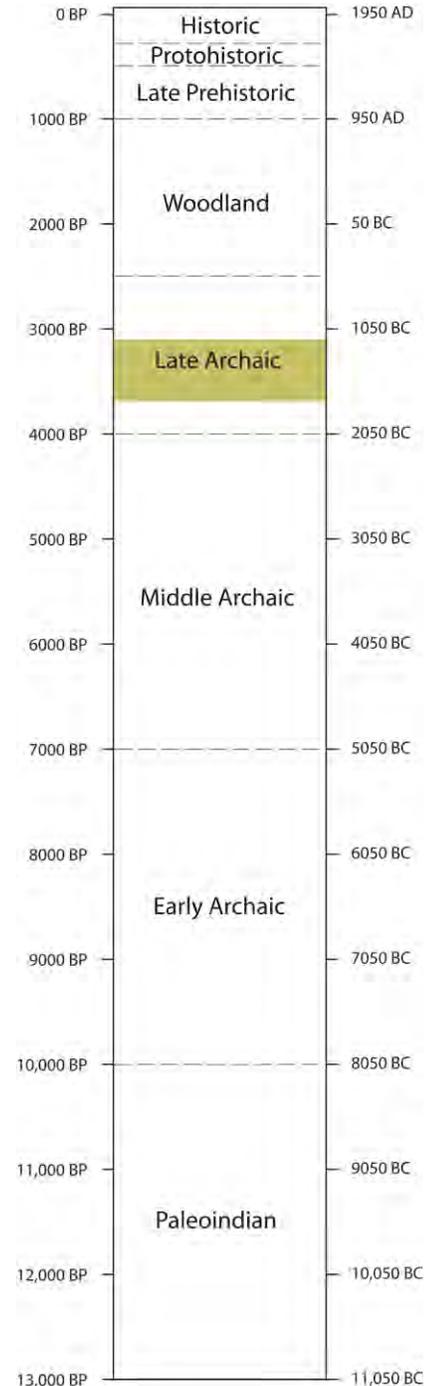


Figure 2.43. Time periods used in discussion of the property's history. Olive fill indicates the time span of Poverty Point.

Archaic features have been identified (Saunders et al. 2010). Early Archaic points (Dalton-Meserve, Hardin, San Patrice, Keithville and Cache River types) are more common on Macon Ridge, and at Poverty Point (Figure 2.44), than the older Paleoindian types (Connolly 2003b; Hillman 1990b; Webb et al. 1970). On Macon Ridge, the Early Archaic points show greater morphological diversity, are found in more varied geographic settings, and are more frequently made from local chert than earlier points (Griffing 1996; Hillman 1990b; Saunders et al. 2010). Higher artifact densities and greater use of local lithic sources indicate reduced mobility, while more diversity in artifact types and locations suggests a broader range of plants and animals were being exploited by these hunter-gatherers than during the Paleoindian period (Rees 2010a). People may have lived year-round in the area during the Early Archaic period, but the population density was still relatively low and there is no evidence that people had much impact on the Macon Ridge landscape. The age of the Early Archaic occupation on Macon Ridge is extrapolated from sites elsewhere in Louisiana and the greater Southeast (Rees 2010a).



Figure 2.44. Paleoindian (left) and Early Archaic (right) points from Poverty Point. The scale is 1 cm<sup>3</sup>. Photos © Jenny Ellerbe

### Middle Archaic Period (7000-4000 BP)

During the Middle Archaic period, some hunter-fisher-gatherers in Louisiana became even less mobile and more culturally complex. People still relied only on wild foods and they returned to some locations, particularly those near rivers, lakes, or the Gulf Coast, repeatedly over hundreds of years (Saunders 2010b). Fauna and flora at many sites of this time period indicate occupation during all seasons, but the question of whether people were year-round (sedentary) residents remains unsettled (Gibson 2006; Girard et al. 2011; Jackson and Scott 2001; Rafferty and Peacock 2010; Saunders 2010b; Saunders et al. 2005). Groups exploited riverine resources like fish, mussels, turtles, and aquatic snails to a degree not previously seen. New cooking and heat-treatment innovations are reflected in fire-cracked rocks and geometric fired-earth objects. The stone artifacts of this time included distinctive points, tiny drills, grinding tools, and cylindrical and animal effigy beads. In northeastern Louisiana, at least, Middle Archaic populations were not involved in long-

distance exchange of raw materials, instead relying on locally available stone (Johnson 2000; Saunders 2004, 2010b). Overall, sites of the Middle Archaic period attest to a greater human presence on the landscape than during prior times (Kidder and Sassaman 2009).

The complexity of Middle Archaic cultural life is most dramatically reflected in earthwork construction (Sidebar 2.12). Louisiana is home to fourteen Middle Archaic mound sites (Saunders et al. 2010), which are among the earliest earthen mounds in the United States. These sites vary in terms of the number of mounds (from one to eleven), their arrangement, their internal structure and submound architecture, and the presence of earthen ridges (Saunders 2010a). There are no Middle Archaic earthworks at Poverty Point, but the Middle Archaic Lower Jackson mound is located south of Poverty Point on Macon Ridge (refer to Section 2.a). Other non-mound Middle Archaic sites are also located in the area.

A few classic Middle Archaic artifacts (e.g., fired-earth cubes [Saunders et al. 1998], Evans type projectile points [Saunders et al. 2001], and a locust effigy bead [Crawford 2003; Webb 1971]) are present in the surface collection from Poverty Point (Figure 2.45) (Connolly 2003b; Ford and Webb 1956), indicating that there was a minor Middle Archaic occupation there. Four controversial radiocarbon dates from Poverty Point fall within the Middle Archaic time period (refer to Section 7.f).<sup>9</sup> However, these are not

#### Sidebar 2.12. Why Did People Build Mounds?

The question of why people built earthen or stone mounds is one that many archaeologists struggle to answer. Often there is evidence to suggest a purpose for a mound, but sometimes there is not.

For example, some mounds were built to serve as burial places – as above-ground cemeteries. And, other mounds were built to serve as the platforms for special buildings. The mounds built by Middle Archaic and Poverty Point peoples do not show evidence for either of those uses. Such mounds are often labeled as “ritual” or “ceremonial” when the end use is unknown, meaning archaeologists don’t really know why they were built.

Archaeologists have suggested that mounds may have served to bring people together for a shared purpose—to reinforce social bonds or to create a physical expression of their cosmos or mythologies (Gibson 2010b; Kidder 2011; Sassaman 2005).

Another hypothesis, known as costly signaling, is that mounds were built by groups (the signalers) to communicate to other groups (the recipients) about their competitiveness, their access to resources, or some other qualities. The recipients could then gauge whether they would be better off cooperating or competing with the signalers.

<sup>9</sup> Radiocarbon determinations (Tx-4969, Tx-4970, Tx-4967a, Tx-4967b, Tx-4974) from hearths and midden within a filled depression beneath the edge of Ridge 1 North were initially dismissed as being contaminated with lignite coal (Greene 1990b); this was apparently because they were too old to fit within the Poverty Point chronology and not because lignite was visually identified within the samples prior to dating (Connolly 2006). Even if the dates are not spuriously old due to contamination, they are not in stratigraphic order and no diagnostic Middle Archaic artifacts were recovered in that excavation, and thus interpretive questions remain (cf. Gibson 2010a).

high-confidence dates, are not in stratigraphic order, and no diagnostic Middle Archaic artifacts were recovered near the samples. Thus, at this time, there is no compelling evidence for a significant Middle Archaic occupation at Poverty Point.

The Middle Archaic suite of cultural elaborations (e.g., earthwork construction, zoomorphic effigy beads, geometric fired-earth objects) has been considered to be precocious (Saunders 2010b) and a precursor to later Poverty Point material culture (Gibson 2007). Yet, there is little evidence for cultural continuity between the two populations. Middle Archaic earthwork construction, in particular, ceased about 1,000 years before building began at Poverty Point (Saunders 2010a). Thus, the monumental complex at Poverty Point cannot be viewed as the pinnacle of a continuous and unbroken tradition of Archaic moundbuilding (Kidder and Sassaman 2009).



Figure 2.45. Middle Archaic artifacts from Poverty Point: Evans points and fired-earth cubes. One of the points has been recycled into a scraper. *Photo © Jenny Ellerbe*

### Late Archaic Period (4000-2500 BP)

Relatively little is known about the Late Archaic period in Louisiana outside of the Poverty Point cultural tradition. Indeed, few sites of that period not associated with the Poverty Point phenomenon have been found in the state. Based on multiple lines of evidence (e.g., faunal and floral seasonality, stone tool diversity, and daub quantity<sup>10</sup>) from the Cowpen Slough site in east central Louisiana, at least some pre-Poverty Point Late Archaic residential sites were occupied year-round (Ramenofsky 1991). The moundbuilding hiatus that began toward the end of the Middle Archaic apparently continued into the Late Archaic period, and there is some suggestion of continuity in stone point types (Saunders 2010a). Nonlocal stone appears in low frequencies in pre-Poverty Point Late Archaic sites, providing a prescient glimmer of the vast lithic exchange network that would be established (Saunders et al. 2010).

The moundbuilding hiatus in northeastern Louisiana ended with the creation of Poverty Point. Evidence beneath the earthworks shows that the site was occupied before at least some of the mounds and the concentric ridges were built. There is submound midden under Mound A and midden or Ab horizon with Poverty Point-type artifacts (Sidebars 2.13-2.15) under Mound C. No midden was found under Mounds B or E, where the uppermost soil horizon had been removed prior to construction. (One soil core from Mound B contained submound Ab material, but no artifacts were noted [Ortmann 2007].) More than 85% of previous excavations and soil cores that extend

<sup>10</sup> Daub is clay or mud plastered over a woven framework of sticks or wood strips, used to build structural walls. If the wall burns, the clay is fired and thus evidence of the structure is preserved.

below the construction fill of the concentric ridges have found Ab horizons with artifacts or midden preserved; the actual percentage is probably greater still, as stratigraphic descriptions in several cases are not sufficiently clear to make a judgment. These prior excavations and cores were widely scattered across the different ridge segments, indicating a high likelihood of encountering a previously occupied surface at most locations under the earthworks.

#### Sidebar 2.13. Artifacts of Poverty Point

Much as the earthworks at Poverty Point represent a spectacular achievement within North American culture history, the artifact inventory at the site represents a virtual explosion of new stylistic and functional types. Soil conditions are such that stone and ceramic objects dominate; only a few bone tools have been recovered – from sediments dredged out of Bayou Maçon at the base of the bluff.

#### Lithics

*Projectile points.* While most people call them “arrowheads,” these are actually spear points. The bow and arrow was not adopted in this part of North America until about 1450 BP. It would be even more accurate, however, to think of them as ancient multi-purpose tools. Chipped out of chert, they are found in a great variety of forms and they have highly variable wear patterns.



*Gorgetes.* Gorgets are often assumed to be weights for spear-throwers, or atlatls, which were used to provide greater velocity and distance in hunting. They are, however, found in a variety of shapes and sizes, and with different attachment strategies, suggesting multiple functions. Some may have been wearable art. Made mostly of limonite, micaceous schist, or slate, many are decorated with patterns of incised lines. Most are broken when found; some show repair holes, drilled on both sides of cracks, that were used to bind the gorgets together when they began to fail.



*Steatite vessels.* Soapstone, or steatite, bowls were brought, already carved, from quarries in the foothills of the Appalachian Mountains of northwestern Georgia and northeastern Alabama. All but one, so far, have been found broken. Repair holes are not uncommon.



All photos © Jenny Ellerbe

## Sidebar 2.14. Artifacts of Poverty Point, continued

*Plummets.* These tear-drop shaped objects look like modern plumb bobs. Formed most frequently of iron-rich hematite and magnetite, probably from outcrops in the Ouachita Mountains of Arkansas, they were originally thought to be fishing net weights, bola weights, or charm stones. A recent hypothesis suggests that they may have been loom weights.



*Beads and pendants.* Most beads are of the cylindrical variety and are made of chert; beads are less frequently made of copper, steatite, or galena. The red jasper “pot-bellied” owl pendants are considered one of the classic Poverty Point artifact types. Although the owls are readily associated with the site, they have a wide distribution, having been found across the South from western Louisiana to eastern Florida. They are not common, with fewer than thirty total specimens known.



*Microliths.* One of the most efficient ways to use the relatively small, locally available, gravel pieces was to shape the rocks so that several long, thin, blades could be struck off a single stone. Each of those blades could then be turned into a cutting, scraping, or drilling tool.



### Ceramics

*Figurines.* These small figurines, hand-molded from the silt loam soils and fired, provide the only portraits of the people of Poverty Point. Most figurines are headless torsos, while some are simply heads; rarely are they complete, with both a head and a torso. Female forms are most frequently represented, although some are androgynous and others have bird-like features. The figurines vary in body shape, hair style, and clothing.



All photos © Jenny Ellerbe

### Sidebar 2.15. Artifacts of Poverty Point, continued

*Pottery.* Poverty Point was originally believed to be a pre-pottery site. Excavations have recovered pottery sherds from within the ridges, thus demonstrating that the original assumption was incorrect. Still, pottery is not an abundant artifact type, by any measure. Some of the sherds strongly resemble pottery wares from elsewhere in both composition and appearance, and thus were likely imported. Other sherds have been argued to represent the earliest development of pottery in the Lower Mississippi Valley. Roughly half of the analyzed sherds from the site post-date the Late Archaic occupation.



*Decorative clay objects.* Decorated, fired-earth objects at Poverty Point come in a range of shapes, sizes, and designs. Most appear to be small, more elaborate versions of PPOs, the common “cooking balls” so abundant at the site. Although they look similar, they are not found in earth ovens like the PPOs, so they may have had some other purpose.



*Fired earth.* Sometimes earth is fired accidentally and traces of things that would not normally preserve are visible. Daub, mud packed against a framework of sticks to form structure walls, can be fired when the building burns. Evidence of basketry was preserved in these pieces of fired earth.



*Pipes.* Tubular stone, and sometimes ceramic, pipes have been found. Some appear to be smoking pipes. Others have been suggested to be “sucking tubes” like those used by shamans in traditional healing ceremonies.



All photos © Jenny Ellerbe

Figure 2.46 shows radiocarbon ages of charred botanical material from below the mounds and ridges. The submound/subridge dates indicate the earliest time that the building of the relevant earthworks could have started. These dates are consistent with the occupation spanning roughly 3650-3100 BP, the latest dates underlying the most recent constructions. One important implication is that construction appears to have been ongoing throughout the entire period of occupation at the site.

As Figure 2.46 shows, one of the dates from the midden beneath the platform of Mound A (Beta-207441) is significantly older (ca. 4100-3900 BP) than the rest of the submound/subridge dates. Because younger dates were obtained from beneath Mound A, the older date is not relevant to the question of when construction of Mound A was begun. It is likely that the date is the result of non-cultural material being charred incidentally and incorporated into the submound midden. But, if additional research indicates that the date reflects cultural activity at the site, then it will be evidence for an earlier Late Archaic use of the site.

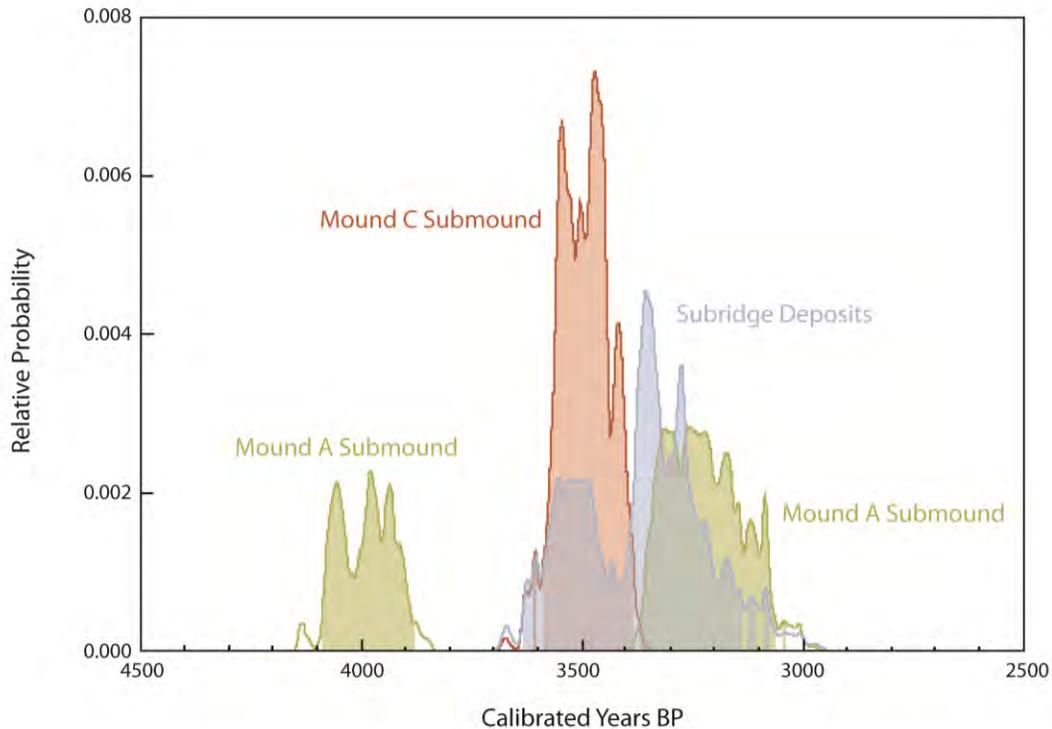


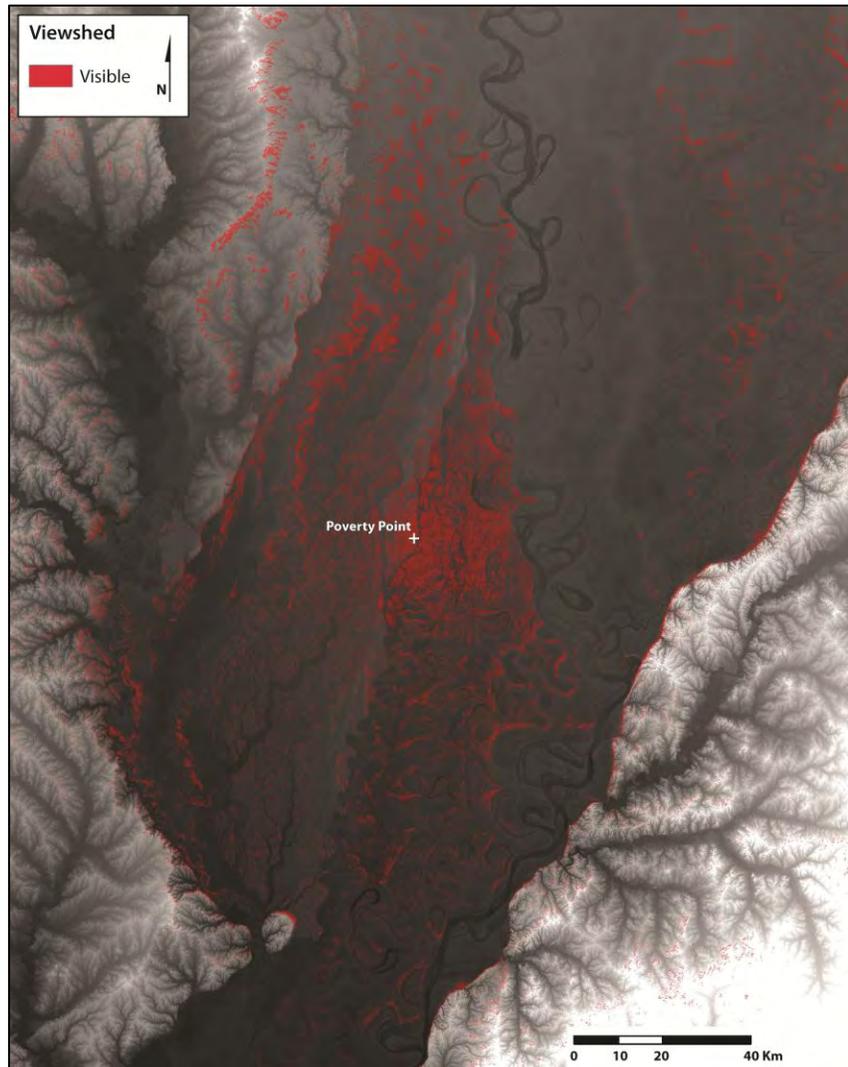
Figure 2.46. Summed probability distributions for radiocarbon determinations on botanical materials from submound and subridge contexts at Poverty Point: Mound A (summed,  $n=4$ ), Mound C ( $n=1$ ) and ridges (summed,  $n=3$ ). Shaded areas indicate the  $2\sigma$  distribution associated with each probability curve. Simply put, there is a 95% chance that the dated events fall within the color-coded shaded area(s) beneath each curve.

The use of nonlocal raw materials (Sidebar 2.1) is one of the key distinctions drawn between Poverty Point and earlier Middle Archaic populations (Saunders 2004, 2010b). Artifacts from subridge and later contexts have been compared (e.g., Connolly 2002; Hays and Weinstein 2004; Spivey 2011). The presence of imported materials (steatite from the southern Appalachian Mountains [Smith 1991; Wisseman et al. 2010; Yates 2009], hematite from the Ouachita Mountains of Arkansas [Gibson 2007], St. Johns pottery from eastern Florida [Hays and Weinstein 2004]) in subridge contexts indicates that a robust network for material acquisition was already in place when ridge construction began. A less diverse lithic toolkit in some pre-ridge contexts, though, suggests that early occupants of the site may not have been involved in the full suite of activities that the later residents assumed (Connolly 2002).

The construction sequence of the earthworks was discussed in Section 2.a. To summarize, Mound B appears to be the first earthwork built at Poverty Point, sometime around 3700-3400 BP. Mound E's construction was probably coeval or slightly later than Mound B. Since Mound A had yet to be built, individuals could have seen Mound B from Mound E, and vice versa. The building of Mound A, the final and greatest Late Archaic earthwork at Poverty Point, was initiated sometime after 3400 BP, apparently while the ridges were still under construction and large post circles were being placed in the plaza. Until the stratigraphic inconsistencies in Mound C's dates are resolved, its exact place in the chronological sequence of Poverty Point's created landscape will remain uncertain – it could be one of the earliest constructions, or one of the latest ones.

The scale of Poverty Point's monumental complex is unprecedented for its time (refer to Section 3.2), being magnitudes beyond what the preceding Middle Archaic and succeeding Woodland populations of eastern North America built. Poverty Point, and in particular Mound A, was demonstrably meant to be seen by human eyes (Figure 2.47).

Figure 2.47. Viewshed from the top of Mound A, disregarding potential impact of vegetation and limited by the curvature of the Earth. Image courtesy of Douglas Comer and Miles Wimbrow (2012).



To the extent that earthworks are expressions of costly signaling, Poverty Point would clearly function in that capacity. Depending upon the vegetation, it could have been visible from almost anywhere on the landscape up to 20 km distant (Comer and Wimbrow 2012). The primary exception is when approaching the site via the water route, which was presumably the most frequently taken route. Bayou Maçon now occupies a long-ago abandoned channel of the Arkansas River, and it hugs

Macon Ridge closely enough that the ridge face provides an effective shield against viewing the site during approach from up- or downstream (Figure 2.48).

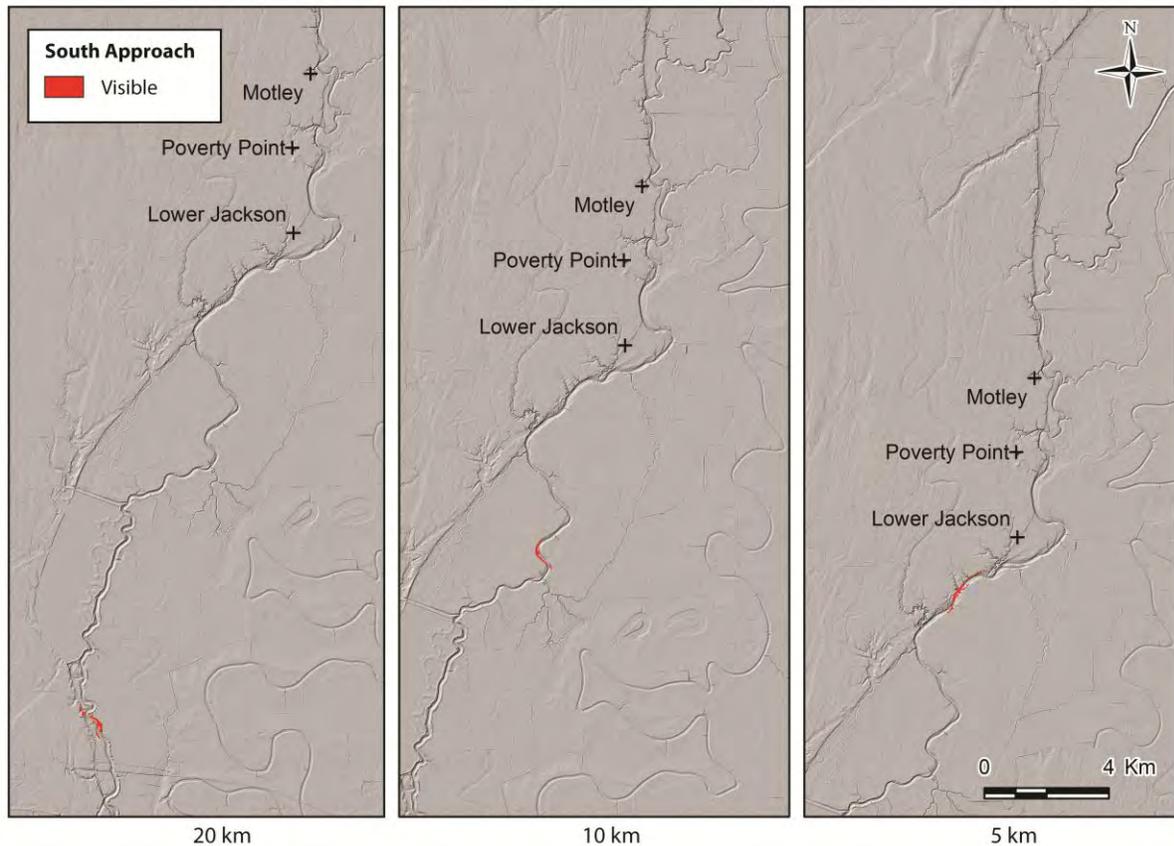


Figure 2.48. Viewsheds at 20 km, 10 km, and 5 km approaching Poverty Point via Bayou Maçon from the south (downstream). Image courtesy of Douglas Comer and Miles Wimbrow (2012).

Viewshed analysis also demonstrates the effectiveness of the artificial enhancement of the plaza at the top of the dock approach to the site (Figure 2.49). As the dock is ascended from the bayou to the plaza, the site is not visible, nor does it become gradually more visible with elevation. It is not until the ridge is nearly crested that the earthworks suddenly appear. This has been likened to dramatic moments at Petra (Jordan) and Machu Picchu (Peru), two World Heritage sites (Comer and Wimbrow 2012). Also worth pointing out is that, once the dock has been crested and the full extent of the site is visible, the landscape behind the viewer, from where he/she has arrived, is no longer in view.

The greatest visual impact at Poverty Point comes, of course, from the constructed earthen monuments. And, it is the earthworks that receive the most attention. Other less-obvious features are also integral to the created landscape. Deep gullies and depressions in areas that would eventually support segments of the ridge system were filled and leveled (Gibson 1990a). The large, artificially leveled plaza required a huge—how much is not yet known—amount of earthmoving to fill more gullies and depressions and to raise its elevation. Soil to sculpt the plaza, ridges, and mounds was taken from areas outside the earthworks, and these show up as low areas today (Figure

2.10). Depressions created by earth borrowing likely influenced the future development of drainage patterns at the site.

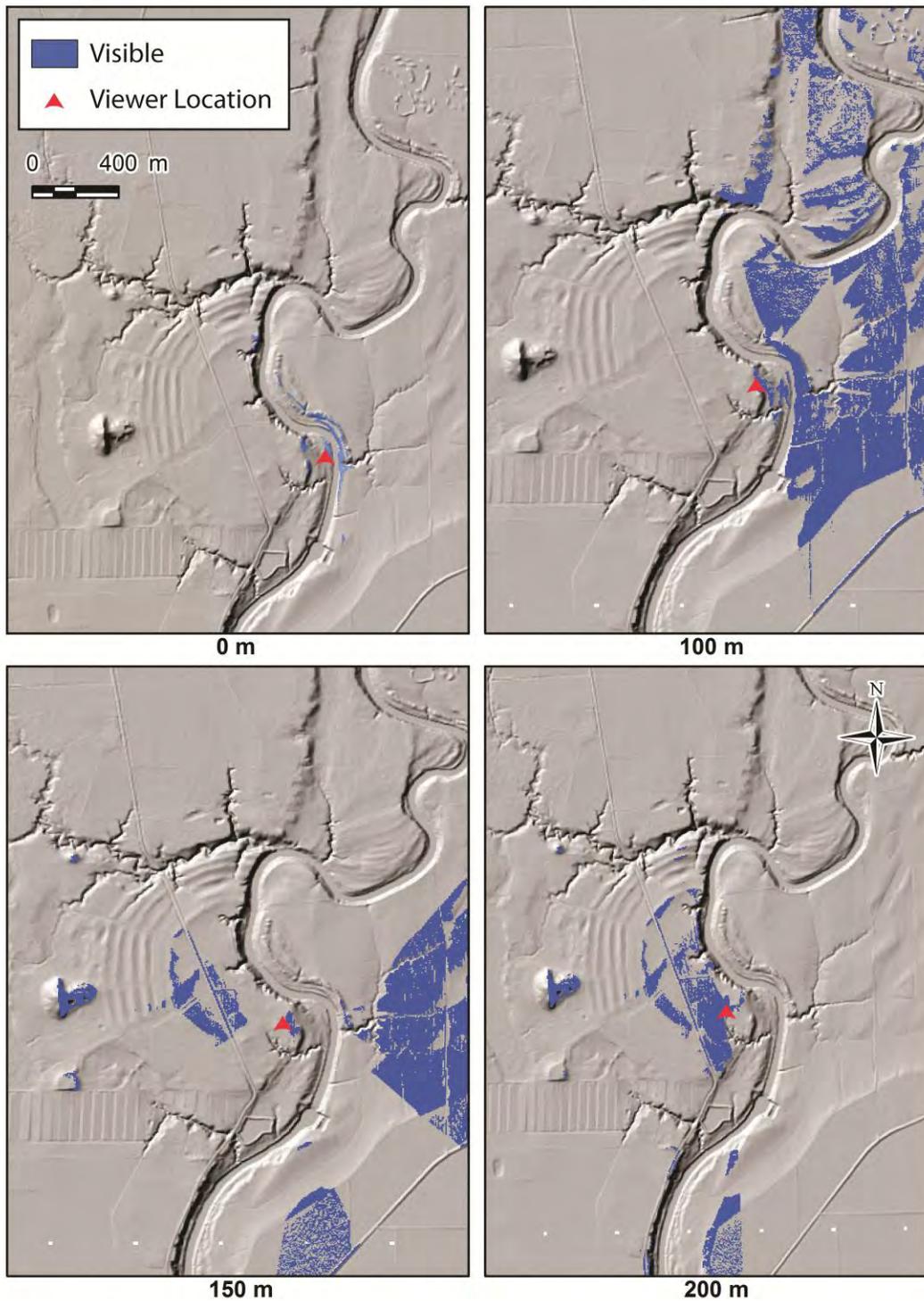


Figure 2.49. Viewsheds along a traverse of the dock, from the edge of Bayou Maçon to the top of the slope. Red arrow indicates the viewer's location. Image courtesy of Douglas Comer and Miles Wimbrow.

Not only is the site massive, but also Poverty Point's design has never been replicated in world archaeological or ethnographic records. The builders presumably established and followed a master plan, although what that plan means remains a matter of conjecture (Clark 2004; Ford and Webb 1956; Gibson 1998a, 2010b; Kidder 2002; Kidder et al. 2008, 2009; Milner 2004; Sassaman 2005; Sassaman and Heckenberger 2004). The degree of planning has implications, too, for the rate of construction, population size, and organizational complexity, all topics of ongoing research (Figure 2.50). Recent models suggest that construction occurred at a rapid pace, on the order of a few generations, decades, or even months (Gibson 2004; Kidder et al. 2008).

Such a speedy tempo requires a significant number of laborers and support personnel; estimates for the community size range from 2,000-2,600 (Gibson 2004) to 3,000-9,000 (Kidder et al. 2009). Although artifact evidence appears to be consistent with a sizable sedentary, permanent population at the site (Gibson 2006), the larger estimates assume temporary aggregation from outlying areas for specific projects. In the absence of agricultural surpluses, craft specialization, and other attributes typically taken to reflect social complexity, ideas are many and varied about what kind of social organization orchestrated such an aggregation of people. Regardless of the accuracy of any of these models, Poverty Point represents a form of community organization for hunter-fisher-gatherer populations that is simply not represented in the ethnographic record.

"Poverty Point is significant not just because of its size and scale, but because it represents the most remarkable expression of hunter-gatherer complexity yet witnessed. It is clearly a far cry from the small-scale encampments of historically recorded hunters and gatherers. The peoples who imagined, planned, and constructed Poverty Point did so with a social structure that defies interpretation using now stale evolutionary models."

—T.R. Kidder et al. (2009:137)

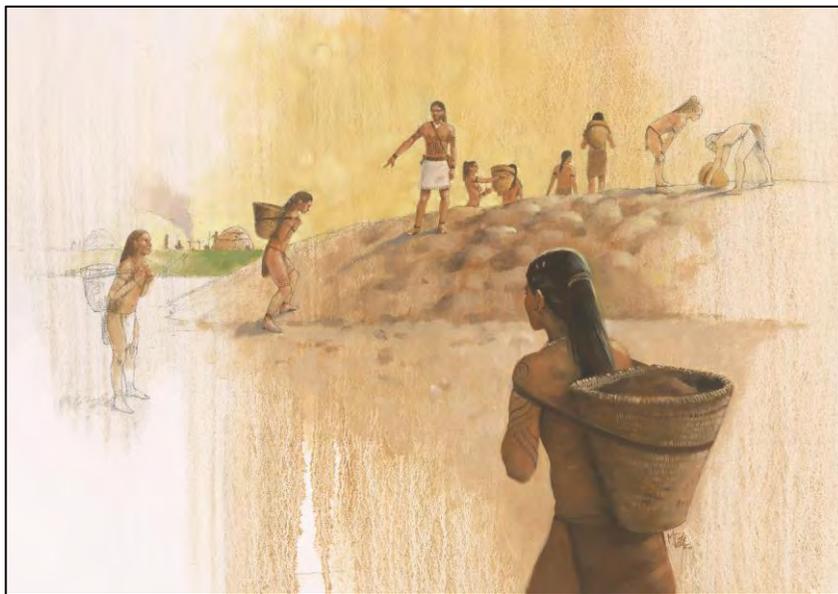


Figure 2.50. Build. (Painting © Martin Pate)

To this point, the discussion has focused on the ways that people manipulated the natural topography of Poverty Point. It is also important to discuss the ways the land supported the population. The site is on Macon Ridge, which is relatively high in elevation, and it is adjacent to the lower elevation waterway known as Bayou Maçon (Figure 2.51). That bayou provided both a rich source of food and a water route to much of the central part of the North American continent. While maps of the Lower Mississippi Valley river systems indicate that the Mississippi River may have flowed only slightly closer to Poverty Point than it does today, that distance would have been easily traversed over water through the backswamps, oxbow lakes, and small streams situated between the site and the river.



Figure 2.51. Bayou Maçon, looking upstream. *Photo © C.C. Lockwood*

The biotic environment around Poverty Point would have been altered through the differential exploitation of plants and animals. Although the people of Poverty Point were initially believed to have had an agricultural economy (Ford and Webb 1956), subsequent research has failed to show any evidence for cultivated plants or domesticated animals, with the likely exception of dogs, among the flora and fauna of Poverty Point and affiliated sites.

Aquatic resources sustained the community (Figure 2.52). Fish, in particular, but also turtles, frogs, and waterfowl that lived in the lowlands adjacent to Poverty Point were important. Aquatic plants (lotus, water lily, cattail), along with nuts, appear to be the most frequently exploited botanical resources. Additionally, mammals (large and small), fruits, and some seeds that grow in both the uplands and the lowlands are also represented at Poverty Point and affiliated sites

(Cummings 2003; Gibson 1993b; Jackson 1989; Andrea Shea Bishop, personal communication, 2009; Ward 1998; Yokell 2001). This complex natural setting supported a large sedentary population for hundreds of years. Not only did the setting provide food, it also held the plants needed for shelter, cooking, and warmth. In fact, perhaps the greatest human impact on the biotic landscape during the Late Archaic period resulted from gathering wood and cane for construction, fuel, and other needs (Greenlee and Seltzer 2009).



Figure 2.52. Cast. (Painting © Martin Pate)

By about 3100 BP, there is no more evidence for Late Archaic occupation at Poverty Point, nor does anything like it reappear at another location. It is not yet clear why this happened. Kidder (2006, 2010) has pointed to climate change causing larger and more frequent flooding episodes in the Mississippi River valley that may have decreased the availability of the aquatic resources on which the community relied and may have inhibited the flow of imported materials. Gibson (1974) suggests the level of organizational complexity that held together the Poverty Point culture could not be sustained economically. For whatever reason, the end of the Poverty Point phenomenon appears to have come as quickly as it began. No post-Poverty Point Late Archaic occupations have been identified in northeastern Louisiana (Kidder 2006).

### Woodland (2500-1000 BP) and Late Prehistoric (1000-500 BP) Periods

The Early Woodland period often is defined in Louisiana by contrasting it with the cultural elaborations of Poverty Point (Hays and Weinstein 2010; Kidder et al. 2010). There are Early Woodland mounds, but they are relatively modest in size, and they occur singly and not in large groups. In some cases, small residential sites are clustered around a central mound, but whether the

occupations were sedentary is not clear. Resource exploitation appears similar to Late Archaic strategies. Imported stone is rare (Gibson 1994c) and there is no evidence for a lapidary industry. Still, certain everyday Early Woodland artifacts overlap in form with artifacts used at Poverty Point. The most common types of projectile points (usually of local rock) and other stone tools are also found at Poverty Point sites. Although Early Woodland peoples produced distinctive forms of pottery, their plainware is similar to that found at Poverty Point. Some people apparently continued to use PPOs and earth ovens during the Early Woodland period.

While it can be difficult to distinguish utilitarian items made and used by Early Woodland and Late Archaic groups, excavation and dating confirm the relative lack of site use at Poverty Point during the Early Woodland period. Of the 24 high-confidence radiocarbon dates from Poverty Point, the range of only one (Beta-154367) *could* post-date the Poverty Point occupation (refer to Section 7.f); its context and associated artifacts suggest a Woodland affiliation is not likely.

By the Middle and Late Woodland periods, pottery styles and other artifacts differ markedly from those used during the Late Archaic period. There are numerous Middle and Late Woodland period sites in Louisiana, Marksville and Troyville being among the largest and most notable (refer to Section 3.2). Although these and other Woodland sites have monumental earthworks, including mounds and earthen enclosures, none are the size or configuration of the Late Archaic earthworks at Poverty Point. The frequency of nonlocal stone and ore in the Lower Mississippi Valley increased during the Middle Woodland, but not nearly to the level found at Poverty Point. Imported materials are frequently found as grave goods in burial mounds, not as everyday items like at Poverty Point. By the Late Woodland period, the flow of exotic materials had virtually ceased.

A limited number of pottery sherds (including Marksville, Baytown, and Coles Creek types [Christopher Hays and Rich Weinstein, personal communication, 2012]) and projectile points from the Middle and Late Woodland are included in the surface collection from Poverty Point (Figure 2.53). Mound D is the most significant evidence for post-Late Archaic Native American landscape modification at Poverty Point. As noted in Section 2.a., Mound D is a Late Woodland period Coles Creek mound built on top of one of the concentric ridges. Late Woodland pottery sherds from excavations into Mound D (Ortmann 2007) are consistent with luminescence dates (refer to Section 7.f) that indicate Mound D was constructed during the Late Woodland period. With the exception of Mound D's construction, Poverty Point saw little use during the Woodland and Late Prehistoric periods.

The Late Prehistoric period is the time during which the enormous Cahokia Mounds site was thriving to the north near present-day St. Louis, Missouri.<sup>11</sup> (Although it was built more than 2,000 years later, Cahokia was the first earthworks site in North America to surpass the size of Poverty Point.) During the Late Prehistoric Period in Louisiana, moundbuilding flourished both as an outgrowth of local Woodland traditions and, to some extent, as a reflection of influences from Mississippian traditions to the north and east (Rees 2010b). Although people in this region still

<sup>11</sup> Cahokia Mounds State Historic Site, located in the state of Illinois, was inscribed on the World Heritage List in 1982 (criteria iii, iv) as the largest pre-Columbian settlement north of Mexico.

hunted, fished, and gathered wild food, maize was grown at some sites by the end of the Late Prehistoric period (Rees 2010b). To the east of Poverty Point, closer to the Mississippi River, several mound sites were occupied. The Macon Ridge area where Poverty Point is located, however, was largely unpopulated (Hally 1972). Evidence for Late Prehistoric use of the Poverty Point site is sparse, and representation in the enormous surface collection is limited to a relatively small number of stone arrow points and, thus far, two sherds of pottery (Figure 2.53). These likely reflect the occasional presence of hunters or travelers.



Figure 2.53. Pottery sherds and points from the Woodland (left) and Late Prehistoric (right) periods at Poverty Point. *Photos © Jenny Ellerbe*

### Protohistoric Period (500-300 BP)

Protohistoric Indian mounds are recorded in the surrounding region, including the Jordan mound complex (16MO1) located 33 km west of Poverty Point (Kidder 1992). The builders of the mounds at Jordan may have relocated from the Mississippi River valley in response to European contact, and they remained at that site from the 1550s until the 1680s. Kidder suggests that the occupants were ancestors to the historic Koroa Indians. The de Soto chronicles describe the Lower Mississippi Valley as densely populated during the mid-sixteenth century (Swanton 1985); populations had apparently decreased substantially during the next century and a half. Although historic Indian groups are reported on the east side of the Mississippi River in the early 1700s, northeastern Louisiana was unpopulated from the Mississippi River west to the Ouachita River, except for salt traders and hunting parties (Kniffen et al. 1987). No evidence for Protohistoric or Historic Indian occupation has been identified at Poverty Point.

### Historic Era (300 BP – present)

The Native American history of Poverty Point has attracted the attention of archaeologists and visitors since at least the mid-1800s, but the Historic Era has drawn considerably less interest. Parish archives and census records allow the sequence of ownership to be traced and levels of agricultural production to be reconstructed, but rarely do they provide detailed insight into the physical condition of the landscape. Thus, records of physical changes to the property (e.g., Figure 2.54) are not very complete during the early Historic Era. Drawing on the research of Reonas (2012) and other documents, a rough outline of developments during the Historic Era is summarized below and in Table 2.2.

After at least 500 years of abandonment, the Poverty Point area was “opened” by Euro-American settlers and their enslaved African Americans in the 1810s and 1820s (Reonas 2012). As farms were established, trees were removed and the land was cultivated. The manual farming technology of the time likely had minimal impact on the earthworks. Archaeological features at or near the surface would have been disturbed, and removal of the ground cover exposed the silt loam soils, leading to increased erosion. In spite of the difficulty of tilling land that was filled with Poverty Point Objects and other artifacts, farming on the site was likely continuous for about fifty years. A traveler who visited the property in the early-to-mid 1800s commented on the large number of clay artifacts at the “old Indian town” as well as “a mound of colossal size” that he called a “teoc[a]lli of the first order” (Walter n.d.). Based on confiscated Confederate maps and records of actions that took place in the area, Poverty Point was likely abandoned again during the American Civil War (1861-1865). By 1870, the land was back in agricultural production, under a system of sharecroppers and tenant farmers. After World War II, the introduction of herbicides, chemical fertilizers, and mechanized farming facilitated a more intensive use of the land, which continued until the state of Louisiana acquired the property in 1972.

### *Park Development*

State and federal interest in protecting Poverty Point and creating an archaeological park dates to as early as 1953. In that year, the director of the United States National Park Service (NPS) wrote to the Louisiana State Parks Commission about the importance of Poverty Point and noted that the site was worthy of protection (William Penn Mott, Jr., statement concerning H.R. 775, dated April 7, 1987). In 1962, the NPS Advisory Board recommended adding Poverty Point to the National Park System (National Park Service 1988), and the secretary of the Interior designated Poverty Point as a National Historic Landmark. In 1963, a bill was introduced in Congress to establish Poverty Point as a National Monument, however, the bill was not enacted. The site was added to the National Register of Historic Places in 1966.

By the early 1970s, local and state interest in developing a park had grown, and with federal support, the idea became a reality. A consortium of interested people formed a non-profit corporation called the West Carroll Tourist Development Corporation. The entity purchased property encompassing the Poverty Point archaeological site from the landowners and made it available to the Louisiana State Parks and Recreation Commission in 1972. With the assistance of a

grant (OSL-LA-06-48-1002) from the U.S. Housing and Urban Development (HUD) Open Space Land Program, the state entered into an agreement to purchase approximately 162 hectares.

Table 2.2. Outline of physical changes to the property during the Historic Era (Reonas 2012).

Time Period	Physical Status
1810-1837	Buildings would have included cabins, a mule-powered cotton gin, and makeshift farm outbuildings.
1837-1840s	A bayou road existed by this time connecting Deerfield (modern-day Delhi, located 28 km southwest of Poverty Point) with Floyd, 3.2 km north of the site. The road ran along the bluff fronting the Bayou Maçon, passing by Mound D and turning north by northwest at Mound C to ford Harlin Bayou. This is the road that is etched into Mound C. Buildings on-site during this time would have included a “big house,” a handful of slave cabins arranged as a “row” or “quarters,” and assorted farm buildings, perhaps still including the old gin.
1840s-1850s	Buildings might have included a few houses, slave cabins, and farm outbuildings such as corn cribs, sheds, and a smokehouse. An 1848 survey map shows a cryptic illustration of a cabin with chimney along the bluff overlooking Bayou Maçon, just southeast of today’s visitors’ center, and just north of Mound D. This would have been a strategic placement close to the bayou road and overlooking the water landing at the dock.
Late 1850s-1870s	Cabins would have been spread out close to individual plots of tilled ground rather than in a “quarters” grouping, as had probably been the case before the Civil War. African Americans may have had a small church on-site, and most definitely had a burying ground, though it is not indicated on maps. There was not a cotton gin on-site.
1880s-1910s	Use of the site in this period is particularly difficult to reconstruct.
1920s-1950s	No gin is indicated on the site in the 1940 and 1950 maps, although one may have existed in the 1920s and 1930s. A church building is shown in the vicinity of Ridge 5 South in those maps and in aerial photographs of the time.  In 1930, a buried natural gas pipeline was placed across the extreme northwest corner of the property as per a permanent, binding agreement.  An aerial photograph of the site from the late 1920s or early 1930s provides the earliest record of a gravel farm road bisecting the plaza in the path now taken by highway LA 577. The Louisiana Department of Transportation and Development’s earliest record for LA 577 dates to 1936 (Amy Giddens, personal communication, 2007).  Above ground residential power and telephone lines were placed along the path of the highway in the 1940s.
1950s-1970s	In 1967, a 115 kV electrical transmission line was placed just inside the southern boundary of the property. Disturbance was restricted to the emplacement of four supports.  Tenant houses, outbuildings, and a church that had existed on the property for several decades were removed through a combination of controlled burning and bulldozing.



Figure 2.54. Historic road etched into Mound C, view looking south. *Photo © C.C. Lockwood*

At the time of state acquisition, the land had “four abandoned farmhouses in very poor physical condition,” according to the state’s grant application to HUD. At least five houses, one dated to 1917 (Haag 1990), several outbuildings, and a church have been documented on the property. None of those buildings stand today. Additionally, a state highway crossed the property and various utilities were in place. Otherwise, the land was undeveloped.

Once the property was acquired, a master plan was prepared that outlined the future development of park facilities. The plan included several structures for site administration, visitor reception, fee collection, and maintenance. The grant from HUD that assisted with the purchase also provided funds for the first phase of construction at the park. The Section 106 review process led to state and federal consultation regarding the plans. The Advisory Council on Historic Preservation provided guidance about steps to be taken to insure preservation of the historic integrity of the site. The Louisiana State Parks and Recreation Commission agreed to and implemented the recommendations. For example, the agreement called for archaeological studies to dictate development at the site. Archaeologists must investigate the property before any proposed construction and they must monitor the construction. That procedure continues today at the site. The Advisory Council prepared a memorandum of agreement and the parties signed it in 1973.

Subsequently, the state awarded a contract for the first phase of the Poverty Point development and construction began. The following improvements were completed prior to the opening of the Poverty Point State Commemorative Area (later renamed Poverty Point State Historic Site) on April 10, 1976:

- a two-lane entrance road with sixteen-car parking lot
- the visitors’ plaza with observation tower overlooking an earthen scale model of the earthworks, outdoor displays, and an open-air shelter

- the rangers' office building
- visitors' plaza restrooms
- a gravel road from the visitors' area to Mound A and a visitors' contact station near the mound
- an equipment storage shed on the north end of the property, with gravel access road

In the summer of 1976, to provide a more stable trail on Mound A, a surface of soil mixed with cement was installed over old foot paths that had been in place for years.

On March 16, 1978, the Louisiana Department of Culture, Recreation, and Tourism signed a lease agreement with Trunkline Gas Company which allows Trunkline to use underground reservoirs (depleted natural gas fields) in the park to "inject, store, and withdraw" natural gas for up to fifty years. There are no associated injection wells, withdrawal wells, or equipment on the ground surface within the state historic site. They are located on other nearby properties. Two abandoned and plugged wells are on the historic site, and safety inspections are conducted periodically. There are no indications, either by sight or by smell, of the presence of the underground storage facility.

Other facilities were planned to enhance visitor services and interpretation, improve management for preservation and conservation, and provide greater opportunities for archaeological research. These projects are referred to as the second phase of the Poverty Point park development. March 10, 1981, was the date of the official dedication of the new facilities, which included:

- the visitors' center with museum and theater
- the laboratory workshop
- the dormitory
- the manager's residence
- a new parking lot
- an interpretive vehicle trail and walking trail

Over time, surface runoff into Bayou Maçon during times of heavy precipitation had produced headward eroding gullies along the eastern and southeastern edges of the property that threatened the site. The Office of State Parks partnered with the West Carroll field office of the United States Department of Agriculture's Soil Conservation Service to design a system of 60 cm high, earthen, contour levees (berms) and eight drop basins to control the runoff. The berms channel surface water into the drop basins, from which it is piped safely beyond the banks where erosion was occurring. The initial work was done in 1981, with follow-up efforts in 1982, 1984, 1989, and 1995. The drop structures require careful monitoring and occasional repair, but the gullies have remained stable. A similar solution was applied in 2011 to a feeder channel of Harlin Bayou that was located near Mound B.

Construction of a weir across Bayou Maçon downstream (south) of Poverty Point in 1980 changed the water depth in the bayou, increasing the rate of undercutting and slumping of the

Macon Ridge bluff. Because the museum was threatened (no cultural deposits were detected during archaeological testing in that area [Hillman 1985]), the Office of State Parks teamed with the United States Army Corps of Engineers, Vicksburg District, on an emergency stream bank protection project (Lewis 1984). At an elevation just below the top of the bluff, a stone toe was tied into the bank both upstream and downstream of the museum, fill was placed behind the toe, and stone riprap was placed on top of the fill. The bank remains stable—the project appears to be a success.

Poverty Point National Monument was created through an act of the United States Congress in 1988. Louisiana retained ownership and operation of the historic site.

In 1993, the owner of property south of the historic site donated about 1 ha to the state. A small portion of one of the earthen ridges (Ridge 6 South) had once stood on that tract. This means that all of the ridges are now within the state historic site boundary.

Further improvements to the Poverty Point State Historic Site occurred occasionally during the next two decades. The most recent group of projects included:

- installation of eighteen metal-framed interpretive signs near the key features of the site in 1997 (Figure 2.55)
- construction of the archaeological curatorial facility with offices and artifact storage in 2000
- addition of a new slip-resistant walkway on Mound A in 2001
- removal of the observation tower in the visitors' plaza in 2007, because of structural concerns
- construction of a tram shelter in 2004
- placement of three longitudinally-peaked stone toe dikes in the channel of Harlin Bayou to stop downcutting and to curb erosion of cutbanks on the outsides of meander bends located near Mound B and the dormitory; this was a collaboration with the United States Army Corps of Engineers, Vicksburg District, in 2007
- removal of the original maintenance shed and construction of a new maintenance shop in 2010

In sum, as of June 2012, there are nine buildings at Poverty Point State Historic Site (refer to Section 5.h). These facilities include:

- rangers' office building
- visitors' plaza restrooms
- visitors' center with museum and theater
- manager's residence
- laboratory workshop with administrative offices
- dormitory
- archaeological curatorial facility
- tram shelter

- maintenance shop

Currently, no new construction is planned at the state historic site. If additional support facilities are needed in the future, the preference will be to locate them at the north end of the property, where archaeological remains are sparse and where visibility from the earthworks is limited.



Figure 2.55. Interpretive sign near Mound D. Photo © C.C. Lockwood

### *History of Archaeological Fieldwork*

The first published account about earthen monuments at Poverty Point was in a brief article in an *Annual Report of the Smithsonian Institution* by Samuel H. Lockett in 1873. An engineer, Lockett traveled the state, gathering data for a topographical survey. He noted several Indian mounds in the vicinity of Poverty Point, described artifacts he saw on the ground surface, and indicated that excavation by an archaeologist would likely “reveal some very valuable and interesting specimens” (Lockett 1873:430). As time would tell, Lockett was correct. Table 2.3 summarizes the history of field research at Poverty Point.

“Poverty Point has been dug into, written about, and speculated about probably more often than any other site in Louisiana or the entire Lower Mississippi Valley.”

— Weinstein et al. (2003:103)

Clarence Bloomfield (C.B.) Moore, an early archaeologist and adventurer, apparently followed Lockett’s advice when he worked at Poverty Point for about three days in February 1913. Moore identified six mounds and numerous low ridges at the site. He did not provide a site map that showed the layout of the mounds, but he did describe them, estimate their dimensions, and indicate the distances and directions between most of them. He noted that the mounds seemed to

form a “rude circle or irregular ellipse” (Moore 2003:631). One mound was actually a high spot on Ridge 1 that contained a historic cemetery and that had presumably been tilled less than other parts of the ridge. Moore (2003:640) excavated in several of the mounds and “dwelling sites in the fields,” and he collected artifacts from the surface. He produced the first topographic map of Mound A, and he provided the first detailed descriptions and illustrations of Poverty Point artifacts. Moore was clearly puzzled by the near absence of pottery from the mounds or the ground surface—Poverty Point did not fit within the developing model of Southeastern prehistory.

In the 1930s, avocational archaeologist and physician, Clarence Webb, began to collect artifacts from the plowed fields on and around Poverty Point. He was joined in his efforts by a local enthusiast, Carl Alexander, from the 1940s to the 1970s. Alexander, whose collection was eventually donated to Poverty Point SHS, amassed over 100,000 artifacts, upon many of which he had recorded provenience information. The collection has proven to be a valuable research tool.

From 1952 to 1955, archaeologist James A. Ford and several notable colleagues (Clarence Webb, William Haag, Robert Neitzel, Junius Bird, and George Quimby) conducted what are considered the first scientific excavations at Poverty Point. As mentioned previously, it was Ford who recognized the geometric arrangement of earthen ridges in an aerial photograph of the site. Under Ford’s guidance, ten excavation units were placed in various segments of the ridges, Mound A was cored to a depth of about 18.5 m, and Mound B was trenched. This project provided fundamental information about the construction and function of the ridges, confirmed the artificial nature of Mound A, and established a construction sequence for Mound B.

Table 2.3. Overview of the history of archaeological field research at Poverty Point.

Researcher(s)	Year(s)	Institution	Type & Location of Work <sup>1</sup>	References
C.B. Moore	1912-1913		Excavations in various mounds and ridges	Moore 2003
C.H. Webb and C. Alexander	1930s-1960s		Surface collection and excavation	Webb 1970, 1982
J.A. Ford et al.	1952-1955	American Museum of Natural History	Excavations in Mound B; Ridges 1 North and South; 4 North and West; 5 West; 6 West and Northwest; Southwest aisle Core in Mound A	Ford and Webb 1956
C. Kuttruff	1972-1973	Tennessee Division of Archaeology	Excavations in Ridges 2 and 3 North	Kuttruff 1975
W.G. Haag	1972-1976	Louisiana State University	Excavations in Mound A; Ridges 2 and 3 North; western plaza	Haag 1990

Table 2.3, continued.

Researcher(s)	Year(s)	Institution	Type & Location of Work <sup>1</sup>	References
D. Woodiel	1978	Louisiana Office of State Parks	Excavations in eastern plaza	Woodiel 1990
S.I. Goad	1980-1982	Louisiana State University	Excavations in Ridge 1 North	Connolly 2002; Exnicios and Woodiel 1990
J.E. Keller	1981	United States Forest Service	Mound geophysical survey	
G.S. Greene	1983-1992	Northeast Louisiana University	Excavations in Ridges 1 North and 2 Northwest Cores in northwest sector ridges, Ridge 1 North, and plaza	Greene 1989, 1990a, 1990b, 1992; Miller 1997
J.L. Gibson	1983-1995	University of Southwestern Louisiana	Excavations and/or cores in various mounds, ridges and the plaza	Gibson 1984, 1987a, 1989, 1990c, 1993b, 1994b, 1997
M.M. Hillman	1985	Louisiana Office of State Parks	Excavations in plaza and dock	Hillman 1985, 1990a
J.A. Doolittle	1988	Soil Conservation Service	Geophysical survey	Gibson 1989
K. Liu	1994	Louisiana State University	Soil cores from probable borrow pit	Thomas 1996
R.P. Connolly	1996-2002	Northeast Louisiana University, later University of Louisiana at Monroe	Excavations in ridges, plaza, Mound B, and north of ridges	Connolly 1997, 1998a, 1999, 2001, 2003a
J. Saunders	2000	University of Louisiana at Monroe	Excavations north of ridges	Saunders 2000
T. Britt, M. Hargrave, and J. Simms	2001	U.S. Army Corps of Engineers	Geophysical survey of mounds and ridges	Hargrave et al. 2007
T.R. Kidder	1999-2000	Tulane University	Topographic survey	Kidder 2002
T.R. Kidder and A.L. Ortmann	2001-2002 2005-2006	Tulane University Washington University at St. Louis; Tulane University	Excavations in Mounds A, C, D, E Soil cores from all mounds, plaza, other areas	Arco 2006; Kidder et al. 2004, 2009; Ortmann 2007

Table 2.3, continued.

Researcher(s)	Year(s)	Institution	Type & Location of Work <sup>1</sup>	References
M. Hargrave, B. Clay, and L. Somers	2006-2011	U.S. Army Corps of Engineers; Cultural Resource Analysts; Archaeophysics	Geophysical survey of plaza and ridges	Hargrave et al. 2010
J. Puekert	2007	U.S. Army Corps of Engineers	Excavations at Mound B Cores from areas leading to Harlin Bayou	
R. Dalan	2007	Minnesota State University Moorhead	Cores from plaza and ridges for subsurface geophysical analysis	Dalan et al. 2010
D.M. Greenlee	2006-2009	University of Louisiana at Monroe	Excavations in Ridge 4 North and north of ridges	Greenlee 2007, 2008, 2009
D.M. Greenlee, E. Peacock, and J. Rafferty	2009-2011	University of Louisiana at Monroe; Mississippi State University	Excavations in plaza	Greenlee 2009, 2010, 2011
E.A. Scharf	2010	University of North Dakota	Soil cores from probable borrow pit	Scharf 2011
D.M. Greenlee	2011	University of Louisiana at Monroe	Soil cores from Mounds D and E	Greenlee 2011
A.L. Ortmann	2011	Murray State University	Excavation in Mound C	Ortmann 2011

<sup>1</sup> The ridges are designated from innermost (Ridge 1) to outermost (Ridge 6); sectors, as divided by aisles, are named according to the cardinal directions.

Subsequent archaeological investigations at Poverty Point can be divided into two groups based on their purpose, as (1) testing in support of the park's development plans and management or as (2) problem-oriented research. Both kinds of projects have provided a significant return in terms of knowledge about Poverty Point.

In the 1970s, William Haag and Deborah Woodiel conducted archaeological testing in Poverty Point's plaza as part of the park's development plan. They established that the plaza is a complex, constructed component of the earthworks. Woodiel found a large depression on the eastern edge of the plaza that had been filled to the current ground level. Haag located numerous filled postholes in the western plaza. At the time, the post pattern was not discernible. As mentioned previously, later geophysical research and targeted excavation have provided the context to interpret them as part of

large, frequently rebuilt, post circles. Other, smaller archaeological projects in support of development/management have been conducted since by Mitchell Hillman, Robert Connolly, Joe Saunders, and Diana Greenlee.

Also, in the 1970s, Haag excavated in Ridges 2 and 3 North to examine the ridge structure and to investigate a possible house floor. Carl Kuttruff excavated in the same area during this time. Haag also excavated a profile on the southern edge of the Mound A platform. Unanswered questions from Haag's effort led to a re-investigation of the Mound A platform by Tristram Kidder in 2005 and 2006. During the 1980s, Sharon Goad investigated portions of Ridge 1 North; Mitchell Hillman examined the dock; Glen Greene excavated in Ridge 1 North and Ridge 2 Northwest; and Greene cored in the plaza and northwest sector ridges. The primary investigator at Poverty Point from the early 1980s through the 1990s, though, was Jon Gibson. As part of his *Ground Truth About Poverty Point* initiative, Gibson investigated, through coring or excavation, nearly every element of the landscape at Poverty Point.

Field research at Poverty Point has continued in a variety of directions over the past twelve or so years. Kidder produced the first high precision surveyed topographic map of the site. Kidder and Anthony Ortmann used cores and limited excavation to examine mound construction techniques and chronology for each of the mounds. In 2011, Greenlee collected soil cores from Mounds D and E to further chronological determinations (Figure 2.56). Ortmann returned in 2011 to Mound C for more in-depth analysis.



Figure 2.56. Collecting soil cores from Mound E at Poverty Point. Photo: Diana Greenlee

Following the initial geophysical survey by Tad Britt, Michael Hargrave, and Janet Simms in 2001, Hargrave collaborated with Berle Clay, Lewis Somers, and Rinita Dalan on a long-term geophysical survey of Poverty Point. One consequence of the geophysical research has been targeted testing of anomalies via excavation by Connolly and Greenlee (Figure 2.57). Elizabeth Scharf has obtained cores to further investigate the origins of the swampy depression west of Mound A studied earlier by Karen Thomas and Kam-biu Liu in the 1990s.

Although this history of archaeological research appears to document a significant amount of excavation, it is estimated that less than 1% of the site's surface area has been disturbed through scientific excavation (Connolly 1999). Importantly, research at Poverty Point is not restricted to traditional excavation. Minimally- or non-invasive field strategies are utilized when they can provide adequate data to fulfill research goals. Artifact collections generated through both surface collection and excavation have been and continue to be used in functional, technological, and materials analyses to better understand the Poverty Point culture. Finally, research in support of artifact conservation and site management is one emphasis of the station archaeology program.



Figure 2.57. Using a handheld probe to collect *in situ* magnetic susceptibility measurements during an excavation in the plaza at Poverty Point. Photo: Diana Greenlee





Mound A from the south. *Photo © C.C. Lockwood*

## 3. JUSTIFICATION FOR INSCRIPTION

- 3.1.a Brief synthesis
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- 3.1.c Statement of integrity
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Pendants.

*Photo © Jenny Ellerbe*

### 3. Justification for Inscription

#### 3.1.a Brief synthesis

The Monumental Earthworks of Poverty Point were constructed 3,700-3,100 years ago in the lower Mississippi River valley. The original configuration of this Late Archaic created landscape included four mounds; six large, concentric, semi-elliptical ridges; a large, flat, interior plaza; and extensive borrow areas. Over the course of the occupation, twenty-five to thirty (25 - 60 m diameter) circles of large wooden posts were raised in the plaza. The mounds and ridges form an integrated landscape that supported both residential and ceremonial functions. A fifth mound was added roughly 1,700-2,000 years later. The size, scale, and complexity of the earthworks are exceptional, and the design is singular. For its time, this tradition was uncharacteristically sophisticated, with a well-developed long-distance trade network and a large and sedentary settlement. Most remarkably, the people were hunter-fisher-gatherers, relying on only wild foods. Poverty Point's monumentality is extraordinary for its age and in comparison to other hunting-gathering cultures worldwide. Further, the site has excellent authenticity, integrity, protection, and management.

#### 3.1.b Criteria under which inscription is proposed

*Criterion (iii): to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization, which is living or which has disappeared.*

The Poverty Point site is an outstanding example of a Late Archaic cultural tradition of North America. This population of hunter-fisher-gatherers, exploiting solely wild resources, created an exceptional landscape. The mound complex, which dates to 3700-3100 BP, is a remarkable achievement in earthen construction in North America, one that was not surpassed for at least 2,000 years (and only then by people supported by a farming economy). The particular form of the complex—six concentric arcs of ridges, a linear arrangement of mounds, and as many as thirty post circles in the plaza—is unlike anything elsewhere in the world. In fact, the complexity and scale of the design, even without regard for its particular form, are unique for earthwork landscapes created by hunter-gatherers. Archaeological research has demonstrated that, in addition to earthwork construction, extensive effort went into landscape preparation (e.g., filling deep gullies, leveling and raising the plaza)—details that are invisible to the casual observer.

The quantity and diversity of artifacts found at Poverty Point imply a large, sedentary, permanent population. Among nonagricultural peoples, such settlements occur typically only in coastal locations with access to predictable, abundant marine resources. The natural setting of this inland settlement was clearly an important factor in the site's establishment and longevity. The location provided easy access to river and floodplain habitats of the Mississippi River valley and the elevated bottomland hardwood forests along its margins. Although rich in most resources, the setting lacked stone, a critical raw material for tools and other objects. Thus, an extensive network for importing stone, bringing a variety of raw materials in great quantities over hundreds of

kilometers, played a key role in the Poverty Point phenomenon. That, too, was facilitated by the site's proximity to the waterways of the Mississippi River system.

The passage of time and the lack of written documents mean that archaeologists don't know what Native American tribe the people of Poverty Point belonged to, what language they spoke, or what their religion was like. There are no skeletal materials to establish their physical stature, their health, or the age structure of their community. But, their artifacts point to a social life far more elaborate than bare subsistence level. In terms of craftsmanship and aesthetics, Poverty Point artifacts imply a skill and expenditure of time far beyond the minimum necessary to survive. Beads, pendants, figurines, exquisitely smooth plummets, and decorated gorgets of nonlocal stone are found in everyday contexts rather than in burials (Sidebars 2.13-2.15). The latter is often the case among archaeological sites with artifacts made of imported raw materials.

Archaeologists are uncertain about the precise social structure of the Poverty Point community and there are no modern analogs to shed light on the issue. The earthworks were such an expensive undertaking that they could only have been constructed through cooperation among many individuals. This requires extensive planning and provisioning—management tasks that archaeologists usually assign to “big men,” chiefs, or other leaders. Yet, the nonlocal stone materials and elaborate artifacts do not appear to be restricted to any particular sector(s) of the site, implying there were no stipulations regarding who could have or use those items. The distribution of artifacts is thus consistent with an egalitarian social structure.

Poverty Point was a residential site. The ridges were living spaces—the location of tool manufacture, food preparation, and housing—for what was probably a substantial year-round population. Archaeologists believe Poverty Point also was a ceremonial center. The mounds were not burial or temple mounds, but costly signals of power and wealth. The earthworks clearly marked Poverty Point as an important place on the landscape, and visitors may have traveled great distances to see the monuments and to participate in special events. Why the site was laid out as it was remains a matter of debate. There are nearly as many hypotheses about the practical, symbolic, or cosmological significance of the site as there are researchers who have considered the issue.

The grandiose scale and design of the earthwork complex, the inland riverine hunting-fishing-gathering subsistence economy, and the vast trade network of Poverty Point testify to an exceptional cultural tradition not duplicated anywhere else in time or across space. The landscape is exceptionally well preserved, has proven authenticity, and demonstrates the intimate relationship between the people of Poverty Point and the setting in which they lived.

“I do not think we have yet said what Poverty Point is socio-politically, but when we do, it will be because we have figured out how the salient factors of large sedentary well-fed hunter-gatherer populations, strong though perhaps temporary or situational leadership, inspirational religion, and long-distance exchange all came to be integrated.”

—Jon L. Gibson (1996b:291-292)

### 3.1.c Statement of integrity

Site integrity, as a measure of the wholeness and intactness of this roughly 3,400-year-old archaeological deposit, is extremely high at Poverty Point. The earthwork complex, which is so large that its full form can be appreciated only from the air, is contained entirely within the boundaries of the nominated property. No features of the site are re-created, although small alterations and repairs have been made to control and minimize damage from erosion and to facilitate visitation.

#### Includes All Elements Necessary to Express its Outstanding Universal Value

The nominated property is the monumental heart of the Poverty Point culture. The physical features (the mounds, the ridges, the plaza, and the borrow areas) that make the Poverty Point landscape so exceptional are well preserved, and the spatial relationships among them remain unchanged. No modern developments interrupt the sightlines between earthworks. The selective removal of trees (Sidebar 2.6) will enhance visibility among the earthworks. The remaining trees will provide a glimpse into the natural forest that would have been present on Macon Ridge, although not on the site, during the Late Archaic occupation of Poverty Point.

More than just the scale and arrangement of the Poverty Point earthworks, however, is what the site represents in terms of hunter-gatherer adaptations. Intact archaeological deposits include hearths, postholes, pits, and huge numbers of artifacts, all of which enrich understanding of the lives of the people who created and occupied the site. Thick midden deposits contain the complete range of Archaic artifacts for a large, permanent, sedentary occupation. The deposits also hold preserved animal and botanical remains which indicate that hunting, fishing, and gathering provided for basic subsistence needs. Tons of stone were imported from across a large portion of the eastern United States, thus reflecting an extensive resource-acquisition network. Large circles of posts were raised and rebuilt in the interior plaza. Of the total site area, it is estimated that less than 1% has been disturbed through scientific excavation (Connolly 1999).

#### Of Adequate Size to Ensure Complete Representation

All of the elements that convey the Outstanding Universal Value of Poverty Point are contained within the nominated property. This includes the integrated complex of earthworks and the associated archaeological deposits.

As noted in Section 2.a, there are other earthworks on Macon Ridge that may have existed during the Late Archaic occupation of Poverty Point. One, Lower Jackson mound, is about 2.9 km south of the geographic center of Poverty Point State Historic Site, and another, Motley mound, is about 2.2 km north. These mounds are not directly associated with the core site of Poverty Point.

#### Absence of Adverse Effects from Development and/or Neglect

The mounds and ridges are 3,700-3,100 years old. Of course, they have experienced some degradation due to natural processes, cultivation, and other Euro-American practices. Still, the earthen monuments at Poverty Point are remarkably intact. The precise original dimensions and

shapes of the mounds are lost to time, but the magnitude and overall design concept are readily evident to those who see the site today.

Mound B, the oldest earthwork at Poverty Point, contains well-preserved evidence for its construction methods and materials. Six trenches through the mound were laid out by archaeologists in 1955 (Ford and Webb 1956), but not all were taken to the original surface below the mound. Thus, perhaps two-thirds of the mound's volume was left undisturbed. The trenches were re-filled after the excavation, but settling of the soil created a dip in the top of the originally conical mound.

The next oldest earthwork, Mound E, has been the subject of limited archaeological research. Sediment cores and one small excavation unit along its southern edge show that the mound fill is intact. At one time, Mound E's southern edge extended roughly 30 m beyond the border of the state property, but it has been damaged by land-leveling and road construction. Thus, approximately three-quarters of the original mound remain and that portion is protected from further damage by being within the boundaries of the nominated property.

Mound C contains well-preserved, complex layers of soil sealed beneath an upper mantle of sediments. The mound's original shape has been altered through some erosion into Bayou Maçon and by a historic road that ran along the edge of Macon Ridge.

Mound A, the last of the Late Archaic mounds at Poverty Point, is the most visible component of the landscape today, as it was at the time of its construction. Limited excavation and coring have shown that the fill of Mound A is intact. The margins of the mound have been slightly impacted through erosion and soil removal, but otherwise, it remains an immense, remarkably well-preserved monument.

The earthen ridges have undergone some change due to farming activities in the nineteenth and twentieth centuries but, like the mounds, they are very well preserved. They are in their original shape, and there is no evidence that they ever extended to the east much beyond their current design. In the past, archaeologists assumed that greater time under cultivation was the reason that portions of the southwestern and southern ridges are less distinct than in the western and northern sectors. However, archaeological excavations suggest that they were never as pronounced as those in the rest of the site. Near-surface remote sensing has revealed that construction details are still accessible for those ridge segments. And, excavations have shown that they contain intact midden, archaeological features, and undisturbed artifacts. At one time, the southernmost portion of Ridge 6 extended beyond the state-owned property; the landowner damaged that small segment during land-leveling in 1993 and subsequently donated the property to the state. Remnants of that earthwork's base may still be preserved.

Borrow pits and swales, locations on the site from where dirt was removed for construction, are also preserved. The swales have experienced some infilling since their creation, but excavations have shown that the surfaces exposed thousands of years ago during soil removal still can be identified.

The plaza, by all appearances a barren, naturally flat place defined by the concentric ridges, is actually an artificially raised and leveled surface. It forms an integral part of the Poverty Point earthworks. The plaza is in excellent condition, except for some loss of surface sediments around drainages leading to Harlin Bayou and Bayou Maçon. Archaeological excavation and geophysical survey have identified traces of large circles of posts within the plaza. Indeed, there are many subsurface features in this part of the site that remain to be explored.

Mound D, the final earthen construction at Poverty Point, was built about 1,700-2,000 years after the Late Archaic occupation of the site ended. A historic Euro-American cemetery dating to the mid-nineteenth century was placed in the mound, but otherwise it is intact and in good condition.

Erosion of the earthworks is the most significant current threat to the integrity of the site. Since obtaining the property, the Louisiana Office of State Parks (OSP) has carefully monitored the site to protect it from erosion. The Office of State Parks has worked with the Louisiana Department of Transportation and Development, the United States Natural Resources Conservation Service, and the United States Army Corps of Engineers to control surface water runoff and to stabilize bayou banks. These collaborations continue today in an effort to minimize damage to the site.

### 3.1.d Statement of authenticity

Poverty Point is a Native American archaeological site. The earthen monuments and artifacts indisputably and convincingly reflect their origin, being authentic in terms of form and design; materials and substance; workmanship; location and setting; and spirit and feeling. As a roughly 3,400-year-old archaeological site, however, Poverty Point has not been part of a continuous Native American tradition, and, thus, there are attributes of authenticity (use and function; traditions, techniques, and management systems; language and other forms of intangible heritage) that are not applicable to this property.

Even though it is their ancient qualities that are celebrated, the earthworks today are products of a long and varied history that tell a unique story about this landscape. In keeping with this perspective, there have been no attempts to reconstruct the earthworks to some idealized past appearance. The earthen monuments of Poverty Point have changed with the passage of time, but they remain impressive structures that well reflect the achievements of the people who built and used them.

### Authenticity in Form and Design

The original form and design of the created landscape, which include the earthen mounds, the earthen ridges, and the interior plaza, are well-preserved at the site and are readily appreciated today. Modern constructions are physically and visually unobtrusive. Archaeologists have established the spatial and temporal relationships between different components of the earthen complex and the surrounding landscape.

### *Authenticity in Materials and Substance*

The earthworks at Poverty Point remain entirely original constructions. Evidence obtained through excavation and soil coring of the mounds and ridges has been invaluable in determining the nature, source, and use of different construction materials. Each mound is unique, not only in terms of shape and construction sequence, but also in the selection of sediments used.

### *Authenticity in Workmanship*

Archaeological research into Poverty Point's mounds and ridges has provided great insight into how they were constructed. Different techniques were used for different elements of the architectural complex. Since no features of the property have been reconstructed, original workmanship is still in evidence.

### *Authenticity in Location and Setting*

The location of the monumental earthworks at Poverty Point has not changed, nor has its physiographic setting. It is easy to appreciate the relative elevation difference between the top of Macon Ridge and Bayou Maçon and the opposite shoreline below. Modern flood control and drainage systems may have suppressed overflow on the Mississippi River floodplain east of the site, but extended heavy rains still reinforce the fact that Poverty Point sits high-and-dry on Macon Ridge.

The local area has a strong Euro-American agricultural tradition that dates back to the early nineteenth century. History has shown that urban development is not always kind to archaeological sites, and so this agricultural tradition played a large role in preserving Poverty Point. Much of the land around the site is farmland, open and undeveloped; land parcels not dedicated to crops are still wooded. The openness that is believed to have characterized Macon Ridge around Poverty Point during its heyday is still present, even if slightly different in character. With the exception of the southern property line, the boundaries of Poverty Point State Historic Site are lined with a wide border of tall trees. The southern view from the tops of Mounds A and E, however, includes flat open land and, in the distance, another site: Lower Jackson mound.

When the earthworks were constructed, they did not have trees on them. Along with preservation concerns, these were the motivating factors behind the ongoing tree removal program. The nominated property today is mostly grassland, with trees on part of the ridge system, in low areas, and along some drainage channels on the property. As a result, visibility between different components of the property varies. The site management plan aims to remove trees from the earthworks and along selected sight lines. Hardwood forest will be preserved along the property perimeter, along water channels and bayous, and in areas lacking archaeological deposits.

### *Authenticity in Spirit and Feeling*

There is no traceable link between the creators of Poverty Point and any single modern Native American tribe. Yet, the native peoples of the southeastern United States regard the site as the work of their ancestors and, thus, it is a sacred landscape to them. Tribal leaders are interested in Poverty

Point's well-being and in maintaining a connection with the site (Sidebar 3.1). Non-native visitors, as well, report a palpable sense of the sacred at Poverty Point – a strong, undeniable “presence.”

### 3.1.e Protection and management requirements

The state of Louisiana owns the Poverty Point State Historic Site, and since 1972 the Office of State Parks has managed and operated it as a historical park open to the public. A warden, responsible for supervising the state historic site, is its only permanent resident and he lives on the north end of the property.

“Sacredness inheres at Poverty Point, it pervades, so I have no qualms about identifying Poverty Point as a sacred place.”

—Jon L. Gibson (1998a:30)

As documented in Section 5.b, strong and effective legal protection is provided in perpetuity by both state and federal laws. It is the public policy of the state of Louisiana to preserve historic properties. Accordingly, the state constitution, state laws, and administrative rules provide protections to the site. They establish Poverty Point as a state historic site; limit use of the site to activities appropriate to its significance; bar the intentional removal, damage, or destruction of the property; and strictly forbid digging for, or otherwise removing, any historical feature, relic, or artifact. All archaeologists conducting field research at Poverty Point must apply for permits from the Louisiana Archaeological Survey and Antiquities Commission. Any person who knowingly excavates, removes, damages, or otherwise alters any archaeological resource located on state lands without obtaining a permit may be fined up to \$20,000 for a first violation or imprisoned not more than two years, or both. Further, cemeteries and unmarked burials at the site are protected and may not be disturbed without a burial permit. No evidence of unlawful excavation or damage of the archaeological remains at Poverty Point has been reported since the property has been in state care. State regulations prohibit selling or donating state-owned property without approval by the Louisiana legislature; thus, in the absence of significant political and public support for a transfer, ownership and control of the property will remain with the state of Louisiana.

Federal laws also protect Poverty Point State Historic Site by requiring federal agencies to evaluate the effect of their activities on National Historic Landmarks (like Poverty Point) and to minimize harm to those properties. Thus, no development involving federal funds, licenses, or permits that could impact Poverty Point will be allowed to move forward without review. These various state and federal provisions help prevent the Outstanding Universal Value (OUV) of Poverty Point from being damaged by human activities.

The Louisiana Office of State Parks has a staff of nine at Poverty Point State Historic Site to manage and maintain the property and to provide visitor services, including site interpretation (refer to Section 5.j). Also working at the state historic site are the three staff members of the Poverty Point Station Archaeology Program. Their responsibility is to provide expertise relating to monitoring, protecting, and studying the archaeological resources that carry the OUV of the property.

The heritage management plan for Poverty Point (refer to Section 5.e and Appendix E) summarizes practices and protocols that have been developed over the past forty years of state management and that are currently in effect. The management document describes the goals and strategies for ensuring resource protection at the property.

The most important part of the management plan is the discussion of twelve natural and cultural threats to the earthworks and archaeological remains. Specific management actions and monitoring strategies are outlined to address these threats. The processes of collaboration with stakeholders, public relations, conflict management, interpretive programming, and the Visitor Experience and Resource Protection (VERP) framework are also described. The management plan includes more than fifty specific strategies for managing the site, as well as the key indicators to be used for assessing its state of conservation (refer to Section 6.a).

The property is well managed and, overall, the archaeological remains are very well protected. Most of the threats discussed in the management plan are of minor concern. The two greatest threats are wind-thrown trees and erosion caused by water. Both of these issues are currently being addressed. Trees have been removed from the mounds, and soon they will be removed from the earthen ridges. To reduce erosion along water drainages, the state has consulted with the United States Natural Resources Conservation Service and the United States Army Corps of Engineers, and strategies have been implemented to lessen erosion. Additionally, hydrologists from two universities have provided advice about other aspects of water action at the site. Erosion will be an ongoing concern, and monitoring through

### Sidebar 3.1 Engaging Stakeholders

The process of developing the dossier for World Heritage listing provided opportunities to form new relationships and to strengthen existing ties with a far-reaching network of colleagues, advisors, and supporters who care deeply about Poverty Point. Over several years, Poverty Point State Historic Site hosted a series of meetings for:

- local, state, and national elected officials
- representatives of tourism groups
- local residents
- friends of Poverty Point
- national and international archaeologists
- members of federally recognized Indian tribes

These experts gave of their time to learn more about the site, to share their insights into its special characteristics, and to provide advice about how to best care for the site. People who grew up in northeast Louisiana told stories of exploring the property as children and climbing up the large mound in the moonlight as teenagers. Tribal members talked about the importance of mounds in their traditions and the value of the natural setting in which the earthworks were constructed. Archaeologists contrasted Poverty Point with other sites around the world, and governmental representatives shared their pride in this local treasure.

Further outreach led to resolutions of support from the United South and Eastern Tribes, Inc., and the Louisiana legislature (Appendix F). Although the stakeholder engagement was initiated to explore the feasibility of nominating Poverty Point as a World Heritage site, a benefit it provided was the opportunity to see the property from many points of view. The experience has broadened horizons and has deepened appreciation for the builders of the unique earthworks. The collective wisdom of advisors has influenced both the dossier and the expanded management plan that accompanies it.

The process enhanced understanding of the international value of the site, the accomplishments of the builders thousands of years ago, and the responsibility of caring for the property today and in the future.

mapping provides a way to quantify any change in the drainages and mounds, in order to evaluate the effects of interventions.

Preventive monitoring is an important aspect of management at Poverty Point. Monitoring helps avoid or minimize problems through early identification and prompt consultation regarding the best means of resolution. For example, monitoring will alert site managers if the rate of visitation changes significantly and if that visitation begins to harm the archaeologically sensitive parts of the site. Through the various management strategies, the earthworks and deposits that provide the OUV of the site are protected.

### 3.2 Comparative analysis

The Monumental Earthworks of Poverty Point form the largest and most elaborate Archaic period mound complex and settlement in North America. Included are four earthen mounds; six enormous, concentric, c-shaped earthen ridges with an outer diameter of 1.14 km; a 17.4-ha plaza containing circles of posts; and extensive borrow areas. Approximately 1,700-2,000 years later, a small fifth mound was added. The original mounds represent diversity in form: a massive cross or effigy mound (Mound A); a small conical mound (Mound B); an oval loaf-shaped mound (Mound C); and a flat-topped, rectangular mound with a ramp-like projection (Mound E). The 22-m-tall Mound A is 215 m by 200 m at the base. It is the largest Poverty Point mound, and it was one of the largest earthen mounds ever built in North America. More significantly, this monumental landscape was built by settled hunter-fisher-gatherers, not agricultural people.

The *Thematic Initiative on Prehistory and World Heritage* (UNESCO 2009) states that ancient archaeological sites are under-represented on the World Heritage List. Such an observation seems particularly significant given that the greatest (temporal) proportion of human existence occurred prior to the modern era. In addition, archaeological heritage is often exceedingly fragile and in need of recognition and protection—clear aims of the World Heritage Convention. To address this bias in representation, the World Heritage Thematic Programme on *Human Evolution: Adaptations, Dispersals and Social Developments (HEADS)* (UNESCO 2010) encourages States Parties to nominate properties that contribute to the understanding of human history. The nomination of Poverty Point is, thus, consistent with the aim of increasing the number of archaeological sites on the World Heritage List.

In *The World Heritage List: Filling the Gaps—An Action Plan for the Future*, ICOMOS (2005) examined the then-current World Heritage List for biases in the representation of different classes of cultural sites. Within the chronological-regional framework, sites associated with Archaic cultures are significantly under-represented in North America.<sup>12</sup> In the thematic framework, under “Utilizing Natural Resources,” hunting-fishing-gathering sites appear to be the least represented. Thus, Poverty Point further contributes to a more balanced World Heritage List as an Archaic period

<sup>12</sup> North America was limited to the area of the United States and Canada; Mexico, which is often considered part of North America, was grouped with the other countries of Mesoamerica. That framework is followed here.

property in North America with Outstanding Universal Value associated with a hunting-fishing-gathering subsistence mode.

### *Selection of Properties for the Comparative Analysis*

There are probably tens, if not hundreds, of thousands of archaeological monuments throughout the world. Relatively few, however, are both massive in scale and complex in design. Even fewer of those were built by people with hunting-gathering subsistence systems. Properties with those three characteristics, however, are the most appropriate for this comparative analysis.

Archaeological definitions of monuments vary. Usually, the term refers to “large-scale communal construction projects” (Feder 1996:465). In the following discussion, monuments will be designated as massive constructions built by humans. How large must a structure be to be considered monumental? Such a question is not easily answered, except, to paraphrase Justice Stewart (1964), “We know it when we see it.” When people visit Poverty Point, they know they have seen a monument.

Design complexity here refers to sites with multiple kinds of monuments. Mounds of various shapes or functions; ridges or embankments; ditches or moats; stone or wooden post circles; and constructed plazas are common to complex monumental landscapes. In this discussion, a site with a complex design will be defined as having more than one structural element, of more than one kind, and showing inter-relatedness between elements. The Late Archaic Poverty Point landscape has earthen mounds of four shapes; six concentric, curving, earthen ridges with intervening swales; connector ridges and aisleways; and a constructed plaza. Incidentally, it also has post circles. No other site worldwide has a similar design.

Subsistence systems vary from complete reliance on wild plants and animals (hunter-gatherers and hunter-fisher-gatherers) to complete reliance on cultivated plants and domesticated animals (agriculturalists). Poverty Point is unusual because it was built by people who relied only on wild plants and animals for their food. The comparison emphasizes sites of hunting-gathering cultures where wild resources were exclusively exploited and also ones in which hunting-gathering was supplemented with cultivated plants or domesticated animals.

The comparative analysis focuses on (1) monumental landscapes that are (2) complex, (3) earthen, and (4) built by hunter-gatherers (Figure 3.1). There are, however, several properties that meet two or three of these four criteria and, thus, are superficially similar and merit some consideration. They are incorporated into the analysis.

A hierarchical strategy is used to organize this comparison. First, Poverty Point is compared with other sites of the Poverty Point culture, establishing that it is the most outstanding example of its tradition. Next, the comparison is expanded to include other monumental landscapes in North America. Then, monumental landscapes on the World Heritage and the World Heritage Tentative Lists are considered. Finally, the comparison is extended beyond the World Heritage and Tentative Lists to otherwise known properties. This will establish that Poverty Point is an exceptional example

of a monumental earthen landscape built by hunter-gatherers and that no other properties have a similar combination of values and attributes.

**Key Variables Considered**

*Late Archaic Time Period*

Poverty Point is a Late Archaic (4000-2500 BP) phenomenon. Within the cultural sequence of North America, Poverty Point is uncharacteristically sophisticated for its age and, thus, in the North American comparison, time is a critical determinant. Outside of North America, age loses meaning because the timing of cultural developments and the tempo of change vary from region to region throughout the world. With this in mind, the age of Poverty Point is given importance within the North American context, but not within the global comparison.

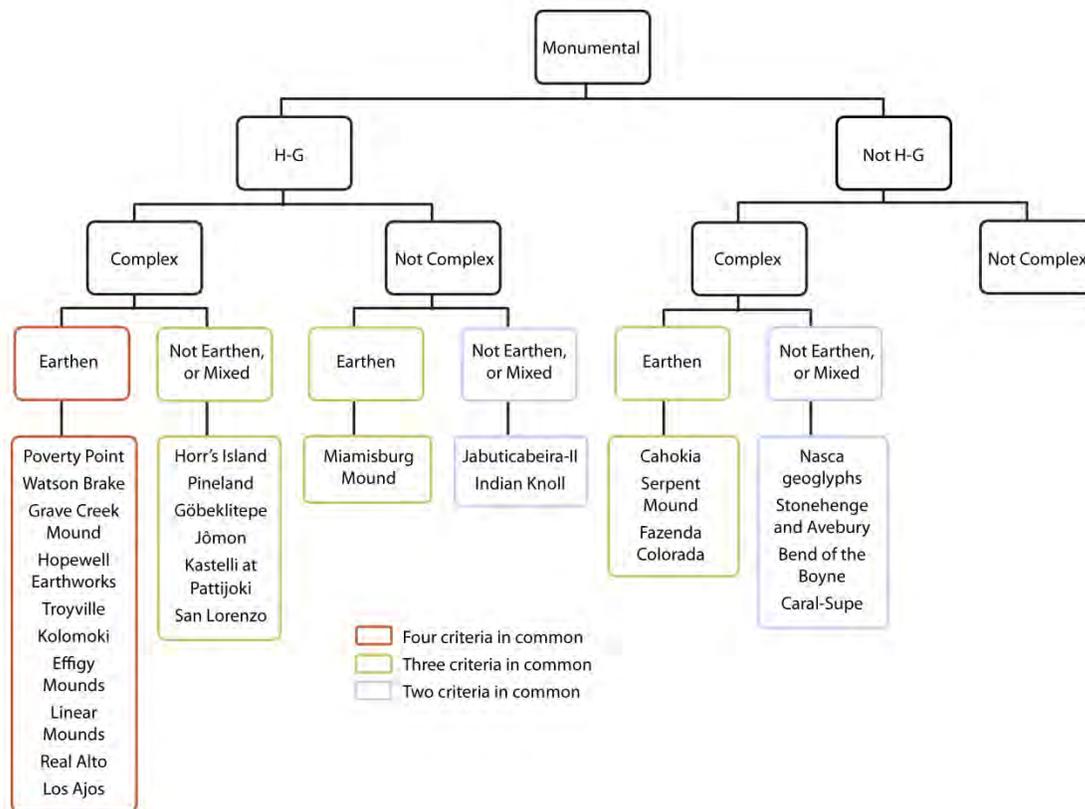


Figure 3.1. Classification of site types for the comparative analysis and list of sites included within the comparative analysis. Sites that are monumental, but that are not associated with hunter-gatherers and are not complex are not considered.

*Hunting-Fishing-Gathering Wild Resources Only*

Within its hunting-fishing-gathering economy, Poverty Point depended solely on wild resources. Some hunting-gathering cultures used a mix of wild and cultivated plants. It is hard to establish, for these other cultures, the ratio of wild to cultivated resources or how much of an advantage the

mixed system actually provided. Still, distinguishing wild only from mixed or predominantly agricultural systems calls attention to how rarely hunting-gathering or hunting-fishing-gathering subsistence supports monumental earthen construction projects.

### *Monumental Scale and Complex Design*

Poverty Point's earthen monuments are massive, and they form a complex design on the landscape. This massiveness and complexity are seemingly out of proportion for Poverty Point's age and position within the cultural sequence for North America and relative to other hunting-gathering cultures throughout the world. The comparison assesses the scale and design complexity of other monumental landscapes relative to Poverty Point.

### *Abundant Exotic Materials*

The people of Poverty Point had an extensive network to acquire stone and other materials. Copper, galena (lead ore), iron oxide, quartz crystals, and various other rocks arrived at the site from a vast portion of the eastern United States. Some cultures had a similarly extensive geographic network for acquiring raw materials, but the volume of imported material was much less than that of Poverty Point. This variable compares the abundance of nonlocal raw materials at other monumental landscapes relative to Poverty Point.

### *Very Good Integrity and Authenticity*

Poverty Point has excellent integrity and authenticity. Other properties with very good to excellent integrity and authenticity are indicated.

### *Poverty Point from a North American Perspective*

Earth and shell mounds and embankments are the most common forms of archaeological Native American monumental architecture in eastern North America.<sup>13</sup> From Ontario (Canada) to Florida (United States) and from the Atlantic Ocean to Manitoba and the eastern edge of the Great Plains, the largest concentrations and most elaborate complexes of mounds are in the Midwest and South of the United States, mostly in or along valleys of the major rivers and along the coasts. The moundbuilding phenomenon predates Poverty Point, stretching back to at least 6000 BP, into what is known as the Middle Archaic period (7000-4000 BP). And, such works continued to be built and used by cultures after Poverty Point's time. European explorers of North America during the sixteenth through eighteenth centuries documented mounds still in use by native peoples (Silverberg 1989; Swanton 1985).

People in some parts of North America never engaged in building monuments of earth or shell. Where mounds did occur, they were not part of a single continuous tradition (Sidebar 3.2). Instead, cultures of various times and places incorporated the practice of moundbuilding within their own traditions. Thus, earth- and shell-works were built and used at different times in different places for

<sup>13</sup> Mounds of earth and shell are also found along the Pacific coast of the United States and Canada, but they tend to be smaller and they do not display the design complexity exhibited in eastern North America.

apparently different reasons. No single earth- or shell-work complex can adequately represent the variability in North American moundbuilding cultures. To place Poverty Point within the North American context, it is first compared with other sites of the Poverty Point culture; then it is compared with sites of other moundbuilding cultures.

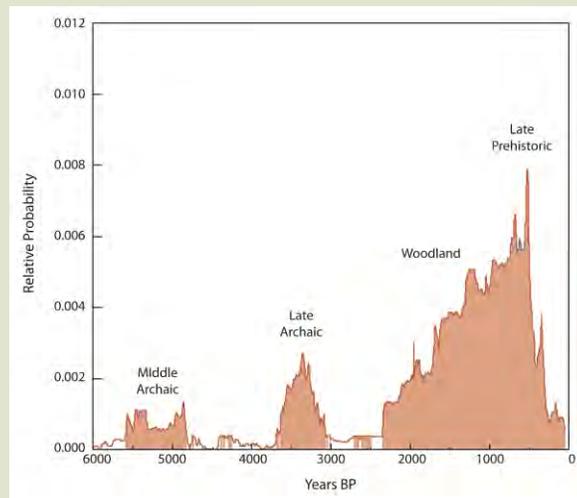
### *Late Archaic Period (ca. 4000–2500 BP)*

The Poverty Point site is the namesake for a group of culturally-related archaeological sites found in the lower Mississippi River valley.<sup>14</sup> Different kinds of settlements include temporary camps, small residential hamlets or villages, and large “regional centers” (Gibson 1980, 1999a; Kidder 1991; Webb 1982). These tend to be found in clusters containing several smaller sites surrounding a larger center. The largest clusters are found in northeastern Louisiana, east central Louisiana, southeastern Arkansas, the Yazoo River basin of northwestern Mississippi, and on the Louisiana-Mississippi Gulf Coast (Figure 3.2). Artifacts similar to those of Poverty Point have also been found at sites in southeastern Missouri, western Tennessee, southwestern Alabama, and western Florida.

Even though sites of the Poverty Point culture appear to show a hierarchy of size, their inhabitants all relied on hunting, fishing, and gathering of wild resources. It has been suggested that some of the smaller sites may have provided food to the larger ones (Jackson 1986). The small settlements tend to have the same kinds of artifacts as the regional

### Sidebar 3.2. Record of Moundbuilding

Within the lower Mississippi River valley, the radiocarbon record of earthwork construction shows several peaks of construction activity (Gibson 1996a; Kidder 2006; Saunders 2010a). Peaks in the graph below reflect high probabilities of moundbuilding, whereas the valleys reflect low probabilities. It is possible that mounds were infrequently built during those low probability times or that they simply are not visible today (e.g., they may have been covered by naturally deposited alluvial sediments or by additions of sediments by later peoples, or they may have been damaged by cultivation or development).



The chart shows the summed probability distribution of 383 radiocarbon determinations associated with earthworks in Louisiana and Mississippi (Greenlee and Saunders 2008). Three distinct peaks of earthen construction correspond to the Middle Archaic, Late Archaic, and Woodland/Late Prehistoric periods.

<sup>14</sup> Sites have been assigned to the Poverty Point culture on the presence of several diagnostic artifacts (Sidebars 2.13–2.15), including: variously-shaped finger-molded fired clay balls (called Poverty Point Objects [Moore 2003]); hematite and/or magnetite plummets; an abundance of exotic stone materials; microliths; steatite vessels; lapidary items; fired clay figurines; and fiber-tempered pottery (Webb 1982). Radiocarbon dates for several Poverty Point culture sites have confirmed temporal overlap with the Poverty Point site (Arco 2009; Connolly 2003a).

centers, but they usually have less exotic material (Gibson 1990b, 1994c, 1998b, 1999b; Gibson and Griffing 1990). In addition to being larger, the centers also often have more and larger mounds. Seven potential regional centers of the Poverty Point culture (Figure 3.2) have been identified (Kidder 1991; Webb 1982) and mounds are known for six of them (Table 3.1).



Figure 3.2. Clusters of Poverty Point culture sites of the Lower Mississippi Valley, with proposed regional centers indicated. Based on Webb (1982).

Table 3.1. Physical characteristics of the regional centers of the Poverty Point culture.

Site	Relative Size and Location	Earthworks	Current Condition	References
Poverty Point, Louisiana	<ul style="list-style-type: none"> <li>• Largest Poverty Point culture (PPc) site</li> <li>• Estimated area, 163 ha</li> </ul>	<ul style="list-style-type: none"> <li>• 4 earthen mounds</li> <li>• 6 concentric artificial earthen ridges around flat plaza</li> <li>• 1 additional earthen mound associated with later use of site</li> </ul>	Excellent	Ford and Webb 1956; Greenlee 2011; Ortmann 2010
Jaketown, Mississippi	<ul style="list-style-type: none"> <li>• Second largest PPc site</li> <li>• Estimated area, 80 ha</li> <li>• About 105 km NE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>• At least 2 mounds and 1 undefined earthwork are PPc</li> <li>• As many as 9 other mounds possibly, but not definitively, associated with the PPc occupation</li> <li>• At least 4 mounds associated with later use of site</li> </ul>	Good 6 possible PPc mounds destroyed; most PPc deposits buried beneath ~3.5 m of natural flood deposits and later occupational debris	Arco 2009; Ford et al. 1955; Lehmann 1982
Caney Mounds, Louisiana	<ul style="list-style-type: none"> <li>• Third largest PPc site</li> <li>• Estimated area, 40 ha</li> <li>• About 140 km SSW of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>• 6 earthen mounds present, but none definitively associated with the PPc occupation</li> <li>• 2 mounds are Middle Archaic</li> </ul>	Good Significant damage due to agricultural activities	Gibson 1991; Hunter 1970; Saunders 2000
Neimeyer-Dare, Louisiana	<ul style="list-style-type: none"> <li>• Fourth largest PPc site</li> <li>• Estimated area, 12-20 ha</li> <li>• About 45 km NNW of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>• 2 conical earthen mounds, but not definitively associated with the PPc occupation</li> </ul>	Poor Mounds destroyed; site in cultivation	Kidder 1991
Claiborne, Mississippi	<ul style="list-style-type: none"> <li>• Fifth largest PPc site</li> <li>• Estimated area, 3-6 ha</li> <li>• About 330 km SE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>• 1 earthen mound, not definitively associated with PPc occupation</li> </ul>	Very poor Mound and rest of site destroyed	Bruseh 1980, 1991; Gagliano and Webb 1970
Calion, Arkansas	<ul style="list-style-type: none"> <li>• Unknown size</li> <li>• About 170 km NW of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>• 1 or 2 mounds, but not definitively associated with the PPc occupation</li> </ul>	Poor Mounds destroyed; significant damage due to construction	Haag and Webb 1953; Weinstein and Kelley 1984
Beau Rivage, Louisiana	<ul style="list-style-type: none"> <li>• Unknown size</li> <li>• About 290 km SSW of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>• No mounds known</li> </ul>	Very poor Site destroyed	Gibson 1975a, 1979

Because of its size and the scale and complexity of its earthworks, Poverty Point is considered the “cultural capital” of the Poverty Point culture (Kidder 1991:43). Poverty Point also stands apart from the other regional centers in terms of site authenticity and integrity. Tragically, several of the regional centers and untold numbers of smaller settlements have been destroyed or seriously disturbed through construction, agriculture, looting, and natural weathering. Poverty Point has not completely escaped these assaults, but its rural location and sheer magnitude have been instrumental in limiting the extent of damage.

#### *Middle Archaic Period (7000–4000 BP)*

Middle Archaic cultures of the southeastern United States were the first to build earthen- and shell-mounds and mound complexes in North America. In Louisiana and Mississippi, these groups were hunter-gatherers who relied on wild resources, staying through multiple seasons (if not the entire year) at locales that provided easy access to aquatic and terrestrial habitats (Saunders et al. 2005). It is at these long-term settlements where the first earthworks are found, suggesting, as in the case of Poverty Point, that the sacred and the secular were intertwined. Locally available stone was used for hot-rock cooking and the manufacture of stone tools. There are sixteen known Middle Archaic earthwork sites. Of these, Watson Brake in northeastern Louisiana (Figures 3.3 and 3.4) is the largest and most elaborate monumental earthwork (Tables 3.2 and 3.3).

*Watson Brake (5400-5000 BP), like Poverty Point, is an earthen mound complex designed and built by hunter-gatherers who exploited only wild resources. Watson Brake is much older than Poverty Point, and therefore represents an earlier cultural tradition. Although it is the largest, most complex, Middle Archaic earthen mound complex in North America, it is smaller and simpler in design than Poverty Point. Unlike Poverty Point, this site lacks imported stone. The site has excellent integrity and authenticity.*

The first shell works along the Atlantic and Gulf coasts of the southeastern United States were also constructed during the Middle Archaic period. Geographic variation in the size, shape, distribution, composition, and complexity of shell rings suggests as many as eight distinct hunting-fishing-gathering cultures were associated with more than fifty rings during that time period (Russo 2006). Depending on the local setting, people exploited the abundant resources found in shallow estuaries, mangrove swamps, or lowland marshes. Seasonality analyses of animal bones at some sites indicate a year-round occupation (Russo and Quitmyer 1996). The complex forms of these constructions have been argued to reflect inequalities in the social organization of the people who built them. Nonlocal stone and pottery are found in many coastal shell rings, and marine shell artifacts are found at inland sites, indicating a trade network was in place at this time (Russo 2006). Horr’s Island, located on the Gulf coast of Florida (Figures 3.3 and 3.4), probably represents the most complex Middle Archaic shell work (Tables 3.2 and 3.3).

*Horr’s Island (4800-4000 BP) is a coastal shell ring and mound complex that, like Poverty Point, was the product of hunter-gatherers who exploited only wild resources. But, the people of Horr’s Island exploited shallow estuary waters and a vast, highly productive mangrove swamp, not an interior river system. Horr’s Island is older, smaller, and less*

*complex in design than Poverty Point. It was part of a very different cultural tradition. No nonlocal materials were found at Horr's Island. This site has fair integrity and authenticity.*



Figure 3.3. Monumental properties of North America referred to in the comparative analysis.

Large shell deposits appear in river valleys of the interior southeastern United States during the period 6500-4500 BP, and the best known of these are situated in the Green River valley of west

central Kentucky. Created by hunter-gatherers, their interpretation as either deliberate monumental constructions or as accumulated heaps of occupational debris (midden) remains controversial, even after nearly 100 years of exploration.<sup>15</sup> Seasonal data suggest that they are most likely the product of repeated, multi-seasonal habitations as part of a mobile settlement system (Jeffries 1996). Exotic materials (e.g., copper, marine shell) are found as burial goods. Of the so-called Shell Mound Archaic shell heaps, Indian Knoll (Figures 3.3 and 3.4; Tables 3.2 and 3.3) is the largest and best known.

*Indian Knoll (5600-4600 BP), like Poverty Point, is the product of hunter-gatherers who exploited only wild resources. Indian Knoll is older than Poverty Point, and represents a different cultural tradition. The shell mound is much smaller and much simpler in design than Poverty Point. Exotic materials are present, but not in quantities comparable to Poverty Point. The site has fair integrity and authenticity.*

#### *Early Woodland Period (2500-1950 BP)*

The Early Woodland Adena culture is one of several post-Poverty Point moundbuilding cultures of eastern North America (Milner 2009; Russo and Schwadron 2009). Adena earthworks are found throughout the central and upper Ohio River valley and the Bluegrass region of Kentucky (Clay 2009; Milner 2009; Railey 1996). They differ from earlier Middle Archaic and Poverty Point earthworks by being conical burial mounds, sometimes with associated circular or oval embankments and ditches, and sometimes with evidence for ritual structures beneath the mounds. These constructions are not incorporated into the settlements as mounds were with earlier cultural traditions. Adena populations were primarily hunter-gatherers, but some archaeologists have characterized them as possible gardeners because they used plants that were eventually cultivated in eastern North America (Abrams 2009; Railey 1996). The Adena culture imported exotic raw materials (e.g., mica, copper, marine shell, galena) and made fine objects that were placed in burials. Grave Creek Mound in West Virginia and Miamisburg Mound in Ohio (Figures 3.3 and 3.4) are the largest Adena constructions known (Tables 3.2 and 3.3).

*Grave Creek Mound (2250-2150 BP) and Miamisburg Mound are large earthen burial mounds; Grave Creek Mound is encircled by a moat. Unlike the inhabitants of Poverty Point, these hunter-gatherers likely supplemented their wild resource base with some cultivated plants. Although they were both built by a more recent cultural tradition than Poverty Point, the mounds are much smaller and the landscape designs are much less complex. Exotic raw materials were found with the burials, but their numbers do not approach the quantities found at Poverty Point. The sites have good to very good integrity and authenticity.*

<sup>15</sup> This comparison focuses on seemingly intentionally-constructed works, as opposed to accumulations of debris (i.e., tells or middens). Shell mounds and rings are an interesting phenomenon in this regard because they have been, and continue to be, interpreted in both ways (e.g., Claassen 1992; Crothers 2004; Hiscock and Faulkner 2006; Marquardt 2010a, 2010b; Milner and Jeffries 1998; Russo 2006; Thompson 2010).

Table 3.2. Physical characteristics of Poverty Point and other North American monumental properties.

Site and Age	Size and Relative Location	Monuments	Current Condition	References
Poverty Point, Louisiana  3700-3100 BP	<ul style="list-style-type: none"> <li>Estimated area, 163 ha</li> </ul>	<ul style="list-style-type: none"> <li>Largest and most elaborate Late Archaic mound complex in North America</li> <li>Largest Late Archaic mound</li> <li>4 earthen mounds</li> <li>6 concentric artificial earthen ridges around flat central plaza</li> <li>1 additional earthen mound associated with later use of site</li> </ul>	Excellent	Ford and Webb 1956; Greenlee 2011; Ortmann 2010
Watson Brake, Louisiana  5400-5000 BP	<ul style="list-style-type: none"> <li>Estimated area, 9.1 ha</li> <li>About 80 km SW of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Most elaborate Middle Archaic mound complex in North America</li> <li>11 earthen mounds</li> <li>Low oval-shaped earthen ridge around a central plaza</li> </ul>	Excellent	Saunders et al. 1997, 2005
Horr's Island, Florida  4800-4000 BP	<ul style="list-style-type: none"> <li>Estimated area, 1.26 ha</li> <li>About 1,210 km SE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Shell ring complex</li> <li>U-shaped shell ring</li> <li>4 shell/sand mounds</li> <li>Shell ridge</li> <li>Shell ramp</li> </ul>	Fair	Russo 2006, 2009a, 2009b
Indian Knoll, Kentucky  5600-4600 BP	<ul style="list-style-type: none"> <li>Estimated area, 0.7 ha</li> <li>About 650 km NE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Largest Shell Mound Archaic site</li> <li>1 mound, shell 1.5-2.5 m deep over 0.7 ha</li> </ul>	Fair	Claassen 1992; Crothers 2009; Jeffries 1996; Moore 2002; Webb 1946
Grave Creek Mound, West Virginia  2250-2150 BP	<ul style="list-style-type: none"> <li>Estimated area, 0.6 ha</li> <li>About 1,230 km NE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Largest Adena (Early Woodland) mound in North America</li> <li>Encircled by moat</li> </ul>	Good	Grantz 1985; Maslowski 2009
Miamisburg Mound, Ohio  2500-1950 BP	<ul style="list-style-type: none"> <li>Estimated area, 0.57 ha</li> <li>About 995 km NE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Second largest Adena (Early Woodland) mound in North America</li> </ul>	Very good	<a href="http://www.ohiohistorycentral.org">http://www.ohiohistorycentral.org</a>
<b>Hopewell Ceremonial Earthworks:</b>				
Hopewell Mound Group, Ohio  2050-1450 BP	<ul style="list-style-type: none"> <li>Estimated area, 49 ha</li> <li>About 1,050 km NE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Largest Hopewellian (Middle Woodland) mound in North America</li> <li>40 earthen mounds</li> <li>1 large and 2 small earthen enclosures</li> </ul>	Very good	Greber 2009; Squier and Davis 1848
Newark Earthworks, Ohio  2050-1450 BP	<ul style="list-style-type: none"> <li>Estimated area, 1,200 ha</li> <li>About 1,140 km NE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Largest Hopewellian (Middle Woodland) earthworks complex in North America</li> <li>Several earthen geometric enclosures</li> <li>Parallel linear earthen walls</li> <li>Earthen mounds</li> </ul>	Very good	Lepper 1998, 2009a; Squier and Davis 1848

Table 3.2, continued.

Site and Age	Size and Relative Location	Monuments	Current Condition	References
Troyville, Louisiana  2050-1250 BP	<ul style="list-style-type: none"> <li>Estimated area, 40 ha</li> <li>About 130 km S of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Largest Late Woodland mound in North America</li> <li>9 earthen mounds</li> <li>D-shaped earthen enclosure</li> </ul>	Poor	Gibson 1996a; Lee 2010; Walker 1936
Kolomoki, Georgia  1600-1200 BP	<ul style="list-style-type: none"> <li>Estimated area, 100 ha</li> <li>About 630 km ESE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>One of the largest Late Woodland mound complexes in the Southeast</li> <li>At least 8 earthen mounds</li> <li>Possible earthen embankment</li> <li>Plaza</li> </ul>	Good	Pluckhahn 2003, 2009
Effigy Mounds National Monument, Iowa  1300-750 BP	<ul style="list-style-type: none"> <li>Estimated area, 1,022 ha</li> <li>About 1,135 km N of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Greatest concentration of effigy mounds in North America</li> <li>206 mounds</li> <li>31 effigy mounds</li> <li>Conical burial mounds</li> <li>Linear mounds</li> </ul>	Very good	Boszhardt 2012; HRA Gray & Pape, LLC 2003; National Park Service 2007; Sullivan 2009
Serpent Mound State Memorial, Ohio  900-750 BP	<ul style="list-style-type: none"> <li>Estimated 400 m long</li> <li>About 997 km NE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Largest serpent effigy</li> <li>Oval embankment</li> <li>3 burial mounds, but two are Early Woodland constructions</li> </ul>	Very good	Fletcher et al. 1996; Lepper 2009b
Cahokia Mounds State Historic Site, Illinois  950-600 BP	<ul style="list-style-type: none"> <li>Estimated area, 1,500 ha</li> <li>About 665 km NNE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Largest pre-Columbian settlement north of Mexico</li> <li>Monks Mound, the largest earthen construction in North America</li> <li>4 plazas in the core area</li> <li>More than 100 burial and platform mounds</li> <li>5 post circles</li> </ul>	Very good	Alt 2012; Dalan et al. 2003; Kelly 2009
Linear Mounds National Historic Site of Canada  1050-550 BP	<ul style="list-style-type: none"> <li>Estimated area, 16 ha</li> <li>About 2,000 km NNW of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>2 embankments, each about 200 m long, oriented perpendicularly</li> <li>4 circular mounds</li> <li>1 elliptical mound</li> </ul>	Excellent	Parks Canada 2007
Pineland, Florida  1850-240 BP	<ul style="list-style-type: none"> <li>Estimated area, 81 ha</li> <li>About 1,160 km SE of Poverty Point</li> </ul>	<ul style="list-style-type: none"> <li>Second largest Calusa town</li> <li>Sand burial mounds</li> <li>Shell mounds and middens</li> <li>4.0 km long canal</li> </ul>	Good	Marquardt 2009; Payne and Marquardt 1996

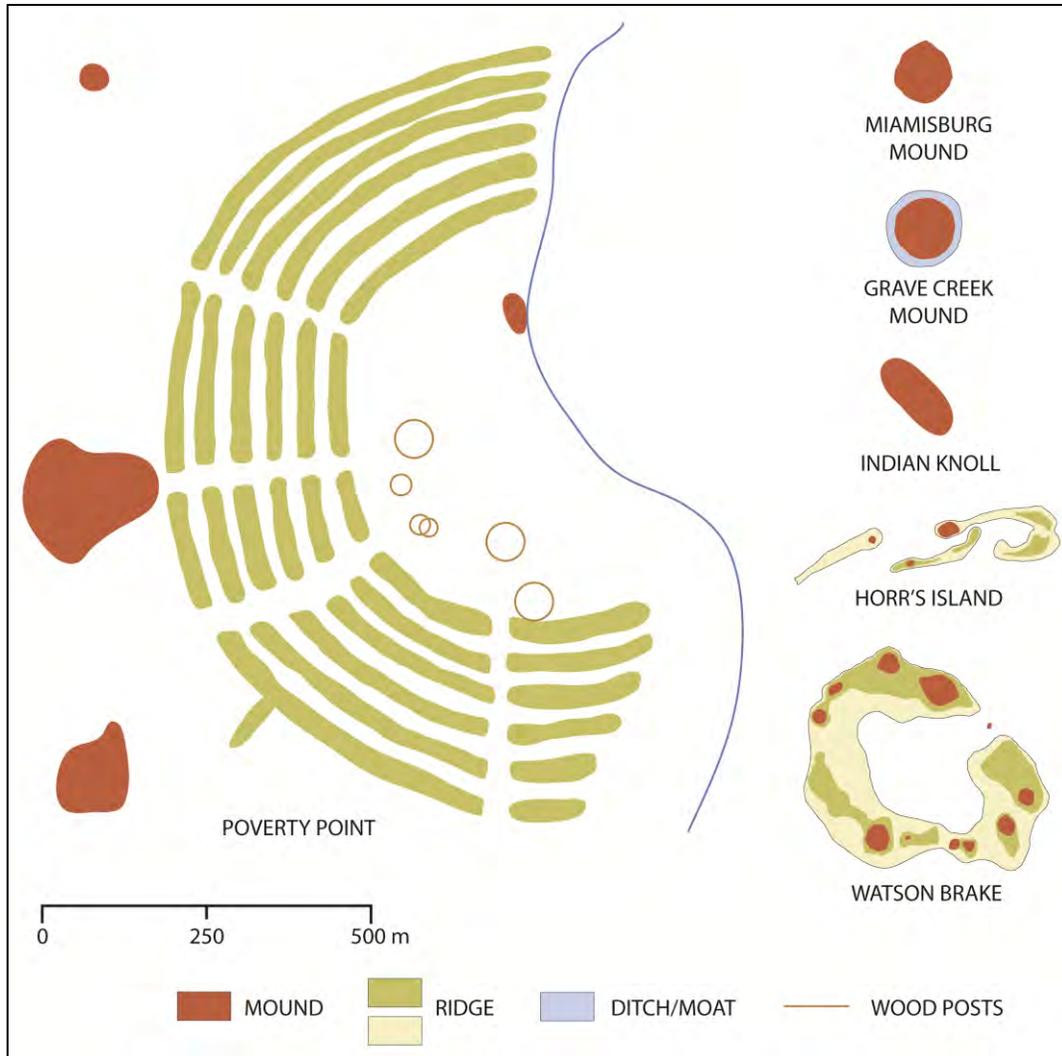


Figure 3.4. Scaled schematic maps comparing monumental scale and design for Watson Brake, Horr's Island, Indian Knoll, Grave Creek Mound, and Miamisburg Mound with Poverty Point.

### *Middle Woodland Period (1950–1450 BP)*

During the Middle Woodland period, several cultural traditions were responsible for elaborate earthen complexes of mounds and embankments across the eastern United States and Canada (Charles 2009; Milner 2009). The Hopewell culture of the Ohio, Illinois, and lower Mississippi River valleys is almost certainly the best known; indeed, several Ohio Hopewell properties constitute the Hopewell Ceremonial Earthworks entry on the United States World Heritage Tentative List (Table 3.4). Most Hopewell mounds were elaborate cemeteries, with central wood-lined tombs and surrounding burials, but flat-topped platforms are also known. Earthen embankments, in the form of geometric and hilltop enclosures, were used to delineate spaces for special purposes (Connolly 1998b; Milner 2009; Riordan 2009). As with the Adena culture, Hopewell earthworks were not residential sites; settlements were dispersed around them. And, like the Adena, the presence of exotic materials (e.g., copper, marine shell, obsidian, mica) as grave goods indicates that the Hopewell participated in a widespread exchange network. But, cultivated plants likely provided a

greater proportion of the diet for the Hopewell (Dancey 2009; Wymer 2009) than for the Adena. The Hopewell site and Newark Earthworks in Ohio (Figures 3.3 and 3.5) are two of the Hopewell culture's most spectacular examples (Tables 3.2 and 3.3).

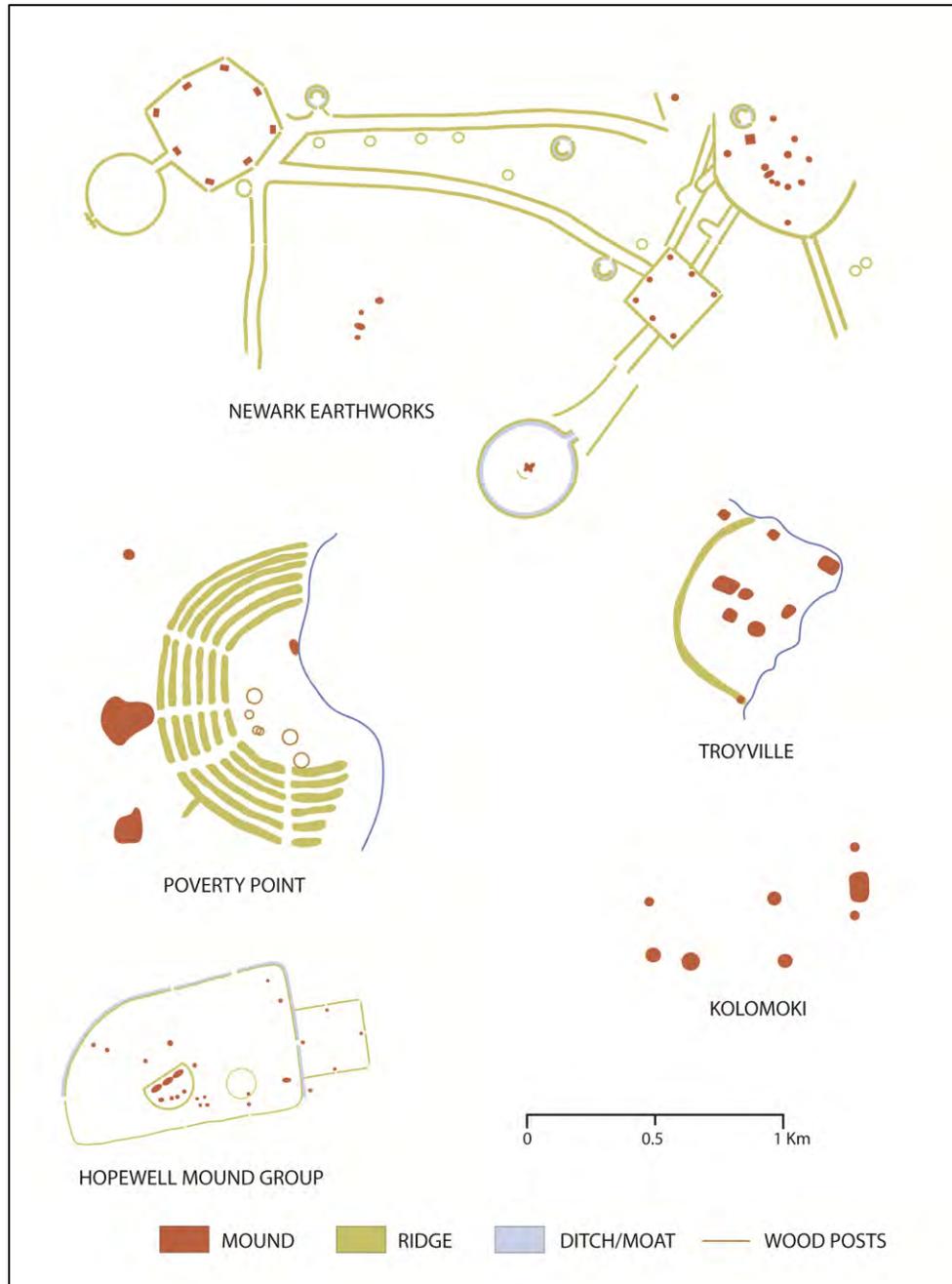


Figure 3.5. Scaled schematic maps comparing monumental scale and design for Hopewell Mound Group, Newark Earthworks, Troyville, and Kolomoki with Poverty Point.

*The Hopewell Mound Group and Newark Earthworks (2050-1450 BP) are mound complexes with associated geometric earthen enclosures. Unlike at Poverty Point, these hunter-gatherers supplemented their wild resource base with cultivated plants. Exotic raw materials*

*were interred with burials in the mounds, but they are not found in quantities comparable to the imports at Poverty Point. These sites have complex landscapes that, although less massive volumetrically than Poverty Point's, show great planning. The sites have very good integrity and authenticity.*

### *Late Woodland Period (1500–1000 BP)*

During the Late Woodland period, mound construction and trade were greatly reduced in many parts of eastern North America (Dunnell and Greenlee 1999; Milner 2009). Considerable subsistence variation is in evidence: some Late Woodland groups were fully agricultural by the end of the time period, others were supported to some degree by horticultural or gardening activities, and others continued to rely solely on wild resources. In the lower Mississippi River valley and the Deep South, people built large earthen mound complexes, and there is evidence for continued trade, albeit at a much lower level than before (Lee 2010). Many Late Woodland earthwork sites were also residential settlements, suggesting a return to the integration of settlement and ritual spaces. The Troyville site in Louisiana and the Kolomoki site in Georgia are among the most impressive mound complexes of the Late Woodland period in southeastern North America (Figures 3.3 and 3.5; Tables 3.2 and 3.3).

*The Troyville site (2050–1250 BP) is a small complex of earthen mounds and a D-shaped enclosure. These hunter-gatherers probably relied on riverine foods; they may have encouraged the growth of weedy annuals, although no domesticated plant remains have been found. Exotic raw materials have been recovered in very small amounts. Troyville has a complex landscape that developed through the Middle and Late Woodland periods, but it is smaller and much less complex than Poverty Point. The site has poor integrity and authenticity.*

*The Kolomoki site (1600–1200 BP) is a complex of at least eight earthen mounds and a plaza, probably once surrounded by an earthen enclosure. These hunter-gatherers supplemented their wild resource base with cultivated plants. Exotic raw materials were interred with burials, but are not considered abundant. Although Kolomoki covers an area only slightly less than Poverty Point, the landscape is much less complex and the earthworks are significantly smaller. The site has good integrity and authenticity.*

Effigy mounds, in the shape of animals both real and imaginary, appeared in the upper Midwest (northern Illinois, southern Wisconsin, southeastern Minnesota, and eastern Iowa) during the Late Woodland period (Boszhardt 2012; Goldstein 2009). These were not settlements, although the people who built and used the mounds probably congregated nearby. Effigy Mounds National Monument (Figures 3.3 and 3.6; Tables 3.2 and 3.3) is the most spectacular of the effigy mound groups.

*Effigy Mounds National Monument (1300–750 BP) is a series of mound groups containing effigy, conical, and linear mounds. Although some archaeologists have suggested that Mound A at Poverty Point was a bird effigy, its design is more abstract than these effigy mounds. Like Poverty Point, this effigy landscape was apparently created by hunter-*

*gatherers relying on wild resources. Although the effigy mounds are spread over a larger area than Poverty Point, and the design, in terms of the distribution of the effigies across the landscape, is quite complex, the volume of earth moved was less than at Poverty Point. Exotic raw materials are lacking. The site has very good integrity and authenticity.*

### *Late Prehistoric Period (1000–500 BP)*

Earthwork construction was once again a prominent activity during the Late Prehistoric period of eastern North America. Of the several cultural traditions that practiced moundbuilding during this time, most were supported to some degree by a farming economy focused on corn, beans, and squash. Earthen mounds were constructed for use as cemeteries or as platforms for special buildings (charnel structures, residences, etc.), and they were usually integrated within the residential sphere (Dalan et al. 2003; Milner 2009).

The Fort Ancient tradition, centered in the middle Ohio River valley, is one Late Prehistoric culture that practiced moundbuilding on a limited scale. Fort Ancient settlements were sedentary villages that sometimes included burial mounds. Their burial mounds are modest in terms of scale and design. The Fort Ancient culture was also responsible for Serpent Mound (Fletcher et al. 1996), which is on the United States World Heritage Tentative List (Table 3.4). Although Serpent Mound derives from a different cultural tradition than the mounds of Effigy Mounds National Monument, it is similar in some ways and represents an excellent example of an effigy mound (Figures 3.3 and 3.7; Tables 3.2 and 3.3).

*Serpent Mound (900–750 BP) is a large serpent effigy with an associated oval embankment and three burial mounds, two of which are Adena mounds (meaning they are older than the effigy). This mound complex is much younger than Poverty Point, and, unlike Poverty Point, the builders were supported by an agricultural economy. The design of the serpent is complex—it may have been a solar calendar—but there are fewer integrated parts to the landscape, and it is, in terms of scale, much smaller than Poverty Point. No artifacts have been recovered from Serpent Mound, and Fort Ancient sites are not known to have much in the way of exotic materials. This site has very good authenticity and integrity.*

The most massive earthen monuments in North America were constructed by the Mississippian culture of the central Mississippi River valley. Mississippian settlements varied in terms of size, from small farmsteads to large regional centers with multiple mounds. Mississippian social organization was apparently differentiated hierarchically, as well – an attribute not in evidence at Poverty Point. Extensive trade networks are evidenced, and most exotic raw materials were used for “prestige” artifacts. Of the large Mississippian mound complexes, Cahokia Mounds State Historic Site in Illinois, currently on the World Heritage List (Table 3.4), has the largest and most elaborate landscape (Figures 3.3 and 3.6; Tables 3.2 and 3.3).

*Cahokia Mounds (950–600 BP) is a huge mound complex with more than one hundred burial and platform mounds. It is the only ancient settlement in North America that is larger than, and with earthwork volumes exceeding those of, Poverty Point. Cahokia is, of course, much*

younger than Poverty Point and, unlike Poverty Point, was sustained by a maize-based agricultural economy. Monks Mound is the largest earthen construction at Cahokia and in North America, having a volume more than twice that of Poverty Point's Mound A. Like Poverty Point, Cahokia also had post circles; five are known at Cahokia, whereas twenty-five to thirty are identified for Poverty Point. And, like Poverty Point, widespread trade is evidenced. The site has very good integrity and authenticity. Despite the apparent similarities, Cahokia is clearly the product of a different cultural tradition.

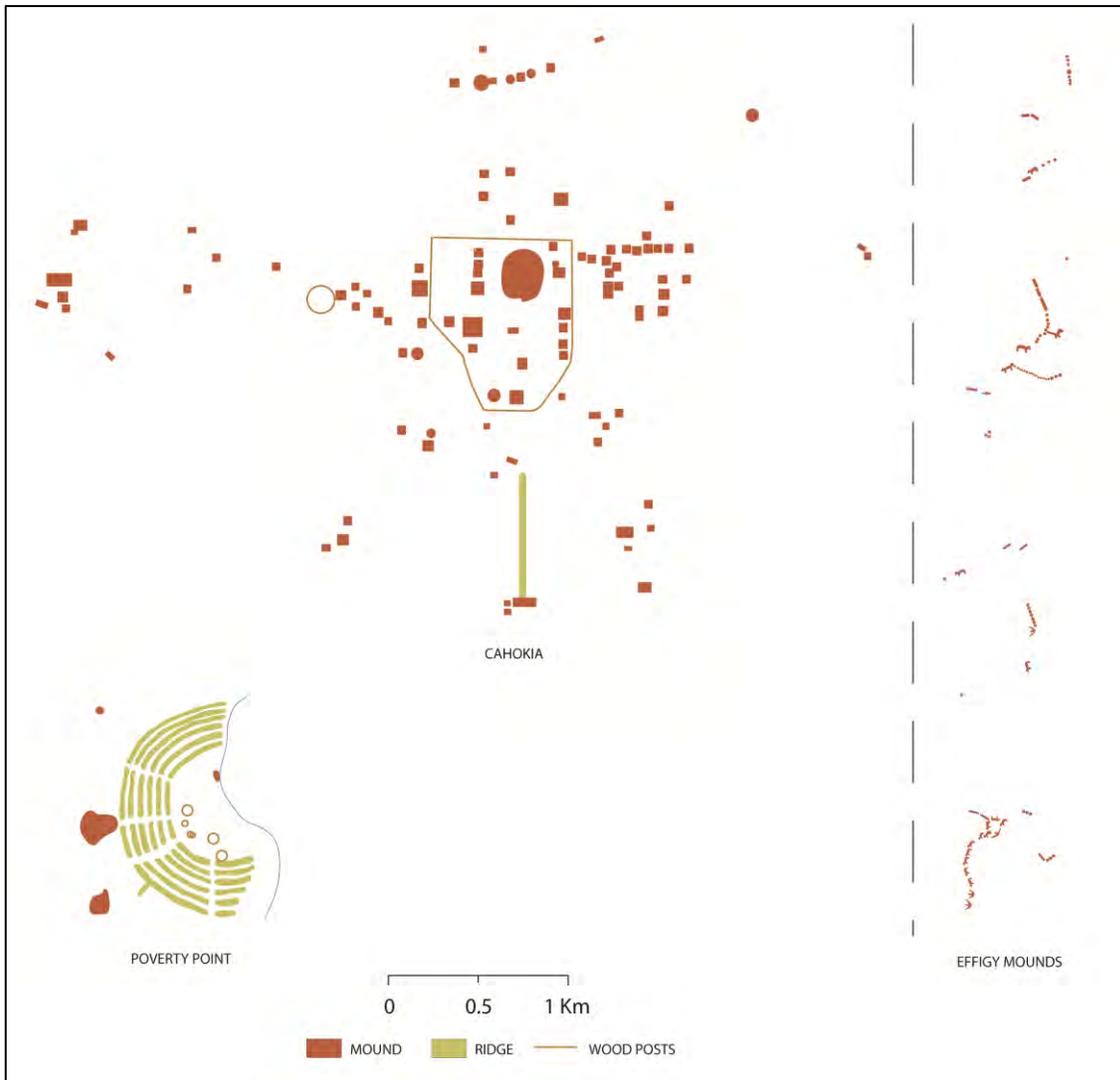


Figure 3.6. Scaled schematic maps comparing monumental scale and design for Effigy Mounds National Monument and Cahokia with Poverty Point.

The Devil's Lake-Sourisford Burial Complex is unusual for the Late Prehistoric period, being the product of a non-agricultural, nomadic, bison-hunting, moundbuilding culture centered in southwestern Manitoba, Canada (Parks Canada 2007). Exotic materials indicate a vast trade network, stretching from the Pacific Coast to the Gulf Coast and including points in-between. There is evidence for trade with agricultural Mississippian populations to the south, which could have

included maize. The Linear Mounds National Historic Site (Figures 3.3 and 3.7; Tables 3.2 and 3.3) is the most impressive of the Devil’s Lake-Sourisford constructions.

*Linear Mounds National Historic Site (1050-550 BP) is much younger than Poverty Point. Like Poverty Point, the landscape was apparently created by hunter-gatherers relying on wild resources, but the people are believed to have been a mobile population whose subsistence was focused on bison. In terms of scale and design, this mound complex is much smaller and simpler than Poverty Point. Exotic materials have been recovered as grave goods. The site has excellent integrity and authenticity.*

Table 3.3. Poverty Point compared across key variables with other monumental properties of North America.

	Late Archaic Time Period	Hunting-Fishing-Gathering Wild Resources Only	Monumental Scale (relative to Poverty Point)	Complex Design	Abundant Exotic Materials	Very Good Integrity and Authenticity
Poverty Point, Louisiana	✓	✓	✓	✓	✓	✓
Watson Brake, Louisiana		✓		✓		✓
Indian Knoll, Kentucky		✓				
Horr’s Island, Florida		✓		✓		
Grave Creek Mound, West Virginia				✓		
Miamisburg Mound, Ohio						✓
Hopewell Ceremonial Earthworks, Ohio			✓	✓		✓
Troyville, Louisiana		✓		✓		
Kolomoki, Georgia				✓		
Effigy Mounds National Monument, Iowa		✓	✓	✓		✓
Serpent Mound, Ohio				✓		✓
Cahokia Mounds State Historic Site, Illinois			✓	✓	✓	✓
Linear Mounds National Historic Site, Manitoba, Canada		✓		✓		✓
Pineland, Florida		✓		✓		

### *Protohistoric Period (500–300 BP)*

Although the chronicles of European explorers recorded several Native American tribes still building and using mounds, the Calusa, who controlled Florida’s southwest Gulf Coast during the sixteenth and early seventeenth centuries, are probably the best documented and most relevant for this analysis (Marquardt 2009). The Calusa are generally considered the endpoint of the long

Caloosahatchee cultural tradition in the area; together these cultures were responsible for roughly 150 shellworks of varying size, shape, complexity, and function. They were coastal hunter-fisher-gatherers, subsisting primarily on fish and shellfish from the rich coastal estuaries, supplemented by terrestrial resources and, apparently, some gardening of papaya and chili peppers (Marquardt 2009; Payne and Marquardt 1996). The Calusa had a strongly hierarchical social organization and are well known for cultural elaborations such as intricate wood carvings and complex shell works (Widmer 1988). Pineland is the best known of the Calusa sites (Figures 3.3 and 3.7; Tables 3.2 and 3.3).

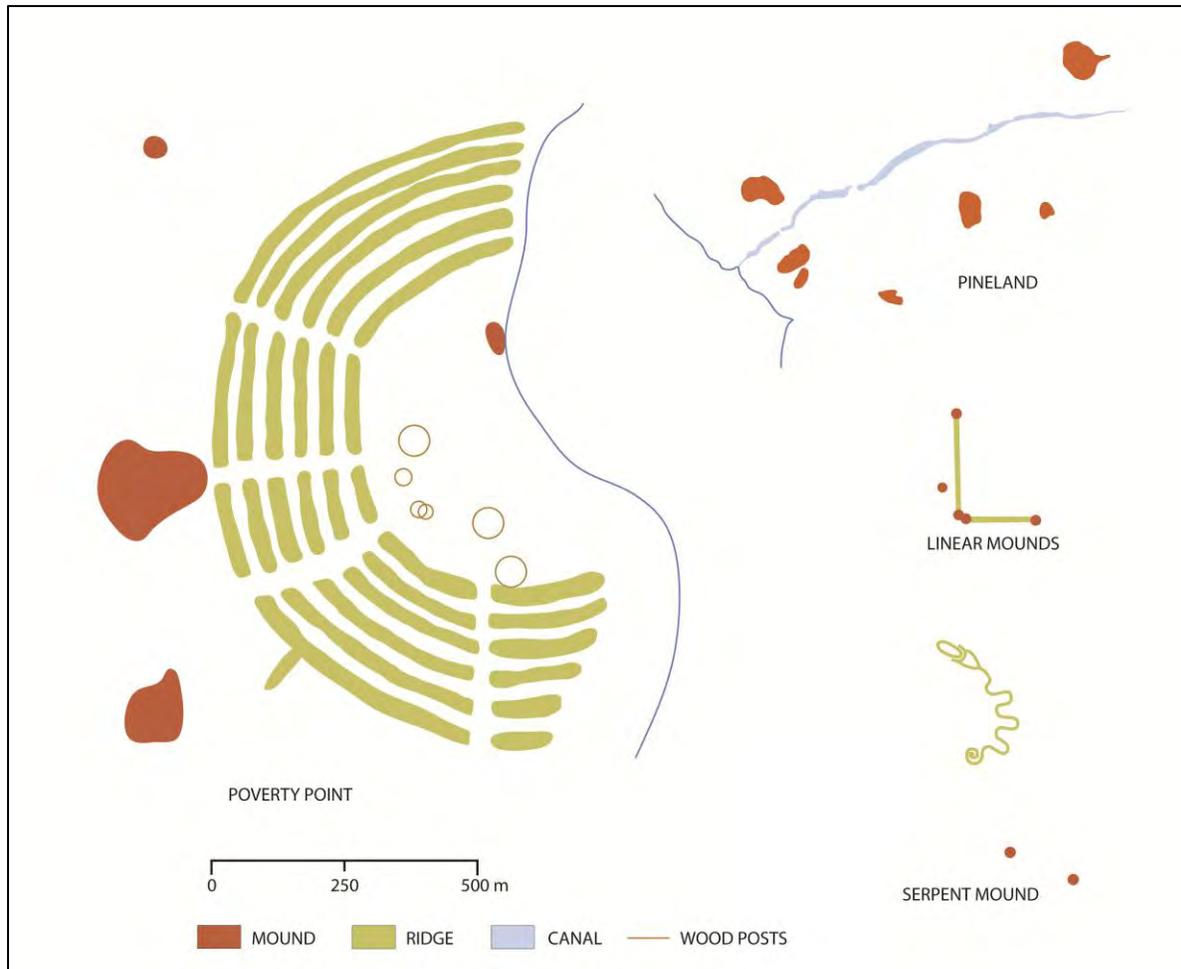


Figure 3.7. Scaled schematic maps comparing monumental scale and design for Serpent Mound, Linear Mounds, and Pineland with Poverty Point.

*The Pineland (1850-240 BP) site is a complex shell work, with shell midden, shell mounds, burial mounds, and a 4-km-long canal cutting through the center. Although constructed of shell, not earth, this site is similar to Poverty Point in being an extensively landscaped residential site with mounds and other elements incorporated into the design. Also like Poverty Point, wild aquatic resources provided the subsistence base, but the Calusa had a coastal adaptation rather than an inland riverine one. Evidence for a geographically extensive trade network is lacking. The site has been damaged through the removal of fill for*

*road construction and leveling, but many elements remain in good condition. Pineland is clearly the product of a cultural tradition very different from Poverty Point.*

### *Conclusion for the Comparison with North American Monumental Properties*

This comparison of Poverty Point with other monumental landscapes of North America clearly demonstrates that no other site has the same combination of values and attributes. Poverty Point is without question the best representative of earthwork sites of the Late Archaic period. No other hunting-gathering monumental sites in North America were as volumetrically massive as Poverty Point, although some landscapes included more area. Poverty Point was finally surpassed some 2,000 later by Cahokia, which was built by agriculturalists. While there are other properties with complex designs, only the properties of the Hopewell Ceremonial Earthworks, with their large-scale geometric enclosures and linear walls, match Poverty Point in terms of design sophistication. Still, they exhibit a very different style. Many of the compared sites produced exotic materials indicative of a raw material trade network, yet only Cahokia might rival Poverty Point in terms of the quantity of exotic materials.

Based on this comparison, Poverty Point stands alone in North America as an exceptional testimony to a hunting-fishing-gathering culture that created a complex, monumental landscape and engaged so abundantly in a geographically-extensive resource network.

### *Poverty Point from a World Heritage Perspective*

Figure 3.1 provides the framework for selecting World Heritage and Tentative List sites for the most appropriate comparison with Poverty Point. With the exception of Hopewell Ceremonial Earthworks, no sites on either list have all four criteria (monumental, complex, earthen landscapes built by hunter-gatherers) in common with Poverty Point. There are three hunter-gatherer culture sites on the Tentative List that meet three of the criteria; no hunter-gatherer sites on the World Heritage List exhibit monumental architecture. This portion of the comparison will begin with the three hunter-gatherer Tentative List sites (Table 3.4): the Large Stone Age Ruin of Kastelli at Pattijoki; Jōmon Archaeological Sites in Hokkaidō, Northern Tōhoku, and other regions; and the Archaeological Site of Göbeklitepe.

Then, the comparative analysis will turn to a sample of monumental landscapes associated with agricultural cultures. Cahokia Mounds and Serpent Mound, which have three criteria in common with Poverty Point (monumental, complex, earthen landscapes) have already been compared. A sample of the many properties on the World Heritage List (Table 3.4) that have two criteria (monumental, complex landscapes) in common with Poverty Point have been selected for comparison: Archaeological Ensemble of the Bend of the Boyne; Lines and Geoglyphs of Nasca and Pampas de Jumana; Sacred City of Caral-Supe; and Stonehenge, Avebury, and Associated Sites.

### *The Large Stone Age Ruin of Kastelli at Pattijoki (Finland)*

The rectangular or oval stone enclosures known as “giant’s churches” are an example of monumental architecture built ca. 5500-4000 BP by hunter-gatherers along the northwest coast of

Finland. These enclosures were initially built on shoreline ridges or hills, but are now located inland due to isostatic rebound. The roughly forty monuments vary in size, from 0.02 to 0.19 ha, with walls up to 7 m thick and 2 m high, and with multiple gates or entrances (Okkonen 2011; Sipilä and Lahelma 2007). Stone cairns and semi-subterranean structures are often associated. Occupational evidence is light, inconsistent with year-round, permanent settlements; their function is debated, ranging from hunting camps to astronomical features to fortifications to territorial markers. Of the “giant’s churches,” Kastelli (Figures 3.8 and 3.9; Tables 3.5 and 3.6) is the largest.

*The ruin of Kastelli at Pattijoki (4800-4200 BP) is a rectangular stone structure known as a “giant’s church.” This property, although presumably built by a hunting-fishing-gathering culture, is much smaller and much less complex than Poverty Point. Exotic materials, including amber, suggest limited trade with agriculturalists to the south. Poverty Point clearly represents a very different cultural tradition.*

Table 3.4. World Heritage and Tentative List properties with monumental landscapes selected for comparison with Poverty Point.

World Heritage List Property	State Party	Inscription Date	Criteria
Archaeological Ensemble of the Bend of the Boyne	Ireland	1983	i,iii,iv
Lines and Geoglyphs of Nasca and Pampas de Jumana	Peru	1994	i,iii,iv
Sacred City of Caral-Supe	Peru	2009	ii,iii,iv
Stonehenge, Avebury, and Associated Sites	United Kingdom	1986	i,ii,iii
Cahokia Mounds State Historic Site	United States	1982	iii,iv
Tentative List Property	State Party	List Date	Criteria
The Large Stone Age Ruin of Kastelli at Pattijoki	Finland	1990	i,iv
Jōmon Archaeological Sites in Hokkaidō, Northern Tōhoku, and other regions	Japan	2009	iii,iv
The Archaeological Site of Göbeklitepe	Turkey	2011	i,ii,iii,iv,vi
Hopewell Ceremonial Earthworks	United States	2008	iii,iv
Monumental Earthworks of Poverty Point	United States	2008	iii
Serpent Mound	United States	2008	i,iii,iv

#### *Jōmon Archaeological Sites in Hokkaidō, Northern Tōhoku, and Other Regions (Japan)*

Several archaeological sites of the hunting-fishing-gathering Jōmon culture are on Japan’s Tentative List. Jōmon sites, dating ca. 16,000-2400 BP, are found across the Japanese archipelago, although they appear to be concentrated in the eastern half (Poussart 2006). Not surprisingly, settlement and subsistence practices and artifact production varied significantly through time and across environments, resulting in great diversity within the label “Jōmon” (Habu 2008; Mochizuki 2006). There is some evidence that plants were cultivated during this time, but they were probably supplements within the generalized hunter-fisher-gatherer diet, rather than dietary staples

(Crawford 1992; Habu 2004; Kobayashi 2004). Jōmon sites exhibit a range of monumental features, from stone circles to ring-shaped earthen embankments and burial mounds to huge shell mounds to large wooden post structures (Habu 2004). One of the Tentative List sites, Sannai Maruyama is (Figures 3.8 and 3.9; Tables 3.5 and 3.6) the largest Jōmon site known.

*Sannai Maruyama (5,900-4,300 BP) is a large hunter-fisher-gatherer settlement containing earthworks, stone pavements and large post structures. Unlike the inhabitants of Poverty Point, these hunter-fisher-gatherers likely supplemented their wild resource base with some cultivated plants. Also in contrast with Poverty Point, the earthworks at Sannai Maruyama appear to be long term accumulations of refuse and soil, and the post structures are rectangular six-post structures instead of circles. Sannai Maruyama is smaller than Poverty Point; its settlement is organizationally complex, but this is likely due more to the long-term use of the site than due to a master plan, as has been posited for Poverty Point. Exotic materials are found at the site, indicating long distance exchange, but they are less abundant than at Poverty Point.*



Figure 3.8. Poverty Point and other monumental properties referred to in the text. Brown dots are monumental sites on the World Heritage and World Heritage Tentative Lists. Black dots are sites otherwise known to have monumental landscapes.

#### *The Archaeological Site at Göbeklitepe (Turkey)*

Göbeklitepe, located in southern Turkey, is the oldest known constructed monument (Figures 3.8 and 3.9; Tables 3.5 and 3.6). There are settlements of the same age in the area that share similar

design motifs, but they lack the elaborate construction found at this site. Göbeklitepe has about twenty rings of elaborately carved, T-shaped, limestone pillars, interpreted as open-air temples. These were filled and capped with soil, creating an earthen mound at the top of the hill where they are located. Food remains have been found at Göbeklitepe, but they were apparently all wild varieties, providing support for the hypothesis that the monument was built by hunter-gatherers.

*Göbeklitepe (11,600-10,200 BP), like Poverty Point, is the complex product of a culture that relied on hunting and gathering wild foods. Unlike Poverty Point, Göbeklitepe is not a residential site. It has been interpreted as a gathering place, even a cult center, for dispersed, perhaps seasonally mobile, hunter-gatherer populations. In terms of spatial scale, Göbeklitepe is much smaller than Poverty Point, but the megalithic rings are complex and represent significant planning. Although the pillars were transported only about 100 m and, thus, are hardly exotic, there are obsidian artifacts that were brought or traded in from sources up to 500 km distant.*

### *Archaeological Ensemble of the Bend of the Boyne (Ireland)*

As in much of Europe, between 5740 and 4150 BP, people in Ireland built passage tombs. These funerary structures are narrow passages constructed of stone slabs that connect one or more burial chambers. These stone tombs may be covered with decorative stones, or earth, thus creating a superficial resemblance to North American earthen mounds. The entrances often align with a solar event, and on a certain day a beam of light enters the passage and shines on an element within. Passage tombs frequently occur in clusters, and the best known grouping in Ireland is The Archaeological Ensemble of the Bend of the Boyne (Figures 3.8 and 3.10; Tables 3.5 and 3.6), which is a landscape dominated by three large passage tombs. The main sites within the complex are Knowth, Dowth, and Newgrange. Each has a major burial mound (passage tomb cemetery) constructed and used by farming people.

Table 3.5. Physical characteristics of Poverty Point, World Heritage List, and Tentative List monumental landscapes.

Site and Age	Size	Monuments	Current Condition	References
Poverty Point, United States  3700-3100 BP	<ul style="list-style-type: none"> <li>Estimated area, 163 ha</li> </ul>	<ul style="list-style-type: none"> <li>Largest and most elaborate Late Archaic mound complex in North America</li> <li>Largest Late Archaic mound</li> <li>4 earthen mounds</li> <li>6 concentric artificial earthen ridges around flat central plaza</li> <li>1 additional earthen mound associated with later use of site</li> </ul>	Excellent	Ford and Webb 1956; Greenlee 2011; Ortmann 2010
Kastelli at Pattijoki, Finland  4800-4200 BP	<ul style="list-style-type: none"> <li>Estimated area, 3.4 ha</li> </ul>	<ul style="list-style-type: none"> <li>Largest stone “giant’s church”</li> <li>Rectangular stone structure with 6 openings</li> <li>19 stone cairns</li> <li>7 house depressions</li> </ul>	Very good	Okkonen 2011; Sipilä and Lahelma 2007

Table 3.5, continued.

Site and Age	Size	Monuments	Current Condition	References
Sannai Maruyama, Japan 5900-4300 BP	<ul style="list-style-type: none"> <li>Estimated area, 35 ha</li> </ul>	<ul style="list-style-type: none"> <li>Largest Jomon site</li> <li>More than 700 pit houses</li> <li>3 earthen mounds</li> <li>Stone circles</li> <li>Roads</li> <li>Huge 6-chestnut-post structures</li> </ul>	Very good	Habu 2004, 2008; Sannai Maruyama Site Preservation Office 2004
Göbeklitepe, Turkey 11,600-10,200 BP	<ul style="list-style-type: none"> <li>Estimated area, 36 ha</li> </ul>	<ul style="list-style-type: none"> <li>Oldest known monumental construction</li> <li>At least twenty 30-m diameter rings of carved T-shaped limestone pillars</li> <li>Stone walls enclosing rings</li> <li>2 central pillars per ring</li> <li>Elaborately carved</li> <li>Filled in, covered over with soil</li> </ul>	Excellent	Chandler 2009; Mann 2011; UNESCO, <a href="http://whc.unesco.org/en/tentativelists/5612">http://whc.unesco.org/en/tentativelists/5612</a>
Bend of the Boyne, Ireland 5750-4150 BP	<ul style="list-style-type: none"> <li>Estimated area, 780 ha</li> </ul>	<ul style="list-style-type: none"> <li>Europe's largest assemblage of megalithic art</li> <li>Great funerary landscape</li> <li>3 large burial mounds</li> <li>40 passage tombs</li> <li>Enclosures</li> </ul>	Excellent	Comer 2011; UNESCO, <a href="http://whc.unesco.org/en/list/659">http://whc.unesco.org/en/list/659</a> ; <a href="http://www.worldheritageireland.ie/bru-na-boinne/">http://www.worldheritageireland.ie/bru-na-boinne/</a> ; <a href="http://www.worldheritageireland.ie/bru-na-boinne/built-heritage">http://www.worldheritageireland.ie/bru-na-boinne/built-heritage</a>
Lines and Geoglyphs of Nasca 2450-1450 BP	<ul style="list-style-type: none"> <li>Estimated area, 45,000 ha</li> </ul>	<ul style="list-style-type: none"> <li>Geoglyphs scratched into ground surface</li> <li>Two types: lines and representational</li> </ul>	Very good	UNESCO, <a href="http://whc.unesco.org/en/list/700">http://whc.unesco.org/en/list/700</a>
Caral-Supe, Peru 4950-3750 BP	<ul style="list-style-type: none"> <li>Estimated area, 66 ha</li> </ul>	<ul style="list-style-type: none"> <li>Monumental platform mounds</li> <li>Sunken circular plazas</li> <li>Other public buildings</li> </ul>	Excellent	Haas and Creamer 2006; Solís 2008
Stonehenge, Avebury, and Associated Sites 5700-3600 BP		<ul style="list-style-type: none"> <li>Funerary and ceremonial landscape</li> <li>Stonehenge megalithic monument</li> <li>Avebury stone circle and henge</li> <li>Avenues</li> <li>Silbury Hill</li> <li>Woodhenge</li> <li>Other mounds</li> </ul>	Excellent	UNESCO, <a href="http://whc.unesco.org/en/list/373">http://whc.unesco.org/en/list/373</a>

*The Bend of the Boyne (5750-4150) is, like Poverty Point, a created monumental landscape. It is, however, a much larger funerary landscape formed by an agricultural culture, whereas Poverty Point is a settlement and a ceremonial space constructed by hunter-fisher-gatherers. No mortuary facilities have been discovered at Poverty Point. Even though the functions of the monuments are different, there is an element of “staging” that appears significant to*

both sites. A controlled view of the constructed landscape, when approaching the site by water, is one of the elements these sites have in common. The area of the Bend of the Boyne landscape is greater than at Poverty Point, but the magnitude of dirt movement is less. Bend of the Boyne presents a more organic and less geometric design than Poverty Point. Like Poverty Point, artifacts indicate that an extensive trading network was in place.

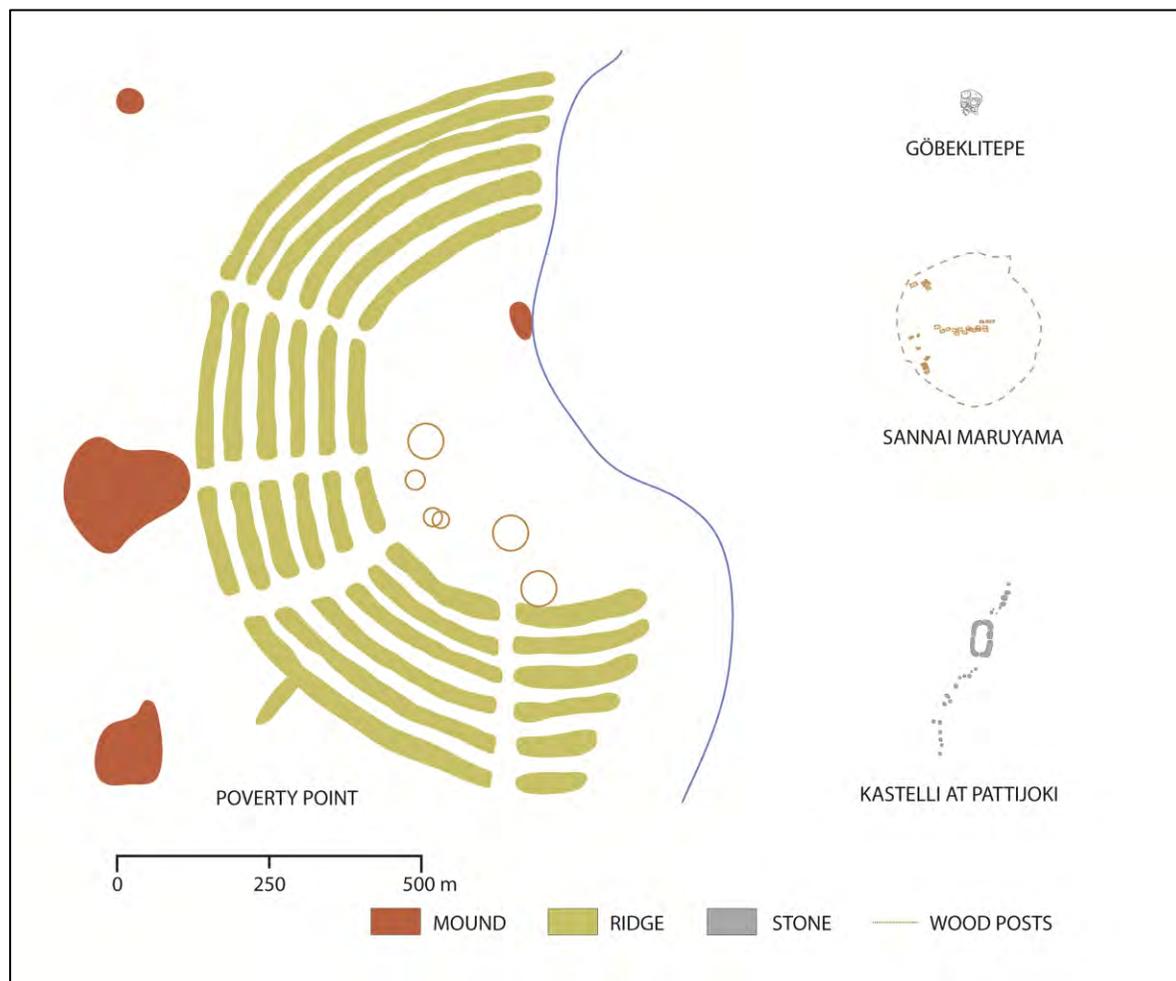


Figure 3.9. Scaled schematic map comparing monumental scale and design for Kastelli at Pattijoki, Sannai Maruyama, and Göbeklitepe with Poverty Point.

### *Lines and Geoglyphs of Nasca and Pampas de Jumana (Peru)*

Geoglyphs, designs etched into the surface of the ground, are found in many arid parts of the world. One of the world's largest groups of geoglyphs is in the desert in northern Chile, but the best known are the lines and geoglyphs of Nasca and Pampas de Jumana (Figures 3.8 and 3.11; Tables 3.5 and 3.6). They are in the arid foothills and desert of Peru's coastal plain, and they extend over an area of 450 km<sup>2</sup>. The remarkable outlines include 70 representational depictions of subjects such as animals, plants, and utilitarian objects. Other glyphs are geometric shapes and straight lines up to several kilometers long. Although they date to a 1,000-year period from 2450 to 1450 BP, the

majority of geoglyphs were created during the Nasca phase (2150-1450 BP), and they were built relatively close to agricultural villages.

*The Nasca geoglyphs and lines (2450-1450 BP) are known for their artistry and use of the landscape. The geoglyph construction process, whereby weathered gravel is scraped from the ground surface to expose unweathered material, is entirely different from moundbuilding. And, the cultures responsible for the geoglyphs had an agricultural subsistence base, unlike the hunter-fisher-gatherers that built Poverty Point. Unlike Poverty Point, the geoglyphs were not residential sites, but are regarded as ritual creations and their overlapping placement does not suggest a master plan.*

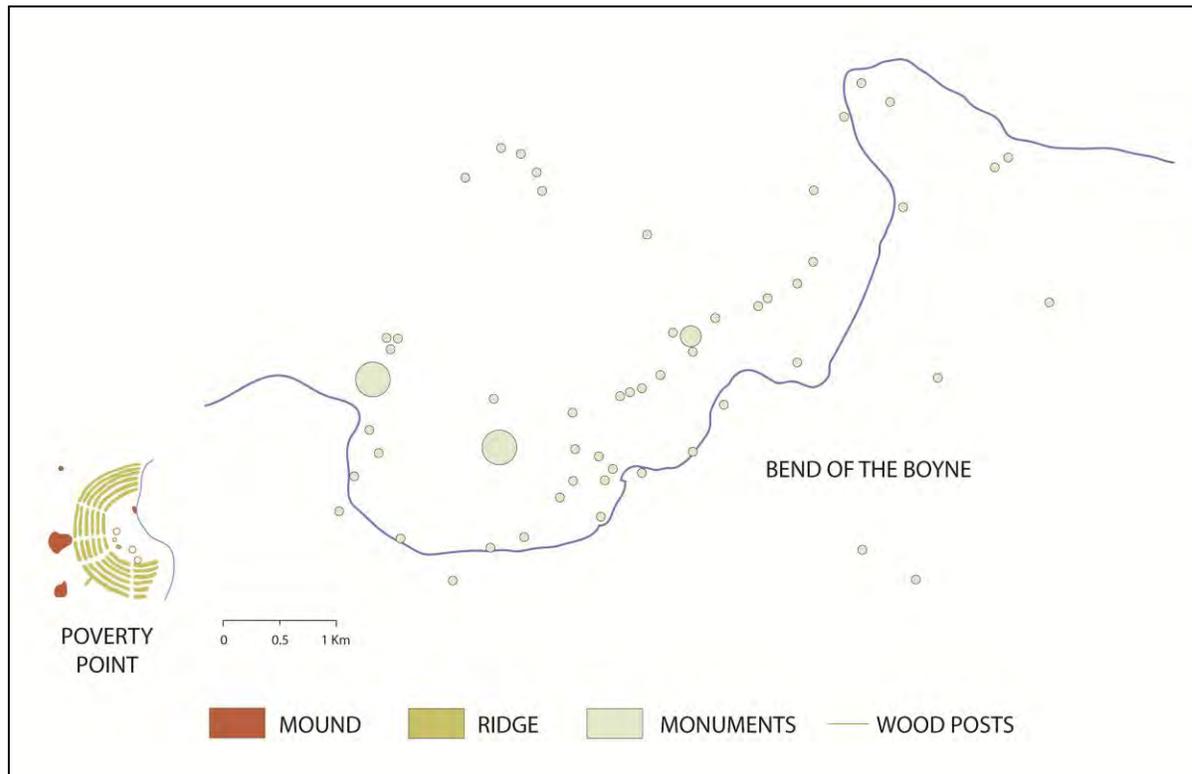


Figure 3.10. Scaled schematic maps comparing scale and design of the monumental landscape of the Bend of the Boyne with Poverty Point. The individual monuments of Bend of the Boyne, which may be passage tombs, earthen enclosures, post circles, or other features, are not scaled to size.

### *Sacred City of Caral-Supe (Peru)*

During the Late Archaic period, ca. 5000-3800 BP, people constructed a cluster of settlements in the Supe Valley in the central Andes of Peru. The builders were farmers who raised crops with the aid of irrigation, but who relied on trade with coastal fishermen rather than raising domesticated animals. The communities had public buildings, domestic buildings, and a sunken circular plaza; some had pyramids. The towns had both residential and public functions, and are considered to be among the first urban centers in the Western Hemisphere. One of these towns is The Sacred City of Caral-Supe (Figures 3.8 and 3.11; Tables 3.5 and 3.6). The site contains the remains of a city that had both cut stone and wooden or cane buildings, platform mounds, and plazas.

*Caral-Supe (4950-3750 BP) is included here as an example of an early urban landscape. Caral-Supe differs from Poverty Point in having been constructed by agriculturalists instead of by hunter-fisher-gatherers. Like Poverty Point, this is a residential site with monumental architecture, but the structures are buildings; no buildings are preserved at Poverty Point. The design of Caral-Supe shows prior planning, like Poverty Point, but it was constructed on a smaller physical scale. Caral-Supe was involved in an extensive exchange system involving Pacific coastal, Andean highland, and Andean jungle communities.*

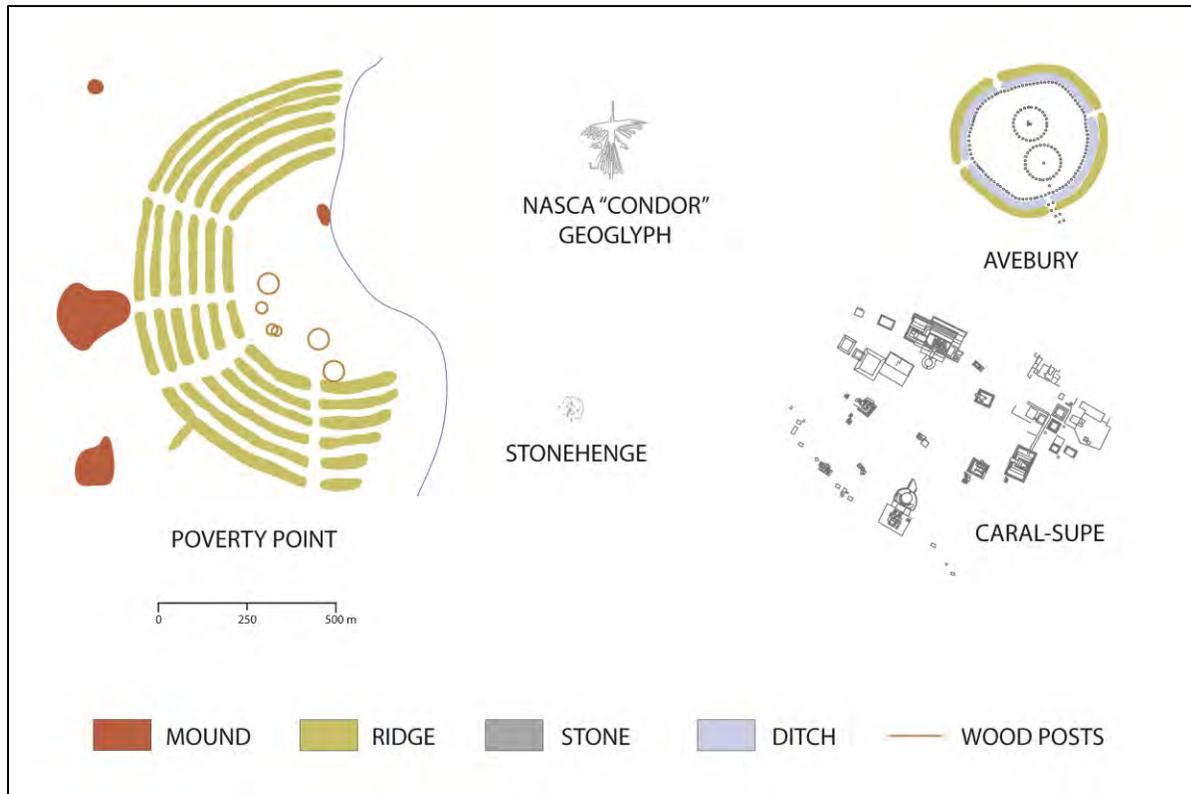


Figure 3.11. Scaled schematic map comparing monumental scale and design for Caral-Supe, Stonehenge, Avebury, and the Nasca “condor” geoglyph with Poverty Point. Note that this compares Poverty Point with select features of the Lines and Geoglyphs of Nasca and Pampas de Jumana and of Stonehenge, Avebury, and Associated Sites; the entire landscapes are not shown.

### *Stonehenge, Avebury, and Associated Sites (United Kingdom)*

Approximately 6,000 to 4,000 years ago in Great Britain, as in much of Europe, people built many megalithic and earthen monuments. The shapes of these highly visible undertakings are varied. They include burial tombs, circles of standing stones, ditch and bank earthworks, earthen mounds, and stone pathways. The purposes are also thought to be varied, but they may have included meeting places, funerary sites, astronomical observatories, and processional paths. Two of the largest, most complex and best known monumental sites are Stonehenge and Avebury (Figures 3.8 and 3.11; Tables 3.5 and 3.6), which are in southern England. The area’s residents were settled farmers who lived near the ceremonial sites.

*Stonehenge, Avebury, and Associated Sites (5700-3600 BP) combine megalithic monuments and earthworks into two complex, monumental, funerary and ceremonial landscapes. Although there are settlements there, they are secondary to the monuments. In contrast, some of Poverty Point's monuments were devoted to residential space. Poverty Point is also distinguished from Stonehenge, Avebury, and Associated Sites by being constructed by hunter-fisher-gatherers, not agriculturalists. These properties are both grand-scale landscapes of complex, but very different, design. Stonehenge clearly surpasses Poverty Point in the tonnage of stone imported, but Poverty Point likely has a more diverse assemblage of imported raw materials.*

### *Conclusion for the Comparison with World Heritage Monumental Properties*

As Table 3.6 demonstrates, none of these properties on the World Heritage or Tentative Lists are more than superficially similar to Poverty Point. When compared to sites of other hunting-fishing-gathering and hunting-gathering cultures on the World Heritage Tentative List, Poverty Point is much larger, its design is more complex, and it exhibits a greater abundance of exotic raw materials. Of the compared World Heritage List properties, Bend of the Boyne and Stonehenge, Avebury and Associated Sites are the closest comparisons, because they are monumental, complex landscapes with abundant exotic materials. Unlike Poverty Point, their monuments are part of funerary and ceremonial, not residential, landscapes and they are associated with agricultural societies. Caral-Supe, while organizationally complex, is not as large as Poverty Point; the Nasca geoglyphs are spread over a large area, but they simply do not dominate the landscape in the way that constructed earthworks do. Poverty Point stands out as an exceptional example of a complex, monumental, earthen, landscape created by a hunting-fishing-gathering culture.

Table 3.6. Poverty Point compared across key variables with World Heritage and Tentative List monumental properties.

	Hunting-Fishing-Gathering Wild Resources Only	Monumental Scale (relative to Poverty Point)	Complex Design	Abundant Exotic Materials	Very Good Integrity and Authenticity
Poverty Point, United States	✓	✓	✓	✓	✓
Kastelli at Pattijoki, Finland	✓		✓		✓
Sannai Maruyama, Japan			✓		✓
Göbeklitepe, Turkey	✓		✓		✓
Bend of the Boyne, Ireland		✓	✓	✓	✓
Lines and Geoglyphs of Nasca, Peru			✓		✓
Caral-Supe, Peru			✓	✓	✓
Stonehenge, Avebury, and Associated Sites, United Kingdom		✓	✓	✓	✓

### Poverty Point and Other Monumental Properties

The final set of comparisons involves properties otherwise known or suggested to have monuments that might be comparable to those of Poverty Point. That these properties are limited to the Americas does not mean that no attempt was made to find comparable properties elsewhere in the world. Rather, no such cases were uncovered in the literature search or in expert interviews. Properties that meet four or three criteria are considered (Figure 3.1).

#### *Real Alto (Ecuador)*

The oldest earthen mounds in South America are found in coastal Ecuador, dating to the Valdivia 3 phase, 4800-4400 BP (Pearsall et al. 2004). Changes in settlement size and structure are associated with the construction of the mounds (Damp 1984). There is evidence for plant cultivation during Valdivia 3, but the dietary contribution of these crops, particularly maize, is unclear (Pearsall 2002; Pearsall et al. 2004; Staller 2003). Real Alto (Figures 3.8 and 3.12; Tables 3.7 and 3.8) is the best known of these early earthwork sites.

*Real Alto (5000-3400 BP), like Poverty Point, is a residential site with mounds and a plaza. Like Poverty Point's ridges, the U-shaped habitation area at Real Alto is raised, but it is an accretional deposit and not a constructed one. The subsistence system has been characterized as mixed, but there is considerable controversy regarding the degree to which maize contributed to the diet. Neither the scale of the Real Alto earthworks nor the design complexity is comparable to that at Poverty Point. No exotic raw materials are mentioned in the literature.*

#### *San Lorenzo (Mexico)*

The Early Formative period (3500-2900 BP) in Mexico was a time of great change in settlement, subsistence, and social organization (Coe 1982). Along the southern Gulf Coast, Olmec hunter-gatherers and gardeners began developing larger communities. Massive earthen platforms were constructed and networks were established for the long-distance exchange of stone (jade, obsidian, iron ore) and pottery across a large region. Although these developments were initially assumed to have been fueled by a reliance on maize, it is more likely that a mixed economy dominated until the end of the Early Formative period. San Lorenzo (Figures 3.8 and 3.13; Tables 3.7 and 3.8) is the largest, most complex Early Formative site in Mexico.

*San Lorenzo (3450-2850 BP) is a settlement atop a massive, artificially leveled plateau and on terraced slopes below. Several mounds are found atop the plateau surface, but only low platforms are associated with the Early Formative occupation of the site. Unlike Poverty Point, a mixed economy of wild and cultivated resources, including maize and beans, supported the population. The volume of the constructed earthen plateau and terraces may exceed that of Poverty Point's earthworks, but the complexity of the original designed landscape appears to be simpler. The jutting ridges, initially believed to be part of the design, are now thought to be erosional remnants. Situated in a stone-poor environment, the large basalt blocks used to create San Lorenzo's altars/thrones and iconic colossal heads were*

*transported over distances of about 80 km, and other types of stone were imported across great distances.*

Table 3.7. Physical characteristics of Poverty Point and otherwise known monumental properties.

Site and Age	Size	Earthworks	Current Condition	References
Poverty Point, United States  3700-3100 BP	<ul style="list-style-type: none"> <li>Estimated area, 163 ha</li> </ul>	<ul style="list-style-type: none"> <li>Largest and most elaborate Late Archaic mound complex in North America</li> <li>Largest Late Archaic mound</li> <li>4 earthen mounds</li> <li>6 concentric artificial earthen ridges around flat central plaza</li> <li>1 additional earthen mound associated with later use of site</li> </ul>	Excellent	Ford and Webb 1956; Greenlee 2011; Ortmann 2010
Real Alto, Ecuador  5000-3400 BP	<ul style="list-style-type: none"> <li>Estimated area, 12.5 ha</li> </ul>	<ul style="list-style-type: none"> <li>Oldest earthen mounds in South America</li> <li>2 platform mounds</li> <li>2 plazas</li> <li>U-shaped residential ridge (accretional)</li> </ul>		Damp 1984; Pearsall et al. 2004; Raymond and Burger 2003
San Lorenzo, Mexico  3450-2850 BP	<ul style="list-style-type: none"> <li>Estimated area, 700 ha?</li> </ul>	<ul style="list-style-type: none"> <li>Largest, most complex Early Formative site in Mexico</li> <li>Immense modified earthen plateau</li> <li>Earthen terraces</li> <li>Low earthen platform mounds</li> <li>Pyramidal mounds, not associated with Early Formative occupation</li> </ul>	Good	Coe 1968; Coe and Diehl 1980; Cyphers 1996; Grove 1999
Los Ajos, Uruguay  4000-300 BP	<ul style="list-style-type: none"> <li>Estimated area, 12 ha</li> </ul>	<ul style="list-style-type: none"> <li>7 flat-topped quadrangular mounds around a central plaza</li> <li>5 dome-shaped residential mounds (accretional)</li> <li>3 elongated mounds (accretional)</li> <li>2 crescent ridges (accretional)</li> </ul>	Very good	Iriarte 2003, 2006, 2009
Jabuticabeira-II, Brazil  2500-1400 BP	<ul style="list-style-type: none"> <li>Estimated area, 10 ha</li> </ul>	<ul style="list-style-type: none"> <li>Large funerary shell mound</li> <li>Estimated volume, 500,000 m<sup>3</sup></li> <li>Alternating layers of clean fill and funerary deposits</li> </ul>	Good	Bianchini and Scheel-Ybert 2011; Klokler 2008
Fazenda Colorada, Brazil  700-550 BP	<ul style="list-style-type: none"> <li>Estimated area, 40 ha</li> </ul>	<ul style="list-style-type: none"> <li>3 ditched elements with embankments</li> <li>Walled roads</li> <li>Low habitation mounds</li> </ul>	Excellent	Pärssinen et al. 2009

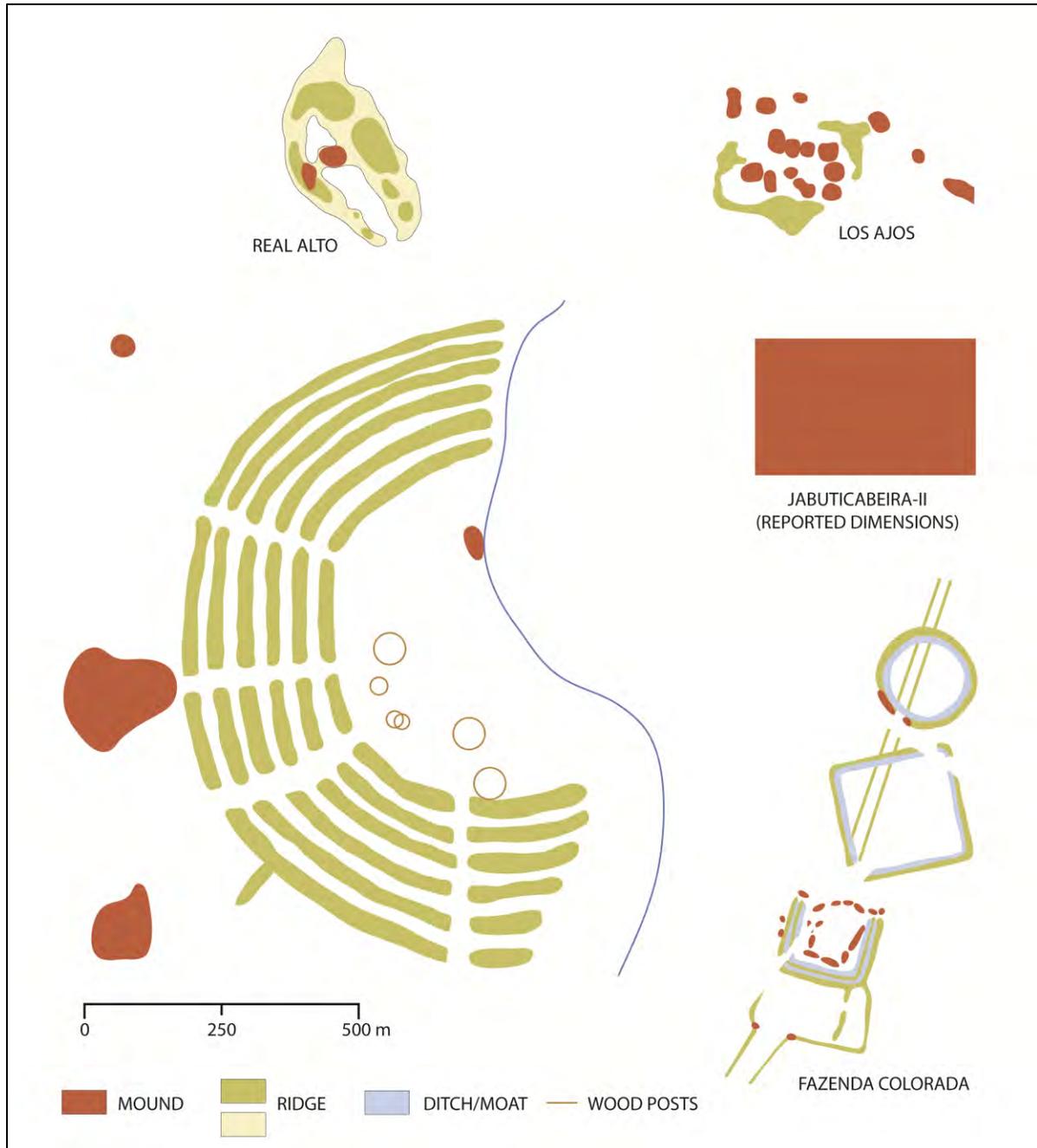


Figure 3.12. Scaled schematic map comparing monumental scale and design for Real Alto, Los Ajos, Jabuticabeira-II, and Fazenda Colorada with Poverty Point.

### *Los Ajos (Uruguay)*

There are hundreds, and were perhaps thousands, of *cerritos de indios*, or Indian mounds, in southeastern Uruguay (Verdesio 2008). They have a long history of construction and use, dating ca. 4190-300 BP (Iriarte 2009). Ranging from 20 m to 40 m in diameter and up to 7 m high (Politis 2008), these earthen mounds are found both singly and in groups. When in groups, they tend to be geometrically arranged into circular, elliptical, or horseshoe patterns (Iriarte 2003). Los Ajos (Figures

3.8 and 3.12; Tables 3.7 and 3.8) is the oldest, best dated, and most formally organized of the studied mound groups.

*Los Ajos (4000-300 BP) is the product of hunter-gatherers who supplemented their diet with cultivated crops. Like Poverty Point, it was a habitation site, but unlike Poverty Point, the mounds were initially created by the accumulation of domestic debris. The platform mounds are reworked dome-shaped residential mounds that were reshaped, capped, and used for ritual and burial purposes. Although there are more mounds at Los Ajos than at Poverty Point, they were mostly not the product of intentional construction. The scale of this site is much smaller than Poverty Point and its design is less complex. No mention is made of exotic raw materials. The integrity and authenticity of the mound complex is very good.*

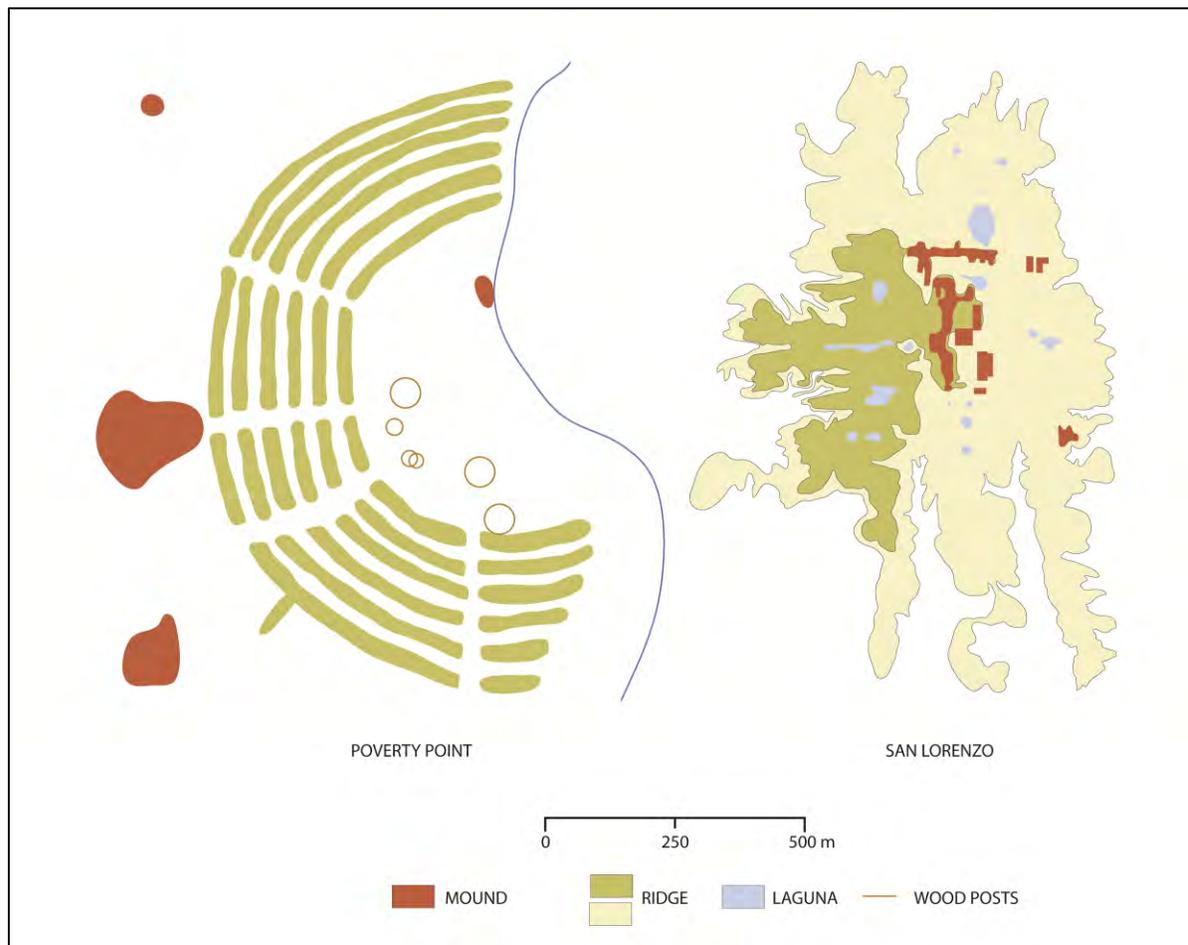


Figure 3.13. Scaled schematic maps comparing the monumental scale and design of San Lorenzo with Poverty Point. Several hundred small earthen mounds on the top of San Lorenzo are not shown.

### *Jabuticabeira-II (Brazil)*

More than 1,000 sambaquis, or shell mounds have been documented along the coast of Brazil; unfortunately, many have been destroyed (Gaspar 1998; Gaspar et al. 2008; Wagner et al. 2011). The sambaquis, which date to 6000-750 BP, vary greatly in size and form (from small circular

middens, roughly 10 m in diameter by 1-1.5 m high, to large elongated mounds, 500 m long by 30-50 m high). Despite this variation, a broad geographical distribution, and a long time span, the sambaquis demonstrate similarity in artifact styles, consistent with a shared cultural tradition (Gaspar 1998). They are found in a variety of ecological settings today (Wagner et al. 2011). These variants likely reflect changing sea levels and their impacts on lagoons and estuaries over the period of their use (Suguio et al. 1992). Food remains indicate a hunting-fishing-gathering economy strongly focused on coastal aquatic resources, primarily fish and secondarily shellfish, supplemented by terrestrial resources (e.g., monkey, guinea pig, turtle, armadillo, and nuts). Studies of dental calculus indicate some dietary input from yam, sweet potato, and maize (Wesolowski et al. 2010). In addition to being the locations of food waste disposal, the sambaquis served as places of habitation and as cemeteries. The largest monuments appear to have been burial mounds only, built and used over hundreds of years (Gaspar 1998; Gaspar et al. 2008; Wagner et al. 2011). Jabuticabeira-II is one of the best known sambaquis (Figures 3.8 and 3.12; Tables 3.7 and 3.8).

*The Jabuticabeira-II sambaqui (2500-1400 BP) is an immense funerary shell mound in coastal Brazil. Although it exceeds the magnitude of Poverty Point's Mound A, as a single feature, it is volumetrically less than the entire Poverty Point earthen landscape. This site also does not reflect the same level of design complexity as seen at Poverty Point. The people who built Jabuticabeira-II were, like the people of Poverty Point, hunter-fisher-gatherers, but they may have supplemented their diet with cultivated crops. Unlike at Poverty Point, there is no evidence for an extensive trade network.*

#### *Fazenda Colorada, Brazil*

The geoglyphs of Amazonia are large, complex, geometric landscapes (Erickson 2010; Heckenberger et al. 2008; Pärssinen et al. 2009). Found in a variety of shapes, from hexagons to diamonds to circles, they are so large and topographically subtle (due to sedimentation) that they are best observed from an aerial perspective. Ranging from about 100 to 350 m in size, they were created by excavating ditches (averaging 10 m wide and 1-7 m deep), banked by the removed soils. Composite features, where more than one geometric element is present, are usually connected by walled roadways. Habitation mounds are often associated with the geoglyphs. The function of these features has not yet been determined, but it has been hypothesized that they served defensive or symbolic, ceremonial purposes. The Fazenda Colorada is one of the best documented of the complex geoglyphs (Figures 3.8 and 3.12; Tables 3.7 and 3.8).

*The Fazenda Colorada (700-550 BP) geoglyph represents a complex earthen landscape of geometric ditches, walled roadways, and habitation mounds. Although not of a magnitude comparable to Poverty Point, the geoglyph is a complex, planned design. Subsistence is not yet demonstrated, but the presumption is that the people who built the geoglyphs were agriculturalists. No evidence for exotic raw materials has yet been presented.*

### *Conclusion for the Comparison with Otherwise Known Monumental Properties*

As Table 3.8 demonstrates, none of these otherwise known monumental properties is similar to Poverty Point. Only the sambaqui, Jabuticabeira-II, is likely the product of a primarily hunting-fishing-gathering culture like Poverty Point. In terms of monumentality, the sambaqui is volumetrically huge, but its design is simple. The other four properties are more complex in terms of the number and kind of features, but only San Lorenzo is comparable to Poverty Point in size. Only Fazenda Colorado shows a geometric design. San Lorenzo is the only property with evidence of an extensive trade network. Based on this comparison, Poverty Point stands alone as a property associated with a hunting-fishing-gathering culture that created a complex, monumental landscape and that participated in an extensive geographical lithic exchange network.

Table 3.8. Poverty Point compared across key variables with otherwise known monumental properties.

	Hunting-Fishing-Gathering Wild Resources Only	Monumental Scale (relative to Poverty Point)	Complex Design	Abundant Exotic Materials	Very Good Integrity and Authenticity
Poverty Point, United States	✓	✓	✓	✓	✓
Real Alto, Ecuador			✓		
San Lorenzo, Mexico		✓	✓	✓	✓
Los Ajos, Uruguay			✓		✓
Jabuticabeira-II, Brazil		✓			
Fazenda Colorada			✓		✓

### **Conclusion**

This comparative analysis has demonstrated that subsistence, monumentality, design complexity, integrity, and authenticity are combined in a unique and vital way at Poverty Point. As a complex, monumental, earthen landscape built by hunter-fisher-gatherers, Poverty Point is without peer. No other place like it was built by a hunting-gathering culture relying only on wild resources or, indeed, by any culture. The particular form of the complex—six concentric arcs of ridges, a linear arrangement of mounds, and as many as thirty post circles in the plaza—is unlike anything elsewhere in the world. As an extraordinary witness to a vanished culture, Poverty Point is of singular value. Inscribing the site will acknowledge its significance and contribute to a balanced World Heritage List.

### 3.3 Proposed statement of Outstanding Universal Value

#### Brief Synthesis

The Monumental Earthworks of Poverty Point are located in northeastern Louisiana on elevated land overlooking the Mississippi River floodplain. The site consists of a vast, integrated complex of earthen monuments, constructed 3,700-3,100 years ago. The original configuration – which is still intact – includes four earthen mounds; six enormous, concentric, semi-elliptical earthen ridges with an outer diameter of 1.14 km; a large flat interior plaza containing large post circles; and extensive borrow areas. A fifth mound was added roughly 1,700-2,000 years later. The massive Mound A, one of the largest artificially constructed earthen mounds in North America, dominates the site. Not only was this culturally created landscape the largest and most elaborate settlement of the entire 7,500-year Archaic period in North America, it was, more significantly, built by settled hunter-fisher-gatherers, not agricultural people.

#### Justification for Criteria

Criterion (iii): This site bears exceptional testimony to a vanished cultural tradition, the Poverty Point culture, centered in the Lower Mississippi Valley during the Late Archaic period 4,000-2,500 years ago. Poverty Point is an outstanding example of landscape design and monumental earthwork construction by a population engaged in a hunting-fishing-gathering subsistence system. The mound complex, which dates to 3700-3100 BP, is a singular achievement in earthen construction in North America, one that was not surpassed for at least 2,000 years (and only then by people supported by a farming economy). The particular form of the complex—six concentric, semi-elliptical earthen ridges, a linear arrangement of mounds, and post circles in the interior plaza—is not duplicated anywhere else in the world. The natural setting of this inland settlement was an important factor in the site's establishment and longevity. The location provided easy access to the Mississippi River valley and the hardwood forests along its margins. Although rich in edible resources, the setting lacked stone, a critical raw material for tools and other objects. Thus, an extensive network that imported rocks and minerals in great quantities over hundreds of kilometers played a key role in the Poverty Point phenomenon. Taken as a whole, the scale and design of the earthwork complex, the inland riverine hunting-fishing-gathering subsistence economy, and the raw material acquisition network of Poverty Point testify to an exceptional cultural tradition not duplicated in time or across space.

#### Statement of Integrity

The boundaries of the property contain all of the monumental and architectural elements of Poverty Point. Although the ridges and some of the mounds have been diminished somewhat by natural processes, cultivation, and other Euro-American activities, the site remains intact and readily appreciated. Its relation to the surrounding landscape is preserved within an agricultural setting. Erosion is the largest threat to the integrity of the site, and the Louisiana Office of State Parks is monitoring and minimizing its impact.

### Statement of Authenticity

That the earthen monuments of Poverty Point survive to be appreciated by modern visitors is a testament to the engineering skills of their builders. The earthworks are all original constructions – there has been no reconstruction at the site. The rural agricultural setting provides an open landscape. Most of the property is in grassland, as it likely was about 3,400 years ago; swatches of hardwood forest are preserved along the bayous and the outer edges of the property.

### Requirements for Protection and Management

Since 1972, the site has been owned and managed by the state of Louisiana as a historic site. A professional staff manages the property and interprets it for the public, and the station archaeologist oversees archaeological matters. The heritage management plan for Poverty Point summarizes protocols and protections currently in place at the site. It describes the processes of management, monitoring, interpretation, and archaeological investigation of the property. It is the public policy of the state of Louisiana to protect and preserve historic properties. Accordingly, the state constitution, state laws, and administrative rules carefully control access to, and activity on, the site. Designated as a National Historic Landmark in 1962, Poverty Point receives the additional benefit of overlapping layers of federal statutory protection.





North ridges in spring. *Photo © C.C. Lockwood*

## 4. STATE OF CONSERVATION AND FACTORS AFFECTING THE PROPERTY

- 4.a Present state of conservation
- 4.b Factors affecting the property



Bird engraved on steatite.  
*Photo © Jenny Ellerbe*

## 4. State of Conservation and Factors Affecting the Property

### 4.a Present state of conservation

The landscape of Poverty Point State Historic Site is stable and in very good condition. Since 1972, when the property was acquired by the state of Louisiana, the management goal for the property has been to conserve the archaeological site—a goal that has been accomplished through close monitoring combined with thoughtful and, at times, creative management solutions.

Until 2010, the mounds were covered with trees. While the trees were beautiful and while their shade provided a welcome break from the summer sun, they were not an authentic attribute of the mounds. The mounds were treeless during their construction and use. More importantly, staff had grave concerns about the potential damage that wind-thrown trees could cause and, secondarily, about the favorable habitat they provided for burrowing armadillos (refer to Sections 4.b(i) and 4.b(ii)). With the trees removed, a more stable grass ground cover has been established. Some parts of the concentric ridge and swale system remain in trees and continue to be threatened by high winds. In the coming years, those trees will also be removed and the ground cover converted to grass, like the rest of the ridge system. Stream margins, wet spots, and areas that lack cultural deposits will remain wooded (Figure 4.1).

The presence of filled gullies along the northern, eastern, and southern edges of the plaza indicates that erosion posed problems at the time the site was originally occupied. It still does today. The most obvious visual reminders of erosion are gullies along the margins of Mound A and the loss of most of Ridge 6 North to

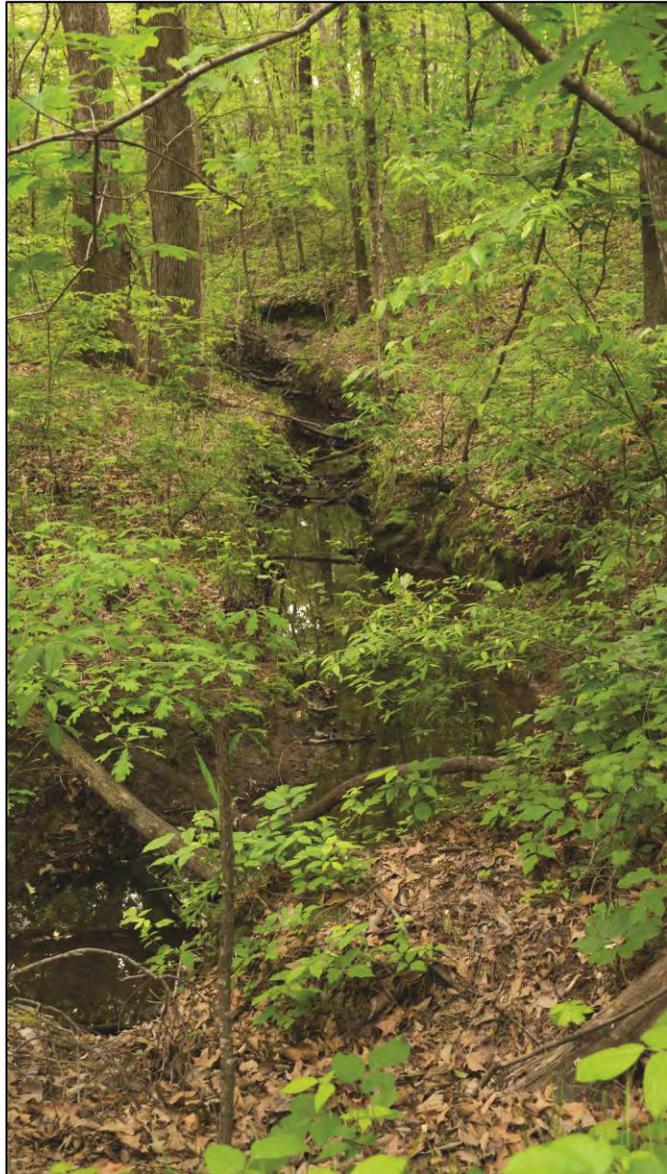


Figure 4.1. Woods along a stream at Poverty Point. *Photo © Jenny Ellerbe*

Harlin Bayou. The Office of State Parks has collaborated with other agencies to stabilize some stream banks and gullies, but there are still places where erosion is active. In 2011, two gullies on Mound A were filled with clean dirt to inhibit further damage. The state has worked with hydrologists to develop a watershed management plan that is appended to the site management plan (Appendix E).

There are sectors of the property, where cultural remains have not been discovered, that remain largely unmanaged. While probably cleared at some time in the past, some of these “natural” areas preserve an upland mixed hardwood forest (Thomas et al. 1980), while others support bottomland, or wetland, vegetation. There are no plans to clear this part of the landscape. At some point in time, one or more trails or boardwalks may be placed so that visitors can see vegetation similar to that which dominated during the Late Archaic period.

#### 4.b Factors affecting the property

As noted by Stovel (1998:17), “Cultural heritage is always at risk. It is at risk from the depredations of war. It is at risk in the face of nature’s occasional eruptions and irruptions. It is at risk from political and economic pressures. It is at risk from the daily forces of slow decay, attrition, and neglect. It is even at risk from the hand of the over-zealous conservator!” In order to ensure the long-term preservation of Poverty Point’s earthen monuments, it is necessary to conduct a thorough evaluation of potential threats.

##### (i) Development pressures (e.g., encroachment, adaptation, agriculture, mining)

The nominated property is owned and managed by the state of Louisiana. It is customary that the Office of State Parks works closely with the Division of Archaeology within the state’s Office of Cultural Development to evaluate projects that might affect archaeological resources on state historic sites. Poverty Point is so special, however, that the two agencies have entered into an agreement that dedicates an archaeologist to the site. Whenever work is planned that might alter or disturb the ground surface, the station archaeologist is called upon to consult, document, and/or test prior to initiation of the effort and to monitor activities during the work. Projects relating to maintenance at Poverty Point are expected to continue in the future. Currently, there are no plans for more extensive development, such as the construction of buildings, on the property.

##### Agricultural Pressure

As described in Section 2, land surrounding the nominated property is used for agricultural purposes, as it has been for the last 180 years. With the exception of the southern ends of Mound E and Ridge 6 (which were not included within the originally purchased boundaries of Poverty Point State Historic Site), the earthworks themselves have not been under cultivation for nearly forty years and thus have been protected from harm by mechanized farming over that time. As noted previously, the small unprotected parts of Mound E and Ridge 6 were damaged by a widely implemented agricultural practice: land-leveling. Land-leveling, as the name implies, is the removal of local topographic variation (soil is scraped from high spots and used to build up low spots) to

improve irrigation efficiency, control surface drainage, minimize energy use, and reduce labor in order to increase crop quality and yield.

Although Poverty Point is now entirely protected from direct agriculture, it is still affected indirectly by it. Land clearance and leveling northwest of the property have changed both the drainage pattern and the amount of surface water run-off for the area. A heavy rain now produces a torrent of water flowing into Harlin Bayou, which runs along the north edge of the site. As a result, the course of Harlin Bayou has grown deeper and wider over past decades. When Mound B and the on-site dormitory facility were threatened by Harlin Bayou in 2007, the U.S. Army Corps of Engineers undertook an emergency stream bank project to protect those features (refer to Section 2.b). A new watershed management plan suggests strategies to reduce erosion at the site.

Currently, agricultural producers apply chemicals to the cultivated fields around Poverty Point. While the farmers do try to minimize overspray, it is unknown whether any of these chemicals reach the property through spray drift (Majra 2011). Fortunately, most of the perimeter of the archaeological site is ringed by tall trees, and these trees reduce the likelihood of windborne chemical drift (Science Daily 1999). Furthermore, the trees and other vegetation serve as sentinels, providing an early warning system if herbicides or defoliants were to reach the outer edges of the site. Future efforts to expand the vegetative buffer around the site will further reduce this source of concern for the natural and cultural resources, the staff, and visitors.

### Invasive Species

Pimentel et al. (2000) estimate that about 50,000 non-native species of plants and animals have been introduced into the United States from elsewhere in the world, many with beneficial, or at least benign, results. Some introductions, however, pose problems. “Any non-native species that has entered and spread aggressively, causing damage to agricultural production, human habitation, forestland, wetlands, or native species” is known as an invasive species (Hummel et al. 2010:8). At Poverty Point, three such species threaten the natural and cultural resources:

#### *Red Imported Fire Ant (Solenopsis invicta)*

Red imported fire ants were introduced into Mobile, Alabama, from South America in the 1930s. Without natural enemies, they spread rapidly, reaching Louisiana in the 1950s. Fire ants are aggressive and often bite and sting en masse, injecting venom into the skin which burns and itches. Some people have severe allergic reactions to the venom. Fire ants have been found to harm populations of ground-nesting birds, reptiles, young or small mammals, beneficial insects, young trees, fruits, and seeds in the southern United States (Allen et al. 1994; Zettler et al. 2001). No specific effects on the indigenous fauna and flora of Poverty Point have been documented, but because fire ants are known to prey on many native plants and animals, they are viewed as a threat.

The ants construct domed mounds up to 61 cm in diameter and up to 20 cm tall, with underground tunnels leading to the mound that can penetrate 1.5 m deep into the soil. While research into the specific impact of *Solenopsis invicta* on the archaeological record has not been widely addressed, other ants are known to mix soils containing artifacts (Balek 2002; Wood and

Johnson 1978) and to transport small artifacts back to their mounds (Schoville et al. 2009). Based on those results, fire ants are also a potential threat to the archaeological deposits at Poverty Point.

*Nine-banded Armadillo (Dasypus novemcinctus)*

Armadillos entered the United States from Mexico and spread into western Louisiana from Texas sometime before 1925 (Figure 4.2). Lacking natural predators, by 1936 they had spread throughout Louisiana west of the Mississippi River (McBee and Baker 1982).<sup>16</sup> They eat mostly insects and other invertebrates, which they find by digging small, inverted-cone “feeding burrows” measuring about 5 cm in diameter by 5 cm deep (Chamberlain 1980). These shallow holes are restricted to the ground surface that plowing has previously disturbed. Therefore, the feeding burrows are not considered a significant threat to cultural resources. Further, armadillos do not appear to pose a direct competitive threat to the native fauna of the property, and, in fact, they are beneficial in that they eat fire ants.

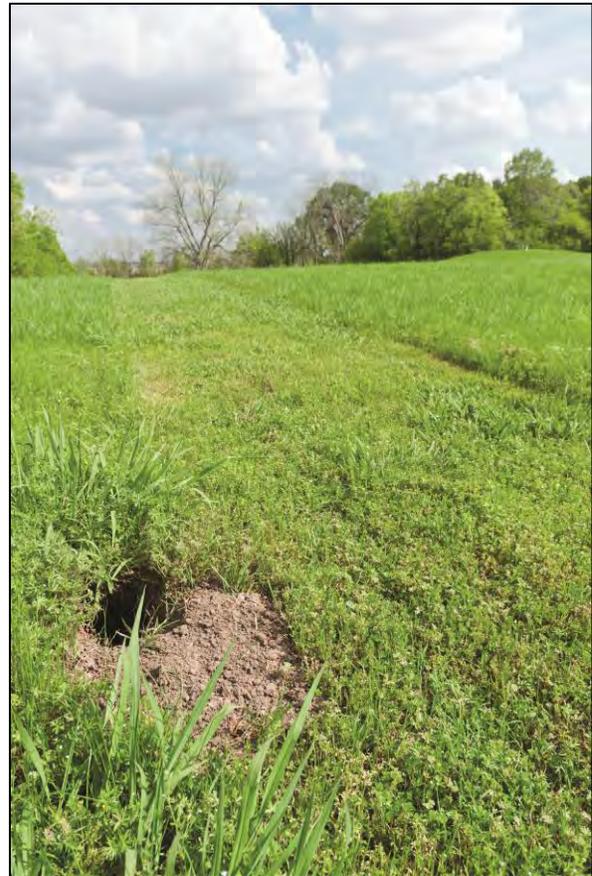


Figure 4.2. Armadillo (above) and a burrow in the plaza (right). Photos © C.C. Lockwood

It is their denning behavior that affects the earthworks at Poverty Point. Armadillos dig multiple burrows, each of which can be 25 cm in diameter, up to 7 m long and up to 1.2 m deep, sometimes with multiple passages (Chamberlain 1980; Mengak 2005). Burrows are found in the sloping margins of the mounds, along stream banks, adjacent to and under trees in the wooded portion of the site and scattered throughout the grassy plaza and ridge system (Figure 4.2). The burrowing disturbs archaeological remains (cf. Araujo and Marcelino 2003), intensifies erosion of the mound margins and stream banks, destabilizes trees, and can cause

<sup>16</sup> Mengak (2005) notes that dog (*Canis familiaris*), coyote (*Canis latrans*), black bear (*Ursus americanus*), fox (*Vulpes* sp., *Urocyon* sp.), and raccoon (*Procyon lotor*), all of which are known at Poverty Point SHS, do kill armadillos; hawks (*Accipitridae* sp.), owls (*Strigiformes* sp.), and feral pigs (*Sus scrofa*) will prey on juveniles.

injuries to staff and visitors. Armadillos present a serious management challenge at archaeological sites throughout the southeastern United States.

### *Feral Swine (Sus scrofa)*

Domestic pigs brought to North America by Spanish explorers and later settlers escaped into the wild and, together with released Eurasian wild boars, have established themselves as persistent feral populations. Although initially concentrated in the southern United States, they have spread steadily northward. Feral swine populations continue to flourish because they are so prolific (sows may have two litters per year, typically four to eight piglets each), have few natural predators, and readily adapt to a variety of environments.<sup>17</sup> Being omnivorous, they eat grasses, roots and tubers, seeds, fruits, nuts, invertebrates, reptiles and amphibians, ground-nesting birds, and small mammals (Seward et al. 2004; West et al. 2009). In addition to out-competing native animals for food, their wallowing, rooting, and trampling damage vegetation, accelerate erosion, and contaminate freshwater environments.

Feral swine have been active sporadically at Poverty Point SHS in the recent past (Connolly 2002, 2003a; Greenlee 2007). It is believed that they were rooting for nutgrass (*Cyperus* sp.) tubers in areas outside the ridge system on the west side of the property, with damage restricted to the depth that historic plowing had already reached. Thus, the harm they caused was more cosmetic than substantive. Before they reached the earthen monuments, the pigs were removed through trapping, relocation, and euthanasia. Wire mesh fencing was placed at their entry points, and park personnel worked with neighboring landowners to discourage feral swine ranging near the site boundaries. No signs of wild pigs have been observed on park property in recent years, but continued vigilance is required.

### **(ii) Environmental pressures (e.g., pollution, climate change, desertification)**

#### **Erosion**

Erosion is the dominant environmental process affecting the nominated property today. Personnel at Poverty Point State Historic Site actively monitor the grounds for signs of erosion. In the past, areas where erosion threatened the OUV have been stabilized, and a watershed management plan is part of the Poverty Point heritage management plan (Appendix E).

Bank stabilization efforts by the U.S. Army Corps of Engineers (Greenlee 2008; Hillman 1985; Lewis 1984) and the U.S. Department of Agriculture's Soil Conservation Service (now the Natural Resources Conservation Service) have reduced erosion along Bayou Maçon and segments of Harlin Bayou, the waterways east and north of the earthworks. Current issues include stream bank erosion along Harlin Bayou due to fluctuating water levels and formation of headward-eroding gullies caused by uncontrolled surface water flowing into Harlin Bayou. Minimizing these threats to the landscape is one of the greatest management challenges at Poverty Point.

<sup>17</sup> In addition to humans, only alligators (*Alligator mississippiensis*), black bears (*Ursus americanus*), and mountain lions (*Puma concolor*) have been documented to prey on feral swine (West et al. 2009).

Rain can cause sheet erosion and gully formation on the earthworks and other sloping areas. This is a particular issue in wooded areas where tree shade prevents the establishment of a thick, protective vegetative ground cover. Removing trees and establishing grass may minimize soil loss due to sheet erosion. State Parks personnel and the station archaeologist are conducting tests to determine if filling erosional gullies with clean soil might further minimize damage. To this end, the gullies were mapped and photographed, soil added and compacted, the new ground surface covered with woven jute matting and grass seed, and the area remapped and re-photographed. The filled areas are now being monitored for evidence of erosion. In those cases where erosion resumes, the newly added soil appears to be protecting the archaeological deposits.

### Treefalls

Wind-thrown trees pose another management challenge at Poverty Point. The mixed hardwood forest that covers the earthworks is mature.<sup>18</sup> Disease, decay, and top-heavy canopies have made the trees vulnerable to falling during strong winds. When they fall, they expose earth-laden root systems (Figure 4.3). Problems stem not only from the mixing and exposure of artifacts that occur with upheaval, but also from subsequent erosion and animal burrowing.

Tree falls have occurred over the millennia since the Late Archaic occupation at Poverty Point, and such damage cannot be undone. It is possible, however, to minimize their present-day harm. To create a more stable ground cover, the Office of State Parks began in 2010 to remove the trees from the earthworks and plant grass. To date, most trees have been removed from Mounds A, B, C, and E. The next phase will comprise removing trees from the ridge system. In the meantime, the station archaeologist and parks personnel collaborate in clearing the exposed root balls of soil, removing them and the tree debris, documenting the damage, and refilling the root holes to stabilize the area.



Figure 4.3. Treefall and exposed roots. Photo: Diana Greenlee

### Climate Change

The effect of climate change on preservation of the earthworks and archaeological remains at Poverty Point SHS is difficult to predict. Currently, erosion from surface-water runoff and wind-thrown trees are the most serious threats to the landscape. According to the United States Environmental Protection Agency, climate change in northeastern Louisiana is likely to lead to warmer and drier conditions (EPA 2012:

<sup>18</sup> A recent analysis of trees on Mound A found they ranged in age from 40 to 156 years.

<http://www.epa.gov/climatechange/impacts-adaptation/water.html>) on average. An overall reduction in rainfall may decrease the incidence of erosion caused by water runoff. However, drier conditions could increase the number of wildfires and could stress grass that is used as a stabilizing ground cover for the earthworks. Paradoxically, warming temperatures over the Gulf of Mexico also could result in more hurricanes and tropical storms, leading to more days per year of strong winds and heavy rain in northeastern Louisiana. The ongoing effort to remove trees from the earthworks is critical, given the possibility of climate change.

### (iii) Natural disasters and risk preparedness (earthquakes, floods, fires, etc.)

Natural disasters that might occur in the area of Poverty Point State Historic Site include strong winds, floods, wildfires, and earthquakes. Plans for emergency operations are in place at the state, parish, and park level to reduce the effects of these natural hazards on buildings and people (refer to Section 5). The dormitory facility at Poverty Point SHS has been designated as one of nine official emergency shelters in West Carroll Parish (IEM, Inc. 2011), thus indicating that it has been deemed a safe haven in the event of a natural disaster. Below is an evaluation of the likelihood of each type of natural disaster and the potential for harm to the Outstanding Universal Value of the property.

#### High Wind Hazard

Northeastern Louisiana is subject to tropical storms, hurricanes, tornadoes, and straight-line winds. The risk of hurricanes is low, but Louisiana has the eleventh highest record of tornadoes among all fifty states (State of Louisiana 2008). Nineteen tornadoes were recorded for West Carroll Parish during the period 1950-2007. The National Oceanic and Atmospheric Administration has estimated that the parish can be expected to experience 0-0.5 tornadoes/year/259 km<sup>2</sup> (State of Louisiana 2008). Wind hazard maps (Figure 4.4) and tables indicate that risk to buildings and people due to extreme wind conditions is high in this area (Federal Emergency Management Agency 2007).

The earthworks are not directly harmed by extreme winds. As noted above, however, strong winds do tip trees, dislodging the root system, and disturbing the cultural resource. To minimize the likelihood of damage from wind-thrown trees, the Office of State Parks has begun a long-term project to remove trees from the earthworks and other archaeological components of the landscape. Tree loss due to high winds is part of the life cycle of hardwood forests in Louisiana and, thus, will not irreparably hurt the natural heritage of the property.

#### Flood Hazard

Since it is well documented that flooding can affect the condition and visibility of archaeological sites (e.g., Artz and Alex 2010; Stovel 1998; Turnbaugh 1978), river flooding—Louisiana's most common natural hazard (State of Louisiana 2008)—must be addressed. Heavy rainfall and upstream runoff into the Mississippi River frequently produce floods in other areas, either as over-bank or backwater flooding. Because flooding is determined by features of the landscape, it is relatively straightforward to predict which properties are at the greatest risk for flood damage. The federal government has overseen development of a sophisticated flood control system for the Mississippi River and its tributaries that is designed to protect properties from a flood event even larger than

the massive flood that occurred in 1927 (Camillo and Percy 2004; Risk Management Solutions 2007).

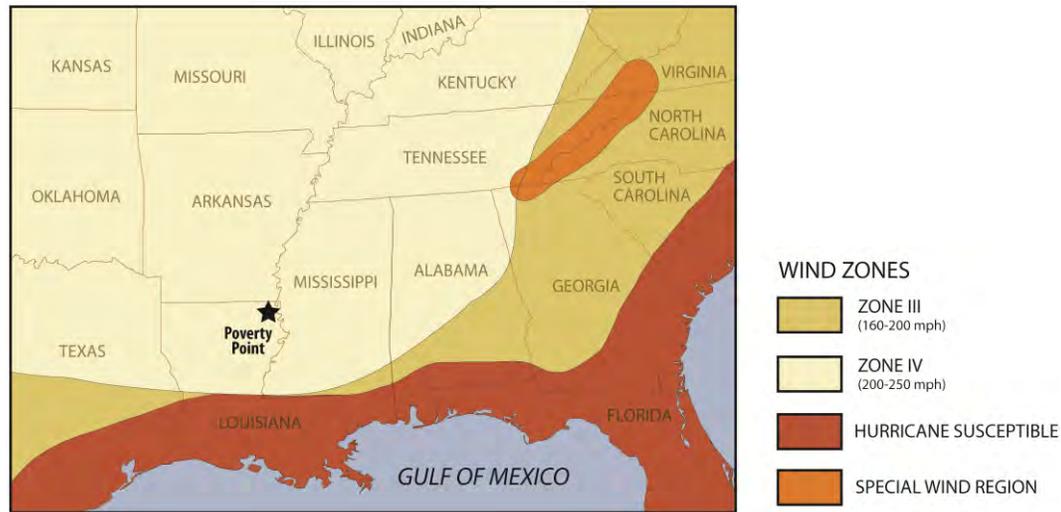


Figure 4.4. Wind speed zones. Based on Federal Emergency Management Agency (2007).

The state's Hazard Mitigation Plan (State of Louisiana 2008) indicates that risk of flooding for West Carroll Parish is low. As described in Section 2.a, Poverty Point is situated 7-9 m higher than the adjacent lowlands, and there is no archaeological evidence or historic record for flooding of the site (cf. Camillo and Percy 2004; Gibson 1990c; Lenzer 1978). In the event of a catastrophe caused by failure of the flood control system, a limited number of refugees may gather at Poverty Point as one of the established emergency shelters located on Macon Ridge (IEM, Inc. 2011). In the past, the dormitory facility has been used to house flood refugees from other parts of Louisiana at no detriment to the property. Thus, flooding is not anticipated to harm the natural or cultural heritage of the site either directly or indirectly.

### Wildfire Hazard

Wildfires are uncontrolled fires that are fueled by vegetation and sometimes by manmade structures. The cause may be natural, such as lightning strikes, or cultural, like arson or human carelessness (State of Louisiana 2008). The U.S. Geological Survey wildfire maps suggest a low risk for natural wildfires in northeastern Louisiana (Figure 4.5), but the state's Hazard Mitigation Plan (State of Louisiana 2008) indicates that West Carroll Parish is at medium risk for wildfires. This ranking is based on the average area burned per year ( $0 < x < 404.7$  ha) during the period 1991-2000. In the event of a large fire at Poverty Point, buildings, trees, and plant life would be destroyed. Animals would be injured or killed, and they would suffer from habitat loss. The earthworks would be at increased risk for erosion from increased runoff (due to the destruction of water-absorbing vegetation) and loss of stabilizing ground cover. In order to reduce the likelihood that a wildfire might reach the natural and cultural resources on the property, a 3-m-wide fire lane is mowed inside the boundary fence line (where topography allows) every year (refer to Appendix E).

### Seismic Hazard

Louisiana is not active seismically, but earthquakes do occur (Stevenson and McCulloh 2001). According to the 2008 U.S. National Seismic Hazard Map (Peterson et al. 2008b), there is a low to moderate future risk of damaging ground motions in northeastern Louisiana. This is due to the area's proximity to the New Madrid seismic zone in the central Mississippi River valley (Frankel et al. 2009). Historic accounts describe a cluster of major (magnitude 7 to 8) earthquakes that occurred in A.D. 1811-1812 in the area of New Madrid, Missouri, with thousands of aftershocks lasting some five years. Sand blows, eruptions of sand that occur when earthquakes cause soil liquefaction deep underground, form a record of comparably strong earthquakes in the New Madrid region going back at least 4,500 years and possibly as far back as 7,000 years (Tuttle et al. 2005, 2006). Although little or no surface ground movement has been detected instrumentally within the New Madrid zone in recent years, geophysicists are hesitant to conclude that the zone is no longer active. Indeed, ongoing small to moderate earthquakes indicate that the region is still under some stress.

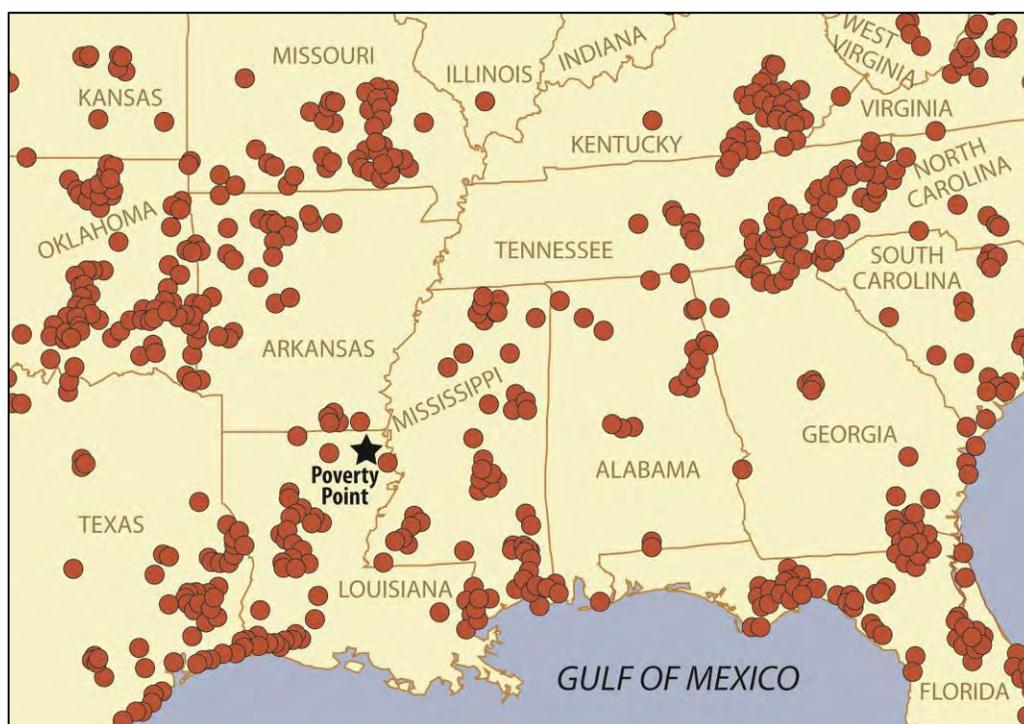


Figure 4.5. Wildfires > 101.2 ha in size recorded from 1980 to 2003. Based on United States Geological Survey (2006).

In the next fifty years, there is a 28-46% chance of a magnitude 6.0 or greater earthquake in the New Madrid area (Williams et al. 2011). Figure 4.6 is a shaking hazard map for much of the southeastern United States as modeled by the U.S. Geological Survey. The tan and yellow isopleths in the Poverty Point vicinity (approximately equivalent to a magnitude 4 or 5 earthquake) reflect the potential of very light to light damage to buildings by a major earthquake in the New Madrid zone.

The state's Hazard Mitigation Plan (State of Louisiana 2008) summarizes earthquake hazard data, but it does not include emergency plans for seismic events because the likelihood of significant

damage is considered to be low. Regardless, the earthen monuments at Poverty Point (and elsewhere throughout the central and lower Mississippi River valley) have survived, with no apparent damage, the long history of strong earthquakes in this region. Indeed, no liquefaction features have ever been discovered here, presumably owing to the compact silty clay loam soils that predominate. The archaeological site is not likely to be damaged by a major earthquake in the foreseeable future.

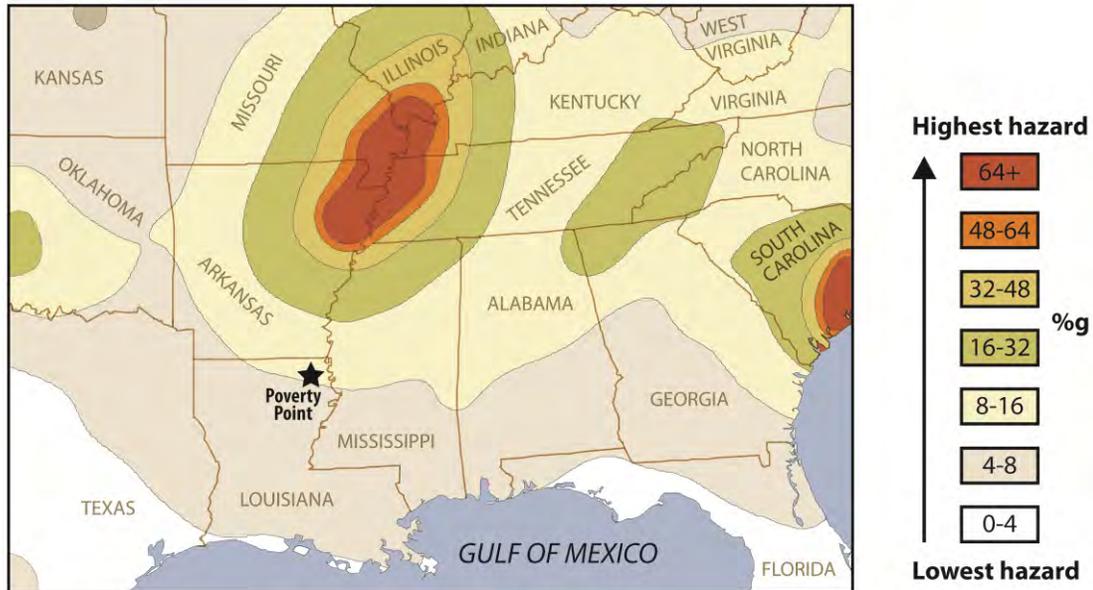


Figure 4.6. Peak Ground Acceleration (degree of shaking, expressed as % g [g = acceleration due to the force of gravity]) with a 2% probability of exceedance in a fifty-year period. Based on Peterson et al. (2008a).

#### (iv) Responsible visitation at World Heritage sites

##### Status of Visitation

The Louisiana Office of State Parks has a long record of visitation rates at Poverty Point State Historic Site (Figure 4.7). Excluding the unusually low count for the 1986/1987 fiscal year, during part of which time the site was in “caretaker” status,<sup>19</sup> the average annual visitation ( $\pm 2$  standard deviations) was  $13,449 \pm 3,721$  individuals. This appears to be a relatively stable level of annual visitation. Like most Louisiana state historic sites, visitation at Poverty Point peaks seasonally in November/December and more so in April/May as a result of school field trips.

Nearly one-third of visitors to Poverty Point are school groups on field trips. Usually, these groups spend most of their time at the visitors’ center, where they watch an introductory video about the site, view the museum displays, observe and sometimes participate in demonstrations by interpretive rangers, and enjoy picnic lunches. Indeed, the visitors’ center is the focal point for most of the activity at the park.

<sup>19</sup> When a park is placed in “caretaker” status, it is not open to the public. The Office of State Parks staff is reduced to two or three people who are responsible for maintaining and protecting the site.

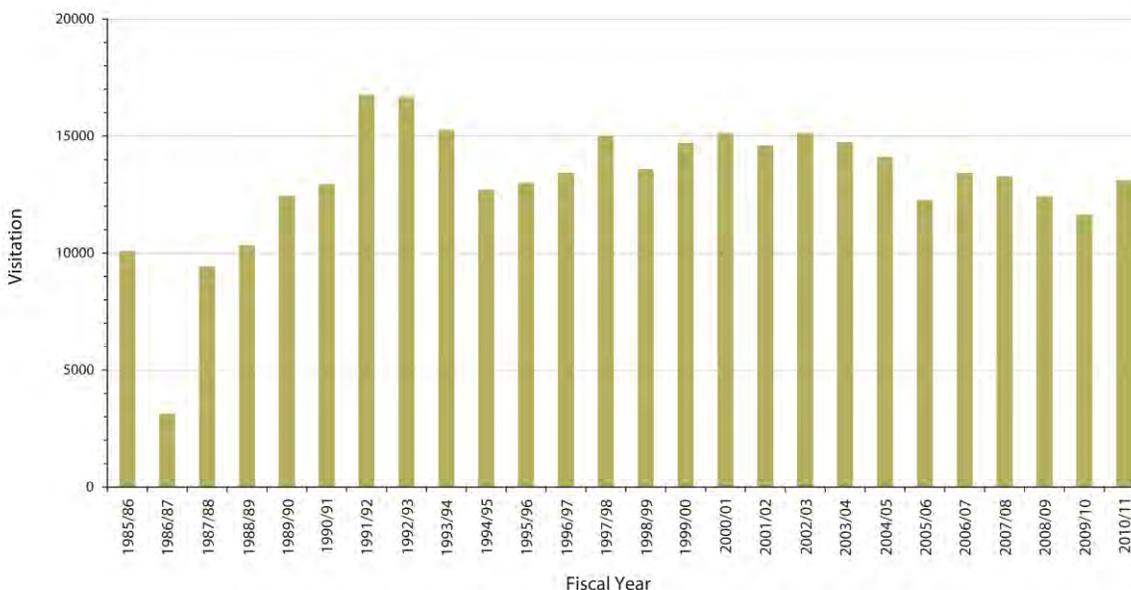


Figure 4.7. Twenty-five year record of visitation at Poverty Point State Historic Site.

The Poverty Point visitor experience typically includes a tour of the earthworks. Most visitors (about 80%) take the ranger-guided tram tour, although some (about 15%) choose to drive their own vehicles, and others (about 5%) walk the hiking trail. From November through February, when the tram is not available except to large groups, most visitors drive. All of these routes include a stop at Mound A. The wooden boardwalk up to the platform at the mound's top is a second focal point for activity on the nominated property (Figure 4.8).

The viability of constructing a new, larger, visitors' center off-site is currently being explored. Removing the existing buildings from the plaza will improve the visual authenticity of the visitor experience, provide updated guest services and better accommodate more visitors.

### Projected Levels of Visitation

Inscription on the World Heritage List is frequently associated with increased visitation (Hall and Piggin 2001; Pederson 2002). Researchers have had some difficulty, however, establishing that greater tourism activity is a direct consequence of World Heritage status (Buckley 2004; Drost 1996; ERS 2006). Reliable visitation statistics are not available for most sites, and there are several factors that may influence visitation estimates at any particular site. Such factors include geographic location (i.e., distance from population centers, major travel corridors, and other attractions), marketing, counting methodology, and the site's national and global profile (Aa 2005; Boyd and Timothy 2001, 2006; Breakey 2012; Buckley 2004; ERS 2006; Gillespie Economics and BDA Group 2008).

Several researchers indicate that sites with lower global profiles might anticipate greater relative increases in visitation due to World Heritage inscription than those already recognized as "must see" attractions (Aa 2005; ERS 2006; Rebanks Consulting Ltd. and Trends Business Research

Ltd. 2009). Aa (2005) noted that, in his sample of World Heritage sites (n=86), 26% indicated a large increase in visitation following inscription, 15% reported a small increase, and 59% showed no change. In most cases, the sites recording no change were established tourism destinations. He also found that, in the United States, visitation to World Heritage sites increased by 40% during the period 1980-2000, but visitation increased only by 20% at non-World Heritage sites. This increase was primarily seen at cultural sites, whereas natural sites showed no change. In contrast, a study by Rebanks Consulting Ltd. and Trends Business Research Ltd. (2009) found that new World Heritage sites in the United Kingdom should anticipate a 0-3% increase in visitation after inscription. All sources appear to agree that the proportion of international visitors increases significantly after inscription.



Figure 4.8. Heading down from the top of Mound A. Photo © Jenny Ellerbe

With such a variable set of data, projecting future visitation is not a simple task. Figure 4.9 plots average pre- and post-inscription visitation for the five cultural United States World Heritage sites for which data are available from the National Park Service. Four of the five sites show average increases in visitor counts between the two periods, but they are associated with large standard deviations and a paired sample t-test indicates that the difference is not statistically significant ( $\alpha = 0.07$ ).

Figure 4.10 shows annual visitor estimates for Chaco Culture, La Fortaleza and San Juan National Historic Site, and Mesa Verde National Park. The urban locations of Independence Hall and the Statue of Liberty make them less relevant comparisons, and thus they have been excluded from this analysis. Visitation at Chaco Culture (which is the most comparable to Poverty Point in terms of its rural setting and visitation statistics) and La Fortaleza and San Juan National Historic Site nearly doubled in the years following inscription, whereas Mesa Verde National Park did not. None have sustained increased levels of visitation in recent years. If Poverty Point follows the same pattern, the site may experience an initial surge in visitation (to as many as 25,000 people) that later falls to a lower level.

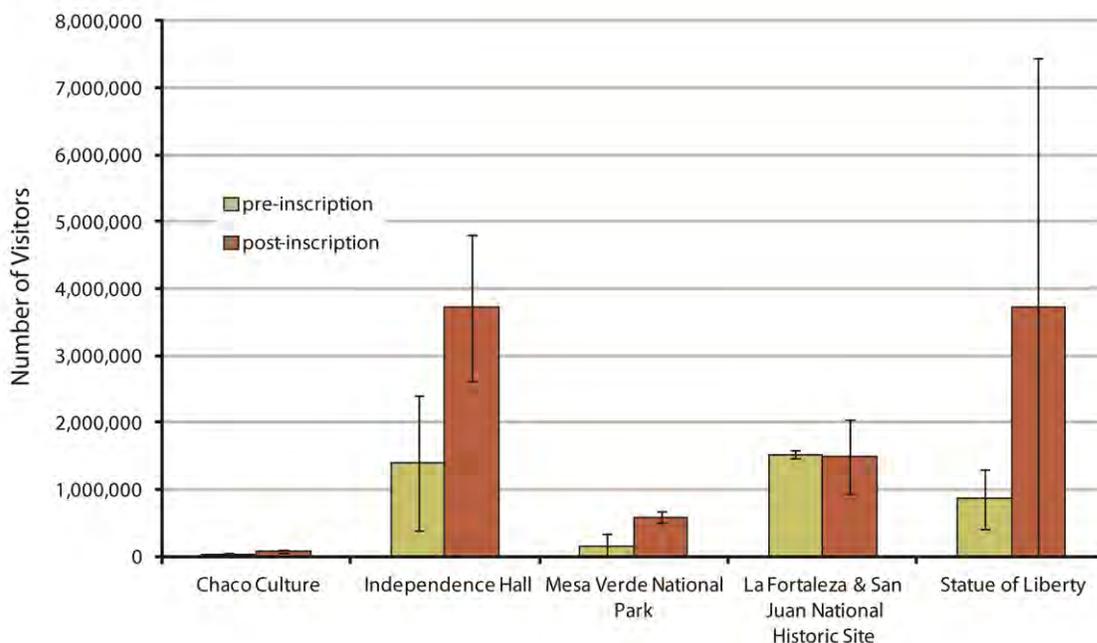


Figure 4.9. Average visitor estimates ( $\pm 1$  standard deviation) during pre- and post-inscription eras for five cultural United States World Heritage sites. Data from United States National Park Service.

### Carrying Capacity

One of the greatest threats to sites on the World Heritage List is visitation, or as ERS (2006:21) stated, “More visitors mean more wear and tear.” According to Aa (2005), 68% of his sample of World Heritage sites reported damage due to tourism. Thus, establishing carrying capacity and preparing for visitor impact is a critical part of any site management plan. Carrying capacity is how many people may visit a site without damage to the resource or a negative visitor experience. Pederson (2002) identifies three kinds of carrying capacity: (1) physical, or facility; (2) ecological; and (3) social.

Physical capacity is determined by the limits of the infrastructure. The visitors’ parking lot at Poverty Point State Historic Site can hold fifty cars, and the museum can accommodate a maximum of sixty people at a time. A practical limit for the current septic system at the visitors’ center is about 300 uses per day, but it has not been established whether that level can be sustained over an extended period of time.

Ecological capacity is determined by environmental resistance and resilience, acceptable limits of damage, and the resources available to lessen the effects of visitors on the landscape. The most sensitive area of the property will serve as the best indicator of tourism impact. At Poverty Point, that area would be the hiking trail where it runs through the woods (Figure 4.11). Grass growth on the trail is inhibited by soil compaction from foot traffic and by shade. As a consequence, both mild erosion and exposure of artifacts occur. If monitoring indicates that visitor use of the trail increases erosion, one of several strategies may be required: jute matting or some other physical barrier could be laid to protect the ground surface, the trail could be rerouted, or access could be limited.

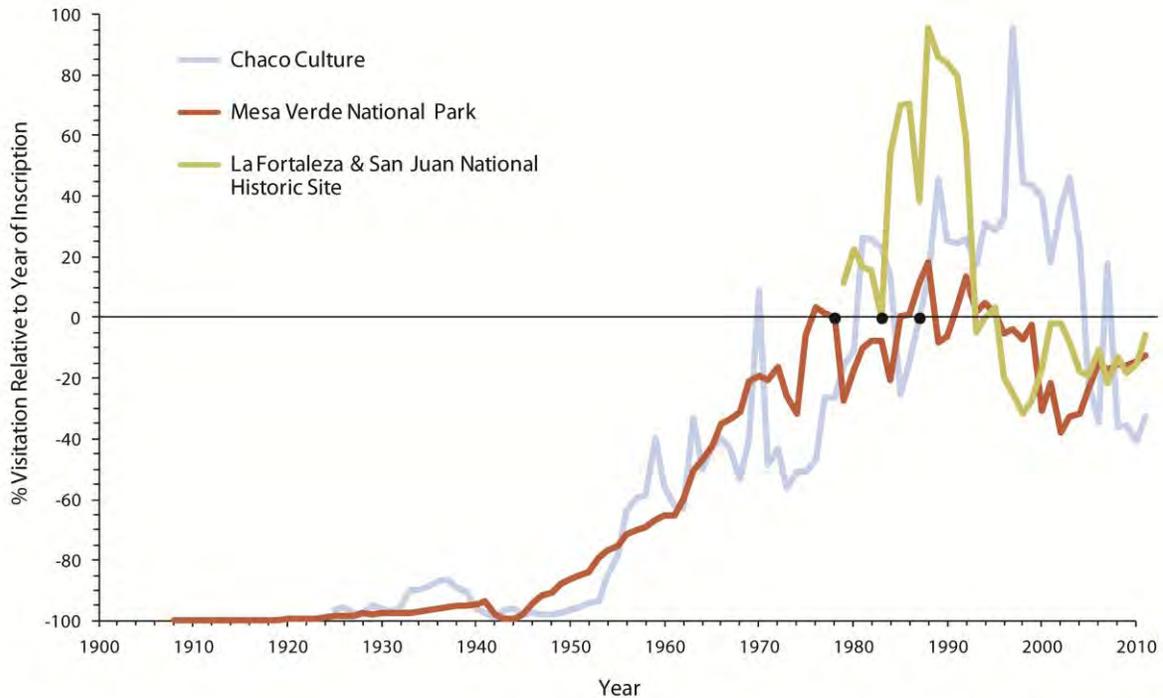


Figure 4.10. Annual visitation data for Chaco Culture, Mesa Verde National Park, and La Fortaleza and San Juan National Historic Site World Heritage sites, plotted as percents relative to their years of inscription, indicated by black dots. Data from United States National Park Service.

Social capacity reflects the number of visitors that can be accommodated without a decrease in the quality of the visitor experience. Different kinds of visitors have different expectations. For those who seek quietude and an outdoor experience, the hiking trail provides a good alternative to the tram. Clearly, more detailed information about the social expectations and experiences of Poverty Point's visiting public needs to be acquired.

Prior visitation records provide a benchmark for estimating and monitoring carrying capacity. As many as 16,781 people in a year have visited Poverty Point State Historic Site without significant harm. Assuming that the number of visitors increases following inscription, the key question will be how their visits are distributed through time. The property can easily accommodate 25,000 people if they are evenly distributed (about 69/day) throughout the 362 days per year that the park is open. However, if the visits conform to a peak/trough distribution, with several thousand people coming during short holiday periods, such visitor pressure will be more difficult to manage.

#### Possible Deterioration Due to Visitor Pressure

All visitation will cause resource deterioration (Pederson 2002). The critical determinations are where the damage will occur and how much damage is acceptable. The greatest concern, of course, involves those features of Outstanding Universal Value. As outlined in the site's management plan (Appendix E), the state seeks to concentrate tourists in areas that are easily monitored and that have been already altered through historic activities or that are repairable. As mentioned above, the hiking trail is likely to see the greatest impact.

The initial strategy is to minimize damage to the resource through existing methods of site presentation. Interpretive exhibits and activities at the visitors' center, along with organized tram tours, will serve the majority of visitors; ranger-led hikes will be offered on a less-frequent schedule. In order to reduce the likelihood of injury to the site by unsupervised visitors, educational materials are being developed that stress the importance of protection and conservation by the public (cf. Drost 1996). These materials will be made available to all guests who wish to experience the site on their own.

**(v) Number of inhabitants within the property**

The site manager of Poverty Point State Historic Site is the only permanent resident within the property boundary. There is an on-site dormitory, for researchers and other guests of the Office of State Parks, which can accommodate up to forty people.



Figure 4.11. Along the hiking trail in the north end ridges.  
Photo © Jenny Ellerbe



Mound B in autumn. *Photo © C.C. Lockwood*

## 5. PROTECTION AND MANAGEMENT OF THE PROPERTY

- 5.a Ownership
- 5.b Protective designation
- 5.c Means of implementing protective measures
- 5.d Existing plans
- 5.e Property management plan
- 5.f Sources and levels of finance
- 5.g Sources of expertise and training
- 5.h Visitor facilities and infrastructure
- 5.i Policies and programmes related to the presentation and promotion of the property
- 5.j Staffing levels and expertise



Incised bead.  
*Photo © Jenny Ellerbe*

## 5. Protection and Management of the Property

### 5.a Ownership

The Poverty Point State Historic Site is owned by the state of Louisiana and is managed and maintained by the Louisiana Office of State Parks.

### 5.b Protective designation

Louisiana Revised Statutes, Louisiana Administrative Code, the Louisiana Constitution, deed provisions, and federal regulations protect the Poverty Point site. State legal measures (refer to Appendix B) are discussed first, followed by deed restrictions (refer to Appendix C), and lastly, federal legal measures (refer to Appendix D). Within the state section, the first instrument defines Poverty Point State Historic Site. All other measures are organized first by category and then by statute or code citation. Where more than one statute or code article applies to a protective measure, the measure is ordered according to the primary statute.

#### State Legal Measures (Appendix B)

##### *Louisiana Revised Statutes 56:1682 et seq. (enacted 1980, amended through 2004)*

Louisiana Revised Statutes 56:1682 *et seq.* establishes the purpose of the Louisiana Office of State Parks as “preserving, protecting, and portraying historic and scientific sites of statewide importance.” Also, it classifies Poverty Point as a state historic site under the jurisdiction of the Louisiana Office of State Parks and it grants all ensuing privileges, such as supervision by wardens, and penalties for violation of rules. It states that legislative approval is required before the alienation (legal transfer) of any land under the jurisdiction of the Office of State Parks.

##### *Louisiana Revised Statutes 41:1601 et seq. (enacted 1970, amended through 2001)*

Louisiana Revised Statutes 41:1601 *et seq.* declares that it is the public policy of Louisiana to protect and preserve prehistoric and historic properties, artifacts, treasure troves, and objects of antiquity that have historical value or are of interest to the public. It creates the Division of Archaeology and the position of state archaeologist to promulgate rules and regulations concerning the recovery and study of archaeological remains (Figure 5.1) and to serve as the archaeological advisory source for all state agencies by assisting them in evaluating any potential impact of their projects on archaeological resources. It further establishes that it is unlawful for any agency, political subdivision, group, or person to take, alter, damage, destroy, or excavate on state-owned lands without first obtaining an antiquities permit. Finally, this legislation provides civil and criminal penalties for prohibited excavations and for taking, altering, damaging, or destroying artifacts without a permit.

*Louisiana Revised Statutes 8:671 et seq. (enacted 1991) and Louisiana Revised Statutes 36:209 (enacted 2009)*

The Louisiana Unmarked Human Burial Sites Preservation Act empowers the secretary of the Department of Culture, Recreation, and Tourism to issue permits for the disinterment and study of human remains and burial artifacts found in unmarked burial sites. The act also provides for civil and criminal penalties for disturbance of an unmarked burial site or for removal of remains or artifacts without a permit.



Figure 5.1. 2011 Murray State University field school excavation in Mound C at Poverty Point.  
Photo © Jenny Ellerbe

*Louisiana Administrative Code Title 25 Cultural Resources, Part IX Office of State Parks, Chapters 1-9 (enacted 1982, amended through 2010)*

Section 303 of the Louisiana Office of State Parks administrative rules provides that no person shall intentionally remove, damage, disturb, or destroy state park property. No person may excavate, remove, damage, or otherwise alter or deface any archaeological resource located on any park. It is strictly forbidden to dig for or otherwise remove any historical feature, relic, or artifact. Persons wishing to excavate and remove historical features by professional archaeological means for research purposes must request a permit from the Louisiana Archaeological Survey and Antiquities Commission. Applications for such permits must be made through the assistant secretary, Office of State Parks.

Section 507 of the rules defines a state historic site as an area that possesses a historical, cultural, or memorial significance when judged on a statewide basis. Activities and uses of historic

sites are limited to those appropriate to the significance of each site as defined by the master plan and interpretive prospectus of the unit.

*Louisiana Administrative Code Title 25, Chapter 1, Subchapter A (enacted 1982, amended through 2010)*

Section 102 of the Louisiana Office of Cultural Development administrative rules outlines the minimum educational and training requirements that a person must have to direct archaeological investigations on state property. It says that the archaeologist must document specific education, training, and expertise relevant for the proposed project.

*Louisiana Administrative Code Title 25, Chapter 1, Subchapter G (enacted 1982, amended through 2010)*

Title 25, Chapter 1, Subchapter G of the Louisiana Office of Cultural Development administrative rules for Indian burial sites provides that no one shall be allowed to excavate burial sites unless the person has a contract for survey and salvage; allows for unclaimed remains and artifacts to become property of the state; provides for emergency landmark preservation of any newly discovered site believed to be in danger of desecration before it can be given official status; and requires any construction project that unexpectedly uncovers a possible burial site to immediately halt operation.

*Louisiana Constitution of 1974 Article VII Section 14 (amended through 2006)*

Article VII Section 14 prohibits the loan, pledge, or donation of public property.

*Louisiana Constitution of 1974 Article IX Section 1*

Article IX Section 1, entitled “Natural Resources and Environment; Public Policy” establishes a public policy to protect and conserve state resources, including the “scenic, historic, and esthetic quality of the environment.”

*Louisiana Constitution of 1974 Article XII Section 13*

Article XII Section 13 prevents state lands from being acquired by the public through acquisitive prescription (gaining ownership of land by occupying it for a period of time).

*Property Deed of 1972 Restrictions (Appendix C)*

The boundaries in the deed clearly identify the extent of the property that the state of Louisiana purchased in 1972. The deed also contains two restrictions. First, restrictions specify that the property is to be used as a park and archaeological site. Second, restrictions prevent the owner from selling, leasing, or transferring the property without approval by the secretary of the United States Department of Housing and Urban Development (HUD). The second restriction is because a grant (OSL-LA-06-48-1002) from the HUD Open Space Land Program provided funding for acquisition and initial development of the property. However, in 1990, HUD released the state of Louisiana from the restriction prohibiting transfer of the property. The release was signed when the state was considering conveying the property to the United States, through the National Park Service. Ultimately, the state retained ownership.

## Federal Legal Measures (Appendix D)

### *Antiquities Act of 1906, 16 U.S.C. 431–433*

The Antiquities Act of 1906 was the first general federal preservation law in the United States, and it authorizes the president to declare certain historic, prehistoric, and scientific resources to be National Monuments.

Public Law 100-560 (102 Stat. 2803), approved October 31, 1988, establishes Poverty Point National Monument to “preserve the archaeological area known as Poverty Point, Louisiana, and to interpret and conduct further research on such areas, its people and their culture.”

### *Historic Sites, Buildings, Objects, and Antiquities Act of 1935, 16 U.S.C. 461–462*

The Historic Sites Act declares it a national policy to preserve historic sites and objects of national significance and provides procedures for designation, administration, and protection of such sites. National Historic Landmarks (NHLs) are named under authority of this act; thus it applies to Poverty Point, which was designated an NHL on June 13, 1962.

### *National Historic Preservation Act (NHPA) of 1966, 16 U.S.C. 470 et seq.; 36 CFR 800; 36 CFR 65*

The NHPA is intended to preserve historical and archaeological sites in the United States. Section 101 defines the National Register of Historic Places (on which Poverty Point was listed in 1966) and describes National Historic Landmarks designation. The act establishes the state historic preservation officer (SHPO), who has the responsibility to advise and assist federal and state agencies and local governments in carrying out their historic preservation responsibilities. Another responsibility of the SHPO is to consult with the appropriate federal agencies on federal undertakings that may affect historic properties and on the content and sufficiency of any plans developed to protect, manage, or to reduce or mitigate harm to such properties.

Among other directives, the act requires federal agencies to evaluate the consequence of all federally funded, licensed, or permitted projects on historic properties through a process known as Section 106 Review. Effects can be direct or indirect and include: physical destruction or damage; alteration; relocation; change in the character of the property’s use or setting; introduction of incompatible visual, atmospheric, or audible elements; neglect and deterioration; and transfer, lease, or sale of a historic property out of federal control without adequate preservation restrictions. Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800 lay out review procedures that ensure historic properties are considered in federal planning processes.

Section 110(f) of the NHPA requires that federal agencies exercise a higher standard of care when considering undertakings that may directly and adversely affect National Historic Landmarks (NHLs), such as Poverty Point. The law requires that agencies, “to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark.” In those cases the agency should consider all prudent and feasible alternatives to avoid an adverse effect on the NHL. Provisions in 36 CFR 800 require that both the Advisory Council on Historic

Preservation and the secretary of the Department of the Interior be invited to participate in any consultation following an agency's determination that a federal or federally assisted undertaking will have an adverse effect on an NHL.

*Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, 25 U.S.C. 3001-3013; 18 U.S.C. 1170; 43 CFR 10*

NAGPRA provides a process for museums and federal agencies to return certain Native American cultural items, such as human remains, funerary objects, sacred objects, or objects of cultural patrimony, to lineal descendants, and to culturally affiliated Indian tribes and Native Hawaiian organizations. NAGPRA also includes provisions relating to the intentional and inadvertent discovery of Native American cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking. Further, 18 U.S.C. 1170 establishes penalties for illegal trafficking in Native American human remains and cultural items. Included in 43 CFR 10 are regulations that carry out provisions of NAGPRA and develop a systematic process for determining the rights of lineal descendants, Indian tribes, and Native Hawaiian organizations to such cultural items.

*National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. 4321 et seq.*

NEPA requires federal agencies that are proposing a major action affecting the quality of the human environment to prepare a detailed environmental impact statement describing the effects of the proposed action. NEPA provides a mandate and a framework for federal agencies to consider all reasonably foreseeable outcomes of their proposed actions and to involve the public in the decision-making process.

*Department of Transportation (DOT) Act of 1966, 49 U.S.C. 303; 23 CFR 774*

The Department of Transportation Act (DOT Act) of 1966 included a special provision – Section 4(f) – that protects certain parks, natural preserves, and historical areas. It stipulates that the Federal Highway Administration (FHWA) and other DOT agencies cannot approve the use of land for transportation projects from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless there is no feasible and prudent alternative and the action includes all possible planning to minimize harm to the property. The regulations implementing Section 4(f) are found in 23 CFR 774.

### **5.c Means of implementing protective measures**

Poverty Point State Historic Site is subject to the protections of various legal measures. As a whole, these laws and regulations help shield the property from future development on, or within view of, the site. Further, they prohibit the removal or sale of remains or artifacts without proper authority; they provide a permitting process for archaeological study and establish the qualifications of archaeologists working on state property. They ensure that Poverty Point will remain protected as a state historic site, a National Register of Historic Places (NRHP) listed archaeological site, a National Monument, and a National Historic Landmark (NHL).

## State Legal Measures and Deed (Appendix B and Appendix C)

### *Louisiana Constitution, Other State Laws and Regulation, and Deed Restrictions*

The Louisiana Constitution, several state laws, administrative rules, and the property's deed provisions provide protections to Poverty Point State Historic Site. Louisiana Revised Statutes 56:1682 *et seq.* and Louisiana Administrative Code Title 25 Cultural Resources, Part IX Office of State Parks, Chapters 1-9 establish Poverty Point as a state historic site; limit uses of the site to those appropriate to its significance; bar the intentional removal, damage, or destruction of state park property; and strictly forbid digging for or otherwise removing any historical feature, relic, or artifact. The site is under the supervision of wardens and penalties for violation of rules include a fine for each violation of not less than \$15 or more than \$250, eviction from the site, and/or restitution to the state for damages incurred, in addition to any other penalty provided by law.

The Louisiana Division of Archaeology is responsible for issuing permits for archaeological investigations conducted on state land. An antiquities permit is required for those projects undertaken on state land that include ground-disturbing activities and/or the removal of artifacts from an archaeological site. The Louisiana Archaeological Survey and Antiquities Commission and the Office of State Parks must approve permits for work at Poverty Point, and requests must be introduced during one of the regularly scheduled commission meetings. All archaeologists receiving permits for ground-disturbing projects must meet minimum professional qualifications. Non-intrusive archaeological research permits are required for archaeological investigations at Poverty Point that do not include any ground disturbing activities or any artifact collection, including all remote sensing projects (Figure 5.2). For non-intrusive projects, only the Louisiana Division of Archaeology reviews the permit request. Limited permits are issued annually to the station archaeologist to allow the recipient to conduct routine surface collecting and minimal subsurface testing at Poverty Point.



Figure 5.2. Archaeologists conducting non-intrusive geophysical survey at Poverty Point. *Photo: Diana Greenlee*

All archaeologists conducting field work at Poverty Point apply for permits. For example, from 2008 through 2012, five antiquities permits, one non-intrusive permit, and five limited permits were issued or extended for archaeological work at Poverty Point.

Any person who knowingly excavates, removes, damages, or otherwise alters any archaeological resource located on state lands without obtaining a permit through the above process shall, upon conviction, be fined not more than \$10,000 or imprisoned not more than one year, or both. If the commercial value of the archaeological resources involved and the cost of restoration and repair of such resources exceed \$500, the person shall be fined not more than \$20,000 or imprisoned not more than two years, or both. In the case of a second or subsequent violation, upon conviction, such person shall be fined not more than \$100,000 or imprisoned not more than five years, or both. Additionally, all archaeological resources collected, transferred, or sold in violation shall be forfeited to the state and all vehicles and equipment of any person that were used in connection with the violation may be forfeited to the state. No evidence of unlawful excavation or damage of the archaeological remains at Poverty Point State Historic Site has been observed; therefore the law has not been applied there.

*Louisiana's Unmarked Human Burial Sites Preservation Act, and the Louisiana Administrative Code  
Title 25, Chapter 1, Subchapter G*

Louisiana's Unmarked Human Burial Sites Preservation Act, and the Louisiana Administrative Code Title 25, Chapter 1, Subchapter G protect aspects of human remains and burial sites, including those at Poverty Point SHS. If possible human remains are discovered in Louisiana as a result of any activity, that activity halts until a specialist can examine the possible bone. For example, during an excavation at Poverty Point in 2001, the project stopped when bone fragments were observed in Mound D. The four bone fragments were left in place until they were definitively identified as nonhuman (Robert Connolly, personal communication 2001). If the evaluation had indicated a human burial, the following protocol would have been followed. The sheriff would have been informed within twenty-four hours and the secretary of the Louisiana Department of Culture Recreation and Tourism would have been informed through the Division of Archaeology within seventy-two hours. If the human remains did not fall under the jurisdiction of the local law enforcement agency, a qualified anthropologist would examine the bones. He or she would render an opinion about ethnicity, based on morphology and context. Then the Louisiana Division of Archaeology would consult with the appropriate lineal descendants about the treatment of the remains.

All planned investigations on non-federal and non-tribal lands in Louisiana involving human remains, graves, or grave markers must obtain an Unmarked Burial Sites permit before beginning work. Application for a permit is made in writing to the Louisiana state archaeologist. The permit application must include a detailed research proposal that identifies the excavation strategies, analytical methods, temporary storage practices, and final disposition for the remains. The act applies to archaeological work affecting the historic burials on Mound D that are marked with

headstones (Figure 5.3), the unmarked plantation-era cemetery on Ridge 1 South, as well as any other remains that may be found on the site.

No archaeologist has planned a burial investigation at Poverty Point since the law was enacted; therefore no burial permit has been issued for work there. If a person illegally disturbs an unmarked burial at the site or buys, sells, barter, exchanges, possesses, or discards human remains from the site, each offense is punishable by up to \$5,000 or imprisonment for not more than one year, or both. No one is known to have committed such an offense involving human remains from Poverty Point.

The Louisiana State Constitution prohibits the loan, pledge, or donation of public property, except in a few specific instances, and also prevents state lands from being acquired by the public through acquisitive prescription (occupying land for a period of time). Further, Louisiana Revised Statutes 56:1682 *et seq.* requires approval by the Louisiana legislature before any land under the jurisdiction of the Office of State Parks may be sold. The deed restrictions also specify the property is to be used as a park and archaeological site; thus further protecting Poverty Point from future changes in use.

Enforcement of laws relating to Poverty Point can be initiated several ways. The Poverty Point SHS manager is a commissioned law officer, and in the event of illegal activity, he would coordinate with the appropriate local law enforcement agency. The property deed provisions, along with the protections granted by the Louisiana Revised Statutes and Louisiana Administrative Code, are enforced by the state of Louisiana. The Louisiana attorney general's office is responsible for enforcing the criminal provisions of the Louisiana Unmarked Human Burial Sites Preservation Act. The United States attorney is responsible for enforcing the provisions of federal laws, such as NAGPRA. Each department is adequately equipped with resources to enforce its own rules or laws, thus ensuring that Poverty Point is protected.



Figure 5.3. Headstone of Sarah Guier on Mound D. Photo © C.C. Lockwood

## Federal Legal Measures (Appendix D)

### *Antiquities Act of 1906*

Under the authority of the Antiquities Act of 1906, Poverty Point was established as a National Monument on October 31, 1988. Other parts of the Antiquities Act relate only to lands owned or controlled by the United States government, so they do not apply to Poverty Point. The state continues to own and manage the property, so the site has the designations of both a state historic site and a National Monument.

### *Historic Sites, Buildings, Objects, and Antiquities Act of 1935, National Historic Preservation Act, National Environmental Policy Act, and the Department of Transportation Act*

Poverty Point's status as a National Historic Landmark (NHL) affords protection from development or alteration of the site and surrounding areas. The applicable federal laws are: Sections 106 and 110(f) of the National Historic Preservation Act (NHPA); the National Environmental Policy Act (NEPA); and Section 4(f) of the Department of Transportation Act (DOT Act). Each one is initiated by a specific activity and has its own regulation; however, there is overlap in the purposes and processes of the laws.

Section 106 of the NHPA requires federal agencies, prior to funding or implementing an undertaking, to take into account effects of that undertaking on historic properties. Poverty Point's status as a National Register property affords special consideration under the law. Furthermore, Poverty Point's NHL status triggers Section 110(f) of the Act, which outlines the specific actions that an agency must take when NHLs may be directly and adversely affected by an undertaking. Agencies must, "to the maximum extent possible...minimize harm" to NHLs affected by undertakings. Both Sections 106 and 110(f) also require agencies to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking. The process for an agency's responsibility under NHPA is defined within 36 CFR 800. The same regulations note that both the ACHP and the secretary of the Department of the Interior shall be invited to participate in consultation where there may be an adverse effect on an NHL. The National Park Service responds for the secretary and participates in consultations about NHLs.

Sections 106 and 110(f) are not limited to direct actions of a federal agency. Actions of private individuals or companies may be subject to review under these processes if they require a permit, receive grant or loan funds, or seek other authorization from a federal agency. Thus, Sections 106 and 110(f) offer Poverty Point protections from development or alterations proposed by federal agencies or by private parties seeking federal funds or approvals. Projects both on and near an NHL are carefully reviewed to determine whether they will affect the historic property either directly or indirectly.

The Section 106 process is initiated when a federal agency determines whether it has an undertaking and if that undertaking could affect historic properties, per 36 CFR 800.16(y). If so, the agency must consult with the state historic preservation officer (SHPO) and federally recognized

Indian tribes, as noted in 36 CFR 800(c)(1). In Louisiana, the assistant secretary of the Office of Cultural Development serves as the SHPO. Within the Office of Cultural Development, the Division of Archaeology advises federal agencies regarding undertakings that might affect Poverty Point.

Section 106 review occurred in 1971 when the state of Louisiana applied for a United States Housing and Urban Development (HUD) grant for acquisition and initial development at the Poverty Point property. For the acquisition, HUD consulted with the National Park Service as well as the Louisiana Historic Preservation and Cultural Commission. For planning initial park development in 1973, the Advisory Council on Historic Preservation also was involved. It developed a memorandum of agreement (MOA) among the Advisory Council, HUD, and the Louisiana historic preservation officer, as part of the Section 106 review. The agreement spelled out conditions to insure protection of the archaeological deposits during park development.

In 2007, the Vicksburg District of the United States Army Corps of Engineers conducted an emergency bank and shoreline protection project for Harlin Bayou at Poverty Point State Historic Site. The purpose was to reduce erosion at the site (Figure 5.4). A memorandum of agreement was developed, per Sections 106 and Sections 110 of the NHPA and 36 CFR 800.8, to address treatment of cultural resources. The signatories were the Corps of Engineers, the Louisiana State Historic Preservation Office, and the Office of State Parks. The MOA addressed protection of the historic property through adherence to federal and state standards and protocols for archaeological research.

Section 106 review can also protect the view from Poverty Point, and special attention is given not just to projects *on* the state historic site, but also to projects *near* the property that might affect the viewshed.

Under NEPA, federal agencies must give proper consideration to the impacts of their activities on the environment, including historic properties such as Poverty Point. The NEPA process consists of an evaluation of the environmental



Figure 5.4. Longitudinal peaked stone toe dike placed in the bottom of Harlin Bayou by the U.S. Army Corps of Engineers.  
*Photo: Diana Greenlee*

effects of a federal undertaking including its alternatives. There are three levels of analysis: (1) categorical exclusion determination; (2) preparation of an environmental assessment/finding of no significant impact (EA/FONSI); and (3) preparation of an environmental impact statement (EIS).

To an extent, NEPA addresses some of the same concerns as Section 106: for instance regarding identification of irreversible effects. Section 106 is a separate authority from NEPA; however, it is reasonable for agencies to coordinate studies and documents under Section 106 with those under NEPA, and this process is outlined within 36 CFR 800.8(a) and 36 CFR 800.8(c). Analogous to Sections 106 and 110(f), NEPA applies to federal agency actions and to recipients of federal permits, loans, loan guarantees, insurance, and other actions. At the state level, any projects that might affect Poverty Point would be reviewed by the Louisiana Division of Archaeology within the State Historic Preservation Office.

In 1978, when Trunkline Gas Company applied to inject, store, and withdraw natural gas from underground reservoirs (depleted natural gas fields) located under and near the park, project review occurred. The only direct effect on the site historic site was the capping of two old wells, so archaeological study focused on areas beyond the boundaries of the state-owned property. All of the proposed construction areas were inspected, and areas of possible significance were tested and evaluated. Cultural resources were avoided or, in two cases, excavated (Thomas and Campbell 1978a). Future relicensing of the permit for gas storage or renewal of the lease will provide an opportunity for the Louisiana State Historic Preservation Office (SHPO) to make a recommendation to the Federal Energy Regulatory Commission. The current SHPO staff would advise against use of the land under or within 0.4 km of the Poverty Point State Historic Site for natural gas storage (Rachel Watson, personal communication 2012).

The intent of Section 4(f) of the DOT Act is to avoid the use of significant public parks, recreation areas, wildlife and waterfowl refuges, and historic sites as part of a transportation project, unless there is no feasible and prudent alternative to the use of such land. Section 4(f) applies to projects that receive funding from, or require approval by, an agency of the U.S. Department of Transportation (USDOT). LA 577, a Louisiana state highway, runs through the Poverty Point State Historic Site property (Figure 5.5). Section 4(f) would be triggered if any alterations to LA 577 were proposed and funding or approval by USDOT was required.

When a project proposes to use resources protected by Section 4(f), a Section 4(f) evaluation must be prepared. The Section 4(f) evaluation may be developed and processed as a stand-alone document, or it may be incorporated into an environmental assessment (EA) or environmental impact statement (EIS), as required under NEPA. However, the evaluation of alternatives under 4(f) is stricter than under NEPA. In other words, there is more room to reject alternatives as unreasonable under NEPA than there is to find those same alternatives are imprudent under Section 4(f). Likewise, 4(f) overlaps Section 106 review when determining adverse effects on historic properties, but Section 4(f) prevents project approval if harm has not been minimized properly. The Louisiana Division of Archaeology, within the State Historic Preservation Office, would have an

opportunity to comment if such a project involving Poverty Point is planned. However, to date, no such project has occurred.

### *Native American Graves Repatriation Act (NAGPRA)*

NAGPRA requires consultation with "appropriate" Indian tribes prior to the intentional excavation, or removal after inadvertent discovery, of several kinds of cultural items, including human remains and objects of cultural patrimony. The law also provides for the repatriation of such items from federal agencies and federally assisted museums and other repositories.

Previous review of the excavations at Poverty Point led to the conclusion that no Poverty Point (or other Native American) burials have been found at the site (Robert Connolly, personal communication 1998), although non-Indian burials are known to be present. NAGPRA protocols will be followed if remains identified as Native American and subject to NAGPRA are found in the archaeological collections at Poverty Point State Historic Site.

In summary, the legal instruments discussed provide stable, long-term protection for Poverty Point State Historic Site, under both state and federal law.



Figure 5.5. Hwy 577 at Poverty Point. Photo © C.C. Lockwood

### **5.d Existing plans**

At present, there are no proposed developments in northeastern Louisiana that will harm Poverty Point. The northeast regional director of Louisiana Economic Development, the Northeast Louisiana Economic Alliance, and the North Delta Regional Planning and Development District are

aware of several planned projects in the region, but none are near Poverty Point SHS and they are unlikely to affect the site.

For example, the Franklin Farm mega-site, at 582.7 ha, is the largest tract of land that has been highlighted for possible industrial development in the region. Situated in Holly Ridge, Richland Parish, about 37 km southeast of Poverty Point, the mega-site is managed by the Northeast Louisiana Economic Alliance ([www.nelea.us](http://www.nelea.us)). The Louisiana Department of Economic Development also identifies two other sites as available for development. The Allen M. Simms property is 64.8 ha, located 10 km southwest of Poverty Point. The Oak Grove/West Carroll Industrial Park is 2.8 ha of land located 32 km north of Poverty Point.

The Louisiana Department of Transportation and Development's *Statewide Transportation Plan* (Wilbur Smith Associates 2003) and the *Statewide Transportation and Infrastructure Plan – Review and Status Report* (Wilbur Smith Associates 2008) identify policies, programs, and projects that are needed to strengthen the state's economy and quality of life. The plan addresses all modes of transportation, specifically: aviation; freight railroad; Intelligent Transportation Systems; ports and waterways; highways; surface passenger (transit, passenger rail, and intercity bus); trucking; and intermodal. There are no projects in the vicinity of Poverty Point.

In addition to the statewide transportation plan, the Louisiana Department of Transportation and Development established the TIMED (Transportation Infrastructure Model for Economic Development) Program ([www.timedla.com](http://www.timedla.com)). The program is designed to enhance economic development in Louisiana through an investment in transportation projects. Although the plan includes widening sections of major north-south highways located in north-central Louisiana, there are no plans to widen or otherwise "improve" LA 577, the highway running through the center of Poverty Point State Historic Site.

The Louisiana Office of Tourism has a statewide tourism plan, but its focus is the process of marketing the entire state of Louisiana, rather than specific destinations within the state. Approaches for promoting Poverty Point on an international level are being discussed with representatives for the Office of Tourism, the Office of State Parks, and the Office of Cultural Development.

### 5.e Property management plan

The *Heritage Management Plan for Poverty Point State Historic Site, National Monument & National Historic Landmark* (Appendix E) serves as a guide to the care and operation of the property. This 2012 management plan compiles management policies, and it places them in the context of international best practices for care of cultural properties. The property has one owner with a history of 40 years of implementing well-defined management practices. The plan is in effect for the period of July 1, 2012 through June 30, 2018, after which time, a revised plan will supersede it.

The plan outlines the challenges at the site and the processes in place for protecting the archaeological remains. The resources that the plan addresses are defined as: all features resting

upon, subsurface archaeological deposits within, and materials derived from Poverty Point State Historic Site. The goals of the management plan are:

- to discuss the measures in place to protect, monitor, and report on Poverty Point SHS and its Outstanding Universal Value (OUV);
- to facilitate the review and coordination of efforts among the parties responsible for, and interested in, site maintenance, management, research, and interpretation;
- to identify persistent challenges faced—and the strategies by which these challenges are addressed—in the areas of site conservation, management, research, and interpretation;
- to present the structures and policies for the public interpretation, use, and enjoyment of Poverty Point SHS and the resources within it; and
- to ensure that the unified management strategy is efficient, inclusive, transparent, and consistent with the highest standards of conservation, management, and interpretation of cultural and archaeological heritage.

Background information about Poverty Point SHS is presented in the plan, including its natural setting, earthworks, significance, OUV, authenticity, and integrity. The document summarizes previous archaeological investigations at Poverty Point, and it gives an overview of the management strategies for archaeological research at the property. The plan compiles international, national, and state legal instruments and contractual agreements that relate to management of Poverty Point SHS.

Most critically, it documents the management system for Poverty Point SHS. It is discussed in the context of the *mission*, which is:

To serve the citizens of Louisiana and visitors to the site by preserving and interpreting the unique and exceptional characteristics of Poverty Point SHS.

The *vision* is:

Poverty Point SHS will impress and inspire all who come in contact with the site. The globally significant cultural heritage assets and setting of Poverty Point SHS will be conserved, interpreted, managed, and documented sensitively and sustainably, to ensure that they are passed to subsequent generations in the best possible condition.

Four *guiding principles* shape management decisions, ongoing research, public interpretation, and visitor enjoyment of Poverty Point SHS. All actions and decisions are weighed against these principles so as to ensure the continued conservation of the site. Poverty Point SHS will be managed in a way that:

- Holds tantamount the need for high quality and informed conservation, interpretation, and sustainable access to the material substance and OUV of the site;
- Promotes and increases the widespread public awareness and understanding of Poverty Point;

- Relies on the principles, objectives, and authorities identified in the site's heritage management plan to guide subsequent plans, policies, and decisions relating to the site; and
- Includes regular and meaningful efforts to gather input from, and strengthen relationships with, professional experts, governmental agencies, community partners, Native American tribes, stakeholders, and interested members of the public (Figure 5.6).



Figure 5.6. Meeting with Native American tribal representatives to discuss Poverty Point's World Heritage nomination. Photo: Diana Greenlee

The site management goal is:

To operate Poverty Point SHS in accordance with the highest standards of management, to retain the balance among: conserving the above- and below-ground material fabric of the site; supporting a diverse natural habitat; enhancing interpretation and visitor services; addressing maintenance and management concerns; and encouraging ongoing scientific research and educational training.

Five *management objectives* flow from this goal:

- Support a diverse natural habitat, while reducing site damage from harmful plants, animals, wind, water, and other agents;
- Encourage varied visitor use, understanding, and enjoyment of the site, while minimizing harm to the earthworks and OUV (Figure 5.7);
- Conduct and coordinate maintenance, management, and park development activities in ways that protect the OUV to the fullest extent possible;
- Foster appropriate archaeological research and educational training while conserving cultural resources; and
- Nurture working relationships with other agencies, organizations, interested stakeholders, descendent groups, and neighbors to enhance site protection, management, presentation, and promotion.

The heart of the plan discusses specific management issues at Poverty Point State Historic Site and the strategies in place to monitor and address each of the threats or challenges. Five categories of natural threats are discussed: erosion, treefalls, animals, climate change, and natural disasters. Seven cultural activities are addressed: development, agriculture, tourism, overpopulation, unauthorized collection and excavation, archaeological research, and security. Other issues covered are collaboration with other entities, conflict management, public relations, and interpretive programming. In addition to the monitoring strategies discussed in Section 6, the management plan includes more than fifty specific management strategies for the site. These are based on the procedures recorded in station archaeology program reports as well as in various protocols and plans that are appended to the management document:

- Summary of Discussion: Research and Planning Committee, Poverty Point State Commemorative Area, February 21-22, 1984
- Memorandum of Understanding Regarding the Poverty Point Station Archaeologist Program
- Deputy Custodian Agreement
- Procedures for Loan, Access & Management of Collections Curated at Poverty Point State Historic Site
- Operational Procedures for the Management of the Poverty Point Curation Facility at Poverty Point State Historic Site
- 2003 Poverty Point Site (16WC5) Research Design
- Memorandum of Agreement for Emergency Streambank and Shoreline Protection for Harlan Bayou at Poverty Point State Historic Site
- Treefall Processing Procedures at Poverty Point SHS
- Revised Minimum Standards for Field Projects
- Safety Program for Poverty Point State Historic Site
- Emergency Response Plan for Poverty Point SHS
- Poverty Point SHS Interpretive Prospectus
- Operations Plan for Poverty Point State Historic Site
- Watershed Management Plan
- Quarterly Miscellaneous Site Inspection Form

Following the discussion of existing management issues and strategies, the management plan focuses on the topic of sustainability, especially as it pertains to the Limits of Acceptable Change (LAC) process and the Visitor Experience and Resource Protection (VERP) framework. Further exploration of the VERP strategy is identified as priority for the future. The effect of World Heritage listing on visitation at Poverty Point is unknown, and therefore, this is an aspect of management that is of special interest for the period that the current management plan is in use.

The *Heritage Management Plan for Poverty Point State Historic Site, National Monument & National Historic Landmark* has been approved and implemented by the Louisiana Office of State Parks, the Poverty Point Station Archaeology Program, and the Division of Archaeology, Louisiana Office of Cultural Development.

## 5.f Sources and levels of finance

The primary source of funding for Poverty Point SHS comes from the general fund of the state of Louisiana and is allocated by the Louisiana state legislature, based on the annual budget recommended by the governor's office of the state of Louisiana. Repair and improvement funds are based on self-generated revenue from site admission fees as outlined by Act 729 of the Louisiana state legislature. Entrance fees are \$4 per person, except children (age twelve and under) and seniors (age sixty-two and over) are free. The funds allocated to Poverty Point SHS for fiscal year 2011/2012 totaled \$459,546. Also, at the district manager's discretion, additional funds may be allocated from district-level funds. The average allocation to Poverty Point SHS over the past five years was \$431,572.



Figure 5.7. Archaeological field school students explain their excavation to visitors at Poverty Point SHS. *Photo: Evan Peacock*

The historic site also houses the Poverty Point Station Archaeology Program. It is funded through a grant from the Louisiana Office of Cultural Development to the University of Louisiana at Monroe. The Office of State Parks provides office space and a secure and climate-controlled artifact storage facility. Funding for this program comes primarily from the general fund of Louisiana. In some years, based on the work planned, a portion of funding may come from the federal Historic Preservation Fund. The Poverty Point Station Archaeology Program budget for fiscal year 2011/2012 was \$175,710, and the five-year average was \$130,721.

The level of funding for the past five years is summarized in Table 5.1. Poverty Point has maintained a consistent level of funding sufficient to support its operations.

### 5.g Sources of expertise and training

Relationships with several national and statewide organizations benefit Poverty Point SHS through training opportunities, expertise, and shared resources. The Louisiana Office of State Parks and the Poverty Point Station Archaeology Program (affiliated with the University of Louisiana at Monroe) both have a presence at the property, and they each bring a diverse set of relationships with outside organizations that benefit site management and interpretation.

The Office of State Parks has had a long-lasting cooperative relationship with the United States National Park Service (NPS). State employees have opportunities to participate in training exercises offered by the NPS. (Likewise, NPS staff members, primarily curators and interpreters, are invited to participate in Office of State Parks-sponsored training and functions.) The station archaeology program has also established professional relationships with archaeologists at the NPS's National Center for Preservation Technology and Training and the Southeastern Archeological Center. In 2010, Poverty Point was listed as a Smithsonian Institution Affiliate. As an affiliate, personnel at the site have access to the resources and expertise of the Smithsonian's staff in the fields of conservation, interpretation, and cultural resources.

Table 5.1. Poverty Point budget, fiscal year 2007/2008 to 2011/2012.

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	<b>Five-Year Average</b>
Poverty Point State Historic Site – Office of State Parks	\$408,463	\$405,799	\$429,939	\$454,114	\$459,546	<b>\$431,572</b>
Poverty Point Station Archaeology Program	\$100,000	\$118,873	\$105,579	\$153,442	\$175,710	<b>\$130,721</b>
<b>Total</b>	<b>\$508,463</b>	<b>\$524,672</b>	<b>\$535,518</b>	<b>\$607,556</b>	<b>\$635,256</b>	<b>\$562,293</b>

Staff of the Office of State Parks belong to a number of professional organizations that offer expert training and advice related to managing cultural heritage sites. These include membership in the United States National Committee of the International Council on Monuments and Sites (US/ICOMOS) and membership in two ICOMOS Scientific Committees, the International Committee on Archaeological Heritage Management (ICAHM), and the International Committee on Interpretation and Presentation. The station archaeologist is also a member of US/ICOMOS and ICAHM, along with the Society for American Archaeology, the Society for Archaeological Science, the Southeastern Archaeological Conference, and the Louisiana Archaeological Society. These organizations provide a network of skilled colleagues, as well as opportunities for ongoing training in matters relevant to internationally significant archaeological sites.

The state also draws on working relationships with experts based at the United States Army Corps of Engineers, the United States Natural Resources Conservation Service, the Louisiana Geological Survey, and universities for advice about care of resources at Poverty Point.

### 5.h Visitor facilities and infrastructure

Poverty Point is in a rural location. The closest airport is in Monroe, Louisiana, 84 km away, and the nearest train station is in Jackson, Mississippi, 154 km away. No scheduled bus or shuttle service travels to Poverty Point SHS from Monroe or Jackson, but a visitor can rent a car and drive to Poverty Point. Both Monroe, Louisiana, and Jackson, Mississippi, are on Interstate 20 (I-20), a major east–west highway in the southern United States. Poverty Point SHS is 28 km northeast of the Delhi exit from I-20 (Figure 5.8). From I-20, the most direct route to Poverty Point is via state highways: north on LA 17, then east on LA 134, and, finally, north on LA 577. Visitor facilities are available in three areas between the interstate and the site. The city of Delhi offers two motels and more than a dozen restaurants. Just north of Delhi (and 24 km south of Poverty Point SHS) is the Poverty Point Reservoir State Park, with newly built cabins and a large campground. Continuing north toward Poverty Point State Historic Site is the Black Bear Golf Club, which has a lodge and a restaurant that are 19 km south of Poverty Point State Historic Site. Motels and restaurants also are located 29 km north of the site in Oak Grove and 35 km northeast of the site in Lake Providence, as well as in other cities, such as Bastrop, Rayville, and Tallulah.



Figure 5.8. Routes to Poverty Point SHS.

Information about visiting Poverty Point is offered online through the Louisiana Office of State Parks website (<http://www.crt.state.la.us/parks/ipvertypt.aspx>), through the Louisiana Office of

Tourism website (<http://www.louisianatravel.com/poverty-point-state-historic-site?page=1>), and through the National Park Service website (<http://www.nps.gov/popo/index.htm>). Many other sources include Poverty Point SHS as a heritage-tourism or eco-tourism destination. These include the Indian Mounds of Northeast Louisiana Driving Trail, the Great River Road Scenic Byway, a canoe paddling trail from Poverty Point Reservoir State Park to Poverty Point SHS, the Mississippi River Trail LA Loop 1—Lake Providence to Poverty Point Bicycle Trail, and the National Park Service’s Places Reflecting America’s Diverse Cultures travel itinerary.

### *Visitor Facilities*

Poverty Point SHS contains an array of public facilities, support facilities, and infrastructure used to preserve and protect the site while educating the visiting public about Poverty Point (Figure 5.9). Facilities are also available to support and encourage research initiatives, such as archaeological field schools. The selection of locations and designs for all physical improvements is dictated by archaeological investigations at the site. This policy of conducting archaeological study before construction was established in a 1973 memorandum of agreement among the Advisory Council on Historic Preservation, the U.S. Department of Housing and Urban Development, and the Louisiana Historic Preservation Officer, as part of Section 106 review of initial park development. A summary of the facilities and infrastructure at Poverty Point State Historic Site follows.

#### *Visitors’ Center with Museum and Theater*

The museum portion (Figures 5.9 and 5.10) of this facility is designed with a foyer, an information desk, and a display area featuring information panels, exhibit cases with over 2,000 artifacts, and an alcove with an illustrated timeline. The museum’s information panels were recently (2009/2010) updated as part of a joint partnership with the Louisiana State Museum and artist Martin Pate. The building also houses an audio-visual theater that seats forty persons. A seventeen-minute video provides the visitors’ first introduction to the site. The theater also has a hands-on display table with replica artifacts for visitors to touch and hold. Informational panels about Louisiana’s past are displayed. There are also public restrooms in the museum. A remotely monitored security and fire detection system is present in this building.

#### *Visitors’ Center Plaza*

The visitors’ plaza serves as a staging area for tours of the site, and it provides several visitor amenities:

1. Two restrooms are located on the eastern edge of the visitors’ plaza. The restrooms are accessible to individuals with disabilities.
2. A concession shelter, on the southern edge of the visitors’ plaza, has two soft drink machines.
3. An open-air shelter, on the north side of the visitors’ plaza, is used for demonstrations such as stone grinding, flint knapping, cooking, pottery making, and basket weaving.

4. A series of informational panels offers visitors an overview of Poverty Point and related topics in archaeology.

*Picnic Areas*

Picnic areas are located both northwest and southeast of the visitors' plaza. Combined, there are twenty wood-topped tables with benches. These provide seating for approximately 200 visitors.

*Visitors' Center Parking Lot*

This paved area is located south of the visitors' plaza and accommodates fifty cars.

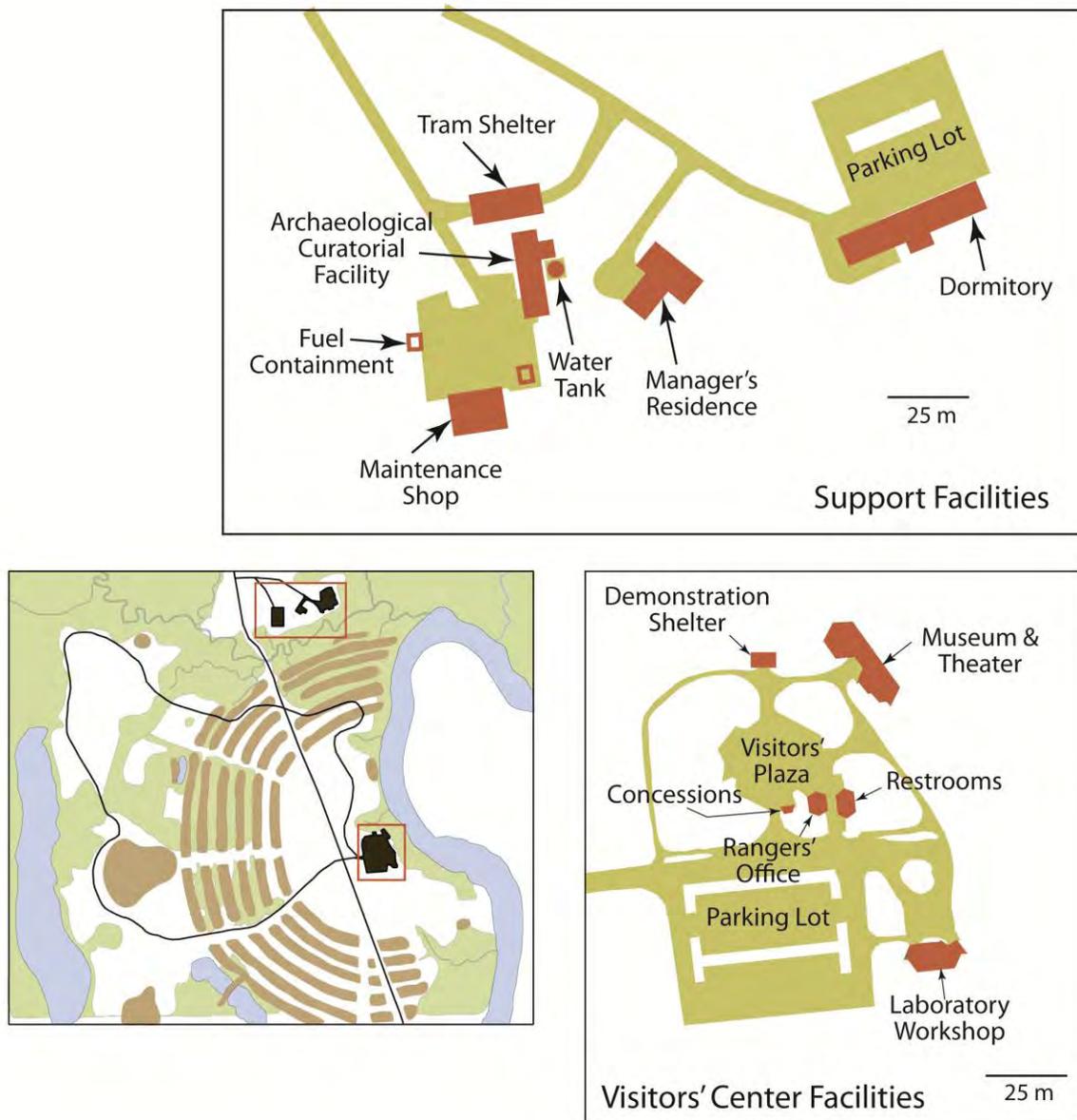


Figure 5.9. Visitor and support facilities at Poverty Point SHS.



Figure 5.10. Museum at Poverty Point State Historic Site. *Photo © Jenny Ellerbe*

### *Interpretive Vehicle Trail*

The 3.4-km-long paved driving trail protects the archaeological deposits while allowing visitors to have access to the vast site (Figures 5.11 and 5.12). Signs marking the ridges and interpreting the earthworks are placed along the trail. From March through October, interpretive rangers give guided tours on the driving trail. Depending on the group size, they may use the touring tram, which seats forty-four visitors, or a golf cart which seats six. In the off-season, November through February, visitors may take their own vehicles on the drive; a printed guide provides information in addition to signage for interpretive stops along the roadway.



Figure 5.11. Interpretive vehicle trail at Poverty Point State Historic Site. *Photo © Jenny Ellerbe*

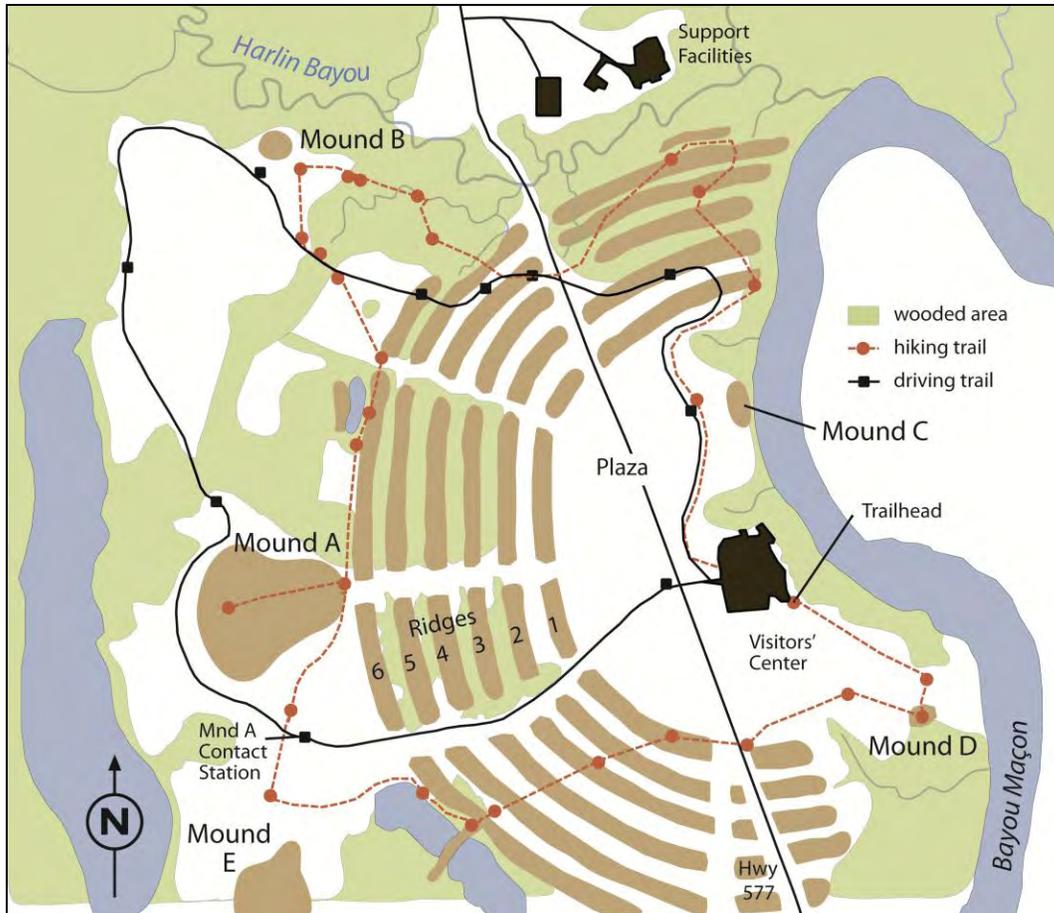


Figure 5.12. Schematic showing interpretive vehicle and hiking trails at Poverty Point State Historic Site. Symbols indicate interpretive stops.

### *Interpretive Hiking Trail*

This 4.2-km walking trail (Figures 5.12 and 5.13) has interpretive stations and signage that are used in conjunction with a printed trail guide. The trail was established by a local troop of the Boy Scouts of America in 1984; Boy Scouts can order a patch from the troop upon completion of the hike.

### *Mound A Visitor Contact Station*

The station contains a 1.2 m diameter glass-fiber cylinder supporting an interpretive panel with educational material and graphics. It orients visitors to the importance of Mound A, the site's most prominent feature. The station has benches that accommodate up to forty persons.

### *Support Facilities and Infrastructure*

#### *Interpretive Rangers' Office Building*

The rangers' office is located in the visitors' plaza, along the route that visitors take from the parking lot to the museum. It is positioned to provide maximum access to visitors.



Figure 5.13. The interpretive walking trail approaching Mound B. *Photo © Jenny Ellerbe*

### *Laboratory Workshop*

This two-story wooden structure is located on the south end of the visitors' plaza (Figures 5.9 and 5.14). It is designed to provide laboratory space during archaeological field schools. The first floor contains a large work area with cabinets and counter space to accommodate eight workers. It has a wash-down area equipped with a sediment trap, two restrooms with showers, an administrative office, and two small closets. The second floor contains office space, a small library, and a locked storage room. This building is locked at all times and access for research purposes is scheduled in advance. This building also has a remotely monitored security and fire detection system.



Figure 5.14. Laboratory workshop at Poverty Point SHS. *Photo © Jenny Ellerbe*

### *Dormitory*

The overnight facility is in a cluster of support buildings on the northern end of the property (Figures 5.9 and 5.15). The dormitory provides accommodations for groups of up to forty persons, and it is used primarily to house archaeological field school students. The building has a large central dining room, two large dorm rooms that sleep sixteen persons each, and four semi-private rooms that sleep two each. Additionally, the building has two restrooms, a laundry room, and a fully equipped kitchen. Two storage rooms house a freezer and a large refrigerator. The dormitory has a remotely monitored security and fire detection system.



Figure 5.15. Dormitory (left) and manager's residence (right) at Poverty Point State Historic Site. Photo © Jenny Ellerbe

### *Dormitory Parking Lot*

Located north of the dormitory, the paved lot is designed to accommodate twenty-three vehicles.

### *On-Site Manager's Residence*

The on-site manager's residence (Figures 5.9 and 5.15) is also on the northern end of the property, near the dormitory, the maintenance shop, and the archaeological curatorial facility. Having a manager with law enforcement capabilities living on the state historic site provides security even when the facilities are not open to the public.

### *Maintenance Shop*

The maintenance shop (Figures 5.9 and 5.16), on the northern end of the property, includes an office, storage room, restroom, and small kitchen area. The work area has two large bays where equipment can be moved in for repair. Two 1,893-l tanks containing gasoline and diesel are stored within a containment wall located northwest of the maintenance building.

### *Tram Shelter*

The tram shelter (Figures 5.9 and 5.16), on the northern end of the property, shelters the tram when it is not in use.



Figure 5.16. Tram shelter (left), archaeological curatorial facility (center) and maintenance shop (right). Photo © Jenny Ellerbe

### *Archaeological Curatorial Facility*

The curatorial facility (Figures 5.9 and 5.16), also in the northern cluster of buildings, houses the staff of the Poverty Point Station Archaeology Program and roughly 1,200 m<sup>3</sup> of archaeological collections. It includes an office, a restroom, a central work area, records storage, and a separate room with shelving for artifact storage. Temperature and relative humidity in the artifact storage area are monitored with a hygro-thermometer, and they are maintained at 21.9° C ± 1.7° and 47.5% ± 5%, respectively. This building is equipped with a monitored security system including motion sensors and a fire detection and suppression (sprinkler) system. A 121-kl dedicated tank holds water for the fire suppression system; thus, if some disaster interrupts the public water supply, water will be available to protect the collections from fire. The pump is tested weekly. All Poverty Point-related artifacts in the state historic site collections that are not on display or on loan are housed in this facility. Over the past twelve years, Poverty Point site artifact collections and associated documentation have been moved to this facility from various other institutions. It now serves as the primary repository for Poverty Point archaeological collections, and it provides physically secure conditions for artifacts and records.

### *Water*

A 5-cm polyvinyl chloride water line from the Pioneer-Darnell Water System serves both the north-end support facilities and the visitors' center area. There is also a well, which is currently not in use.

### *Electricity*

Northeast Louisiana Power Cooperative provides electricity to the Poverty Point State Historic Site.

### *Sewage Management*

Sewage generated by the north-end support facilities is directed into a 316.5-l buried septic/holding tank, and from there, by pump, into a fenced oxidation pond. The museum, plaza,

and laboratory workshop restrooms are currently using two 1,892-l buried septic tanks with field lines.

### 5.i Policies and programmes related to the presentation and promotion of the property

Information about Poverty Point is offered to the public through various means. An overview booklet about the site and culture is available online through the Louisiana Division of Archaeology (<http://www.crt.state.la.us/archaeology/virtualbooks/POVERPOI/Popo.htm>). The property is promoted through the Office of State Parks brochure and online (<http://www.crt.state.la.us/parks/ipvertypt.aspx>). As part of its publicity efforts, the Louisiana Office of Tourism also provides information online (<http://www.louisianatravel.com/poverty-point-state-historic-site?page=1>) and through the official Louisiana travel guidebook. Further, as a National Monument, Poverty Point is included on the United States National Park Service website (<http://www.nps.gov/popop/index.htm>).

Poverty Point SHS offers a wide variety of educational programs about the significance of the site to school groups, day visitors, visiting archaeologists, archaeology students, and local community groups. With a staff of three interpretive rangers, the Office of State Parks can modify existing programs to meet the needs and expectations of the visitors. Staff members of the station archaeology program frequently are asked to participate in the programs for school groups and educators. The significance of the Poverty Point site is presented through a variety of methods. The informational activities, narratives, and scripts are outlined in the Poverty Point State Historic Site Interpretive Prospectus (refer to Appendix E). Below are key points of contact for the interpretation of the Poverty Point Site:

#### Visitors' Center with Museum and Theater

Once visitors are seated in the theater, a seventeen-minute video provides an overview of the site and its importance. After the video, guests are encouraged to examine materials and replica Native American tools and drums that are in the theater. Generally, visitors then explore the displays and artifacts in the museum (Figure 5.17). Outside, near the museum, guests may observe Bayou Maçon, information panels in the center plaza, and a scale model of the site.



Figure 5.17. Museum displays. Photos © Jenny Ellerbe

## Tours

Guided tram or, for small groups, golf cart tours of the site are offered daily at regularly scheduled times from March 1 through October 31. Designated interpretive personnel lead the tours, which consist of educational stops (Figure 5.18) and a climb up Mound A, using a boarded pathway. If there are any on-site archaeological excavations, the tour is expanded to include them, as well. Visitors may opt instead to use the trail guide to explore the site via the interpretive hiking trail.

## Educational Materials

Information about Poverty Point is available to teachers both at the site and through the Division of Archaeology's web page (<http://www.crt.state.la.us/archaeology/>). Educators find the *Poverty Point Expeditions* classroom activity guide (Bucu 1999) to be an excellent tool for teaching their students about Native American life at the site. A poster set (Louisiana Division of Archaeology 2005) that describes and illustrates the different time periods of Louisiana before Europeans is also popular among teachers. The booklet *Poverty Point: A Terminal Archaic Culture of the Lower Mississippi Valley* (Gibson 1999a) serves as an excellent introduction to the site for teachers and for the general public. These written materials are also included in educational kits that are loaned at no charge to teachers and group leaders. The kits include books, maps, videos, artifacts, samples of raw materials, replica pump drills, and replica atlatls (spear-throwers).



Figure 5.18. The Poverty Point tram at a stop along the driving trail. Photo: Evan Peacock

## Special Programs

Special programs are developed in advance, upon request, to meet the needs of some visitors. Examples include: Louisiana Archaeology Month, Girl Scout Day, Artifact Identification Weekend, and School Day programs for large groups of students. On these special program days, a host of demonstrations are performed. Flintknapping, stone drilling, earth oven cooking, spear/atlatl throwing, archaeological screening, and artifact identification are common programs. Depending on

the size and interest of the groups, individuals may have the opportunity to try their hand at some of the activities demonstrated.

### Educational Programs

The manager, interpretive rangers, and station archaeologist often present talks about Poverty Point to interested civic, school, and public groups in nearby communities. The interpretive rangers also schedule public programs at the site, on average, once per week. Below is a sample of the educational programs:

#### *Ranger-Guided Hike*

Participants are given a walking tour around the earthworks at Poverty Point. Emphasis is placed on what archaeologists have learned about the site and on the visible remnants of the Poverty Point culture, such as the mounds, ridges, and plaza.

#### *Expand the Senses Night Hike*

An interpretive ranger guides visitors along the trails at dusk (Figure 5.19) to observe nature, using the senses of smell and hearing, in addition to sight. The hike concludes with hot chocolate and Native American storytelling around a campfire. Nighttime experiences in Native American culture are an important aspect of how Indians viewed the world around them, and this experience is often overlooked in today's world of electric light. This program attempts to bring the night back into consciousness.



Figure 5.19. Mound A at dusk. Photo © C.C. Lockwood

#### *Astronomy and Astrology in the Night Sky Night Hike*

Visitors hike the park trails after hours with a ranger. The importance of the celestial skies in Native American culture and possible interpretations of the Poverty Point layout are discussed.

### *Flintknapping Workshop*

Guided by an interpretive ranger, participants learn, and experience firsthand, the art and importance of stone tool making in Native American culture.

### *Edible Wild Plants*

The program consists of a 1.6 km hike around the site highlighting some of the native plants that the Poverty Point people probably used for food. Emphasis is put on the abundant wild fruits, nuts, roots, and other plant resources available to the Poverty Point peoples (Figure 5.20).



Figure 5.20. Lotus (*Nelumbo lutea*). Photo © C.C. Lockwood

### *Earth Oven Demonstration*

Guests of all ages are welcome to come and join as members of the Poverty Point staff demonstrate earth oven cooking (Figure 5.21). Using replica cooking balls, the ranger shows how the unique Poverty Point objects (PPOs) might have been used to cook food.

### *Erosion Patrol*

Visitors are invited to tour the site in order to see, firsthand, the effects of erosion on the natural and cultural landscape while gaining knowledge of different methods of erosion prevention and control used by the Office of State Parks.



Figure 5.21. Demonstrating how PPOs are made and used. Photo © Jenny Ellerbe

### *Ancient Tool Demonstration*

A ranger demonstrates the tools used by the inhabitants of Poverty Point to build, hunt, and create other artifacts used in their culture. The interpretive ranger answers questions relating to the origins and making of the ancient tools.

### *Poverty Point Trade*

Guests of all ages are invited to try this interactive activity about trading. Not only will guests get a chance to do some "pretend" trading of their own, but the trading of various rocks and minerals by the Poverty Point people also is explained. Emphasis is placed on the vast trade network of the Poverty Point people.

### *Coil (Clay) Pots*

This program is taught for all ages, and the whole family can enjoy this hands-on pottery-making activity. Guests learn about the Poverty Point culture while getting their hands dirty and creating coil pots and other Poverty Point objects out of clay. Although pottery is often associated with agricultural cultures, visitors learn that it was important at Poverty Point long before agriculture was practiced.

### *Basket Weaving Workshop*

Adults and children, ages thirteen and up, learn how to make hand-woven baskets, which they can take home with them. Basketry, although a rare archeological find, does appear as imprints at Poverty Point (Figure 5.22), and the importance of basket-loaded dirt in the building of the mounds is explained.



Figure 5.22. Basketry impression in fired earth. Photo © Jenny Ellerbe

### *What's Wrong with this Picture?*

Interpretive rangers explain how information about Native Americans has changed through time. Participants can compare pictures with accurate historical information available in the museum, to identify common misconceptions about Native American history.

### *Atlatl Competition*

The importance of the atlatl in the culture and the livelihood of Native Americans, including the Poverty Point peoples, cannot be underestimated. Therefore, guests are invited to learn about, and actually use, atlatl reproductions to hurl spears. This opportunity allows visitors to experience,

firsthand, the extraordinary level of skill needed to be successful in one of the ways ancient hunters obtained meat (Figure 5.23).



Figure 5.23. A young visitor tries his hand at throwing a spear using an atlatl. *Photo: Diana Greenlee*

### *Poverty Point Rocks*

Guests observe visual and textural differences in different types of rocks traded by Poverty Point peoples such as cherts, quartzes, and iron ores.



Figure 5.24. A sample of the different kinds of stone found at Poverty Point, with 1 cm cube for scale. *Photo © Jenny Ellerbe*

### *Artifact Identification*

Community members bring their artifacts to find out their purpose, use, and age. This program allows staff and guests to learn about the distribution patterns of Native American artifacts over the landscape beyond the historic site. The program also helps to establish good community relationships with the people of northeastern Louisiana.

### *Maze Craze*

Children delight in this program by working their way through a maze set up by an interpretive ranger. To get through the maze, children answer Poverty Point questions and make choices at each turn in the maze. The process is similar to a scientist using a dichotomous key to identify an animal or plant.

### *Tracking Food*

Visitors are invited to discover how the people of Poverty Point might have used animal tracks and signs (Figure 5.25). Visitors will also be shown how to identify various animal furs along with tracks and signs.

### *Sand-Sifting Activity*

In a simple simulated archaeology activity, children twelve and under can sift sand and look for plastic beads. This is a program for younger audiences that demonstrates the importance of archaeologists screening soil to recover very small artifacts.

### *Crafts Day*

Guests learn about the great variety of symbolic objects and ornaments that Poverty Point people crafted from stone. Visitors also have an opportunity to make a handicraft of their own.



Figure 5.25. Raccoon tracks. Photo © Jenny Ellerbe

### *Station Archaeology Volunteer Program*

Volunteers assist the station archaeologists and collections manager with various projects. Work may include excavation, geophysical survey, processing soil from tree root balls, screening dirt for artifacts, sorting screened debris, cataloging artifacts, or collecting data for analysis. A popular

activity is the Poverty Point Screen-A-Thon, a water-screening marathon held during Louisiana's Archaeology Month. At this event, volunteers work in shifts over forty-eight continuous hours to help recover small artifacts and other remains by using running water to wash soil through fine-mesh wire screen (Figure 5.26).

### 5.j Staffing levels and expertise

The Office of State Parks at Poverty Point State Historic Site currently employs one part-time and eight full-time employees. These positions include: a site manager, three interpretive rangers, a maintenance foreman, a maintenance repairer, a mobile equipment operator, an administrative coordinator, and a park attendant. The Louisiana Department of State Civil Service specifies the minimum qualifications for these positions. For example, an employee with the title Interpretive Ranger 2 must have a baccalaureate degree plus one year of related archaeological, archival, historical, or interpretive experience. Extensive on-the-job training is required of all employees.



Figure 5.26. Volunteers at the Poverty Point Screen-A-Thon. *Photo: Diana Greenlee*

Other personnel working at the historic site include employees of the Poverty Point Station Archaeology Program, whose offices are located in the curatorial facility. The program has three employees: the station archaeologist, the assistant station archaeologist, and the collections manager. During some summers, M.A.-level interns join the staff, assisting with tasks and gaining valuable real-world experience.

The station archaeologist oversees the program and is required to have a Ph.D. in anthropology with a specialization in archaeology and to have extensive relevant experience in archaeology of the region. The station archaeologist must meet the United States secretary of the Interior's qualifications for an archaeologist and also must meet the state of Louisiana's qualifications for a prehistoric archaeologist working on state land. For routine work, the station archaeologist must annually receive a limited permit from the Louisiana Archaeological Survey and Antiquities Commission. For more extensive archaeological investigations, the station archaeologist must

submit a detailed proposal to the Louisiana Archaeological Survey and Antiquities Commission to receive a regular permit. The station archaeologist provides advice to the Office of State Parks about archaeological matters at the site.

Presently, also on staff is an assistant station archaeologist who has completed the coursework to receive a Ph.D. in anthropology with a specialization in archaeology. Although this is not a permanent position, the plan is that a place will always be available for an advanced Ph.D. student to be in residence at the site both to learn and to serve. The assistant station archaeologist monitors maintenance activities and natural disturbances that affect archaeological resources at the site. That individual also must meet the national and state qualifications for an archaeologist. The collections manager focuses on processing newly recovered artifacts, documenting artifacts at the curatorial facility, and tracking loaned artifacts. The station archaeologist and visiting scholars provide the specialized training needed for the collections management position.

The state of Louisiana provides safety and management training through the Office of State Parks and the University of Louisiana at Monroe. The staff also can take advantage of learning opportunities on subjects such as NAGPRA compliance and emergency preparedness planning through web-based seminars and programs sponsored by other institutions. Table 5.2 lists some of the relevant training that staff members have received.

Table 5.2. Safety and management training.

	Site Manager	Interpretive Rangers	Administrative Coordinator	Park Attendant	Maintenance Crew	Station Archaeologists	Collections Manager
Occupational Health & Safety <sup>1</sup>	X	X	X	X	X	X	X
Cardiopulmonary Resuscitation & First Aid	X	X			X	X	
Accident Prevention & Investigation	X				X	X	X
Safety Management	X						
Safety Inspections	X				X		
Firearm Safety & Law Enforcement	X						
NAGPRA Compliance						X	X
Cultural Resource Management	X					X	
Emergency Preparedness Planning	X					X	

<sup>1</sup> Includes training on topics such as driving safety, blood-borne pathogen control, material safety data sheets, personal protective equipment, preventing sexual harassment



Hardwood bottomlands. *Photo © C.C. Lockwood*

## 6. MONITORING

- 6.a Key indicators for measuring state of conservation
- 6.b Administrative arrangements for monitoring property
- 6.c Results of previous reporting exercises



Galena pendant, button, and cube.  
*Photo © Jenny Ellerbe*

## 6. Monitoring

### 6.a Key indicators for measuring state of conservation

Conservation is a key part of management of the cultural resources at Poverty Point State Historic Site (SHS). In fact, the site’s vision statement says, in part:

The globally significant cultural heritage assets and setting of Poverty Point SHS will be conserved, interpreted, managed, and documented sensitively and sustainably so as to ensure that they are passed to subsequent generations in the best possible condition.

As highlighted in the *Heritage Management Plan for Poverty Point State Historic Site, National Monument & National Historic Landmark* (Appendix E), part of implementing this vision is to monitor and report indicators at Poverty Point SHS that document the state of conservation of the characteristics contributing to the site’s Outstanding Universal Value (OUV). The indicators relate to the site management goal of retaining a balance among:

- conserving the above- and below-ground material fabric of the site
- supporting a diverse natural habitat
- enhancing interpretation and visitor services
- addressing maintenance and management concerns
- encouraging ongoing scientific research and educational training

Poverty Point SHS will be made accessible to the widest possible audience while paying careful attention to the site and the surrounding area’s character and carrying capacity. Indicators are measured to document:

- condition of earthworks
- condition of drainages
- visitor use
- natural events
- archaeological research

Activities of both people and nature always have affected the Poverty Point property. Human occupants from thousands of years ago until today have been the primary force affecting the site. Nature, through winds, rain, growth and death of trees, animal activities, and water erosion also has had a role in shaping the earthworks, plaza, and other features into the property that exists today. Realizing that these forces cannot be halted, the Office of State Parks, the Division of Archaeology, and the Poverty Point Station Archaeology Program have developed and initiated a conservation monitoring plan (Table 6.1) for Poverty Point SHS. The plan documents the goals, the indicators, the interval of documentation (periodicity), and the location of records.

Poverty Point State Historic Site monitoring plan includes various levels of visual inspections of cultural resources that are conducted monthly, quarterly, or annually. Staff members also maintain a “Quarterly Miscellaneous Facility Inspection” report that documents negative effects on the interpretive hiking trail, Mound A, and other sensitive areas, such as the property’s oxidation pond.

The form is used to document damage to the trail signage system, as well. Records are kept in the Poverty Point State Historic Site administration files.

Poverty Point SHS has remained under vigilant care since its acquisition by the state. This is in keeping with the Office of State Parks' role of "preserving, protecting, and portraying historic and scientific sites" of the state (La. R.S. 56:1682; Appendix B).

Table 6.1. Key indicators for measuring state of conservation.

Monitoring Goal	Indicator	Periodicity	Location of Records
Monitor plants, animals, wind, and water at the site to minimize harm to the earthworks and OUV while supporting a diverse natural habitat	Presence of measurable Mound A erosion and bayou erosion documented by comparing LiDAR images of site	Every 10 years, or when new LiDAR images are available (baseline established 2009)	Station Archaeology Curatorial Facility
	Sheet erosion in plaza as indicated by presence of accumulated debris on drainage basin grates	Weekly March –October; monthly November – February; and after each heavy rain	Poverty Point SHS administrative files
	Presence of chemical damage to vegetation on the southern boundary	Quarterly	Poverty Point SHS administrative files
	Number of trees uprooted by wind	After every high wind and rain event; totaled annually	Poverty Point SHS administrative files and Station Archaeology Curatorial Facility
	Number of armadillo ( <i>Dasypus novemcinctus</i> ) burrows observed and mapped	Quarterly; totaled annually	Poverty Point SHS administrative files
	Number of times feral swine ( <i>Sus scrofa</i> ) activity (rooting or broken fences) noted	Quarterly	Poverty Point SHS administrative files
	Number of Red Imported Fire Ant ( <i>Solenopsis invicta</i> ) nests in monitored area	Quarterly	Poverty Point SHS administrative files
	Number of times western slough is filled with water because of beaver ( <i>Castor canadensis</i> ) dams	Quarterly	Poverty Point SHS administrative files
	Number of beaver ( <i>Castor canadensis</i> ) dams removed from western slough	Quarterly	Poverty Point SHS administrative files

Table 6.1, continued.

Monitoring Goal	Indicator	Periodicity	Location of Records
	Number of fox burrows observed	Quarterly	Poverty Point SHS administrative files
	Qualitative assessment and/or photos of erosion along Harlin Bayou, Bayou Maçon, or gullies	Quarterly, and after heavy rain; also annual inspection	Poverty Point SHS administrative files and Station Archaeology Curatorial Facility
Monitor the visitor experience at the site to minimize harm to the OUV while encouraging diverse visitor activities	Number of visitors per day	Daily	Poverty Point SHS administrative files
	Number of visitors taking tram tour	Daily	Poverty Point SHS administrative files
	Number of visitors taking self-guided driving trail	Daily	Poverty Point SHS administrative files
	Number of visitors taking walking tour	Daily	Poverty Point SHS administrative files
	Number of times evidence of site looting is observed	Daily	Poverty Point SHS administrative files
	Number of visitors attending scheduled programs	Daily; totaled quarterly	Poverty Point SHS administrative files
	Subjective assessment of wear on trail through woods	Quarterly	Poverty Point SHS administrative files
	Number of days with indication of septic system overload	Daily; totaled annually	Poverty Point SHS administrative files
	Number of visitor facilities (restaurants, gas stations, overnight accommodations) within 10 km of center of site	Annually	Station Archaeology Curatorial Facility
Coordinate maintenance and management activities with archaeological assessment to minimize harm to the OUV	Number of ground-disturbing maintenance projects each year	Quarterly; totaled annually	Station Archaeology Curatorial Facility
	Number of maintenance projects for which archaeological work or monitoring occurred	Quarterly; totaled annually	Station Archaeology Curatorial Facility

Table 6.1, continued.

Monitoring Goal	Indicator	Periodicity	Location of Records
Encourage appropriate archaeological research and educational training while minimizing harm to the OUV	Number of square meters of site excavated	Quarterly; totaled annually	Station Archaeology Curatorial Facility
	Number of antiquities permit projects	Quarterly; totaled annually	Station Archaeology Curatorial Facility
	Number of non-intrusive permit projects	Quarterly; totaled annually	Station Archaeology Curatorial Facility
	Number of artifact loans for research	Quarterly; totaled annually	Station Archaeology Curatorial Facility

### 6.b Administrative arrangements for monitoring property

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### 6.c Results of previous reporting exercises

No single source currently summarizes findings from all reports. However, the annual reports of the Poverty Point station archaeologist include activities that directly relate to the earthworks at the Poverty Point State Historic Site. The report dates for the five most recent reports are listed in Table 6.2, and the report titles are included below the table.

Table 6.2. Annual reports reporting key indicators for measuring state of conservation.

Goal	Indicator	Periodicity	Annual Reports
Monitor plants, animals, wind, and water at the site to minimize harm to the earthworks and OUV while supporting a diverse natural habitat	Presence of measurable Mound A erosion and bayou erosion documented by comparing LiDAR images of site	Every 10 years, or when new LiDAR images are available (baseline established 2009)	Station archaeologist: 2010
	Sheet erosion in plaza as indicated by presence of accumulated debris on drainage basin grates	Weekly March –October; monthly November – February; and after each heavy rain	Poverty Point SHS administrative files

Table 6.2, continued.

Goal	Indicator	Periodicity	Annual Reports
	Presence of chemical damage to vegetation on the southern boundary	Quarterly	Poverty Point SHS administrative files
	Number of trees uprooted by wind	After every high wind and rain event; totaled annually	Station archaeologist: 2011, 2010, 2009, 2008, 2007
	Number of armadillo ( <i>Dasypus novemcinctus</i> ) burrows observed and mapped	Quarterly; totaled annually	Poverty Point SHS administrative files; Station archaeologist: 2011, 2010, 2009, 2008
	Number of times feral swine ( <i>Sus scrofa</i> ) activity (rooting or broken fences) noted	Quarterly	Poverty Point SHS administrative files; Station archaeologist: 2007
	Number of Red Imported Fire Ant ( <i>Solenopsis invicta</i> ) nests in monitored area	Quarterly	Poverty Point SHS administrative files
	Number of times western slough is filled with water because of beaver ( <i>Castor canadensis</i> ) dams	Quarterly	Poverty Point SHS administrative files
	Number of beaver ( <i>Castor canadensis</i> ) dams removed from western slough	Quarterly	Poverty Point SHS administrative files
	Number of fox burrows observed	Quarterly	Poverty Point SHS administrative files
	Qualitative assessment and/or photos of erosion along Harlin Bayou, Bayou Maçon, and gullies	Quarterly, and after heavy rain; also annual inspection	Poverty Point SHS administrative files; Station Archaeologist: 2011, 2010, 2009, 2008, 2007
Monitor the visitor experience at the site to minimize harm to the OUV while encouraging diverse visitor activities	Number of visitors per day	Daily	Poverty Point SHS administrative files
	Number of visitors taking tram tour	Daily	Poverty Point SHS administrative files
	Number of visitors taking self-guided driving trail	Daily	Poverty Point SHS administrative files

Table 6.2, continued.

Goal	Indicator	Periodicity	Annual Reports
	Number of visitors taking walking tour	Daily	Poverty Point SHS administrative files
	Number of times evidence of site looting is observed	Daily	Poverty Point SHS administrative files
	Number of visitors attending scheduled programs	Daily	Poverty Point SHS administrative files
	Subjective assessment of wear on trail through woods	Quarterly	Poverty Point SHS administrative files
	Number of days with indication of septic system overload	Daily; totaled annually	Poverty Point SHS administrative files
	Number of visitor facilities (restaurants, gas stations, overnight accommodations) within 10 km of center of site	Annually	Station archaeologist
Coordinate maintenance and management activities with archaeological assessment to minimize harm to the OUV	Number of ground-disturbing maintenance projects each year	Quarterly; totaled annually	Station Archaeologist: 2011, 2010, 2009, 2008, 2007
	Number of maintenance projects for which archaeological work or monitoring occurred	Quarterly; totaled annually	Station Archaeologist: 2011, 2010, 2009, 2008, 2007
Encourage appropriate archaeological research and educational training while minimizing harm to the OUV	Number of square meters of site excavated	Quarterly; totaled annually	Station Archaeologist: 2011, 2010, 2009, 2008, 2007
	Number of antiquities permit projects	Quarterly; totaled annually	Station Archaeologist: 2011, 2010, 2009, 2008, 2007
	Number of non-intrusive permit projects	Quarterly; totaled annually	Station Archaeologist: 2011, 2010, 2009, 2008, 2007
	Number of artifact loans for research	Quarterly; totaled annually	Station Archaeologist: 2011, 2010, 2009, 2008, 2007

*2011 Annual Report of the Station Archaeology Program at Poverty Point State Historic Site*

Diana M. Greenlee, Station Archaeologist

Poverty Point Station Archaeology Program

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*2010 Annual Report of the Station Archaeology Program at Poverty Point State Historic Site*

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*2009 Annual Report of the Station Archaeology Program at Poverty Point State Historic Site*

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*2008 Annual Report of the Station Archaeology Program at Poverty Point State Historic Site*

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*2007 Annual Report of the Station Archaeology Program at Poverty Point State Historic Site*

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Winter sun on the north ridges. *Photo © Jenny Ellerbe*

## 7. DOCUMENTATION

- 7.a Photographs and audiovisual image inventory
- 7.b Texts relating to protective designation, copies of property management plans or documented management systems, and extracts of other plans relevant to the property
- 7.c Form and date of most recent records or inventory of property
- 7.d Addresses where inventory, records and archives are held
- 7.e Bibliography
- 7.f Radiocarbon and luminescence dates



Incised gorgets.  
*Photo © Jenny Ellerbe*

## 7. Documentation

### 7.a Photographs and audiovisual image inventory

<b>Id. No.</b>	<b>Format</b>	<b>Caption</b>	<b>Date of Photo m/d/y</b>	<b>Photographer</b>	<b>Copyright owner</b>	<b>Contact details of copyright owner (Name, address, tel/fax, and email)</b>	<b>Non-exclusive cession of rights</b>
DSC_0091	jpg	Poverty Point Mound A, looking south; note person on walk near top of mound	7/31/12	Susan Guice	Susan Guice	Susan Guice/Wings of Anglers P.O. Drawer 1187 Biloxi, MS 39533 Phone: 228-863-3592 Fax: 228-435-0449 Email: susan@guiceagency.com	yes
09222010 018	jpg	Poverty Point Mound A, looking north northeast	4/5/12	Sharon Broussard	State of Louisiana	Office of State Parks P.O. Box 44426 Baton Rouge, LA 70804 Phone: 225-342-8111 Fax: 225-342-8107 Email: parks@crt.la.gov	yes
09222010 022	jpg	Poverty Point Mound A, looking north	4/5/12	Sharon Broussard	State of Louisiana	Office of State Parks P.O. Box 44426 Baton Rouge, LA 70804 Phone: 225-342-8111 Fax: 225-342-8107 Email: parks@crt.la.gov	yes
09222010 066	jpg	Poverty Point Mound A, looking west	4/5/12	Sharon Broussard	State of Louisiana	Office of State Parks P.O. Box 44426 Baton Rouge, LA 70804 Phone: 225-342-8111 Fax: 225-342-8107 Email: parks@crt.la.gov	yes
09222010 089	jpg	Poverty Point Mound A, looking west	4/5/12	Sharon Broussard	State of Louisiana	Office of State Parks P.O. Box 44426 Baton Rouge, LA 70804 Phone: 225-342-8111 Fax: 225-342-8107 Email: parks@crt.la.gov	yes
09222010 090	jpg	Poverty Point Mound A, looking west	4/5/12	Sharon Broussard	State of Louisiana	Office of State Parks P.O. Box 44426 Baton Rouge, LA 70804 Phone: 225-342-8111 Fax: 225-342-8107 Email: parks@crt.la.gov	yes
100-1636	jpg	Poverty Point Mound A, looking southeast	2/16/12	Alisha Wright	State of Louisiana	Poverty Point Station Archaeology Program P.O. Box 276 Epps, LA 71237 Phone: 318-926-3314 Email: greenlee@ulm.edu	yes
100-1651	jpg	Poverty Point Mound B, looking northeast	2/16/12	Alisha Wright	State of Louisiana	Poverty Point Station Archaeology Program P.O. Box 276 Epps, LA 71237 Phone: 318-926-3314 Email: greenlee@ulm.edu	yes

<b>Id. No.</b>	<b>Format</b>	<b>Caption</b>	<b>Date of Photo m/d/y</b>	<b>Photographer</b>	<b>Copyright owner</b>	<b>Contact details of copyright owner (Name, address, tel/fax, and email)</b>	<b>Non-exclusive cession of rights</b>
100-1582	jpg	Poverty Point west ridges, looking east southeast	2/10/12	Alisha Wright	State of Louisiana	Poverty Point Station Archaeology Program P.O. Box 276 Epps, LA 71237 Phone: 318-926-3314 Email: greenlee@ulm.edu	yes
100-1565	jpg	Poverty Point north ridges, looking south southwest	2/10/12	Alisha Wright	State of Louisiana	Poverty Point Station Archaeology Program P.O. Box 276 Epps, LA 71237 Phone: 318-926-3314 Email: greenlee@ulm.edu	yes
120320_0034P	jpg	Poverty Point Mound A, looking north northwest	3/20/12	C.C. Lockwood	C.C. Lockwood	C.C. Lockwood P.O. Box 14876 Baton Rouge, LA 70898 Phone: 225-769-4766 Fax: 225-767-3726 Email: cactusclyd@aol.com	no
Cover DSC_1013_vs4	jpg	Poverty Point aerial view, looking west	7/31/12	Susan Guice	Susan Guice	Susan Guice/Wings of Anglers P.O. Drawer 1187 Biloxi, MS 39533 Phone: 228-863-3592 Fax: 228-435-0449 Email: susan@guiceagency.com	yes
Fig. 1.5 DSC_0997_vs2	jpg	2012 aerial photograph of Poverty Point (north at top)	7/31/12	Susan Guice	Susan Guice	Susan Guice/Wings of Anglers P.O. Drawer 1187 Biloxi, MS 39533 Phone: 228-863-3592 Fax: 228-435-0449 Email: susan@guiceagency.com	yes
Divider 2 120327_0227	jpg	Poverty Point, aerial view of south and southwest ridges	3/27/12	C.C. Lockwood	C.C. Lockwood	C.C. Lockwood P.O. Box 14876 Baton Rouge, LA 70898 Phone: 225-769-4766 Fax: 225-767-3726 Email: cactusclyd@aol.com	no
Fig. 2.5 DSC_1024	jpg	Aerial view (looking west northwest) of Poverty Point, situated among croplands and woods	7/31/12	Susan Guice	Susan Guice	Susan Guice/Wings of Anglers P.O. Drawer 1187 Biloxi, MS 39533 Phone: 228-863-3592 Fax: 228-435-0449 Email: susan@guiceagency.com	yes
Fig. 2.8 _MG_2907	jpg	View from the center of the Poverty Point plaza, looking east	7/10/12	Jenny Ellerbe	Jenny Ellerbe	Jenny Ellerbe 707 Lakeshore Drive Monroe, LA 71203 Phone: 318-342-8766 Email: info@jennyyellerbe.com	no
Fig. 2.8 _MG_2909	jpg	View from the center of the Poverty Point plaza, looking south	7/10/12	Jenny Ellerbe	Jenny Ellerbe	Jenny Ellerbe 707 Lakeshore Drive Monroe, LA 71203 Phone: 318-342-8766 Email: info@jennyyellerbe.com	no

<b>Id. No.</b>	<b>Format</b>	<b>Caption</b>	<b>Date of Photo m/d/y</b>	<b>Photographer</b>	<b>Copyright owner</b>	<b>Contact details of copyright owner (Name, address, tel/fax, and email)</b>	<b>Non-exclusive cession of rights</b>
Fig. 2.8 _MG_2912	jpg	View from the center of the Poverty Point plaza, looking west	7/10/12	Jenny Ellerbe	Jenny Ellerbe	Jenny Ellerbe 707 Lakeshore Drive Monroe, LA 71203 Phone: 318-342-8766 Email: info@jennyyellerbe.com	no
Fig. 2.8 _MG_2917	jpg	View from the center of the Poverty Point plaza, looking north	7/10/12	Jenny Ellerbe	Jenny Ellerbe	Jenny Ellerbe 707 Lakeshore Drive Monroe, LA 71203 Phone: 318-342-8766 Email: info@jennyyellerbe.com	no
Fig. 2.10 PP LiDAR	jpg	LiDAR image of Poverty Point, with the cultural elements identified. Data distributed by "Atlas: The Louisiana Statewide GIS," LSU CADGIS Research Laboratory, Baton Rouge, Louisiana.	2009	Diana Greenlee	State of Louisiana	Poverty Point Station Archaeology Program P.O. Box 276 Epps, LA 71237 Phone: 318-926-3314 Email: greenlee@ulm.edu	yes
Fig. 2.11 1020455	jpg	Poverty Point Mound B, looking north	3/7/12	Jenny Ellerbe	Jenny Ellerbe	Jenny Ellerbe 707 Lakeshore Drive Monroe, LA 71203 Phone: 318-342-8766 Email: info@jennyyellerbe.com	no
Fig. 2.15 120328_0078	jpg	Poverty Point Mound E, looking south	3/28/12	C.C. Lockwood	C.C. Lockwood	C.C. Lockwood P.O. Box 14876 Baton Rouge, LA 70898 Phone: 225-769-4766 Fax: 225-767-3726 Email: cactusclyd@aol.com	no
Fig. 2.17 1020466	jpg	Poverty Point Mound C, looking north	3/7/12	Jenny Ellerbe	Jenny Ellerbe	Jenny Ellerbe 707 Lakeshore Drive Monroe, LA 71203 Phone: 318-342-8766 Email: info@jennyyellerbe.com	no
Fig. 2.19 MG_3216	jpg	Poverty Point Mound A, looking northwest; note people at top, heading up ramp, and in foreground	8/15/12	Jenny Ellerbe	Jenny Ellerbe	Jenny Ellerbe 707 Lakeshore Drive Monroe, LA 71203 Phone: 318-342-8766 Email: info@jennyyellerbe.com	no
Fig. 2.24 MG_9423	jpg	Poverty Point ridges in the northern sector	10/28/11	Jenny Ellerbe	Jenny Ellerbe	Jenny Ellerbe 707 Lakeshore Drive Monroe, LA 71203 Phone: 318-342-8766 Email: info@jennyyellerbe.com	no
Fig. 2.41 120328_0271	jpg	Poverty Point Mound D, looking southeast	3/28/12	C.C. Lockwood	C.C. Lockwood	C.C. Lockwood P.O. Box 14876 Baton Rouge, LA 70898 Phone: 225-769-4766 Fax: 225-767-3726 Email: cactusclyd@aol.com	no

<b>Id. No.</b>	<b>Format</b>	<b>Caption</b>	<b>Date of Photo m/d/y</b>	<b>Photographer</b>	<b>Copyright owner</b>	<b>Contact details of copyright owner (Name, address, tel/fax, and email)</b>	<b>Non-exclusive cession of rights</b>
Divider 3 120327_0082	jpg	Poverty Point Mound A from the south	3/27/12	C.C. Lockwood	C.C. Lockwood	C.C. Lockwood P.O. Box 14876 Baton Rouge, LA 70898 Phone: 225-769-4766 Fax: 225-767-3726 Email: cactusclyd@aol.com	no
Divider 5 111221_0163	jpg	Poverty Point Mound B in autumn	12/21/11	C.C. Lockwood	C.C. Lockwood	C.C. Lockwood P.O. Box 14876 Baton Rouge, LA 70898 Phone: 225-769-4766 Fax: 225-767-3726 Email: cactusclyd@aol.com	no

### 7.b Texts relating to protective designation, copies of property management plans or documented management systems, and extracts of other plans relevant to the property

<b>Appendix</b>	<b>Format</b>	<b>Item</b>
A	Map	Original 7.5' United States Geological Survey topographic quadrangle map
B	Text	<p><i>State Legal Measures:</i></p> <p>Louisiana Revised Statutes 56:1682 <i>et seq.</i> (enacted 1980, amended through 2004)</p> <p>Louisiana Revised Statutes 41:1601 <i>et seq.</i> (enacted 1970, amended through 2001)</p> <p>Louisiana Revised Statutes 8:671 <i>et seq.</i> (enacted 1991)</p> <p>Louisiana Revised Statutes 36:209 (enacted 2009)</p> <p>Louisiana Administrative Code Title 25 Cultural Resources, Part IX Office of State Parks, Chapters 1-9 (enacted 1982, amended through 2010)</p> <p>Louisiana Administrative Code Title 25, Chapter 1, Subchapter A (enacted 1982, amended through 2010)</p> <p>Louisiana Administrative Code Title 25, Chapter 1, Subchapter G (enacted 1982, amended through 2010)</p> <p>Louisiana Constitution of 1974 Article VII Section 14 (amended through 2006)</p> <p>Louisiana Constitution of 1974 Article IX Section 1</p> <p>Louisiana Constitution of 1974 Article XII Section 13</p>
C	Text	<p><i>Property Deed:</i></p> <p>Property Deed of 1972 with Restrictions</p> <p>Removal of Restrictions from Property Deed of 1972, Parts 1 and 2</p> <p>Act of Donation of 1993</p>
D	Text	<p><i>Federal Legal Measures:</i></p> <p>Antiquities Act of 1906, 16 U.S.C. 431-433</p> <p>Public Law 100-560 (102 Stat. 2803)</p> <p>Historic Sites, Buildings, Objects and Antiquities Act of 1935, 16 U.S.C. 461-462</p> <p>National Historic Preservation Act (NHPA) of 1966, 16 U.S.C. 470 <i>et seq.</i></p> <p>36 CFR 800</p> <p>36 CFR 65</p> <p>Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, 25 U.S.C. 3001-3013</p> <p>18 U.S.C. 1170</p> <p>43 CFR 10</p> <p>National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. 4321 <i>et seq.</i></p> <p>Department of Transportation (DOT) Act of 1966, 49 U.S.C. 303</p> <p>23 CFR 774</p>

Appendix	Format	Item
E	Text	<i>Property Management Plan:</i> <i>Heritage Management Plan for Poverty Point State Historic Site, National Monument &amp; National Historic Landmark (West Carroll Parish, Louisiana, U.S.A) (2012)</i>
F	Text	<i>Resolutions and Letters:</i> Regular Session 2010 Senate Concurrent Resolution No. 15 (Louisiana Legislature) Letter of support from the Choctaw Nation of Oklahoma
G	Text	<i>Authorization Forms:</i> Photograph and Image Authorization Forms

### 7.c Form and date of most recent records or inventory of property

Light Detection And Ranging (LiDAR) images of the property (2009) provide the most precise model of the earthworks at Poverty Point State Historic Site. The LiDAR data cover the entire property, and detailed views of the earthworks and drainages document the shapes of individual topographic features.

### 7.d Addresses where inventory, records, and archives are held

Poverty Point Station Archaeologist  
Archaeological Curatorial Facility  
146 Poverty Point Drive, Hwy 577  
Pioneer, Louisiana 71266

Poverty Point Site Manager  
Poverty Point State Historic Site  
6859 Hwy 577  
Pioneer, LA 71266

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## 7.f Radiocarbon and luminescence dates

Table 7.1. All radiocarbon determinations from Poverty Point. Dates are grouped by earthwork, and presented stratigraphically within each earthwork (i.e., upper levels above, lower levels below). Dates marked by • in the first column meet basic quality standards (i.e., composed of botanical material, corrected for isotopic fractionation, 1  $\sigma$  error < 100 years); discussion is restricted to those • high-confidence dates.

	Lab # <sup>1</sup>	<sup>14</sup> C age (years BP) <sup>2</sup>	Material <sup>3</sup>	Provenience <sup>4</sup>	Reference <sup>5</sup>	2 $\sigma$ cal BP <sup>6</sup>	Area <sup>7</sup>
•	Beta-175059	3340 $\pm$ 40	charcoal	Mound B, 608-651 cm BS, stage 2 mound fill	Kidder et al. 2004	3471-3644 3659-3686	0.938 0.062
	L-272	2700 $\pm$ 100 <sup>a</sup>	cane <sup>b</sup>	Mound B, ash bed, est. 690 cm below top of mound	Ford & Webb 1956	2490-2604 2606-2642 2676-3078 3091-3101 3133-3136	0.060 0.024 0.914 0.001 0.001
	Schatzman	2339 $\pm$ 200 <sup>a</sup>	cane <sup>b</sup>	Mound B, ash bed, est. 690 cm below top of mound	Ford & Webb 1956	1889-2797 2823-2843	0.995 0.005
	Schatzman	2685 $\pm$ 210 <sup>a</sup>	cane <sup>b</sup>	Mound B, ash bed, est. 690 cm below top of mound	Ford & Webb 1956	2330-3350	1.000
	M-403	2850 $\pm$ 250 <sup>a</sup>	cane <sup>b</sup>	Mound B, ash bed, est. 690 cm below top of mound	Ford & Webb 1956	2357-3558	1.000
	O-66	3150 $\pm$ 120 <sup>a</sup>	cane <sup>b</sup>	Mound B, ash bed, est. 690 cm below top of mound	Ford & Webb 1956	3005-3014 3023-3052 3059-3640 3672-3675	0.004 0.011 0.984 0.011
•	Wk-11284	3386 $\pm$ 49	charcoal	Mound C, 124 cm BD, feature 26, possible structure wall	Ortmann 2007	3479-3725 3752-3761 3794-3820	0.958 0.009 0.034
•	Wk-11285	3068 $\pm$ 47	charcoal	Mound C, 146.5-163.5 cm BD, feature 22, possible fire pit	Ortmann 2007	3084-3087 3145-3146 3158-3385	0.002 0.001 0.997
•	Wk-11283	3264 $\pm$ 47	charcoal	Mound C, 173-193 cm BD, submound Ab horizon	Ortmann 2007	3383-3588 3602-3611	0.989 0.011
•	Beta-219671	2980 $\pm$ 40	charcoal	Mound A cone, submound Ab horizon	Kidder et al. 2009	3005-3016 3021-3052 3059-3268 3289-3323	0.012 0.034 0.905 0.049
•	Beta-207440	3060 $\pm$ 40	charcoal	Mound A platform, submound Ab horizon	Kidder et al. 2009	3162-3190 3201-3374	0.047 0.953
•	Beta-197514	3070 $\pm$ 40	root, uncharred	Mound A platform, submound Ab horizon	Kidder et al. 2009	3166-3183 3206-3378	0.023 0.977

Table 7.1, continued.

	Lab # <sup>1</sup>	<sup>14</sup> C age (years BP) <sup>2</sup>	Material <sup>3</sup>	Provenience <sup>4</sup>	Reference <sup>5</sup>	2 $\sigma$ cal BP <sup>6</sup>	Area <sup>7</sup>
•	Beta-207441	3660 $\pm$ 40	charcoal	Mound A platform, submound Ab horizon	Kidder et al. 2009	3874-4090 4130-4139	0.990 0.010
	Tx-4969	4960 $\pm$ 80 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 1 N, stratum 2A, 180 cm BD, feature 9, hearth, subridge	Greene 1990b	5587-5900	1.000
	Tx-4966	2490 $\pm$ 80 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 1 N, stratum 3A, 366 cm BD, feature 14, hearth, subridge	Greene 1990b	2361-2738	1.000
	Tx-4970	3800 $\pm$ 70 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 1 N, stratum 3A, 360 cm BD, feature 12, hearth, subridge	Greene 1990b	3986-4049 4063-4413	0.095 0.905
	Tx-4967a	4960 $\pm$ 170 <sup>a</sup>	fine charcoal <sup>b</sup>	Ridge 1 N, stratum 3A, 364 cm BD, midden, subridge	Greene 1990b	5315-6024 6048-6064 6078-6116 6152-6175	0.975 0.005 0.013 0.008
	Tx-4967b	4350 $\pm$ 240 <sup>a</sup>	coarse charcoal <sup>b</sup>	Ridge 1 N, stratum 3A, 380 cm BD, midden, subridge	Greene 1990b	4298-4329 4352-4371 4382-5586	0.007 0.004 0.989
	Tx-4965	3110 $\pm$ 90 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 1 N, stratum 4A, 556 cm BD, midden, subridge	Greene 1990b	3070-3490 3496-3510 3519-3556	0.973 0.007 0.020
	Tx-4968	3400 $\pm$ 100 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 1 N, stratum 4A, 574 cm BD, midden, subridge	Greene 1990b	3406-3428 3440-3895	0.012 0.988
	Tx-4974	4850 $\pm$ 110 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 1 N, stratum 4A, 528 cm BD, midden, subridge	Greene 1990b	5319-5424 5433-5761 5809-5887	0.133 0.807 0.060
•	Beta-153802	3110 $\pm$ 40	charcoal	Ridge 1 NW, 95 cm BD, feature 6, daub concentration in ridge fill	Connolly 2002	3218-3231 3238-3404 3430-3439	0.017 0.971 0.012
•	Beta-153803	2970 $\pm$ 40	charcoal	Ridge 1 NW, 120 cm BD, feature 27, basin in ridge fill	Connolly 2002	3001-3265 3305-3319	0.986 0.014
•	Beta-153804	3040 $\pm$ 70	charcoal	Ridge 1 NW, 128 cm BS, feature 86, subridge? pit	Connolly 2002	3005-3014 3023-3052 3059-3390	0.007 0.019 0.974
•	Beta-177759	3180 $\pm$ 40	charcoal	Ridge 1 SW, 60-77 cm BS, feature 2, pit in ridge fill	Connolly 2003a	3336-3477	1.000
•	Beta-177760	3120 $\pm$ 40	charcoal	Ridge 1 SW, 150 cm BS, subridge Ab horizon	Connolly 2003a	3246-3413 3421-3443	0.960 0.040
•	Wk-10963	3123 $\pm$ 59	charcoal <sup>b</sup>	Ridge 1 S, 85-102.5 cm BD, feature 5, fire pit on ridge surface	Ortmann 2007	3170-3177 3208-3466	0.006 0.994
•	Wk-11282	3303 $\pm$ 47	charcoal	Ridge 1 S, 102-134 cm BD, subridge Ab horizon	Ortmann 2007	3408-3426 3441-3640 3670-3676	0.020 0.973 0.007

Table 7.1, continued.

Lab # <sup>1</sup>	<sup>14</sup> C age (years BP) <sup>2</sup>	Material <sup>3</sup>	Provenience <sup>4</sup>	Reference <sup>5</sup>	2 $\sigma$ cal BP <sup>6</sup>	Area <sup>7</sup>
M-2154	2820 ± 150 <sup>a</sup>	cane <sup>b</sup>	Ridge 2 N, subridge pit	Webb 1970	2543-2563 2570-2586 2616-2635 2700-3372	0.005 0.003 0.006 0.986
Tx-680	3000 ± 90 <sup>a</sup>	cane <sup>b</sup>	Ridge 2 N, subridge pit	Webb 1970	2929-2939 2941-3387	0.005 0.995
Beta-47965	3180 ± 70 <sup>a</sup>	cane <sup>b</sup>	Ridge 2 NW, 88 cm BS, feature 15, possible earth oven	Miller 1997	3244-3570	1.000
Tx-8440	2657 ± 44	organic sediments	Ridge 3 N, 85-90 cm BS	Gibson 1997	2730-2853	1.000
● Beta-94168	3060 ± 60	charcoal <sup>b</sup>	Ridge 3 N, 60-70 cm BS, ridge fill	Connolly 2006; Gibson 1997; Darden Hood, pers. comm. 2012	3078-3098 3101-3390	0.024 0.976
Beta-122916	3160 ± 140	charcoal	Ridge 3 W, 100-110 cm BS, ridge fill	Connolly 2001, 2006; Darden Hood, pers. comm. 2012	2976-2984 2986-3696	0.002 0.998
● Beta-122917	3040 ± 50	charcoal	Ridge 3 W, 120 cm BS, ridge fill	Connolly 2001, 2006; Darden Hood, pers. comm. 2012	3079-3094 3104-3130 3137-3366	0.025 0.034 0.940
Tx-5443	3080 ± 240 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 3 W, 80-90 cm BS, ridge fill	Gibson 1993b	2743-3867	1.000
Tx-5324	2970 ± 130 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 3 W, 71-77 cm BS, ridge fill occupation	Gibson 1987a	2798-2822 2843-3410 3424-3442	0.011 0.980 0.009
Tx-5445	3270 ± 80 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 3 W, 140-150 cm BS, ridge fill	Gibson 1993b	3355-3691	1.000
Tx-5444	3220 ± 80 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 3 W, 170-180 cm BS, subridge midden	Gibson 1993b	3264-3308 3317-3637	0.036 0.964
Tx-5325	3760 ± 720 <sup>a</sup>	charcoal	Ridge 3 W, subridge	Gibson 1987a	2364-2417 2430-5900	0.004 0.996
● Beta-154367	3000 ± 40	charcoal	Ridge 3 S, 285 cm BS, Ab horizon in QH gully	Connolly 2001	2155-2270 2295-4160 4168-4179 4199-4229	0.015 0.981 0.001 0.003
L-195	2860 ± 100 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 4 N, 45 cm BS, hearth	Ford & Webb 1956	2767-3260	1.000
Beta-71858	3210 ± 70 <sup>a</sup>	charcoal	Ridge 4 N, 140-152 cm BS, feature 3, hearth	Gibson 1994b; Darden Hood, pers. comm. 2012	3265-3295 3320-3593 3597-3614	0.026 0.962 0.012
Tx-4984	3130 ± 210 <sup>a</sup>	charcoal	Ridge 4 N, 175 cm BD, ridge fill	Gibson 1984	2798-2822 2843-3833	0.007 0.993
Beta-71859	3180 ± 130 <sup>a</sup>	organic sediment	Ridge 4 N, 200-210 cm BS, ridge fill	Gibson 1994b; Darden Hood, pers. comm. 2012	3005-3014 3030-3051 3060-3701	0.002 0.006 0.991

Table 7.1, continued.

	Lab # <sup>1</sup>	<sup>14</sup> C age (years BP) <sup>2</sup>	Material <sup>3</sup>	Provenience <sup>4</sup>	Reference <sup>5</sup>	2 $\sigma$ cal BP <sup>6</sup>	Area <sup>7</sup>
	Tx-4983	3340 $\pm$ 60 <sup>a</sup>	charcoal	Ridge 4 N, 203 cm BD, initial ridge fill deposit	Gibson 1984	3411-3423 3442-3718	0.007 0.993
•	Beta-230783	3120 $\pm$ 40	charcoal	Ridge 4 NW, 46-52 cm BS, feature 1, possible smudge pit	Greenlee 2007	3246-3413 3421-3443	0.960 0.040
	Tx-5446	3080 $\pm$ 70 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 4 W, 90 cm BS, ridge fill	Gibson 1993b	3079-3095 3103-3132 3136-3445	0.018 0.028 0.954
	Tx-5442	3230 $\pm$ 70 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 4 W, 95-100 cm BS, subridge fire pit	Gibson 1993b	3275-3277 3335-3635	0.001 0.999
	Tx-5326	2690 $\pm$ 650 <sup>a</sup>	charcoal <sup>b</sup>	Ridge 4 SW, 52-62 cm BS, feature 6, subridge earth oven	Gibson 1987a	1311-4419	1.000
	Tx-5327	2580 $\pm$ 730 <sup>a</sup>	charcoal	Swale 3/4 SW, 109 cm BS, preconstruction surface?	Gibson 1987a	1020-1020 1056-4448 4468-4517	<0.001 0.996 0.003
	Beta-75876	3400 $\pm$ 130	charcoal	Ridge 6 SW, feature 1, fire pit	Gibson 1994b	3371-3978	1.000
•	Beta-72595	3140 $\pm$ 80	charcoal	Ridge 6 SW, feature 4, fire pit	Gibson 1994b	3084-3087 3158-3561	0.001 0.999
	UGa-1697	2845 $\pm$ 115 <sup>a</sup>	charcoal	Plaza, pit	McGimsey, pers. comm. 2012	2753-3265 3305-3319	0.992 0.008
	UGa-2468	3065 $\pm$ 95 <sup>a</sup>	charcoal	Plaza, est. 150 cm BS, feature 11, trash pit	Woodiel 1990	2979-2981 2989-3467	<0.001 1.000
•	Beta-260708	3100 $\pm$ 40	charcoal	Plaza, 137 cm BS, feature 8, large post hole	Greenlee 2009	3215-3395	1.000
•	Beta-274979	3020 $\pm$ 40	charcoal	Plaza, 96 cm BD, feature 7, pit	Greenlee 2010	3079-3094 3103-3131 3136-3344	0.034 0.048 0.918
•	Beta-274980	2990 $\pm$ 40	charcoal	Plaza, 149 cm BD, feature 11, large post hole	Greenlee 2010	3009-3011 3037-3048 3062-3274 3281-3334	0.002 0.008 0.897 0.093
•	Beta-274981	3050 $\pm$ 40	charcoal	Plaza, 128.5 cm BD, feature 18, large posthole	Greenlee 2010	3084-3087 3145-3146 3158-3367	0.003 0.002 0.996
	Tx-5328	2860 $\pm$ 200 <sup>a</sup>	charcoal	Dock, 130-140 cm BD, pre-construction	Gibson 1987a	2474-2477 2486-3474	0.001 0.999
	LNSC-73-057	2815 $\pm$ 255 <sup>a</sup>	unknown	unknown	Webb 1982	2344-3558	1.000

<sup>1</sup> Number assigned by the laboratory which processed the sample.<sup>2</sup> Uncalibrated radiocarbon age  $\pm$  1  $\sigma$  in radiocarbon years before present (BP). <sup>a</sup> Not a conventional radiocarbon age (i.e., has not been corrected for isotopic fractionation).<sup>3</sup> Organic material analyzed. <sup>b</sup> Aggregate or suspected aggregate sample.<sup>4</sup> Locational source of the sample; BS = below surface; BD = below datum.<sup>5</sup> Publication or personal communication reporting the date.<sup>6</sup> Age range in calendar years before present (present = 1950), following calibration with Calib Rev 6.1.0 (Stuiver and Reimer 1993) using the IntCal09.14C terrestrial calibration dataset (Reimer et al. 2009).<sup>7</sup> Relative area under the probability distribution; the higher the number, the greater the likelihood that the "true" age of the dated event falls within that range.

Table 7.2. All luminescence dates from Poverty Point.

Method <sup>1</sup>	Lab # <sup>2</sup>	Age $\pm 2\sigma$ <sup>3</sup>	Provenience <sup>4</sup>	Reference <sup>5</sup>
OSL	UW-738	3300 $\pm$ 260 BC	Mound E, est. 110 cm BD, Stratum 6, fill	Kidder et al. 2004
OSL	UW-739	2100 $\pm$ 350 BC	Mound E, est. 290 cm BD, Stratum 2, fill	Kidder et al. 2004
OSL	UW-2578	(a) AD 890 $\pm$ 190 <sup>a</sup> (b) AD 560 $\pm$ 180 <sup>a</sup>	Mound D, 104-124 cm BS, 2 samples dated: (a) mound fill and (b) submound Ab	Feathers and Sheikh 2012; Greenlee 2011
OSL	UW-2579	(a) AD 850 $\pm$ 170 <sup>a</sup> (b) 1500 $\pm$ 280 BC <sup>b</sup> (c) 1230 $\pm$ 360 BC <sup>b</sup>	Mound D, 80-85 cm BS, 3 samples dated: (a) mound fill, (b) and (c) ridge fill	Feathers and Sheikh 2012; Greenlee 2011
TL	UW-485	AD 911 $\pm$ 329	Ridge 2 N, 80-100 cm BS, ceramic, St. Johns Plain	Saunders 2000
TL	UW-486	6556 $\pm$ 768 BC	Ridge 2 N, 80-100 cm BS, ceramic, St. Johns Plain	Saunders 2000
OSL		2142 $\pm$ 424 BP	Ridge 3 NE, 85-90 cm BS, buried surface	Feathers 1997
OSL	UW-591-3	3680 $\pm$ 480 BP	Ridge 3 W, 114 cm BS, buried A horizon	Bush 2008
OSL	UW-597	2590 $\pm$ 400 BP 2980 $\pm$ 520 BP	Ridge 3 W, 112 cm BS, buried A horizon	Bush 2008
OSL	LB-0150	1912 $\pm$ 117 BC	Ridge 4 NW, 35-46 cm BS, feature sediment	Sachiko Sakai, pers. comm. 2008
OSL	LB-0152	2341 $\pm$ 206 BC	Ridge 4 NW, 35-46 cm BS, fired clay fragment	Sachiko Sakai, pers. comm. 2008
OSL	LB-0153	1472 $\pm$ 165 BC	Ridge 4 NW, 35-46 cm BS, fired clay fragment	Sachiko Sakai, pers. comm. 2008
TL		750 $\pm$ 200 BC	Ridge 6 S, 15 cm BS, Poverty Point Object	Weber 1970
TL	b2	120 $\pm$ 130 BC	Ridge 6 S, $\leq$ 15 cm BS, Poverty Point Object	Huxtable et al. 1972
TL	b3	841 $\pm$ 370 BC	Ridge 6 S, $\leq$ 15 cm BS, Poverty Point Object	Huxtable et al. 1972
TL	b4	1303 $\pm$ 330 BC	Ridge 6 S, $\leq$ 15 cm BS, Poverty Point Object	Huxtable et al. 1972
TL	b5	975 $\pm$ 380 BC	Ridge 6 S, $\leq$ 15 cm BS, Poverty Point Object	Huxtable et al. 1972
TL	b6	1079 $\pm$ 250 BC	Ridge 6 S, $\leq$ 15 cm BS, Poverty Point Object	Huxtable et al. 1972
OSL	LB-410	AD 716 $\pm$ 149	Plaza, 90.5 cm BS, fired loess fragment	Lipo and Sakai 2010

<sup>1</sup> Analytic method; OSL = optically-stimulated luminescence, TL = thermoluminescence.

<sup>2</sup> Number assigned by the laboratory which processed the sample.

<sup>3</sup> Determined age  $\pm 2\sigma$  error. <sup>a</sup> Minimum age model; <sup>b</sup> Central age model.

<sup>4</sup> Locational source of the sample; BS = below surface; BD = below datum.

<sup>5</sup> Publication or personal communication reporting the date.



Plaza sunrise. Photo © C.C. Lockwood

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Copper beads.  
Photo © Jenny Ellerbe

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Hiking trail through pawpaws. *Photo © Jenny Ellerbe*

## 9. SIGNATURE ON BEHALF OF THE STATE PARTY



Spear points.  
*Photo © Jenny Ellerbe*

## 9. Signature on Behalf of the State Party

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Poverty Point aerial view, looking west. *Photo © Susan Guice; artwork © John Koepke*