National Park Service
U.S. Department of the Interior



Hopewell Culture National Historical Park

Cultural Landscape Report and Environmental Assessment

September 7, 2016



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Hopewell Culture National Historical Park

Cultural Landscape Report and Environmental Assessment

September 7, 2016

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National Park Service

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National Park Service
U.S. Department of the Interior

Hopewell Culture National Historical Park
Ohio

HOPEWELL CULTURE NATIONAL HISTORICAL PARK CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT FINDING OF NO SIGNIFICANT IMPACT

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA) and implementing regulations published by the Council on Environmental Quality and the Department of the Interior, the National Park Service (NPS) prepared a Cultural Landscape Report and Environmental Assessment (CLR/EA) for Hopewell Culture National Historical Park (NHP) (the park). The CLR/EA presents detailed documentation of the park's historical development, evaluation of existing conditions, analysis of landscape characteristics, determination of contributing features, and treatment recommendations. This Finding of No Significant Impact (FONSI) describes the alternative the NPS has selected for implementation, provides the rationale for its selection, and explains why it will not have significant impacts on the human environment. This FONSI concludes the NEPA compliance process.

BACKGROUND

The park, located in Ross County in south-central Ohio, is a network of five archeological earthwork complexes built by the American Indian Hopewell people nearly 2000 years ago. The Mound City Group National Monument was established in 1923 to preserve prehistoric mounds of "great historic and scientific interest." In 1992, four additional parcels were added and Hopewell Culture NHP was established by a law that renamed the monument (106 Statute (Stat.) 187). Spruce Hill was added to the park's legislated boundary in 2009 (PL 111-11, Sec. 7104). The park was established to protect the archeological features and artifacts of a dynamic social and ceremonial phenomenon that flourished in the woodlands of eastern North America long before Europeans first landed on this continent. The park protects and interprets the Hopewell archeological landscape and provides access and facilities for the care and accommodation of visitors.

ALTERNATIVES CONSIDERED

The CLR/EA considered two action alternatives and a no action alternative. These alternatives are discussed below.

No Action Alternative

The no action alternative provides "a baseline of existing impact continued into the future against which to compare impacts of action alternatives." Under the no action alternative, the present level of use, management, interpretation, maintenance, and operations will continue. The no action alternative will include actions identified in the GMP.

Action Alternatives

Components Common to All Action Alternatives

Two action alternatives were determined to meet the park' s purpose, need, and objectives for taking action. Several treatment recommendations are common to both action alternatives for earthwork complexes within the park.

Land Use. The park will purchase areas within the authorized park unit boundary, plus additional adjacent or related properties necessary for the protection of earthwork complexes. Alternative methods of protection, such as protective easements or encouraging the establishment of local planning measures will be explored to protect earthwork complexes outside the Hopewell Culture NHP jurisdictional boundary.

Archeological Features. All extant below-grade features will be preserved.

- Additional research will be conducted to understand Hopewellian habitation sites in relationship to the earthwork complexes and modes of circulation (waterways and overland routes) between earthwork complexes. Additional research will be undertaken to reveal the daily lifestyle of the Hopewell Culture.

- Additional research, investigations, and surveys will be conducted to confirm material reconstructions and to better understand the construction of the Hopewellian archeological features.

- Additional magnetic surveys and archeological investigations will be undertaken to locate undocumented archeological resources.

- Excavation of any type within the park will occur only with consultation with the park archeologist, the Midwest Archeological Center, and others where appropriate (e.g., federally recognized American Indian tribes and the Ohio State Historic Preservation Officer (SHPO)).

- Radiocarbon dating, pollen and phytolith analysis, soil micromorphological analysis, and other testing will be undertaken to reveal historic vegetation patterns.

- Streambanks of the Scioto River, Paint Creek, and the North Fork Paint Creek will be monitored, and areas of erosion that threaten archeological resources will be stabilized.

Circulation. New pedestrian connections will link the earthwork complexes and better interpret overland and waterway routes that may have been used by the Hopewell people.

- The park will work with Ross County Park District in their efforts to establish a greenway trail system to link the earthwork complexes by adding a trail on the north and main forks of Paint Creek and the Scioto River. The park will add trail connections, bicycle racks, and directional signs within park land.

- The park will work with Ross County Park District in their efforts to establish bike paths along roads and abandoned railways to link the earthwork complexes and to link community, county, state, and federal parks, and recreation areas to better serve residents and visitors.

- The park will coordinate with Ross County Park District, City of Chillicothe, and Ohio Department of Natural Resources (ODNR) to locate, design, and construct canoe launches and access trails at each earthwork complex.

- The park will coordinate with Chillicothe Transit Company in an effort to establish a bus route system with scheduled bus service to each earthwork complex.

Vegetation. Vegetation types and management techniques will be used to protect the archeological landscape.

- Portions of the archeological landscape currently cultivated will be converted to low-maintenance vegetation. Agricultural cultivation has degraded archeological features over time, leaving many features indiscernible.

- Burning will be allowed as a vegetation management tool after sufficient research is completed to demonstrate that archeological resources or archeological research, including geophysical surveys, will not be negatively impacted.

- Any machinery used for landscape management will be tested and evaluated to ensure that maintenance practices protect archeological features.

- Vegetation within the earthwork complexes and on archeological features will be kept low by periodic mowing. Tall grasses and herbaceous vegetation create habitat for destructive burrowing animals, such as groundhogs, and make it difficult to monitor archeological landscapes for the presence of animals. Largescale geophysical survey instruments also perform better in areas with low vegetation.

Alternative 1 – Preserving Earthwork Complexes

Alternative 1 will focus on preserving the earthwork complexes, better delineating archeological features and spaces to make them more visible, and providing a visitor experience in sync with earthwork preservation. Vegetation management will be the primary technique in marking or depicting

the archeological features, and the relationships between them. Extant below- and above-grade archeological features will be preserved and maintained.

Alternative 2 – Conserving and Revealing Earthwork Complexes (Selected Alternative)

Alternative 2 will focus on preserving extant below- and above-grade archeological features, clearly delineating archeological features and spaces, balancing removal of noncontributing features with earthwork preservation, and providing visitor experiences and management tailored to the individual character of each park unit. At Mound City Group, Hopewell Mound Group, and Seip Earthworks, this alternative will assertively delineate non-extant archeological features (e.g., mounds and earthen walls) through markings or rehabilitation. At Hopeton Earthworks and High Bank Works, the focus is on preservation but will focus on the delineation of spaces and patterns by using vegetation types and management.

WHY THE SELECTED ALTERNATIVE WOULD NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

The intensity or severity of impacts resulting from implementing the selected alternative is evaluated using the 10 criteria listed in 40 CFR § 1508.27. Key areas in which impacts were evaluated include cultural resources, vegetation, wildlife, visual resources, park operations, and visitor use and experience. As defined in 40 CFR § 1508.27, significance is determined by examining the following criteria.

Impacts that May be Both Beneficial and Adverse; a Significant Effect May Exist Even if the NPS Believes that on Balance the Effect Would be Beneficial

The selected alternative will result in both beneficial and adverse impacts. In general, the alternative provides beneficial effects on cultural resources, vegetation, wildlife, visual resources, park operations, and visitor use and experience. All analyzed resource topics will benefit from the removal of noncontributing features in the project area. Additional benefits to cultural resources and vegetation will result from restoration of native vegetation communities in the park. Benefits to visual resources and visitor use and experience will result from improvements to access and interpretation, as well as a large increase in trails and connections between the park units. Similarly, increasing the interpretation of the earthwork complexes in the park units will benefit park operations by increasing the park staff' s ability to relay interpretive information about the park units to visitors.

Adverse impacts on cultural resources, vegetation, and wildlife will be local, short- and long-term, and minor to moderate, and will result from removal of a historic structure, removal of vegetation, and construction of trails and parking areas. Additional adverse impacts on cultural resources will result from the rehabilitation and delineation of archeological features, which will alter the cultural features within the park. Adverse impacts on park operations will be parkwide, long-term, and minor, and will result from increased maintenance needs and costs. Adverse impacts on visitor use and experience will be local, short-term, and minor, and will only occur during implementation of the selected alternative. To mitigate potential adverse impacts on historic properties, treatment activities will be

implemented in accordance with the *2008 Programmatic Agreement among the National Park Service (U.S. Department of the Interior), the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act.* . No other specific mitigation measures will be needed to reduce adverse impacts of the selected alternative beyond the best management practices (BMPs) listed in Table 4-2 and Chapter 6 of the CLR/EA. A summary of effects on resources is found in Table 4-4 of the CLR/EA.

Unique Characteristics of the Geographic Area such as Proximity to Historic or Cultural Resources, Park Lands, Prime Farmlands, Wetlands, Wild and Scenic Rivers, or Ecologically Critical Areas

As described in the CLR/EA, the selected alternative will not affect wild and scenic rivers or ecologically critical areas because those resources do not exist in the project area. No wetlands will be impacted by the proposed activities.

Although the majority of soils in the park have been classified as prime farmlands, the selected alternative will result negligible adverse effects on this resource because less than 1% of prime farmland will be converted to building sites and parking areas associated with new facilities. Vegetation management treatment alternatives will be implemented on much of the prime farmland, but the selected alternative will not affect the classification of the areas because their ability to produce common foods, forage, fiber, and oil seed will not be diminished.

The project area contains five archeological earthwork complexes, each consisting of ruins, traces, or elements that exist from early American Indian periods, primarily the Hopewell Culture. The selected alternative will result in an adverse impact on the earthwork complexes and below-grade extant features. To resolve potential adverse impacts, survey and data recovery measures will be taken to identify and salvage significant archeological deposits. Further research will be conducted on the impacts of delineation and rehabilitation techniques on below-grade archeological features. All activities will comply with the Secretary of the Interior' s Standards and Guidelines for Archeology and Historic Preservation (48 Federal Register (FR) 44716, revised), and archeological resources in the vicinity of the project area will be identified and delineated for avoidance prior to project work. The Blackstone House at Seip Earthworks has been determined to be eligible for listing on the national register and the selected alternative would remove this feature, which would be considered an adverse effect to a historic property. To mitigate potential adverse impacts on historic properties, treatment activities will be implemented in accordance with the 2008 Programmatic Agreement among the National Park Service (U.S. Department of the Interior), the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act. . Additional mitigation measures and BMPs will be used to reduce adverse impacts of the selected alternative on historical and cultural resources in the park.

Degree to Which the Action may Adversely Affect Districts, Sites, Highways, Structures, or Objects Listed on the National Register of Historic Places; or May Cause Loss or Destruction of Significant Scientific, Cultural, or Historic Resources

The selected alternative will have local short- and long-term adverse impacts on historic and cultural resources resulting from removal of the Blackstone House, a historic building, removal of vegetation, rehabilitation and delineation of archeological features, and construction of trails and parking areas. Effects on the archeological landscape will be beneficial from the continued enhancement of the archeological landscape, resulting from removal of noncontributing features and restoration of native vegetation communities. Past, present, and reasonably foreseeable future actions will have both a long-term beneficial impact and local short-term and long-term minor to moderate adverse cumulative effect on cultural landscapes and historic properties. To mitigate potential adverse impacts on historic properties, treatment activities will be implemented in accordance with the 2008 Programmatic Agreement among the National Park Service (U.S. Department of the Interior), the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act. The NPS initiated consultation with the SHPO with a scoping letter sent on February 4, 2015. The SHPO also received a copy of the draft CLR/EA for review and comment. A letter response was received from the SHPO on March 31, 2015. A follow-up letter was received from the SHPO on April 15, 2016 in response to the final CLR/EA, supporting the management approach designed and developed in the CLR/EA.

Degree to Which the Action May Adversely Affect an Endangered or Threatened Species or its Critical Habitat

The U.S. Fish and Wildlife Service (USFWS) lists six federally endangered species as having the potential to be affected by projects in Ross County, the county in which the park is located. The listed species are Indiana bat (*Myotis sodalis*), clubshell mussel (*Pleurobema clava*), northern riffleshell (*Epioblasma torulosa rangiana*), snuffbox mussel (*Epioblasma triquetra*), rayed bean mussel (*Villosa fabalis*), and running buffalo clover (*Trifolium stoloniferum*). The USFWS also lists two species of concern as potentially present in Ross County – eastern hellbender (*Cryptobranchus alleganiensis alleganiensis (Daudin)*) and timber rattlesnake (*Crotalus horridus*). The bald eagle (*Haliaeetus leucocephalus*) is listed as protected under the Bald and Golden Eagle Protection Act. The northern long-eared bat (*Myotis septentrionalis*) is a species impacted by white-nose syndrome, and due to recent declines, was listed as threatened under the Endangered Species Act on April 2, 2015 (81 FR 1900).

Due to a lack of habitat for federally threatened or endangered aquatic species; the likely absence from the park of the Indiana bat, bald eagle, and running buffalo clover; measures that will be undertaken to avoid and minimize impacts on the northern long-eared bat and its habitat; and the project type, size, and location, the selected alternative is not anticipated to have an adverse effect on federally listed and candidate species. The USFWS concurred with the NPS effects determination in a letter dated February 25, 2015 (Attachment B).

AMERICAN INDIAN CONSULTATION

As part of tribal consultation, scoping letters were sent to federally recognized tribes and organizations on February 4, 2015 soliciting informal consultation on the CLR/EA. The tribes and governments that received letters are:

- Absentee-Shawnee Tribe of Indians of Oklahoma
- Delaware Nation
- Delaware Tribe of Indians
- Eastern Shawnee Tribe of Oklahoma
- Miami Tribe of Oklahoma
- Ottawa Tribe of Oklahoma
- Seneca-Cayuga Tribe of Oklahoma
- Shawnee Tribe
- Wyandotte Nation

The park sent copies of the Public Review Draft of the CLR/EA and solicited further comments from the same set of American Indian tribes via letter dated March 16, 2016. The Delaware Nation responded on June 6, 2016 stating they had no concerns or issues with the proposed CLR/EA. No other responses were received.

FINDING OF NO SIGNIFICANT IMPACT

Based on the review of the facts and analysis contained in the CLR/EA, the NPS has selected Alternative 2 for implementing the CLR/EA at the Hopewell Culture National Historical Park. Alternative 2 will not have a significant impact either by itself or in consideration of cumulative impacts. Accordingly, NEPA requirements, regulations promulgated by the President's Council on Environmental Quality, provisions of NPS Director's Order-12 and Handbook (Conservation Planning and Environmental Impact Analysis and Decision-Making), and the NHPA have been fulfilled. Furthermore, the selected alternative will not impair park resources or values and will not violate the NPS Organic Act. The selected alternative supports the enabling legislation establishing Hopewell Culture National Historical Park under the NPS Organic Act with the intended purpose of preserving the scientific and public interests for future generations. An environmental impact statement is not required and will not be prepared for implementation of the selected alternative.

Recommended: _____ 8/18/16
Dean Alexander, Superintendent — Date

Approved: _____ 9/14/2016
Cam Sholly, Regional Director — Date
Midwest Region

REFERENCE

National Park Service (NPS). 2016. Hopewell Culture National Historical Park Cultural Landscape Report and Environmental Assessment. Public Review Draft March 1.

ATTACHMENT A
NON-IMPAIRMENT DETERMINATION
HOPEWELL CULTURE NATIONAL HISTORICAL PARK
CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT

HOPEWELL CULTURE NATIONAL HISTORICAL PARK CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT NON-IMPAIRMENT DETERMINATION

In addition to determining the environmental consequences of alternatives to proposed actions, National Park Service (NPS) *Management Policies 2006* and Director's Order-12 require an analysis of potential effects to determine if actions will impair park resources. Impairment is an impact that would, in the professional judgment of the responsible NPS manager, harm the integrity of park resources or values, including opportunities that will otherwise be present for the enjoyment of those resources or values. A determination of impairment is made for particular resource impact topics carried forward and analyzed in the environmental assessment for the selected alternative. The selected alternative for meeting the objectives established in the Hopewell Culture National Historical Park (NHP) (the park) Cultural Landscape Report and Environmental Assessment (CLR/EA), Alternative 2, is described in the CLR/EA. The CLR/EA also includes detailed information on existing conditions of resources and the effects the selected alternative will have on those resources. Existing conditions and effects are briefly summarized in this impairment determination.

The description of park significance in the CLR/EA was used as a basis for determining if a resource is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park, or to opportunities for enjoyment of the park, or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance.

This impairment determination is based on current NPS guidance on determining impairment of park resources and values. The impairment determination for each resource and value includes:

- a brief description of the condition of the resource;
- whether the resource is necessary to fulfill the purposes for which the park was established;
- whether the resource is key to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park;
- whether the resource is identified as a significant resource in the park's planning documents; and
- a statement as to why the action will or will not result in impairment of the resource, including a discussion of the context, severity, duration, and timing of any impacts, and any mitigation measures, if applicable.

Impairment findings relate directly to park resources and values; the Organic Act does not consider visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations to be park resources or values so they can be dismissed from impairment review. Based on the aforementioned guidelines and basis for determining impairment of park resources and values, a determination of impairment is made for the following resource impact topics carried forward and analyzed in the CLR/EA for the selected alternative: cultural resources, vegetation, wildlife, and visual resources.

CULTURAL RESOURCES

The park protects and interprets the Hopewell archeological landscape, which includes five archeological earthwork complexes. The network of archeological complexes is connected by their shared function as ritual, ceremonial and burial places, and their known construction by the Hopewell people. Together, they create the significant archeological landscape of the park. The park units are part of a broad network of archeologically important economic, political, spiritual beliefs, and practices of the Hopewell Culture. The park's national significance is recognized by its listing in the National Register of Historic Places.

The park's cultural resources, which are necessary to fulfill the purpose of the park, are key to the cultural integrity of the park and are considered a significant park resource.

The selected alternative will result in an adverse impact on the earthwork complexes and below-grade extant features resulting from removal of vegetation, rehabilitation and delineation of archeological features, and construction of trails and parking areas. The selected alternative will also result in an adverse impact on the Blackstone House, which has been determined to be eligible as a historic resource. To resolve potential adverse impacts on archeological and historic resources, survey and data recovery measures will be taken to identify and salvage significant archeological deposits and a MOA and PA will be prepared between the NPS, SHPO, and interested American Indian tribes. All activities will comply with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716, revised). Ultimately the removal of noncontributing features and restoration of native vegetation communities will improve the cultural resources in the park and will have a local long-term beneficial effect on the cultural landscape. Because the selected alternative will be beneficial to cultural resources, and only local minor to moderate adverse impacts could result, there will be no impairment of cultural resources. The cultural resources for which the park was created will remain in good or improved condition and will be enjoyed by current and future generations.

VEGETATION

The five park units are situated near river floodplains, on the north edge of the Allegheny Plateau, just south of the Till Plains. The majority of the units have been clear-cut in the past and cultivated with agricultural activities. The most "semi-natural" and significant communities

identified were (1) an upland forest at the Hopewell Mound Group unit; (2) floodplain forests at the Mound City Group, Seip Earthworks, and High Bank Works units; and (3) small native grassland plots on the High Bank Works, Hopewell Mound Group, and Hopeton Earthworks units.

The existing vegetation contributes to the park's historic character, is necessary to fulfill the park's purpose of preserving and interpreting the history of the area, and is key to the cultural and natural integrity of the park.

The selected alternative will include the removal of vegetation for marking the archeological features, constructing additional trails, and creating an interconnected water route between the park units. The selected alternative will also include the removal of noncontributing features including buildings, roads, and parking areas. Restoration of these areas with native vegetation communities will benefit vegetation in the park over the long term. Overall, the proposed actions from the selected alternative will result in a local long-term minor adverse impact and a long-term beneficial impact on vegetation. Adverse impacts will result from removal of vegetation and construction of trails and parking areas. The selected alternative will have a beneficial effect by removing noncontributing features and restoring native communities to a state more likely to represent the landscape that existed during the time of earthwork construction and use.

Because the adverse effects of the selected alternative will be local and minor, the adverse effects will not modify the vegetation enough to reduce its role in fulfilling the park's purpose of preserving or interpreting the history of the area. Thus, the selected alternative will not impair vegetation resources because the park's vegetation will remain in the same or better condition and will contribute to the enjoyment of current and future generation of visitors.

WILDLIFE

The woodlands, shrublands, riparian areas, native grasslands, hay fields, and crop fields in the park provide year-round habitat for a variety of wildlife. Common species in the park include white-tailed deer (*Odocoileus virginianus*); coyote (*Canis latrans*); red fox (*Vulpes vulpes*); Virginia opossum (*Didelphis virginiana*); woodchuck (*Marmota monax*); eastern cottontail rabbit (*Sylvilagus floridana*); several species of squirrels, mice, and voles; and numerous migratory birds, for which the park serves as an important refuge.

The wildlife within the park contribute to the park's historic character and are necessary to fulfill the park's purpose of preserving and interpreting the history of the area, are key to the natural integrity of the park, and are considered significant park resources.

The selected alternative will include the removal of vegetation for marking the archeological features, constructing additional trails, and creating an interconnected water route between the park units. These actions may result in a net increase in visitor use, which could increase wildlife disturbance. The selected alternative will also include removal of noncontributing features including buildings, roads, and parking areas, which will increase the amount of wildlife habitat in the park. Overall, the selected alternative will result in both a long-term beneficial impact and a

local long-term minor adverse impact on wildlife. The slight adverse impact could change how wildlife contribute to the visitor experience by reducing existing habitat; however, the long-term beneficial impacts on wildlife also could lead to a beneficial impact on the visitor experience in viewing wildlife by improving wildlife habitat.

The adverse effects of the selected alternative on wildlife will be minor and will not substantially alter the overall wildlife, wildlife habitat, or natural processes within the park or region. Therefore, these adverse effects on wildlife will not diminish the park's role in fulfilling the park's purpose of preserving or interpreting the history of the area or the natural integrity of the park. Thus, the selected alternative will not impair wildlife resources because the modifications to vegetation will allow species and habitat to remain essentially unchanged.

VISUAL RESOURCES

The Mound City Group unit is a 120-acre area consisting of the visitor facilities, a mowed grassland area containing the mounds, and surrounding hardwood forest, agricultural land, and riparian vegetation along the adjacent Scioto River. The Hopeton Earthworks unit is located on a terrace east of the Scioto River. The site is fairly flat and open, with some elevation gain eastward from the river. A private residence and gravel mining operation occur adjacent to the site. Due to previous cultivation in the area, some of the earthworks are now less than 5 feet high and are difficult to see. The Hopewell Mound Group unit is 300 acres and consists mainly of fields containing the mounds on the southern section of the property and a low bluff with woodlands/forest on the northern section of the property. The Seip Earthworks unit is 336 acres, with US 50 bordering the property to the north and Paint Creek bordering it to the south. The majority of the property is fallow fields with forests enclosing the property on the west and south. The High Bank Works unit occurs on a terrace above the Scioto River. Three different railroad tracks traverse the site, and agricultural land and three private residences occupy the 197-acre site. US 35 is east of the property and hardwood forests occur along the northern and western boundaries of the property.

Visual resources in the park are important to the visitor's understanding of the park's cultural significance. Visual resources are necessary to fulfill the park's purpose of preserving and interpreting the Hopewell archeological landscape and are key to the cultural integrity of the park.

The selected alternative will improve visual resources by allowing access to Hopeton Earthworks and High Bank Works and creating more trails at the park units, which will increase visitor access to visual features at each park unit. Improving the visual interpretation of the earthwork complexes through managing vegetation, marking the archeological features for improved interpretation, constructing additional trails, creating an interconnected water route between the park units, and removing noncontributing features will also have beneficial effects on visual resources at each park unit. These actions will improve the visual quality of the park units by enhancing the ability to interpret the earthwork complexes and surrounding area. Because of these reasons, the selected alternative will result in local long-term beneficial effects on visual resources.

Because visual resources will be improved and, therefore, will better contribute to fulfilling the park's purpose for current and future generations of visitors, the selected alternative will not impair visual resources.

Chapter 1. Introduction

Introduction

This document presents the Cultural Landscape Report and Environmental Assessment (CLR / EA) for Hopewell Culture National Historical Park (NHP) in south-central Ohio, a network of six archeological earthwork complexes built by the American Indian Hopewell people, whose civilization flourished from circa AD 1 to AD 400. The six park units — Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, High Bank Works, and Spruce Hill — represent some of the finest examples of Hopewellian resources.[1.1]

This CLR / EA presents detailed documentation of Hopewell Culture NHP's historical development, evaluation of existing condition, analysis of landscape characteristics, determination of contributing features, and treatment recommendations.

This CLR / EA builds upon the numerous studies, investigations, and documents that exist for the Hopewell Culture NHP (the park) and its discontiguous parcels. These documents include the 1997 General Management Plan (GMP); the 2014 Cultural Landscape Inventories (CLI) for Mound City Group, Hopeton Earthworks, and Hopewell Mound Group; the 1997 Long Range Interpretive Plan (LRIP); the 1999 Administrative History; and various natural resource reports.

Numerous archeological investigations have been undertaken for the park, beginning with research and mapping by Ephraim G. Squier and Edwin H. Davis in the 1840s, the work of Warren Moorehead in the 1890s, and the work of William Mills and Henry Shetrone of the Ohio Historical Society in the 1920s.

More recent studies include those undertaken by the National Park Service (NPS), particularly the NPS Midwest Archeological Center (MWAC) and researchers affiliated with academic institutions.

Seven Hopewellian archeological complexes were included on the United States Tentative List in 2008 for possible nomination to the UNESCO World Heritage List as 'Hopewell Ceremonial Earthworks.' This includes Hopewell Culture NHP and two Hopewell earthwork complexes (Newark Earthworks State Memorial and Fort Ancient State Memorial) owned and managed by Ohio History Connection (OHC).

This CLR / EA is the primary document used to guide management and stewardship of Hopewell Culture NHP. The intent of the CLR / EA is to provide a comprehensive and integrated guidance document that reflects the mission of the NPS, and ensures long-term preservation, stewardship, and visitor experience objectives are met to the maximum extent practicable.

1.1 Spruce Hill is included in the park's legislated boundary, but is co-managed with a non-NPS entity, the Arc of Appalachia. A separate appendix has been prepared for this park unit.

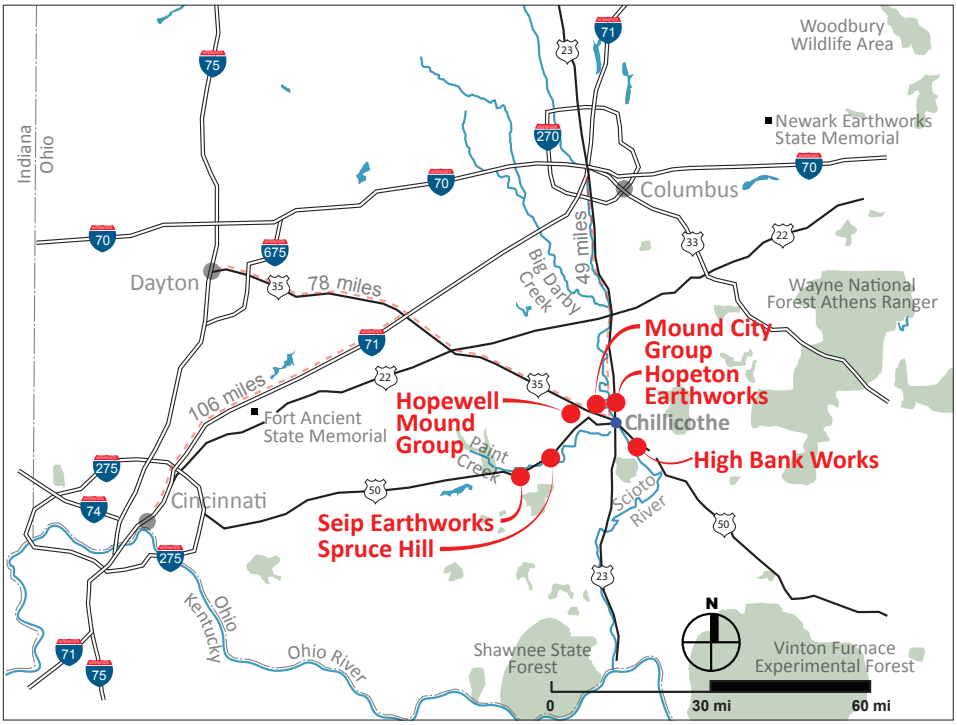


Figure 1-1. Hopewell Culture NHP is in south-central Ohio within the Scioto River valley. (Mundus Bishop 2014)

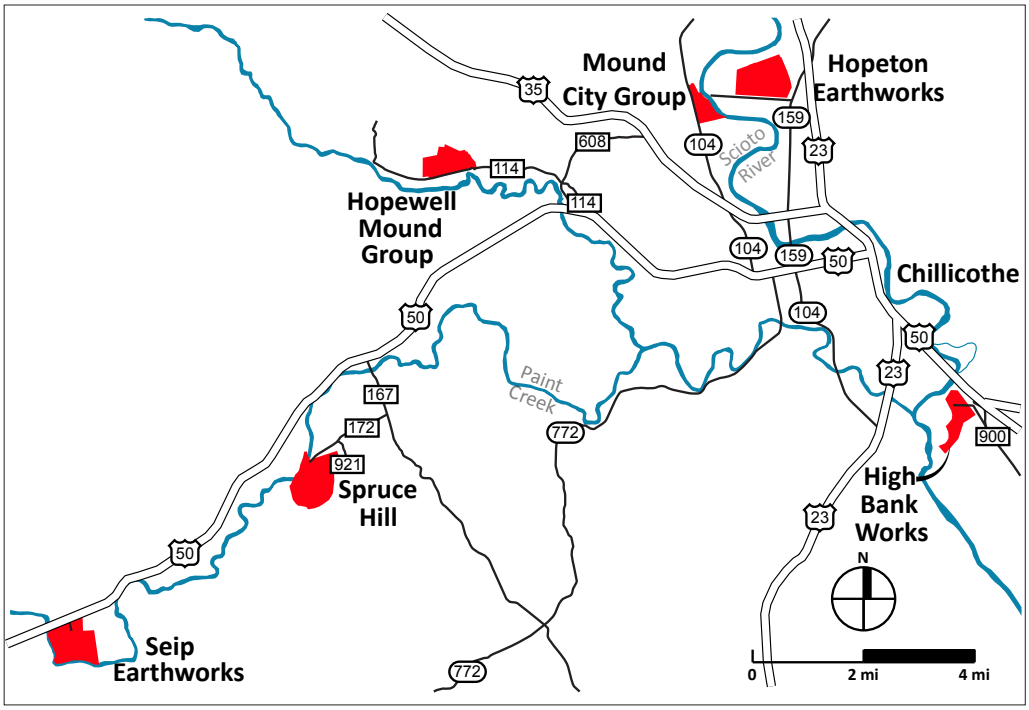


Figure 1-2. The park has six discontiguous park units, each with a unique set of archeological earthworks. Mound City Group is located north of Chillicothe, Ohio, on the west bank of the Scioto River; Hopeton Earthworks is located immediately across the river to the east. Hopewell Mound Group is located adjacent to North Fork Paint Creek, to the west of the other park units; Spruce Hill is on the north bank of Paint Creek; and Seip Earthworks is located the furthest west, on the north bank of Paint Creek. High Bank Works is south of Chillicothe, Ohio, on the east bank above the Scioto River. (Mundus Bishop 2014)

Study Area and Park Units

The park is located near Chillicothe within Ross County in south central Ohio. It is approximately 45 miles south of Columbus and 100 miles east of Cincinnati. The study area is 1,828 acres in size, consists of six discontiguous park units, connected by state and federal highways. Traveling distances extend as far as 15 miles between park units.

Hopewell Culture NHP is situated in the Scioto River Valley, at the western edge of the Appalachian foothills. The landscape is topographically rugged, and filled with heavy tree cover. Its diverse natural environment is a combination of woodlands, shrublands, riparian areas, native grasslands, hay fields, and former and current crop fields.

Many Hopewellian earthwork complexes are within Ross County. Efforts to protect these earthwork complexes date to the turn of the twentieth century, when Mound City Group (129 acres) was established in 1923 as a National Monument. In 1992, three additional parcels—Hopeton Earthworks (308 acres), Hopewell Mound Group (312 acres), Seip Earthworks (167 acres), High Bank Works (170 acres)—were added creating Hopewell Culture NHP.[1.2] Spruce Hill (150 acres) was added in 2009. Additional lands of Seip Earthworks (120 acres) were transferred to the park in 2014. Each park unit is characterized by monumental-scaled, Hopewellian built earthworks set in relationship to both a river course (near the Scioto River, Paint Creek, or the North Fork Paint Creek), and to the surrounding mountains and hillsides.

The network of archeological complexes are connected by their shared function as ritual, ceremonial and burial places, and their known construction by the Hopewell people. Together, they create the significant archeological landscape of the park, representative of thousands of earthworks originally built by the Hopewell Culture, including many other extant earthwork complexes in the surrounding region. The park units are part of a broad network of archeologically important economic, political, and spiritual beliefs, and practices of the Hopewell Culture.

Hopewell Culture NHP's national significance is recognized by its listing in the National Register of Historic Places (NHRP): Mound City Group NRHP 1978; Hopeton Earthworks NRHP 1975; Hopewell Mound Group NRHP 1974; Seip Earthworks NRHP 1971; High Bank Works NRHP 1973; and Spruce Hill NRHP 1972, and by the designation of Hopeton Earthworks (1964) as a National Historic Landmark (NHL). The period of significance is AD 1 to AD 400, which recognizes the active use of the region by the Hopewell Culture and the building of the ceremonial earthwork complexes. A broader, secondary period of significance extends from AD 400 to AD 1650, to include the contributions and occupations of later groups of American Indians. Other potentially significant resources from later periods are within the study area but are not significant to the Hopewell Culture.

Mound City Group, Hopewell Mound Group, and Seip Earthworks are open to the public, with facilities that include roads, trails, shelters, restrooms, and signage to guide visitors. Hopeton Earthworks and High Bank Works have no visitor facilities, and are not currently open to the public.

1.2 Ron Cockrell. *Amidst Ancient Monuments, Administrative History / Hopewell Culture National Historical Park Ohio.* Omaha: U.S. Department of Interior, NPS, Division of Cultural Resources, Midwest Support Office, 1999. NPS, *Hopewell NHP Foundation Document*, in preparation.

Mound City Group
Mound City Group is north of Chillicothe, Ohio on a 120-acre park unit, on the west side of the Scioto River, and east of State Highway 104. Mound City Group consists of at least 25 mounds, an earthen wall, and borrow pits located outside the earthen wall.

In the 1920s Mound City Group was preserved and reconstructed through the efforts of grassroots organizers and the Ohio State Archaeological and Historical Society. It became Mound City Group National Monument in 1923, and came under the direction of the NPS in the 1940s. Reconstruction of the perimeter earthen wall and 23 mounds was completed in 1927. The reconstructed walls and mounds reflect the scale and spatial qualities of the earthwork complex, suggesting how it may have looked during use by the Hopewell Culture. The land is relatively flat, the mounds and earthworks are covered with mown lawn, and are surrounded by wooded areas on the north, south, and east sides. A steep bank descends on the east side of the park unit, to the Scioto River.

The park headquarters and primary visitor facilities are immediately adjacent to Mound City Group. Facilities include a visitor center, administrative buildings, maintenance facilities, a picnic area, and nature trail in addition to the mounds and earthworks.

Hopeton Earthworks
Hopeton Earthworks is about one mile east of Mound City Group, on a terrace east of the Scioto River, and west of U.S. Highway 23. The park unit is fairly flat and open, with some elevation gain eastward from the river. A hardwood forest and an intermittent creek is at the southeast corner of the park unit. Much of the land was formerly in agricultural production, but is now fallow. A gravel mining operation is adjacent to the park unit on the west.

Hopeton Earthworks is 308 acres. The earthworks include a great circle enclosure, formed by earthen walls, enclosing 20 acres; a conjoined rectangular enclosure encompassing 20 acres, made of earthen walls with rounded corners; three other circular enclosures; and parallel walls that extend from the northwest corner of the rectangular enclosure towards the Scioto River.[1.3] Two gravel roads bisect Hopeton Earthworks, one extends north south, and the other is east west passing through the middle of the square enclosure.

Since site documentation was completed in October 2014, a parking lot at Hopetown Road and trail between the parking lot and overlook have been designed through a separate project.

Hopewell Mound Group
Hopewell Mound Group is on the North Fork Paint Creek, five miles southwest of Mound City Group. Historically much of the land was in agricultural production, but is now fallow or cut for hay. A hardwood forest is at the north edge of the park unit.

In 1980 Hopewell Mound Group was purchased and preserved by the Archeological Conservancy. In 1992 it became one of six complexes established as Hopewell Culture NHP.

The general shape of the monumental Hopewell Mound Group earthworks is a parallelogram; archeologists estimate that the walls enclose an area of 111 acres.[1.4] A smaller square enclosure connects to the east side of the parallelogram. Remnants of the east, west, and north walls are visible. Two earthwork

1.3 "Great Circle Enclosure - Hopeton Earthworks," *List of Classified Structures, Ohio, Hopewell Culture National Historical Park (OH)*. http://www.hscl.cr.nps.gov (accessed October 2014).
1.4 *Cultural Landscapes Inventory, Hopewell Mound Group, Hopewell Culture National Historical Park. (*NPS, 2014), 3.

features occur within the parallelogram, one circular and one D-shaped, and evidence of at least 30 mounds. One mound, Mound 25, is the largest known mound constructed by the Hopewell Culture.[1.5]

A small square parcel of privately owned land occurs within the park unit on the southern boundary. The eastern side of the property contains a visitor parking area and restroom facilities. An abandoned railroad track, now a bicycle trail, extends through the southern portion of the Hopewell Mound Group. County Road 114 extends through the southern portion of the earthwork complex, and a 138kv AEP power-line bisects the earthwork complex. The NPS is working with the power company to consider options for reducing visibility of this facility within the Hopewell Mound Group.

Seip Earthworks

Seip Earthworks is 16 miles southwest of Mound City Group, on the north bank of Paint Creek, adjacent to U.S. Highway 50. The park unit is fairly open, with vegetation becoming more dense at the creek's edge. Visitor parking and a picnic area are on the north edge of the park unit.

In 1927 an approximately 10 acre tract, including the Seip-Pricer Mound, was designated 'Seip Mound State Memorial'. However, the memorial did not include the entire earthwork complex, and portions of the earthworks remained in private ownership. Today, the NPS owns the entire earthwork complex except for three parcels of land still in private ownership.

Seip Earthworks is a large complex of 236 acres. Earthworks include two miles of earthen walls enclosing over 120 acres in the shape of two immense circles, and a precise square with astronomical alignments. Two prominent mounds, the Seip-Conjoined Mound, and the Seip-Pricer Mound are in the center of Seip Earthwork's great circle enclosure. The Seip-Pricer Mound is an enormous reconstructed mound that is the third largest burial mound the Hopewell are known to have built.[1.6]

High Bank Works

High Bank Works is south of Chillicothe, Ohio, along an upper terrace of the east bank of the Scioto River. It is west of U.S. Highway 35, with a railroad extending north south, at the park unit's eastern edge. Due to safety concerns regarding the railroad crossing, this park unit is not accessible to visitors. Most of the land is cleared, with mown hay on the north and a native grasslands ecosystem to the south. A native, hardwood forest thrives along the river bank, and provides valuable habitat along the river's riparian edge.

The main earthwork complex is a conjoined circle and octagon, each enclosing about 20 acres. The octagon has eight small mounds corresponding to openings or gateways in earthen walls. The circle has one gateway facing east toward a small circular enclosure and ditch earthwork. A series of borrow pits surround the octagon. Additional circular enclosures and linear walls are located to the southwest of the octagon. The NPS has acquired all but two parcels of the earthwork, which remain in private ownership.

Spruce Hill

Spruce Hill Preserve is a 150-acre archeological complex west of Chillicothe, sited on top of a flat-topped mesa that juts above Paint Creek Valley. Spruce Hill's archeological features consist of a series of

1.5 *General Management Plan, Hopewell Culture National Historical Park, Ohio,* (NPS, 1997).

1.6 NPS, Seip Earthworks Site Bulletin (Hopewell Culture NHP brochure, 2010).



Figure 1-3. Mound City Group is north of Chillicothe, Ohio on a 120-acre park unit, on the west side of the Scioto River. (Mundus Bishop 2014)



Figure 1-4. Hopeton Earthworks is about one mile east of Mound City Group, on a terrace east of the Scioto River. (Mundus Bishop 2014)



Figure 1-5. Hopewell Mound Group is on the North Fork Paint Creek, five miles southwest of Mound City Group. (Mundus Bishop 2014)



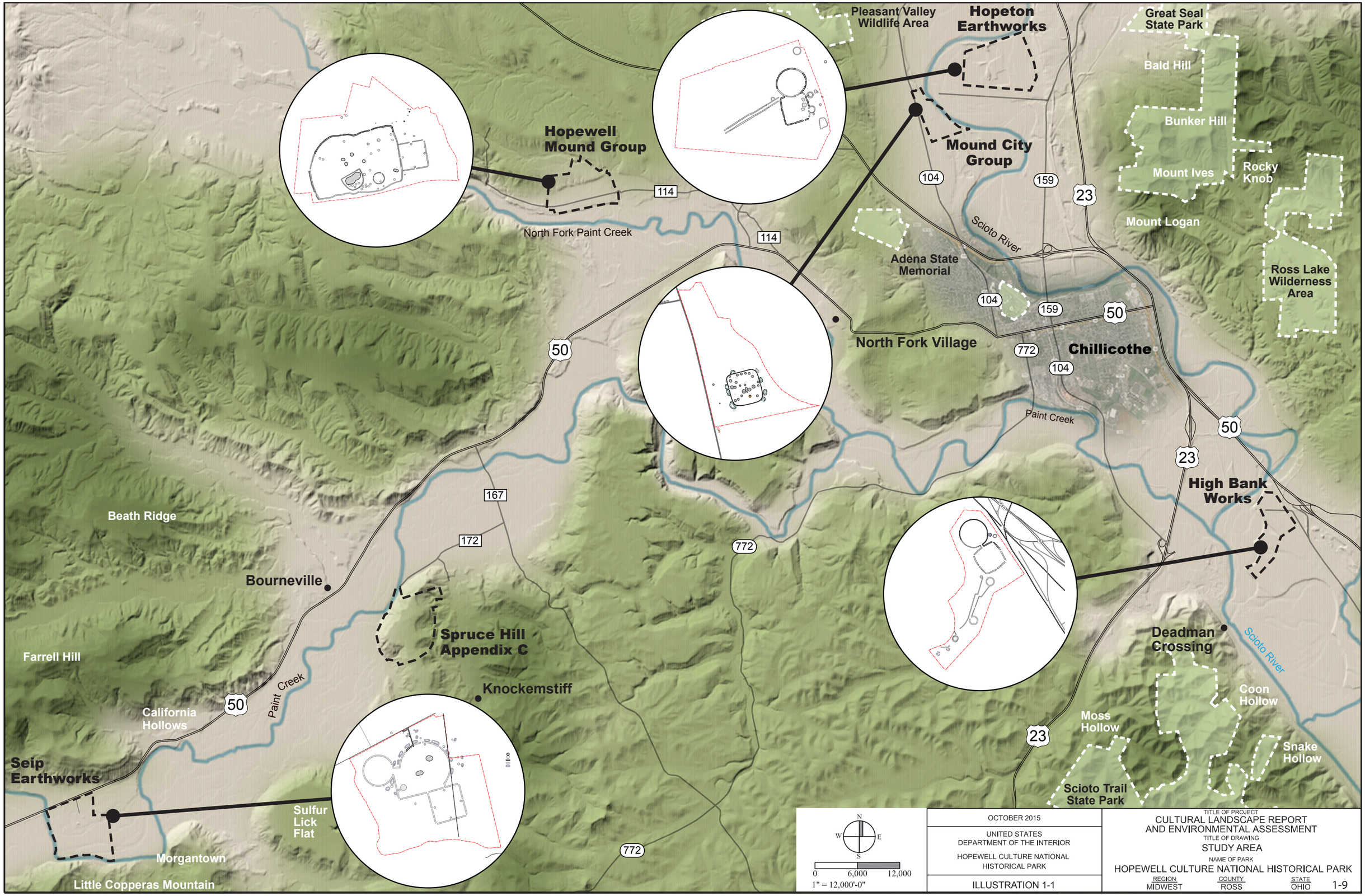
Figure 1-6. Seip Earthworks is 16 miles southwest of Mound City Group, on the northern bank of Paint Creek. (Mundus Bishop 2014)

stone walls that enclose the level mesa of the hill, and circumscribe the top of the bluff.

Spruce Hill is within the park's legislated boundary and is co-managed with the Arc of Appalachia. Since the park does not own the property and has no management authority, it is not included in the environmental assessment or detailed analysis and treatment recommendations. A separate appendix is provided for Spruce Hill, which includes an abbreviated CLR with general recommendations for the treatment of this archeological landscape.



Figure 1-7. High Bank Works is south of Chillicothe, Ohio, along an upper terrace of the east bank of the Scioto River. (Mundus Bishop 2014)


Pleasant Valley Wildlife Area
Hopeton Earthworks
Great Seal State Park
Bald Hill
Bunker Hill
Mount Ives
Rocky Knob
Mount Logan
Hopewell Mound Group
Mound City Group
104
159
23
114
North Fork Paint Creek
Scioto River
Adena State Memorial
Ross Lake Wilderness Area
50
North Fork Village
772
Chillicothe
Paint Creek
High Bank Works
167
Beath Ridge
172
Bourneville
Spruce Hill Appendix C
Deadman Crossing
Farrell Hill
Knockemstiff
Coon Hollow
Moss Hollow
California Hollows
Snake Hollow
Seip Earthworks
Sulfur Lick Flat
Scioto Trail State Park
Morgantown
Little Copperas Mountain
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12,000
1" = 12,000'-0"
OCTOBER 2015
UNITED STATES DEPARTMENT OF THE INTERIOR
HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 1-1
TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
TITLE OF DRAWING
STUDY AREA
NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK
REGION MIDWEST
COUNTY ROSS
STATE OHIO
1-9

Project Purpose and Need

Project Purpose
The purpose of this CLR / EA is to provide guidance for managing landscape resources within Hopewell Culture NHP. This project will define a treatment strategy that will reinforce the mission and significance of the park. The strategy will focus on long-term resource protection, sustainable cyclic maintenance, and visitor understanding and enjoyment.

This CLR / EA will document the site history from prehistory to the present (including recent NPS landscape treatments), determine ongoing impacts on the landscape, evaluate existing conditions, and develop treatment alternatives that meet the resource protection and visitor experience goals outlined in the park's GMP.

This project will guide the long-term stewardship of Hopewell Culture NHP for the enjoyment of current visitors and future generations by improving cultural and archeological resource protection, and providing a cohesive, unified visitor experience. The treatment guidelines will address appropriate modifications to existing and proposed visitor facilities such as overlooks, trails, and parking areas.

The treatment approach will address alternatives for mound / earthwork rehabilitation, stability, and identify methods for enhancing visibility of degraded earthworks. The plan will also establish a maintenance program that the park can sustain over time.

Project Need
This proposed CLR / EA addresses the need to preserve the park's historically significant archeological landscape. The project is needed to generate baseline documentation, supplement existing historical and natural resource data, provide recommendations for future study, and provide guidance for treatment and resource protection.

The proposed project is needed to document the changes to the archeological landscape that have occurred over time, to transfer knowledge, and to provide holistic and integrated guidance for the long-term preservation and stewardship of the archeological landscape. The project is also needed to connect archeological landscape maintenance to other resource management plans and projects.

Finally, this project is needed to provide baseline documentation and management planning to support the potential nomination of Hopewell Ceremonial Earthworks to the UNESCO World Heritage List.

Project Goals

The CLR / EA identifies landscape characteristics and features that convey the historical significance of the archeological landscape, and provides holistic, integrated guidance for long-term preservation and stewardship for park units.[1.7] This CLR / EA addresses the following goals.

- Document the pre-contact history, historic activity, and current physical conditions at Hopewell Culture NHP.
- Document resource threats and ensuing impacts, e.g., invasive plants and animals, erosion, maintenance practices, agricultural activity, utility lines, non-compatible intrusions, and others.
- Evaluate management practices that may provide income for sustaining vegetation management programs.
- Investigate mowing and other methods for increasing earthwork visibility. Address Best Management Practices for Earthen Architecture demonstrated by these and other earthwork complexes. Define the appropriateness of protective buffers at park units.
- Consult with federally recognized American Indian tribes, other federal and state agencies, and cultural, archeological, and natural resource experts to determine a desired landscape condition and provide guidance on achieving desired condition through physical treatment and long-term maintenance.
- Explore concepts for how the NPS can protect resources and provide a cohesive, unified visitor experience with the goal for having this information transferable to other archeological landscape managers.
- In accordance with draft 2014 Foundation Document, establish clear management priorities for the archeological landscape.
- Provide a synthesis / summary of other earthwork management approaches in the U.S. and abroad.
- Evaluate guidance from the Stubbendiek report in light of issues other than mechanical impacts from roots; consider potential alterations of soil color, chemistry, and soil formation processes.[1.8]
- Address issues raised as part of the World Heritage Site nomination process—buffers, intrusions, visibility, and viewshed management.
- Identify opportunities for accommodating universal access while avoiding adverse archeological resource impacts.
- Supplement existing GIS database for archeological resources by providing layers to represent "Management Zoning" (as defined in the GMP), "Treatment Recommendations," and "Desired Vegetation Management Regimes."

1.7 The necessity of a CLR / EA for Hopewell Culture NHP is mandated under the directives of the NPS Director's Order 28: Cultural Resource Management (DO 28). According to both federal law and NPS Management Policies, historic landscapes in which the NPS has a legal interest are to be managed as cultural resources, and every landscape feature is to receive full consideration for its historical values whenever a decision is made that might affect its integrity. Chapter 7 of DO 28 deals with the Management of Cultural Landscapes, and identifies a Cultural Landscape Report as the primary guide to treatment and use of a cultural landscape.

1.8 James Stubbendiek and Cheryl D. Dunn. *Hopewell Culture National Historical Park: Review of the Literature on the Influence of Roots on Archeological Features and Vegetation Restoration Recommendations*. Lincoln: University of Nebraska, 2011.

- Coordinate archeological landscape condition assessment with the service-wide initiative to list nationally significant landscapes in the Facility Management Software System (FMSS). Asset and location data for Hopewell Culture NHP would fall under "Maintained Landscape" or "Maintained Archeological Site."

Methodology

The CLR / EA is conducted at a thorough level of investigation for historical research, existing condition assessment, landscape analysis, and treatment recommendations. The thorough level research methodology, as defined by the NPS, focuses on the use of select documentation of known and presumed relevance, including primary and secondary sources that are easily available.

The existing condition investigation was conducted according to best practices. A review of readily available documentation was undertaken, including information from Hopewell Culture NHP, the National Park Service's Midwest Regional Office (MWRO), and the National Park Service's Midwest Archeological Center (MWAC).

This review included planning documents, administrative reports, technical reports, natural resource studies, and correspondence. Review of historical documentation included archeological reports, historic drawings, photographs, and correspondence available from primary and secondary sources.

Background information provided by the park as a GIS database was used to prepare the CLR / EA drawings. Site investigations in October 2014 documented existing conditions. Archeological research focused on review of previous archeological studies and investigations, including those completed prior to the establishment of the park. The CLR / EA did not include any additional archeological investigations.

This CLR / EA has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, and implementing regulations: 40 CFR Parts 1500-1508 and NPS Director's Order (DO) – 12 and Handbook, Conservation Planning, Environmental Impact Analysis, and Decision-making. In addition, this CLR / EA was prepared in compliance with the requirements of Section 106 of the National Historic Preservation Act (NHPA), in accordance with the Advisory Council on Historic Preservation's (ACHP) regulations implementing section 106 (36 CFR Part 800.8, Coordination with the National Environmental Policy Act).

Park Purpose and Significance

Hopewell Culture NHP was established to protect the archeological features and artifacts of a dynamic social and ceremonial phenomenon that flourished in the woodlands of eastern North America long before Europeans first landed on this continent. The park protects and interprets the Hopewell archeological landscape and provides access and facilities for the care and accommodation of visitors.[1.9]

The park's archeological landscape represents some of the finest examples of Hopewellian resources. The monumental architecture and artifacts of the park reflect a pinnacle of achievement in the fields of art, astronomy, mathematics, and engineering.

The Hopewell Culture represents an important cultural development, and "it is

1.9 *GMP,* 5.

clear they had a stable society, capable of major efforts to build earthworks, as well as establishing their network of contacts with other peoples."[1.10]

They produced sculptures of stunning grace, skill and beauty, and had a complex spiritual and ritual life.[1.11]

The Hopewell Culture NHP is significant due to these factors:

- The park is the only federal area that preserves and interprets remnants of the Hopewell Culture, a culture (including regional settlement patterns, rituals, and trade routes) that was distinctive and widespread for 400 years.

- The park represents the most elaborate earthwork complexes of the Hopewell Culture, evidenced by large geometric enclosures, unique to the Scioto River area, as well as the largest and densest concentrations of Hopewellian earthwork complexes in the country.

- The monumental earthwork complexes are repeated across a large area, built to a similar scale and incorporating a similar series of astronomical alignments.

- The park units were among the first places in North America where the practice of scientific archeology was used, and among the first described in scientific publications.

- The park contains Hopewell Mound Group which is the 'type-site' for the Hopewell Culture. A type-site means that it is the location where the Hopewell Culture was first defined by archeologists and gives the culture its name.

- The park contains Hopewell resources with tremendous potential for directed research and further investigation to answer many questions about the Hopewell Culture.

- The park preserves some of the general physical environment in which the Hopewell peoples lived.

- The park preserves some of the most spectacular Hopewellian achievements. The biggest Hopewellian conjoined mound is located at Hopewell Mound Group, the largest concentration of mounds within an enclosure occurs at Mound City Group, and one of two known extant octagonal structures occurs at High Bank Works.

- The Hopewell Ceremonial Earthworks in Ohio were the focal center of an influential network of interaction that linked together distinct societies scattered across half a continent.

- Associated ritual deposits contain exceptionally finely crafted objects fashioned from exotic raw materials obtained from distant parts of North America: copper from the Great Lakes, mica from the Appalachians, marine shell from the Gulf of Mexico, and even obsidian from the Rocky Mountains.

- The earthwork complexes were settings for ceremonies, sacred rituals and festivals that brought together peoples living in small dispersed settlements, and may have drawn pilgrims bearing exotic gifts from hundreds of miles away.

1.10 *General Management Plan. Hopewell Culture National Historical Park, Ohio. (NPS, 1997),* 3.
1.11 Hopewell Culture National Historical Park, *Long-Range Interpretive Plan (NPS, 1997),* 15.

Mound City Group
Mound City Group is significant for its numerous ceremonial and burial mounds, and is the only fully restored Hopewellian earthwork complex. Mound City Group played an important role as a mortuary precinct. Mounds were built over the remains of a wooden building once used for funerary rites and other ceremonial activities. Mound City Group's importance was nationally recognized in 1923, when President Warren G. Harding established the Mound City Group National Monument. It was entered into the National Register of Historic Places (NRHP) on February 17, 1978.

Hopeton Earthworks
Hopeton Earthworks is significant as one of the finest and best preserved examples of a monumental Hopewellian geometric earthwork complex. It contains a rich archeological record of domestic habitations and specialized activity areas that help to place the construction and use of the earthworks in broader cultural context. Hopeton Earthworks includes large earthen walls, but no associated mounds or mortuary features. Mound City Group and Hopeton Earthworks likely served complementary roles in the ritual life of a single community. Hopeton Earthworks' importance was nationally recognized in 1964, when it was designated as a National Historic Landmark (NHL). It was entered into the NRHP on July 2, 1975.

Hopewell Mound Group
Hopewell Mound Group is the largest Hopewell earthwork complex and has provided the greatest set in quality and quantity of artistic Hopewell artifacts ever discovered. Many of the most famous images of the Hopewell Culture are from artifacts found at this park unit: mica bird claw, copper bear paw, and mica hand with its elongated fingers stretching upward. All of these extraordinary features support the idea that Hopewell Mound Group was possibly the most important ceremonial center of all the earthwork complexes in southern Ohio. This park unit gives the Hopewell Culture its name and sets the standard for what is considered 'Hopewell.' The park unit was entered into the NRHP in 1974.

Seip Earthworks
Seip Earthworks is significant for being the only existing example of the rare class of extremely large Hopewell burial mounds. It represents the only protected example of a type of geometric enclosure known as a tripartite earthwork, of which five once existed in the Scioto and Paint Creek valleys in southern Ohio. Rich ritual deposits buried under the mound attest to Hopewell ceremonialism, artistry, and long distance interactions. Seip Earthworks was listed in the NRHP in 1971.

High Bank Works
High Bank Works is among the largest and most intricate earthwork complexes in the Hopewell core area. The conjoined circle and octagon mirrors the geometry of the Octagon Earthworks at Newark, nearly 60 miles away. These are the only two known circle and octagon enclosures ever constructed. The circles at both earthwork complexes are exactly the same size, and are remarkable for their monumental scale, geometric complexity and precision, and for the complicated set of lunar and solar alignments. These exact similarities across vast distances distinguish Hopewell earthwork complexes as a uniquely inter-regional phenomenon. High Bank Works was listed in the NRHP in 1973.

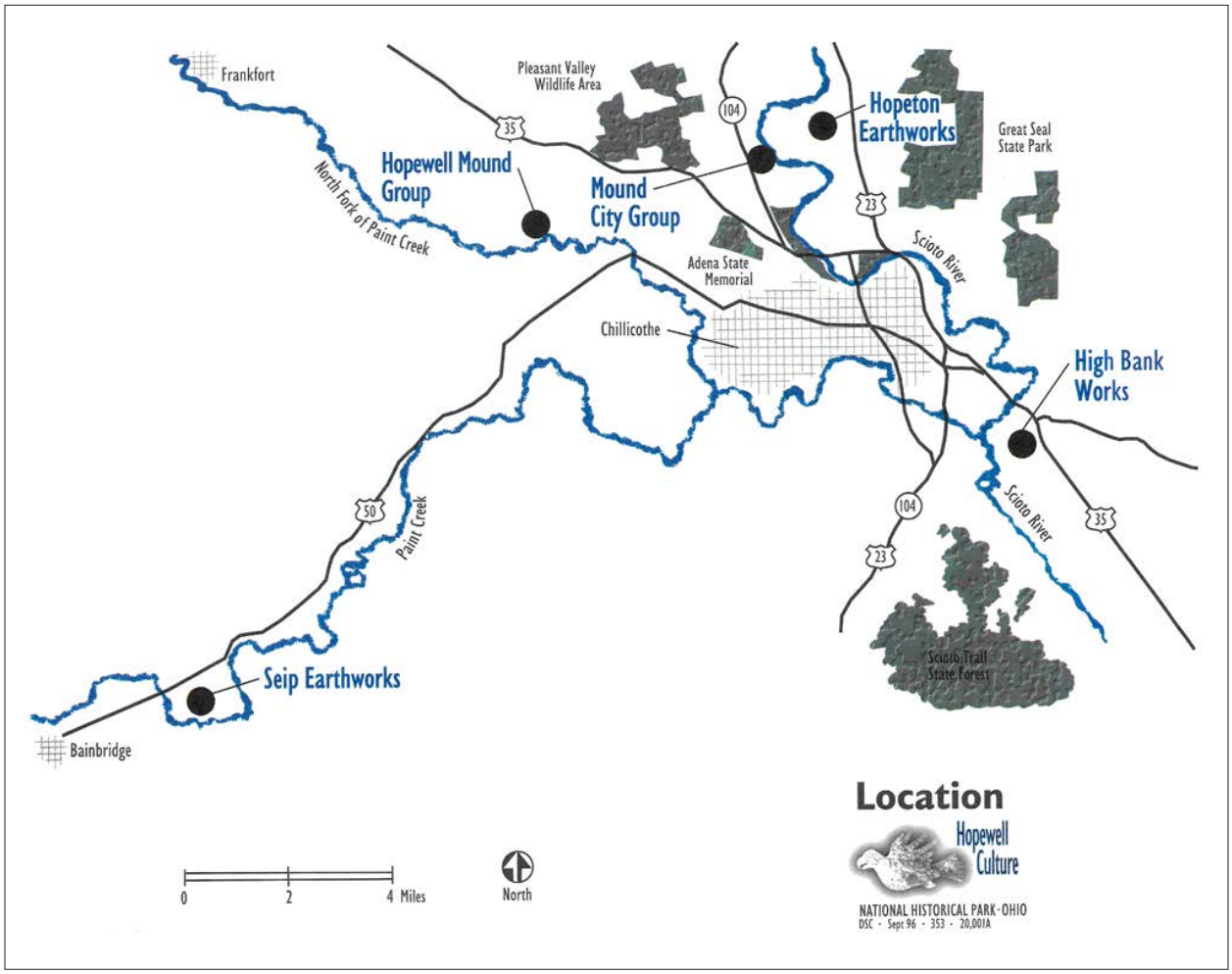


Figure 1-8. The 1997 GMP guides the management and stewardship of the six discontiguous park units. (GMP, 9)

Management

The study area is composed of five discontiguous park units that comprise Hopewell Culture NHP, owned and managed by the NPS. Legislation originally created the park in 1923 when Mound City Group was established as a National Monument, to "preserve prehistoric mounds of great historic and scientific interest . . . , and from all depredations and from all changes that would to any extent mar or jeopardize their historic value." In 1980 the park was expanded by Congress to include 150 acres of the Hopeton Earthworks archeological landscape. In the same legislation, NPS was directed to investigate other earthwork complexes within the region for their suitability for preservation. Of 20 earthwork complexes considered, NPS recommended three archeological landscapes, plus the remainder of Hopeton Earthworks, for preservation as they represented some of the best examples of Hopewellian earthwork architecture.[1.12]

In 1992 the park became a National Historical Park and was renamed Hopewell Culture NHP. The four recommended parcels— the remainder of Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works, were authorized for addition to the park at this time. The new name recognized the park's larger size, 1,134 acres, and greater complexity resulting from the addition of these parcels.[1.13] Of these five park units, three have been developed for public access.

The 1992 law establishing the NHP, initiated a special resource study to "determine the adequacy of the present unit boundaries."[1.14] Hopewell earthwork complexes specifically identified for further study included the Harness Group near U.S. Highway 35, four miles south of Chillicothe; Cedar Bank near U.S. Highway 23, four miles north of Chillicothe; and Spruce Hill above Paint Creek and U.S. Highway 50, ten miles southwest of Chillicothe.[1.15]

Since the GMP was completed, Spruce Hill was added to the park's legislated boundary in 2009. Spruce Hill is co-managed by the NPS and the Arc of Appalachia, a non-profit organization.[1.16]

The management of Hopewell Culture NHP is primarily guided by the 2014 Foundation Document; the 1997 General Management Plan (GMP); the 1999 Long Range Interpretive Plan (LRIP); Cultural Landscape Inventories (CLI) for Mound City Group, Hopeton Earthworks, and Hopewell Mound Group; numerous archeological surveys and investigations; and a World Heritage Nomination currently in preparation. A Foundation Document is currently being drafted for the park. It is intended to provide clear guidance on management priorities, and to identify the NHP's fundamental resources and values.

The GMP envisions Hopewell Culture NHP becoming an "international center for the interpretation, study, and resource preservation of the Hopewell Culture," focused on "preservation with an emphasis on interpretation and research." In addition to preserving lands with archeological earthwork complexes, the GMP recommended acquiring "adjacent lands or easements for necessary resource protection."[1.17]

1.12 *GMP*, 2.
1.13 *GMP*, 2.
1.14 *GMP*, 2.
1.15 *GMP*, 2.
1.16 A separate appendix has been prepared for this park unit.
1.17 *GMP*, 17.

Mound City Group would remain the central visitor center for orientation and interpretation for the park and all park units, and would have "expanded collection and research facilities."[1.18]

- The goal of cultural resource management recommended in the GMP is to "identify, evaluate, preserve, interpret, and protect significant cultural properties, including archeological sites and cultural landscapes." The GMP specifically notes that "protection of the cultural environment would be given the highest priority" in relationship to natural resource management. The need for archeological inventories and evaluations is emphasized, particularly for the recently added park units.[1.19]

- Inventory and evaluation to determine integrity, significance, and NRHP eligibility of potential historic features and archeological remains "thought to pre-date 1850" is recommended, as is an inventory of remnants of Camp Sherman.[1.20]

- The GMP notes the need for research and investigations into the daily life, settlement patterns, and subsistence of the Hopewell.[1.21]

- The treatment of earthwork complexes for resource protection is emphasized in the GMP to provide a meaningful experience for visitors, and as a means to interpret their 'original extent, appearance, and significance." A series of treatment goals are recommended, and include preservation of original features and materials, protection against further deterioration (particularly related to cultivation), research and correction of any inaccurate reconstructions, stabilization by non-invasive vegetation, restoration of select archeological features, and "outline features" for interpretation.[1.22]

- The GMP recommends natural resource management "follow recommendations of an approved cultural landscape report," with natural resources to be more actively managed, for control and elimination of "non-native flora," and for aggressive habitat restoration associated with threatened and endangered species.[1.23]

- A physical network of trails and waterway routes is recommended in the GMP to promote resource conservation, offer visitors alternative modes of travel between park units, and to connect to local and regional greenways, and park and open space properties.[1.24]

- Four management zones recommended in the GMP include a limited access zone for preservation and research of archeological features; natural resource zone for preservation and restoration of native ecosystems with limited visitor access; pedestrian zone where visitors could view and walk among the earthwork complexes; and a development zone where park and visitor facilities for visitor use, orientation, education, and maintenance would be developed. An educational subzone and special use subzone are also included.

1.18 *GMP*, 17.
1.19 *GMP*, 20.
1.20 *Draft General Management Plan / Environmental Assessment, Hopewell Culture National Historical Park, Ohio,* (NPS, 1996), 45. Specific areas of inquiry are listed in the draft GMP / EA, and not included in the final.
1.21 *GMP / EA*, 45.
1.22 *GMP*, 21.
1.23 *GMP*, 24.
1.24 *GMP*, 29.

The 1997 Long Range Interpretive Plan (LRIP) "provides guidance for the interpretation and education programs at Hopewell Culture NHP; and for development of visitor experiences, interpretive media, and facilities "to meet the purpose and significance of the park." The LRIP intends for these actions to be accomplished to provide quality experiences, and to protect irreplaceable resources.[1.25]

- The LRIP presents a primary interpretive theme, supported by a series of secondary themes as the framework for the park's interpretive program. The primary theme is to interpret the Hopewell Culture, from daily life, to artistry and earthwork complexes —"construction techniques, especially of geometric earthworks, demonstrated sophisticated engineering, architecture and mathematics, and significant investments of human labor," to the preservation of archeological features and earthwork complexes, to understanding early archeology in the park.[1.26] Secondary themes are to interpret Camp Sherman and the Ohio-Erie Canal.[1.27]

- The LRIP supports the goal of the GMP to create an international center for interpretation, study and preservation of the Hopewell Culture; and recommends three complexes be open to the public—Mound City Group, Hopewell Mound Group, and Seip Earthworks; and two complexes to be devoted to preservation and research, Hopeton Earthworks and High Bank Works. To support this goal, the LRIP recommends new or renovated facilities for visitor use, and collections and research. An expanded visitor center at Mound City Group is envisioned to provide increased exhibit and museum space, a research center with controlled public access, and indoor and outdoor education areas. Wayside exhibits are envisioned for each park unit open to the public, some of which have been recently revised, as are park trails.[1.28]

- For Hopewell Mound Group, the LRIP recommends a new seasonal contact station, trail connections to the county regional trail, new wayside exhibits, new trails of varying degrees of difficulty, and interpretation of the earthwork complexes by 'outlining' the archeological features.

- An off-site "multi-agency visitor center" is envisioned in the LRIP for Seip Earthworks, as are linkages to the high school, viewing platform, demonstration garden, and trails that include a greenway trail along Paint Creek, and a rails-to-trails route.[1.29]

- For Hopeton Earthworks and High Bank Works, the two complexes noted to be archeological research sites, the LRIP envisioned a short trail with interpretive wayside for visitor access, with the remainder primarily for active archeological investigations.[1.30]

Recent archeological research and investigations guide management decisions within the park. Modern archeological investigations focus on less-intrusive methods than in the past.

- High resolution mapping, including magnetic surveying are being used to identify extant below-grade archeological features.

1.25 *LRIP,* 2.
1.26 *LRIP,* 16-19.
1.27 *LRIP,* 19.
1.28 Hopewell Culture NHP, *LRIP,* 37-45.
1.29 Hopewell Culture NHP, *LRIP,* 49-52.
1.30 Hopewell Culture NHP, *LRIP,* 55-57.

- Radiocarbon dating, pollen and phytolith analysis, soil micromorphological analysis, etc., are being used to shed further light on the Hopewell Culture.

- Magnetic surveys commissioned by the NPS have resulted in more detailed maps of the earthwork complexes, revealing previously unverified deposits and features that must be managed as archeological resources.

- Field investigations demonstrate that plowing has only caused superficial disturbance to upper mound strata.

- Recent high resolution topographic mapping using LiDAR ("light radar") technology provides evidence on the integrity of the earthwork architecture.

- Archeological salvage investigations are used to remove archeological material that is threatened by erosion by waterways (e.g. 2004 to 2006 investigations at Hopewell Mound Group removed deposits threatened by potential erosion of North Paint Creek).[1.31]

Vegetation management is informed by the archeological studies, which reveal that managing earthwork complexes as hay fields, cut and baled one to three times per year, establishes an effective barrier to soil erosion, enhances visibility of the earthwork complexes, and facilitates access for archeological research.

- Native plant cover obscures the earthwork complexes, especially during the growing season when most visitation occurs. Prescribed burning would be a sustainable method of reducing the biomass, but burning has been shown to interfere with magnetic surveys and may introduce carbon that could interfere with radiocarbon dating efforts.

- Recently, an Executive Order on proper herbicide use was issued to help the park protect pollinators.[1.32]

The park units and two affiliated properties began a nomination process for the UNESCO World Heritage List in 2013. The nomination is currently under review. The seven archeological landscapes nominated include the five park units of Hopewell Culture NHP, Newark Earthworks State Memorial, and Fort Ancient State Memorial, the latter two owned and managed by the Ohio History Connection.

Upon approval, the World Heritage Nomination (WHN) will provide a statement of integrity and authenticity for each earthwork complex, a summary of field investigations, and history.

- The WHN provides a basis for preservation and care that is required to maintain World Heritage status.

- The nomination identifies threats to the park units and how they can be mitigated.

- It provides a rationale for any archeological salvage investigations that might be required in order to protect the integrity of the park units.

- It stresses the need for protection of these earthwork complexes, indicates the importance of maintaining or expanding the park unit boundaries to encompass all or most of the earthwork complexes,

1.31 Bret Ruby, *"Authenticity and Integrity of the Hopewell Mound Group,"* Draft World Heritage Nomination, 2.

1.32 Presidential Memorandum for Heads of Executive Departments and Agencies. Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators, June 20, 2014.

and boundary adjustments that may be necessary to provide a protective buffer against encroaching development.[1.33]

Management Issues

The following summarizes management issues identified during the research, inventory, and evaluation of Hopewell Culture NHP's archeological landscape.

Need for Research and Archeological Investigations

The six park units encompass some of the most important archeological complexes in the nation, for which additional scientific investigations and systematic study continue to be needed.

- Recent magnetic surveys revealed important findings on extant below-grade features, not currently visible on the surface. The survey work completed for Mound City Group and High Bank Works on parcels within NPS ownership have revealed the extent of extant below-grade features. This same level of investigation is needed for the other park units including Hopeton Earthworks, Hopewell Mound Group, and Seip Earthworks, and for archeological features that remain on private property including portions of High Bank Works. Hopeton Earthworks, and Seip Earthworks.

- Recent magnetic surveys have confirmed that most reconstructions of mounds and earthen walls have occurred in historic locations, i.e., in relationship to identified below-grade features identified in these magnetic surveys. However not all mounds or earthen walls were surveyed, and additional investigations are needed.

- Reconstructions of mounds and earthen walls may not have been built with materials that match the original materials in the original compositions. Additional research, investigations, and magnetic surveys are needed to confirm material reconstructions.

- Additional magnetic surveys are needed to confirm accuracy of some reconstructions. Potential archeological features for additional investigation include the earthen wall at Seip Earthworks.

- Little is known of early American Indian habitation sites in relationship to the earthwork complexes, and of modes of circulation (waterways and overland routes) between earthwork complexes. More information on the lives of the Hopewell people, who built and used the earthwork complexes, is critical to understanding settlement in the region, and the purpose and use of the earthwork complexes.

- Additionally, archeological research is needed to identify vegetation evident during the period of significance. This could include pollen and seed analysis from excavations.

Need for Earthwork Complex Preservation

Earthwork complexes within Hopewell Culture NHP include reconstructions of mounds and earthen walls, re-excavation of borrow pits, and protection of extant original materials. Vegetation management on archeological features varies from mown lawn to native grasslands.

A consistent long-term strategy for earthwork preservation is needed, in which best management practices are identified based on those undertaken for nationally

1.33 Ruby, "Authenticity and Integrity of the Hopewell Mound Group," 3.

and internationally significant earthwork complexes.

- Vegetation on many archeological features is managed as mown lawn, hay fields, or crop fields.[1.34] In some areas, archeological features are covered by native grassland vegetation. Some earthwork complexes, still privately owned, continue to be cultivated for agricultural purposes. Earthwork complexes in active cultivation continue to degrade by plowing and other agricultural practices.

- In park units with reconstructed archeological features, mown lawn is the vegetation management approach for earthen walls, mounds, and borrow pits. This is the same vegetation used for visitor or public use areas. Mown lawn clearly defines the extent of the archeological feature and its topography; however, it is subject to erosion and requires extensive maintenance. In areas where earthwork complexes are mown lawn, such as Mound City Group, the extensive use of a singular vegetation type assists in the visibility of the individual archeological features. However, using mown lawn for both earthwork complexes and visitor areas creates a confusing experience.

- Many earthwork complexes are managed as field vegetation, with some specific archeological features or portions of features managed as hay fields. In some earthwork complexes, limited public access is via mown paths. Field vegetation generally grows to a height that obscures the subtle topographic presence of the archeological features. Hay fields assist in defining the archeological features, but due to the low height of many features, the form is still difficult to discern.

- Mown paths are used to provide visitor access. When paths cross or transect archeological features, it can be confusing because it is difficult to know if the path follows the outline of an archeological feature and wayfinding is difficult.

- In earthwork complexes with native grasslands, archeological features are completely obscured due to the density and height of the vegetation. Deep roots of native grasslands may impact below-grade features. Native vegetation occurs in other areas within the park units, near rivers and on the exterior of some earthwork complexes. Placing a native vegetation type within an earthwork complex creates a confusing scene for visitors in which it is difficult to discern between an earthwork complex and a native area.

- Other vegetation management issues include erosion on steeper slopes of mounds and earthen walls, and burrowing animals and mowing equipment. Erosion is due to natural forces and pedestrians accessing the mounds.

- Archeological materials have been compromised due to agricultural practices, intrusive archeological excavations, and the presence of buildings, roads, and other features built upon the earthwork complexes. As a result, a large amount of the original archeological features have been removed, damaged, or destroyed.

- Burning has been shown to interfere with magnetic surveys to identify subsurface archeological features. Burning introduces

1.34 Mown lawn is regularly mown turf grass species; hay fields are primarily grass species with regular or occasional cultivation; crop fields are yearly cultivated crop species such as corn, soybeans, or wheat.

modern carbon into the soil that may interfere with radiocarbon dating.

- Tall grasses create habitat for destructive burrowing animals such as groundhogs, and make it difficult to monitor archeological landscapes for the presence of destructive burrowing animals.

- Tall grasses and shrubs limit access for archeological research, especially the new generation of large-scale geophysical survey instruments that require low, mown vegetation for data collection

Acquisition of Significant Earthwork Complexes
The establishment of Hopewell Culture NHP in 1992, and expansion of park boundaries in 2000, preserved several significant earthwork complexes—the remainder of Hopeton Earthworks, Hopewell Mound Group (2000 boundary expansion gained a greater portion of the earthwork), Seip Earthworks, and High Bank Works. However, some portions of certain earthwork complexes remain in private ownership, with some still in agricultural cultivation. These include a portion of Seip Earthworks, and the center parcel of High Bank Works.

Several additional Hopewell complexes were identified in the 1992 enabling legislation, which authorized special resource studies to evaluate the Harness Group, Cedar Banks, Spruce Hill, the Mann Site in Indiana, and other earthwork complexes. The Harness Group, Spruce Hill and Mann Site studies have been completed, but additional special resource studies are needed to evaluate the desirability and feasibility of preserving additional earthwork complexes as park units, or by other means.[1.35]

Adjacent lands threaten setting and Earthwork Complexes
Some adjacent land uses threaten the setting. Ongoing residential development occurs close to some park units; and Mound City Group is adjacent to two government owned institutional facilities, including two state prisons and a U.S. Veterans Administration hospital. A privately-owned gravel pit is adjacent to Hopeton Earthworks, and has damaged archeological resources. Public and private roads and utilities have right-of-ways across the park units. Some of the roads have damaged the earthwork complexes, and overhead power lines disrupt views and the spatial organization of the earthwork complexes. Agricultural activities are adjacent to most park units. Portions of park units, not owned by the NPS, are cultivated yearly with corn and soybean fields. Crop cultivation damages earthwork complexes.

1.35 Cedar-Bank Works and Edwin Harness Mound are both located in Ross County, approximately 10 miles north of Chillicothe.

Related Laws, Regulations, Policies, Orders, and Planning Documents

Several guiding laws and policies, as well as previous planning project reports, provide background and management information for this CLR / EA. Relevant laws, policies, and plans are described below.

Guiding Laws and Policies

National Environmental Policy Act of 1969 as Amended

NEPA was passed by Congress in 1969 and took effect on January 1, 1970. This legislation established the country's environmental policies, including the goal of achieving a productive harmony between human beings and the physical environment for present and future generations. NEPA provides the tools to implement these goals by requiring that every federal agency prepare an in-depth study of the impacts of "major federal actions having a significant effect on the environment" and alternatives to those actions. NEPA also requires that each agency makes that information an integral part of its decision-making process. In addition, NEPA requires that agencies make a diligent effort to involve interested members of the public before agencies make decisions affecting the environment. NEPA is implemented through regulations of the Council on Environmental Quality (CEQ). [1.36]

Natural Resource Management Reference Manual #77

The Natural Resource Management Reference Manual #77 offers comprehensive guidance to National Park Service employees responsible for managing, conserving, and protecting the natural resources found in National Park System units. This Reference Manual serves as the primary Level 3 guidance on natural resource management in units of the National Park System, replacing NPS-77, The Natural Resource Management Guideline, issued in 1991 under the previous NPS guideline series.

National Historic Preservation Act of 1966, as Amended

The NHPA, as amended, protects buildings, sites, districts, structures, and objects that have significant scientific, historic, or cultural value. The act established affirmative responsibilities of federal agencies to preserve historic and prehistoric resources. Effects on properties that are listed in, or that are eligible for listing in, the NRHP must be taken into account in planning and operations. Any property that may qualify for listing on the NRHP must not be inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate.

Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties. The Advisory Council on Historic Preservation (ACHP) is then afforded a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the ACHP. Revised regulations, known as "Protection of Historic Properties" (36 CFR Part 800), were updated on August 5, 2004. In addition to considering the effects of their undertakings on historic properties, Section 110 of the NHPA requires federal agencies to establish a historic preservation program to identify and protect historic properties under their management or control. The plans must include a process for evaluating historic properties for listing in the NRHP.

NPS Organic Act of 1916

By enacting the NPS Organic Act of 1916, Congress directed the U.S. Department of

1.36 40 CFR 1500-1508.

the Interior and NPS to manage units "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations."[1.37]

Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

NPS Management Policies 2006

NPS Management Policies 2006 provides guidance for all management decisions, including decisions related to archeological resources. Archeological resources, including archeological landscapes and historic structures, are addressed in section 5.0, which states the NPS cultural resources management program involves "…stewardship to ensure that cultural resources are preserved and protected, receive appropriate treatments (including maintenance) to achieve desired conditions, and are made available for public understanding and enjoyment." The policy goes on to state that "each park's resource stewardship strategy will provide comprehensive recommendations about specific actions needed to achieve and maintain the desired resource conditions and visitor experiences for the park's cultural resources."[1.38]

Director's Order-12 (2001, rev. 2011) and Handbook (2001)

DO-12 and Handbook provides the instruction or procedures by which the NPS complies with NEPA and for practicing environmental impact assessment and resource conservation.[1.39] DO-12 and Handbook provide the framework for the NPS's approach in environmental analysis, public involvement, and making resource-based decisions. The order and handbook require a full and open evaluation, interdisciplinary approach, and technical and scientific analysis of management decisions.

Director's Order-28: Cultural Resource Management

DO-28 elaborates on the existing laws for cultural resources including, but not limited to, the 1916 NPS Organic Act, NPS Management Policies 2006, and NHPA.[1.40] DO-28 offers guidance in applying the laws and regulations regarding cultural resource management to establish, maintain, and refine park cultural resource programs.

Executive Order 11593, "Protection and Enhancement of the Cultural Environment"

Executive Order (EO) 11593 mandates that all agencies 1) compile an inventory of the cultural resources for which they are the

1.37 16 United States code [USC] section 1.

1.38 NPS, *Management Policies 2006.*

1.39 NPS, *Director's Order-12 (2001, rev. 2011) and Handbook (2001).*

1.40 NPS, *DO-28: Cultural Resource Management*, 2002.

trustee, 2) nominate all eligible government properties to the NRHP, 3) preserve and protect their cultural resources, and 4) ensure that agency activities contribute to the preservation and protection of non-federally owned cultural resources.

Executive Order 11990, "Protection of Wetlands"
EO 11990, "Protection of Wetlands" is an order to avoid adverse impacts associated with the destruction or modification of wetlands. The order requires agencies to "take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agencies' responsibilities." The order applies to acquisition, management, and disposition of federal lands and facilities construction and improvement projects that are undertaken, financed, or assisted by federal agencies, and federal activities and programs affecting land use.

2011 Guidance for Non-impairment Determinations and the NPS NEPA Process
New guidance for non-impairment determinations was approved by the NPS in September 2011. The new guidance states that non-impairment determinations will only be required for the preferred alternative in NEPA documents and that the determination will be appended to the decision document (FONSI or Record of Decision (ROD)) (previously included in the analysis for each resource area). The new guidance will be included in the upcoming revised DO-12 Handbook. Based on the new guidance, the non-impairment determination will be appended to the decision document for this EA.

Relevant Planning Documents, Related Studies, Recommended Future Studies
In addition to NPS management policies, the following park-specific documents provided information on park resources and management strategies and priorities.

General Management Plan
The General Management Plan provides broad management direction for resource management, visitor use, and development 15-20 years into the future.[1.41]

Long Range Interpretive Plan
The Long Range Interpretive Plan articulates a vision for the park's interpretive future, and recommends the media and programs best suited for meeting visitor needs, achieving management goals, and telling the park stories. [1.42]

Wildland Fire Management Plan
The Wildland Fire Management Plan outlines a detailed program of actions to be taken by the park to meet the fire management goals for the area.[1.43] The fire management program at the park was developed to balance the park's goals with the goals of the National Fire Plan.[1.44] Resource management objectives determine whether fire may be used as a tool to manipulate vegetation and how fire will be managed.

Heartland Invasive Plant Management Plan
The Heartland Inventory and Monitoring Network (HTLN) is part of the nationwide Inventory and Monitoring Program of

1.41 *GMP.*
1.42 *LRIP.*
1.43 *GMP.*
1.44 *Managing the Impact of Wildfires on Communities and the Environment.* (Washington, D.C.; U.S. Departments of Agriculture and Interior. 2000).

the NPS.[1.45] HTLN parks in eight states (Arkansas, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, and Ohio) propose the establishment of an invasive plant management team (IPMT) action plan to control invasive plants cooperatively. This will support restoration of native vegetation in several ecosystem types associated with tallgrass prairies, eastern deciduous forests, interior highlands, and the Mississippi floodplain within the parks.

Environmental Assessment Impact Topics

Scope of the Report

This CLR / EA has been prepared to evaluate potential effects on environmental, socioeconomic, and cultural resources from the proposed treatment alternative and a no action alternative. The CLR / EA provides the decision-making framework that:

1. Analyzes a reasonable range of alternatives to meet objectives of the proposal,

2. Evaluates potential issues and impacts to the park's resources and values, and

3. Identifies mitigation measures to lessen the degree or extent of these impacts.

Impact topics evaluated in detail in this EA are cultural resources, vegetation, wildlife, visual resources, visitor use and experience, and park operations and maintenance. Some impact topics were dismissed because the project would result in no more than minor effects. No major effects were identified as a result of implementing the proposed alternatives in an initial analysis of effects. The public, regulatory agencies, and other stakeholders have an opportunity to comment on this CLR / EA. Comments received will be considered in the final evaluation of effects.

Scoping

Scoping is an early and open process to determine the breadth of issues and alternatives to be addressed in an environmental assessment. Park staff and resource professionals of the NPS Midwest Regional Office conducted internal scoping. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the

1.45 S.A. Middlemis-Brown and C.C. Young. *Heartland Invasive Plant Management Plan and Environmental Assessment. Natural Resource Data Series NPS/MWR/HRLN/NRDS-2012/XXX.* (Philadelphia, PA; National Park Service 2012).

relationship of the proposed action to other planning efforts at the park.

As part of tribal consultation, scoping letters were sent to federally recognized tribes on February 4, 2015, to initiate informal consultation on the CLR/EA. The tribes and governments that received letters are:

- Absentee-Shawnee Tribe of Indians of Oklahoma
- Delaware Nation
- Delaware Tribe of Indians
- Eastern Shawnee Tribe of Oklahoma
- Miami Tribe of Oklahoma
- Ottawa Tribe of Oklahoma
- Seneca-Cayuga Tribe of Oklahoma
- Shawnee Tribe
- Wyandotte Nation

The NHPA requires the consideration of impacts on cultural resources, either listed in or eligible to be listed in, the National Register.[1.46] Park staff sent a scoping letter to the Ohio State Historic Preservation Officer (SHPO) on February 4, 2015 to solicit input on issues of concern. The SHPO responded with a letter dated April 15, 2016 supporting the recommendations of the CLR/EA.

The park also sent a scoping letter on February 4, 2015 to the U.S. Fish and Wildlife Service (USFWS) to solicit input on issues of concern. The USFWS Ohio Field Office responded to the scoping letter in a letter dated February 25, 2015, recommending a consultation with ODNR.

The park initiated public scoping with a press release that was sent to the Chillicothe Gazette, published on March 21, 2016.

Issues and Impact Topics

An important part of the decision-making process is seeking to understand the consequences of making one decision over another. This CLR / EA identifies the anticipated impacts of possible actions on certain resources, park visitors, and neighbors. The impacts are organized by topic, such as "vegetation" or "public health and safety." Impact topics serve to focus the environmental analysis and ensure the relevance of impact evaluation.

Impact topics were developed from the questions and comments brought forth during scoping; existing conditions; staff knowledge of the park resources; and any laws, regulations, policies, or orders applicable to the project. Some topics were dismissed from detailed analysis because the resource is not present in the study area, or because the action alternatives would either have no effect on the impact topic, or the effects would be negligible to minor. Some impact topics were retained even though the effects of the alternatives would be negligible to minor because the impact topic is a particularly sensitive resource, or was identified as an important topic in scoping.

1.46 16 USC 470 et seq.

TABLE 1-1. Impact Topics Retained and Relevant Laws, Regulations, and Policies

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Cultural Landscapes, Archeological Sites, and Historic Structures / Objects	The treatment recommendations for archeological landscapes are key issues of the CLR / EA. Because implementing one or more of the alternatives may result in changes to archeological landscapes and historic structures and because ground disturbances may affect archeological sites (i.e., disturb buried artifacts) this topic was retained for further analysis.	Sections 106 and 110 of the NHPA; ACHP implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800); DO-28: Cultural Resource Management Guidelines; NPS Management Policies 2006; Secretary of the Interior's Standards for the Treatment of Historic Properties; NEPA; Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes (1996); Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; DO-28A: Archeology (NPS 2004)
Vegetation	Vegetation disturbance could occur and the introduction of invasive nonnative species is possible from ground-disturbing activities. Because the alternatives have the potential to affect vegetation, including state listed species, this topic was retained for further analysis.	NPS Organic Act; NPS Management Policies 2006; Resource Management Guidelines (NPS-77); Federal Noxious Weed Control Act; EO 13112, "Invasive Species" (NPS 1999)
Wildlife	Changes in vegetation may alter wildlife habitat and could affect wildlife in the project area. Because the CLR / EA alternatives have the potential to affect wildlife habitat, including for state listed species, this topic was retained for further analysis.	NPS Organic Act; enabling legislation; NPS Management Policies 2006; NPS-77

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Visual Resources	Modifications to the archeological landscape proposed in the CLR / EA alternatives may alter the views for park visitors; therefore, this topic was retained for further analysis.	NPS Management Policies 2006
Visitor Use and Experience	The CLR / EA alternatives could affect overall visitor understanding of the park, including interpretive and educational opportunities and, therefore, this topic was retained for further analysis.	NPS Organic Act; NPS Management Policies 2006
Park Operations and Maintenance	Park operations and maintenance activities could be affected by the CLR / EA alternatives; therefore, this topic was retained for further analysis.	NPS Management Policies 2006

Impact Topics Selected for Analysis
The issues identified during scoping that are evaluated in this CLR / EA are potential effects on the following resources:

- Archeological landscapes, archeological sites, and historic structures / objects
- Vegetation
- Wildlife
- Visual resources
- Visitor use and experience
- Park operations and maintenance

Table 1 discusses the retained impact topics; the reasons for retaining the topic; and relevant laws, regulations, and policies.

Impact Topics Dismissed from Further Consideration
The following impact topics or issues were eliminated from consideration because either the resources are not present in the areas proposed for management implementation or because the effects, if any, would be negligible to minor.

Natural Resources
Air Quality
Ross County is designated as a Class II Air Quality area under the 1963 Clean Air Act, as amended.[1.47] The park and the State of Ohio do not monitor air quality. The local and short-term changes in air quality associated with emissions from construction or maintenance equipment during implementation of the proposed action alternatives would have a negligible effect on regional and local air quality. Because there would be a negligible effect on regional and local air quality from the proposed alternatives, this impact topic was dismissed from further analysis.

Climate Change
As discussed above, any local, short-term emissions associated with the proposed alternatives would be negligible. These emissions would have an indiscernible effect on climate change. Changes in visitor use following implementation of action alternatives would not result in a substantial increase in traffic to the park. Because the proposed alternatives would result in indiscernible contributions to climate change, this impact topic was dismissed from further analysis.

Geology and Soils
The NPS Organic Act and NPS Management Policies 2006 direct the NPS to preserve and protect geologic resources and maintain natural geologic and coastal processes and preserve and protect soil resources. The park is located in south-central Ohio, an area that has experienced numerous episodes of glaciation.[1.48] The major geologic features include glacial outwash, moraines, and terraces formed by rivers cutting through glacial till and outwash.[1.49] Soils at the earthwork park units are dominated by silty to gravelly loams formed in the floodplains of Paint Creek, North Paint Creek, and the Scioto River. Most of the land at the park units has been cultivated in the past or is currently under cultivation. Geologic and soil resources do not contribute to the significance of the park and no important or unusual geologic formations would be affected by the alternatives.

The proposed action alternatives would have little to no impact on park geology or soils because no extensive excavation is proposed. There would be minor soil disturbances associated with proposed visitor facilities, but adverse effects would be minimized by limiting areas of disturbance and by revegetating temporarily disturbed areas

1.47 NPS. 2004, 14. 42 USC 7401 et seq.

1.48 Hopewell Culture NHP, Ancillary Map Information Document. (National Park Service, 2009)
1.49 Hopewell Culture NHP, Ancillary Map Information Document. (National Park Service, 2009)

as soon as possible following completion of work. As a result, at most, the action alternatives would have local short-term and long-term negligible adverse effects on geologic and resources in the project area. The no action alternative would have no effect on geologic or soil resources. Because impacts to geologic and soil resources would be no more than negligible under the proposed alternatives, this impact topic was dismissed from further analysis.

Prime or Unique Farmland

In 1980, the Council on Environmental Quality (CEQ) directed federal agencies to assess the effects of their actions on farmland soils classified as prime or unique by the United States Department of Agriculture, Natural Resource Conservation Service (NRCS). Prime farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed and is available for these uses; and unique farmland produces specialty crops such as fruits, vegetables, and nuts.

The NRCS has classified the majority of soils in the park as prime farmlands.[1.50] No unique farmland has been identified within the Hopewell Culture National Historical Park.

Potential effects of the proposed alternatives on prime farmland in the park include constructing new facilities and vegetation management treatments. The extent of the effects is related to the amount of land disturbance caused by construction and operation of park facilities and the extent of vegetation management treatments. Under the action alternatives, a maximum of one acre would be converted from prime farmland to building sites and parking areas associated with new facilities. This represents less than 1% of prime farmland in the park and would result in a long-term, negligible, adverse effect. Vegetation management treatment alternatives would be implemented on much of the prime farmland, but the alternatives would not affect the classification of the areas because their capability to produce common foods, forage, fiber, and oil seed would not be diminished.

Overall, the proposed alternatives would at most result in local long-term negligible adverse effects on prime farmland. Because effects would be negligible, this topic was dismissed from further analysis.

Threatened and Endangered Species

Federally threatened and endangered species are protected under the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) (ESA). Section 7 of the ESA requires federal agencies to promote the conservation purposes of the ESA and to consult with the USFWS to ensure that effects of actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or species proposed for listing.

The USFWS lists six federally endangered species as having the potential to be affected by projects in Ross County, the county in which the park is located.[1.51] The listed species are Indiana bat (*Myotis sodalis*), clubshell mussel (*Pleurobema clava*), northern riffleshell (*Epioblasma torulosa rangiana*), snuffbox mussel (*Epioblasma triquetra*), rayed bean mussel (*Villosa fabalis*), and running buffalo clover (*Trifolium stoloniferum*). The USFWS also lists two species of concern as potentially present in Ross County

1.50 Natural Resource Conservation Service (NRCS). *"Web Soil Survey of Ross County, Ohio."* Soil Survey Staff. United States Department of Agriculture. Accessed October 2014, *http://websoilsurvey.nrcs.usda.gov/*.

1.51 U.S. Fish and Wildlife Service (USFWS). *"Ohio, Federally-Listed Threatened, Endangered, Proposed, and Candidate Species.' County Distribution, Revised December 2014."* Accessed January 2015. *http://www.fws.gov/midwest/Endangered/lists/pdf/OhioSppList2014.pdf*

– eastern hellbender (*Cryptobranchus alleganiensis alleganiensis (Daudin)*) and timber rattlesnake (*Crotalus horridus*). Bald eagle (*Haliaeetus leucocephalus*) is listed as protected under the Bald and Golden Eagle Protection Act. The northern long-eared bat is a species impacted by white-nose syndrome, and due to recent declines, the USFWS proposed listing this bat as endangered on October 2, 2013.[1.52] The comment period on the proposed 4(d) rule relating to the listing expired on July 1, 2015.

Based on relevant studies, park resource data, and staff knowledge, NPS has determined that suitable habitat is not present in the park for clubshell mussel, northern riffleshell, snuffbox mussel, rayed bean mussel, or eastern hellbender because suitable aquatic habitat is not present in the park units. Because of the lack of suitable habitat and because the proposed alternatives would be limited to terrestrial areas, the proposed alternatives would have no effect on federal threatened or endangered aquatic species. The project would also have no effect on timber rattlesnake because habitat for the timber rattlesnake was not found within park boundaries during a herpetological study conducted in 2002-2003.[1.53]

Although within the habitat range of Indiana bat and running buffalo clover, the species have not been documented in the park. Because they are not known to occur in the park, despite a number of surveys, it is unlikely Indiana bat and running buffalo clover are present in the park and the proposed alternatives would at most have an insignificant and discountable effect on the species. Bald eagles have been documented within the park units, but it is not likely the proposed treatments would have an adverse effect on bald eagles.

A bat inventory conducted in the park documented the occurrence of northern long-eared bat at the park.[1.54] This species has been described as roosting and having their young in association with forest trees, either in the foliage, in cavities, or under loose bark. The population of the bat has primarily declined due to the white-nose syndrome disease.[1.55] To avoid inadvertently harming individuals or roost sites, tree removal would be completed during the hibernation period of northern long-eared bat (November I to March 1). If removal of trees between November 1 and March 1 is not feasible, surveys for the species would be completed before trees are removed. Removing trees during the hibernation period and surveying trees before removal outside of the hibernation period would reduce the likelihood of harming individual bats. At most the proposed alternatives would affect a small fraction of the 244 acres of wooded habitat in the park and the thousands of acres of habitat in the region.[1.56] For these reasons, the proposed alternatives would not likely adversely affect northern long-eared bat and would not contribute to further declines in the population.

Due to a lack of habitat for aquatic species; likely absence from the park of Indiana bat,

1.52 78 Fed. Reg. 191.

1.53 Christina Wieg. *A Herpetofaunal Inventory of Hopewell Culture National Historical Park, Ross County, Ohio. Technical Report NPS/HTLN/P6514020002.* (Republic, MO: Heartland Network Inventory and Monitoring Program, National Park Service, 2004).

1.54 Lynn W. Robbins. *Inventory of Distribution, Composition, and Relative Abundance of Bats at Hopewell Culture National Historical Park.* (Republic, MO: Heartland Network Inventory and Monitoring Program, National Park Service, 2005).

1.55 78 Fed. Reg. 191

1.56 David D. Diamond, Lee F. Elliott, Michael D. DeBacker, Kevin M. James, Dyanna L. Pursell, and Alicia Struckhoff. *Vegetation Classification and Mapping of Hopewell Culture National Historical Park, Ohio. Natural Resource Report NPS/HOCU/NRR—2014/793.* (Fort Collins, CO: National Park Service, 2014.)

bald eagle, and running buffalo clover; and measures that would be undertaken to avoid and minimize impacts to northern long-eared bat and its habitat, the proposed alternatives would have at most an insignificant and discountable effect on federally listed and candidate species. The USFWS concurred with the NPS effects determination in a letter dated February 25, 2015. For this reason this impact topic was dismissed from further evaluation.

Water Resources and Wetlands
The Clean Water Act, EO 11990 Wetland Protection, NPS Management Policies 2006, and DO 77-1 direct that water resources and wetlands be protected, and that wetlands and wetland functions and values be preserved. These orders and policies further stipulate that direct or indirect impacts to wetlands be avoided when practicable alternatives exist. When an alternative is selected for implementation that will result in adverse impacts on wetlands, a wetland statement of findings must be prepared that documents the extent and functions of impacted wetlands, why wetland impacts are unavoidable, what measures were taken to minimize impacts, and how impacts will be compensated. Some types of activities are exempted from the requirement for a wetland statement of findings, including foot trails with the primary purpose of public education, interpretation, or enjoyment of wetland resources and where total wetland impacts from placement of fill material does not exceed 0.10 acre.

Although not in the units themselves, each earthwork complex is located in the Scioto River watershed on floodplains near the Scioto River or North Paint Creek or Paint Creek, tributaries to the Scioto River. Within the park units, Dry Run, an intermittent stream is located at Hopeton Earthworks, a man-made pond and ephemeral drainage at Hopewell Mound Group, and five vernal pools of wetland vegetation, each less than 30 feet in diameter at Hopewell Mound Group.

None of the proposed alternatives would affect the drainages or wetlands in the park or rivers adjacent to the units. In the unlikely event work would occur near the drainages or wetlands, buffer zones would be established around these areas for all action alternatives to prevent disturbance from implementing treatment alternatives. Because the buffer zones would ensure that the alternatives would have no impact on wetlands, this topic was dismissed from detailed discussion in this CLR / EA.

Floodplains
EO 11988, "Floodplain Management" requires an examination of impacts on floodplains and potential risks involved in placing facilities within floodplains. NPS Management Policies 2006 and DO-77-2: Floodplain Management provide guidelines for proposed actions in floodplains.

With the exception of High Bank Works, parts of each of the park units are located in a FEMA-mapped 100-year floodplain. Although floodplains are present, the proposed alternatives do not include constructing new permanent structures or discharging fill material into the floodplain and so would have no impacts on existing floodplains.

The action alternatives would also have no impacts on natural floodplain values (e.g., river processes or aquatic habitat) and the ability of the floodplains within the park to function naturally. There would be no increase in risk to life or property. Because there would be no impacts on floodplains, this impact topic was dismissed from further analysis in this CLR / EA.

Cultural Resources

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights. The order represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. None of the park units is an Indian trust resource according to this definition. In addition, any Indian titles to such lands now within the park have been extinguished through cession or sale. Therefore, Indian trust resources was dismissed as an impact topic.

Ethnographic Resources

Ethnographic resources are defined by the NPS as "subsistence and ceremonial locales, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users." An ethnographic study conducted by the park did not identify any current ethnographic resources or uses of the park units. No specific issues related to ethnographic resources were identified during scoping or during consultation with the tribes contacted for this CLR / EA. No specific issues related to ethnographic resources have been identified in past consultations for actions in the park or as of the date of this publication. If subsequent issues or concerns are identified, appropriate consultations would be undertaken. Because it is unlikely that ethnographic resources would be affected by the preferred alternative, and because appropriate steps would be taken to protect any ethnographic resources that are inadvertently discovered, ethnographic resources was dismissed as an impact topic.

Museum Collections

Museum collections include historic artifacts, natural specimens, and archival and manuscript material. These collections may be threatened by fire, vandalism, natural disasters, and careless acts. The preservation of museum collections is an ongoing process of preventative conservation, supplemented by conservation treatment, when necessary. The primary goal is preservation of artifacts in the most stable condition possible to prevent damage and minimize deterioration.

The proposed alternatives would not affect the current museum objects of the park. The proposed action alternatives may produce new museum accessions, including archeological objects, during any limited earthwork associated with the proposed alternatives. These new accessions would likely have minor beneficial contributions to the understanding of the park's natural and cultural resources. Because the effects on the museum collection would be minor and beneficial, museum collections was dismissed as an impact topic.

Environmental Justice

EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and adverse human health or environmental effects of their actions on minorities and low-income populations and communities.

No actions in the proposed alternatives would have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the EPA's "Draft Environmental Justice Guidance" (July 1996); therefore, environmental justice was dismissed as an impact topic.

Soundscapes
An important part of the NPS mission is preservation of natural and cultural soundscapes associated with national park units as indicated in NPS Management Policies 2006 and DO – 47: Sound Preservation and Noise Management. Natural soundscapes exist in the absence of human-caused sound and is the aggregate of all natural sounds within the park. Cultural soundscapes include sounds that are fundamental to the purposes and values for which a park was established. Examples of cultural sounds include native drumming; music; and bands, cannon fire, or other military demonstrations at some national battlefield parks.

The park units are located in a patchwork of agricultural areas, dispersed residences, and light industry or public facilities. Visitors would generally expect to hear a mix of natural sounds such as bird calls and insect noises and non-natural sounds such as those from farm equipment, cars and trains, and people. A prison facility is adjacent to the park and visitors to the park can hear a siren from the prison facility 2 to 3 times a day.

The proposed alternatives, including the no action alternative, include vegetation management treatments that would require the use of motorized equipment such as tractors, saws, and maintenance vehicles. These noises would be of similar character and loudness as noises generated by existing vegetation management activities and activities outside of the park units. Increases in noise that may result from proposed vegetation management treatments would be local and no more than minor because the alternatives do not propose using equipment different than what is currently used and because sound-reducing equipment such as mufflers would be kept in good repair.

Because effects from the alternatives would be no more than minor, soundscapes was dismissed as an impact topic.

Lightscape
In accordance with NPS Management Policies 2006, the NPS strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of human-caused light. The proposed alternatives may result in a minor use of nighttime lighting, specifically at any proposed structures. However, in compliance with NPS policies and design guidelines, potential effects of this lighting would be minimized, resulting in localized and minor adverse effects at most. Only a small area would be affected by any proposed additional lighting and it would have a negligible impact on the night sky. Therefore, lightscape was dismissed as an impact topic.

Public Health and Safety. The NPS seeks to provide a safe and healthful environment for visitors and employees. Conditions in the park are similar to those of surrounding areas and do not pose unusual threats to public health and safety. None of the proposed alternatives would increase risks to public health and safety because standard best practices would be used during design and construction of new facilities. Because there would be no increased risk to public health and safety, this impact topic was dismissed from further analysis.

Chapter 2. Site History

Introduction

This chapter presents an overview of the developmental history of the Hopewell Culture NHP, from the earliest documented settlement through present-day.

This chapter begins with a statement of significance for the park and for each of the five archeological complexes. This is followed by a summary of archeological reports, which includes major archeological investigations at the five park units, over the past 150 years.

The site history is organized into periods of landscape development. Each period includes beginning and end dates, and provides descriptions of cultural developments and landscape modifications that occurred during that period. Where historical evidence is inconclusive, context is provided that addresses the influences that regional events likely had upon the study area.

Statement of Significance

Study Area (AD 1 to AD 400)
Hopewell Culture NHP is significant as it preserves an important assemblage of earthen structures associated with the precontact American Indian Hopewell Culture. These complexes are unique and exceptional among ancient monuments worldwide in their enormous scale, geometric precision, astronomical alignments and broad geographic distribution.[2.1]

Hopewell Culture NHP is significant for preserving the monumental architecture and artifacts of the Hopewell Culture which reflect a pinnacle of achievement in the fields of art, astronomy, mathematics and engineering, the likes of which was seldom seen again in eastern North America. The construction techniques, especially of geometric earthwork complexes, demonstrated sophisticated engineering, architecture, mathematics, and significant investments of human labor.

The earthwork complexes were settings for ceremonies, sacred rituals and festivals that brought together peoples living in small dispersed settlements, and may have drawn pilgrims bearing exotic gifts from hundreds of miles away.[2.2] The extant archeological resources provide an insight into the social, ceremonial, political, and economic life of the Hopewell people, and the influential network of interaction that linked together distinct societies scattered across half a continent.

The Hopewell achievement was complex and diverse, and different aspects of the total achievement were expressed at individual complexes. The geometrical complexity, precision and astronomical alignment of Hopewell earthen architecture is best expressed at Hopeton Earthworks, Seip Earthworks, and High Bank Works. These earthwork complexes are the largest, most elaborate, and best preserved examples of hundreds of mounds, earthen walls, and borrow pits built in the Hopewell cultural tradition in eastern North America.

The monumental scale of Hopewellian earthwork construction is best expressed at Hopewell Mound Group and Seip Earthworks. The objects placed with human burials and in ceremonial deposits at Mound City Group, Hopewell Mound Group, and Seip Earthworks are the best expressions of Hopewellian artistry and the inter-regional networks that brought exotic raw materials to Ohio from much of North America.

2.1 NPS, WHN, Hopewell Draft Statement of Outstanding Universal Value, May 2014.

2.2 NPS, WHN, Hopewell Draft Statement of Outstanding Universal Value, May 2014.

Hopewell Culture NHP is significant as a World Heritage site under Criterion iii — it bears a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared.

The park is also significant for its association with the origins of American archeology. The earthwork complexes now included in Hopewell Culture NHP were among the first archeological landscapes to open the eyes of European Americans to the long and rich native prehistory of the country. The pioneering efforts of E.G. Squier and E.H. Davis resulted in the first publication of the newly founded Smithsonian Institution in 1848. Their work was the first detailed study of American Indian structures in the Mississippi Valley and is an archeological milestone.

The park is significant for its contribution to the archeological record. These complexes have contributed extensively to the understanding of the Hopewell tradition and include the best assemblage of Hopewell funerary features available. The park holds the potential to reveal a great amount of information about early American Indians. The park is further significant for containing Hopewell Mound Group, which is the 'type-site' for defining what is considered to be Hopewellian. The archeological landscape is significant as part of the cultural legacy and heritage for many modern-day American Indians.[2.3]

A period of significance of AD 1 to AD 400 is for all resources, and captures the events that shaped the archeological landscape. A secondary period of AD 400 to AD 1650 includes events and modifications that are also significant as part of precontact American Indian history and culture. This includes use of the earthworks by the Intrusive Mound people and other groups. While these events are significant in their own right, the primary period of significance is for the active use by the Hopewell people from AD 1 to AD 400.

Mound City Group (AD 1 to AD 400)
Mound City Group is one of the most significant complexes that represents Hopewell Culture. The park unit's importance was nationally recognized in 1923, when President Warren G. Harding established the Mound City Group National Monument. It was entered into the National Register of Historic Places on February 17, 1978, under Criterion D, as it has yielded and holds the potential to reveal a great amount of information. Mound City Group is significant under Criterion C, as it embodies the distinctive characteristics of a type and period of construction. Mound City Group is listed on the US Tentative List for potential nomination to the UNESCO World Heritage List, significant under Criteria iii.

The mounds, earthen walls, and borrow pits are significant as they authentically express the American Indian builders' mastery of the use of earth to create enduring architectural forms on a monumental scale (Criteria i, iv). The mounds, earthen walls, and borrow pits are authentic expressions of a ceremonial landscape used over several centuries for culturally distinctive social and religious ceremonies: uniquely Hopewellian funerals, feasts, and rites of passage (Criteria iii). The period of significance is AD 1 to AD 400, including the peak period of Hopewellian inter-regional interaction and earthwork construction in the Ohio Valley.

Hopeton Earthworks (AD 1 to AD 400)
Hopeton Earthworks is significant as one of the finest and best preserved examples

2.3 Chief Glenna Wallace, Eastern Shawnee Tribe of Oklahoma, "Chief Glenna Wallace's Seip Earthworks Speech" NPS: October 2014. www.nps.gov/hocu/learn/photosmultimedia/multimedia.htm (Accessed: July 2015)

of a monumental Hopewellian geometric enclosure. The surrounding area contains a rich archeological record of domestic habitations and specialized activity areas that help to place the construction and use of the earthwork complexes in broader cultural context. The park unit's importance was nationally recognized in 1964, when it was designated as a National Historic Landmark. It was entered into the National Register of Historic Places in 1975, under Criterion D for its potential to yield information about prehistory, and Criterion C, as it embodies the distinctive characteristics of a type and period of construction. Hopeton Earthworks is listed on the US Tentative List for potential nomination to the UNESCO World Heritage List, significant under Criteria i, iii, iv. It is significant because the physical fabric of the complex embodies human creative genius (World Heritage Criterion i) and illustrates a significant stage in human history (World Heritage Criterion iv). Lands in and around Hopeton Earthworks contain a well-preserved archeological record that bears unique testimony to a cultural tradition or civilization which has disappeared (World Heritage Criterion iii). The period of significance is AD 1 to AD 400 including the peak period of Hopewellian inter-regional interaction and earthwork construction in the Ohio Valley.

Hopewell Mound Group (AD 1 to AD 400)
Hopewell Mound Group is one of the most important complexes that represent Hopewell Culture. This earthwork is significant for being the "type-site" for the Hopewell Culture since excavations that took place at this park unit set down the format of what is now classified as Hopewell. Coined by archeologists for the then property owner, Mordecai C. Hopewell, the name Hopewell has come to signify a diverse range of eastern woodland American Indians who shared a common mound-building culture. The park unit was entered into the National Register of Historic Places in 1974, under Criterion D as it has yielded and contains the potential to yield a great deal of information. It is significant under Criterion C, as it embodies the distinctive characteristics of a type and period of construction. Hopewell Mound Group is listed on the US Tentative List for potential nomination to the UNESCO World Heritage List, significant under Criteria i, iii, iv.

Hopewell Mound Group is significant for its contributions to American archeology. This complex provided the greatest set, both in quality and quantity, of artistic Hopewell objects ever discovered. Many of the most famous images of the Hopewell Culture are from the objects found at this park unit. While most Hopewell complexes seem to have been used for less than two centuries, evidence suggests that Hopewell Mound Group remained an important ceremonial center throughout the entire era of the Hopewell Culture in Ohio. All of these extraordinary features support the idea that Hopewell Mound Group was possibly the most important ceremonial center of all the earthwork complexes in southern Ohio.

Hopewell Mound Group is significant because the earthwork complexes represent an authentic testament to the human creative genius of an American Indian culture that is no longer extant. The mounds, earthen walls, and borrow pits at the Hopewell Mound Group authentically express the American Indian builders' mastery of the use of earth to create enduring architectural forms incorporating complex geometries and precise astronomical alignments on a monumental scale (World Heritage Criteria i, iv). Further, the artifacts, earthen enclosures and mounds of the Hopewell Mound Group are authentic expressions of a ceremonial landscape used over several centuries for culturally distinctive social and religious

ceremonies, including funerals, feasts, and rites of passage reflective of a sophisticated culture no longer extant (World Heritage Criteria iii). The period of significance is AD 1 to AD 400 including the peak period of Hopewellian inter-regional interaction and earthwork construction in the Ohio Valley.

Seip Earthworks (AD 1 to AD 400)
Seip Earthworks is significant for being the only existing example of the rare class of extremely large Hopewell burial mounds. It represents the only protected example of a type of geometric enclosure known as a tripartite earthwork, of which five once existed in the Scioto and Paint Creek valleys in southern Ohio. The symbolic and social significance of the earthwork complexes and structures underlying the mounds at Seip Earthworks is major focus of debate in Hopewell archeology. Seip Earthworks was listed in the NRHP in 1971, for significance under Criterion D as it as it has yielded and contains the potential to yield a great deal of information. Seip Earthworks is listed on the US Tentative List for potential nomination to the UNESCO World Heritage List, significant under Criteria i, iii, iv.

Seip Earthworks is significant for the Seip-Pricer Mound which is the largest burial mound in the Paint Creek Valley and the third largest mound the Hopewell are known to have built. Seip Earthworks authentically expresses the American Indian builders' mastery of the use of earth to create enduring architectural forms incorporating monumental and complex geometries (World Heritage Criteria i and iv). The Seip Earthworks are significant as authentic expressions of a ceremonial landscape used over several centuries for culturally distinctive social and religious ceremonies (World Heritage Criterion iii). The period of significance is AD 1 to AD 400 including the peak period of Hopewellian inter-regional interaction and earthwork construction in the Ohio Valley.

High Bank Works (AD 1 to AD 400)
High Bank Works is significant for the geometric complexity and precision of its earthen architecture; for its complicated alignment to the movements of the sun and moon; and for the geometric and astronomical similarities between this complex and the Octagon Earthworks at Newark; these are the only two circle-and-octagon enclosures ever constructed. High Bank Works is among the largest and most complex earthwork complexes in the Hopewell core area, and is remarkable for its monumental scale, geometric complexity and precision, and for the complicated set of lunar and solar alignments. It was listed in the NRHP in 1973, under Criterion D as a park unit that has yielded and has potential to yield information important to prehistory. The archeological complex offers outstanding potential for further research.

High Bank Works is listed on the US Tentative List for potential nomination to the UNESCO World Heritage List, significant under Criteria i and iv. High Bank Works is significant as it reveals the builders' mastery of geometry and astronomy and expresses the human creative genius embodied in earthen monuments (World Heritage Criterion i).

High Bank Works is an outstanding example of a type of architecture which illustrates a significant stage in human history (World Heritage Criterion iv). The period of significance is AD 1 to AD 400 including the peak period of Hopewellian inter-regional interaction and earthwork construction in the Ohio Valley.

Summary of Archeological Reports

This brief summary outlines the sequence of archeological investigations, including the key studies, and those relevant works guiding current scholarship and investigation. A more detailed listing of archeological work can be found in the appendix. (See Appendix C)

Europeans first encountered the earthwork complexes of the Hopewell Culture in the 1650s, but it was not until the early nineteenth century that the American Antiquarian Society documented the archeological landscapes, and real scientific investigations began.

Caleb Atwater of the American Antiquarian Society described earthwork complexes throughout the Ohio Valley in 1820. His published work contains some of the earliest descriptions and illustrations of Hopewell Mound Group, Seip Earthworks, and Spruce Hill. Atwater assumed the Hopewell Mound Group had been built for defense, and named the earthwork complex "Clark Fort" after the owners of the farm.[2.4]

From 1845 to 1847, Ephraim Squier and Edwin Davis of the Smithsonian Institution documented hundreds of Hopewellian earthwork complexes in detail. They conducted surveys and limited excavations throughout the region, including Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works.[2.5]

The Squier and Davis investigations revealed that the earthwork complexes appeared to be associated with mortuary activities and contained elaborate objects made from exotic raw materials from across the continent. Their excavations yielded effigy pipes, cremated burials, mica and copper objects, obsidian knives, and pearls.

In 1889 Cyrus Thomas of the Smithsonian Institution described and surveyed Hopeton Earthworks and High Bank Works. He noted their precise dimensions and corroborated with Squier and Davis on the mathematical accuracy of the earthwork complexes.[2.6]

In the 1890s Warren Moorehead became the pioneering archeologist to work at the Hopewell Mound Group. He changed the name of the complex from "Clark's Works" to be named after the landowner Mordecai Cloud Hopewell. He excavated approximately half of the mounds, including about a quarter of the largest mound, Mound 25. The abundance and exquisite craftsmanship of the artifacts led to the concept of the 'Hopewell Culture,' and Hopewell Mound Group became the type-site for the culture.[2.7] Circa 1908 William Mills of the Ohio Historical Society extensively excavated the Seip Conjoined Mound at Seip Earthworks.

In the early 1920s Henry Shetrone and William Mills of the Ohio Historical Society began investigation of Mound City Group.[2.8] Working around the buildings of Camp Sherman, excavations amassed more than

2.4 Caleb Atwater. "Description of the Antiquities Discovered in the State of Ohio and Other Western States." *Archaeologia Americana: Transactions and Collections of the American Antiquarian Society 1* (Worchester, MA: William Manning, 1820).

2.5 E.G. Squier and E. H. Davis, *Smithsonian Contributions to Knowledge, Vol. 1. Ancient Monuments of the Mississippi Valley: Comprising the Results of Extensive Original Surveys and Explorations* (New York: Smithsonian Institution, 1848).

2.6 Cyrus Thomas, *The Circular, Square, and Octagonal Earthworks of Ohio* (Washington D.C.: Smithsonian Institution Government Printing Office, 1889).

2.7 Warren Moorehead, *The Hopewell Mound Group of Ohio* (Chicago: Field Museum of Natural History, 1922).

2.8 William Mills, "Exploration of the Mound City Group," *Ohio Archaeological and Historical Quarterly*, Volume 31, 423-584.

167,000 museum objects and archival items. The mounds were then reconstructed in the mid-1920s after Camp Sherman had been removed.

It was the archaeological excavations of Henry Shetrone in the 1920s that remain as the existing authority on the Hopewell Mound Group. Shetrone located and mapped the mound and earthwork locations, and at the completion of his fieldwork almost every mound had been excavated, if not by him, then by previous excavators. Shetrone concluded that these earthwork complexes were a great ceremonial center.[2.9]

In the 1920s, Henry Shetrone and Greenman excavated at Seip Earthworks. The Seip-Pricer Mound (Mound 1) was extensively excavated and revealed floors, fire pits, and burials of two very large connected buildings with a small building between them. Among the artifacts found was the famous clay Seip Head, copper breast plates, and intact samples of Hopewell cloth, woven of milkweed fibers. Seip-Pricer Mound was reconstructed after excavation.[2.10]

Little archeological work was undertaken in the 1930s and 1940s, due to the Great Depression and World War II. The next wave of archeological investigations took place in the 1960s through the 1970s, with work done by Raymond Baby of the Ohio Historical Society. Baby was contracted to rectify the differences between the Squier and Davis survey with the restoration work by Mills and Shetrone at Mound City Group.[2.11] (Baby et al, 1964). James A. Brown from the Illinois State Museum served as Baby's on-site project manager. The archeological investigations indicated that most of the mounds had been reconstructed in the wrong place during the 1920's restoration efforts, as well as the entire southern enclosure wall.

Raymond Baby also worked at Seip during the 1970s (Baby and Langlois 1979).

The NPS continued to contract with the Ohio Historical Society and Northwestern University on archeological restoration of the mounds within the Mound City Group through 1975.[2.12] They clarified locations of mounds, gateways, borrow pits, and conducted radiocarbon dating. The mounds were reconstructed in their accurate, original locations.

At the same time, archeological testing was completed by David Brose of the National Park Service in order to determine the integrity and significance of the Hopeton Earthworks.[2.13]

In the early 1980s, Mark Seeman of Kent State University conducted a site survey of the Hopewell Mound Group, accurately locating most of the mounds through aerial photography and surface survey.[2.14]

In 1984, High Bank Works became the subject of a multi-year archeological research effort, conducted by N'omi Greber of the Cleveland Museum of Natural History. This work

2.9 Henry Shetrone, "Explorations of the Hopewell Group of Prehistoric Earthworks," *Ohio Archaeological and Historical Quarterly 35 (1926):* 1-277.

2.10 Henry Shetrone, *The Mound-Builders* (New York: D. Appleton and Company, 1930); Henry Shetrone and E. F. Greenman, "Explorations of the Seip Group of Prehistoric Earthworks," *Ohio Archaeological and Historical Quarterly* 40 (1931): 343-509.

2.11 James Brown and Raymond Baby, *Mound City Revisited,* (Lincoln: Midwest Archeological Center, 1966).

2.12 Ron Cockrell. *Amidst Ancient Monuments, Administrative History / Hopewell Culture National Historical Park Ohio.* (Omaha: U.S. Department of Interior, NPS, Division of Cultural Resources, Midwest Support Office, 1999), 135.

2.13 David Brose, "An Historical Archaeological Evaluation of the Hopeton Works, Ross County, Ohio." (Cleveland: Department of Archaeology, Cleveland Museum of Natural History, 1976).

2.14 Mark Seeman, "An Archaeological Survey of the Hopewell Site (33R027) and Vicinity," (Columbus: Ohio Historic Preservation Office, 1981).

focused on understanding the age, context, and building patterns of the Hopewellian earthwork complexes.[2.15]

Investigations at High Bank Works in the 1980s resulted in the theory that the earthwork complexes served as astronomical observatories. The earthwork complexes incorporate alignments to the rising and setting of the moon through its 18.6-year cycle, and also include alignments to the summer and winter solstice sunrises and sunsets.[2.16]

The Midwest Archeological Center and the park's archeological staff have conducted several inventory and compliance projects at the Mound City Group beginning in the 1980s to the present.[2.17]

Other recent work includes William Dancey's Hopewell Catchment Survey, Jennifer Pederson's dissertation work at Hopewell Mound Group in 2006, and Pacheco and Wymer's field school at Hopewell Mound Group in 2012.[2.18]

In the mid-1990s the Midwest Archeological Center initiated a long-term study of the Hopeton Earthworks, with a combination of geophysical surveys and strategic testing. Excavations were begun in 2001 and continued through 2008 to determine how the earthwork was constructed as well as to look further at anomalies found in the geophysical readings.[2.19]

From 2001 through 2013 the five park units were mapped geophysically and magnetically. The magnetometry for Mound City Group, Hopeton Earthworks, and High Bank Works, has revealed extensive below-grade features, indicating the integrity and extent of the earthwork complexes, and revealing previously unknown features, not visible on the surface. Magnetometry has not been completed for Seip Earthworks.[2.20]

2.15 N'omi Greber, "The 2008 Field Season at the High Bank Earthworks (33Ro60) Ross County, Ohio. Archaeological Research Report 157, Cleveland Museum of Natural History," (Omaha: Midwest Archeological Center, 2009); N'omi Greber, "Re-interpretation of a Group of Hopewell Low Mounds and Structures, Seip Earthworks, Ross County, Ohio." *Midcontinental Journal of Archaeology 34(1)5-186* (2009).

2.16 Ray Hively and Robert Horn, "Hopewellian Geometry and Astronomy at High Bank," Archaeoastronomy Supplement to J*ournal for the History of Astronomy*, Vol. 15 (1984).

2.17 Michael Downs, Rebecca Hawkins, Scott Walley, Betsy Strick, and N'omi Greber, *Ethnographic Overview and Assessment, Hopewell Culture NHP, Ross County, Ohio.* (San Diego: EDAW/KEA Environmental, Inc., 2002); Mark Lynott, *An Archeological Investigation of an Area Adjacent to Mound City Group National Monument: A Preliminary Report.* (Lincoln: Midwest Archeological Center, 1982); Mark Lynott and Susan Monk, "Mound City, Ohio, Archeological Investigations." *Occasional Studies in Anthropology* No. 12. (Lincoln: Midwest Archeological Center, 1985); Jeffery Richner, *An Archeological Survey of a Proposed Sewer Line at Mound City Group National Monument* (Lincoln: Midwest Archeological Center, 1989).

2.18 Dancey, William S. Hopewell Earthwork Catchment Survey: Interim Report, edited by H. C. N. H. P. Report submitted to the National Park Service, Chillicothe, Ohio, (1996); Pederson Weinberger, Jennifer. Ohio Hopewell Earthworks: An Examination of Site Use from Non-Mound Space at the Hopewell Site, Department of Anthropology, Ohio State University, (2006); Pacheco, Paul J., et al. Preliminary Report of Results from the 2012 Archaeological Investigations Hopewell Mound Group (33Ro26), Hopewell Culture NHP, Chillicothe, 2012.

2.19 Mark Lynott, "The Hopeton Earthworks: An Interim Report," *Hopewell Archeology 4-2* (2001): 1-5.; Mark Lynott. Hopewell Ceremonial Landscapes of Ohio: More than Mounds and Geometric Enclosures. Oxbow Books, Havertown, PA, (2014); Lynott, Mark J. and Midwest Archeological Center (U.S.), Footprints : in the footprints of Squier and Davis. U.S. Dept. of the Interior, National Park Service, Midwest Archeological Center, Lincoln, Neb, 2009.

2.20 Bruce Bevan, G*eophysical Tests at the Hopeton Mound Group* (Virginia: Geosight, 2001); William Romain and Jarrod Burks, "LiDAR Analysis of Prehistoric Earthworks in Ross County."*Current Research in Ohio Archeology* (2008); Jennifer Pederson, Jarrod Burks, and William Dancey, "Hopewell Mound Group: Data Collection in 2001" *Current Research in Ohio Archaeology* (2001).

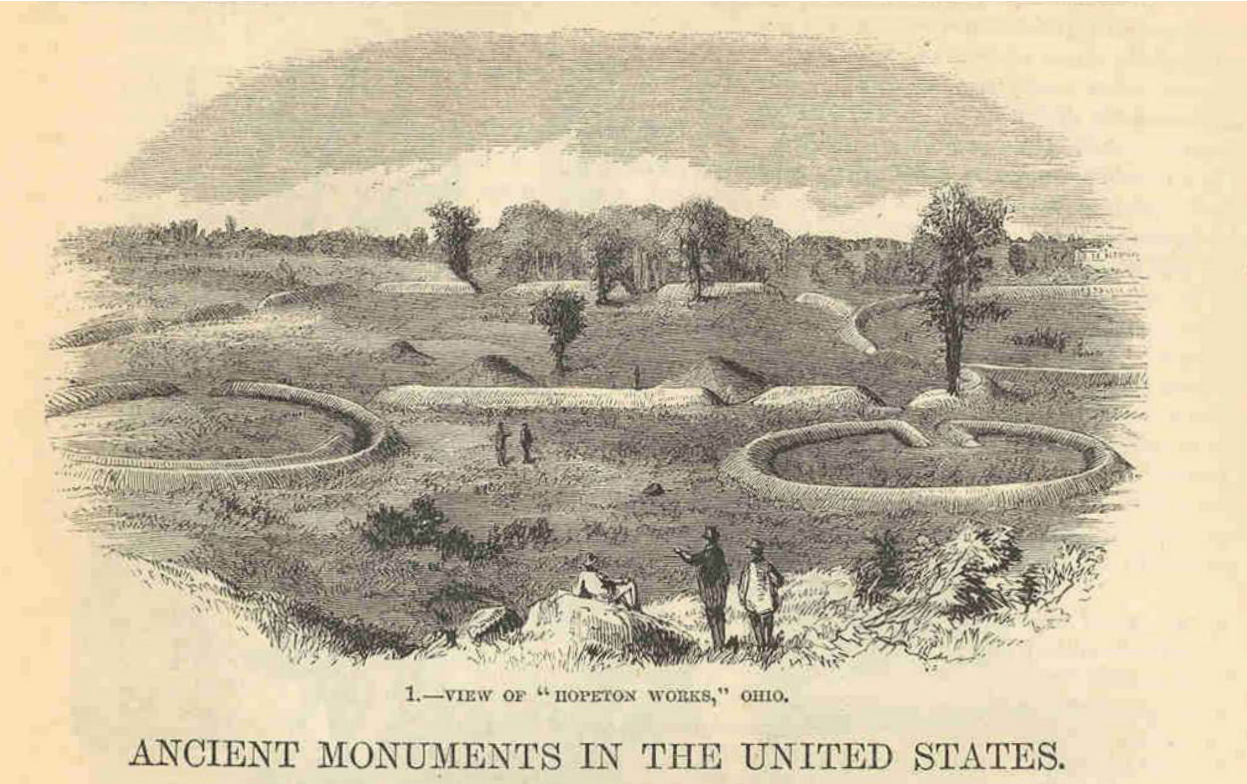


Figure 1-1. Beginning in the early 1800s, a cluster of structures known as the Cryder Farm were built within the large circular earthwork at Hopeton Earthworks. (Squier and Davis, 1860)

Periods of Landscape Development

Eight periods of landscape development have been identified and describe the physical evolution of the Hopewell Culture NHP. The beginning and end of each period corresponds to and documents points of major physical modifications or significant change in settlement patterns. This differs from the traditional culture-historical framework developed by archeologists: Paleoindian / Archaic / Woodland / Late Prehistoric / Historic; in order to highlight the Hopewell Culture.

The eight periods of development are described through narrative text and illustrations. One period falls within the period of significance, and is identified in bold text below.

- *Pre-Hopewell Culture (pre-AD 1)*
- ***Hopewell Culture (AD 1 to AD 400)***
- *Indigenous Occupation, post-Hopewell (AD 400 to c.1650)*
- *Early Historic / European American Settlement (c.1651 to 1844)*
- *Archeological Exploration / Early Agriculture (1845 to 1916)*
- *Camp Sherman (1917 to 1922)*
- *Preservation / Late Agricultural (1923 to 1992)*
- *Hopewell Culture NHP to present-day (1992 to present)*

Pre-Hopewell Culture (pre-AD 1)
This period of development includes the Paleoindian Period, the Archaic Period, and the Early Woodland Period. The appearance of the landscape at this time is unknown, however, after the last glacial period ended around 14,000 years ago, the land was settled by hunter-gatherers who lived a nomadic lifestyle. During the Archaic Period, people settled near waterways, mastered the efficient exploitation of wild food resources, and began experimenting with small-scale horticulture. Around 1000 BC the Early Woodland Period marks the beginning of increased horticulture. The Adena culture cultivated crops and built burial mounds and circular earthen enclosures.

11000 BC to 9000 BC
Small groups of people lived primarily by hunting large game during the Paleoindian period.[2.21] Little archeological evidence remains for these people. "Along with the fossilized bones of their prey, virtually the only remaining archeological evidence of Paleoindians are their fluted points."[2.22]

9000 BC to 1000 BC
During the Archaic period, people adapted to changing climates by exploiting new foods and settling in semi-permanent camps.[2.23] As their mobility decreased, they depended upon local food sources, including freshwater mussels.[2.24] By the end of the Archaic period people were experimenting with horticulture and were living in sturdier, more permanent houses.

2.21 George Milner, *The Moundbuilders: Ancient Peoples of Eastern North America* (London: Thames & Hudson, 2004), 9.
2.22 Lepper, Bradley. Ohio Archaeology: An Illustrated Chronicle of Ohio's Ancient American Indian Culture. Wilmington, OH: Orange Frazer Press, 2005.
2.23 Milner, *The Moundbuilders,* 9.
2.24 Lepper, Bradley. Ohio Archaeology: An Illustrated Chronicle of Ohio's Ancient American Indian Culture. Wilmington, OH: Orange Frazer Press, 2005.

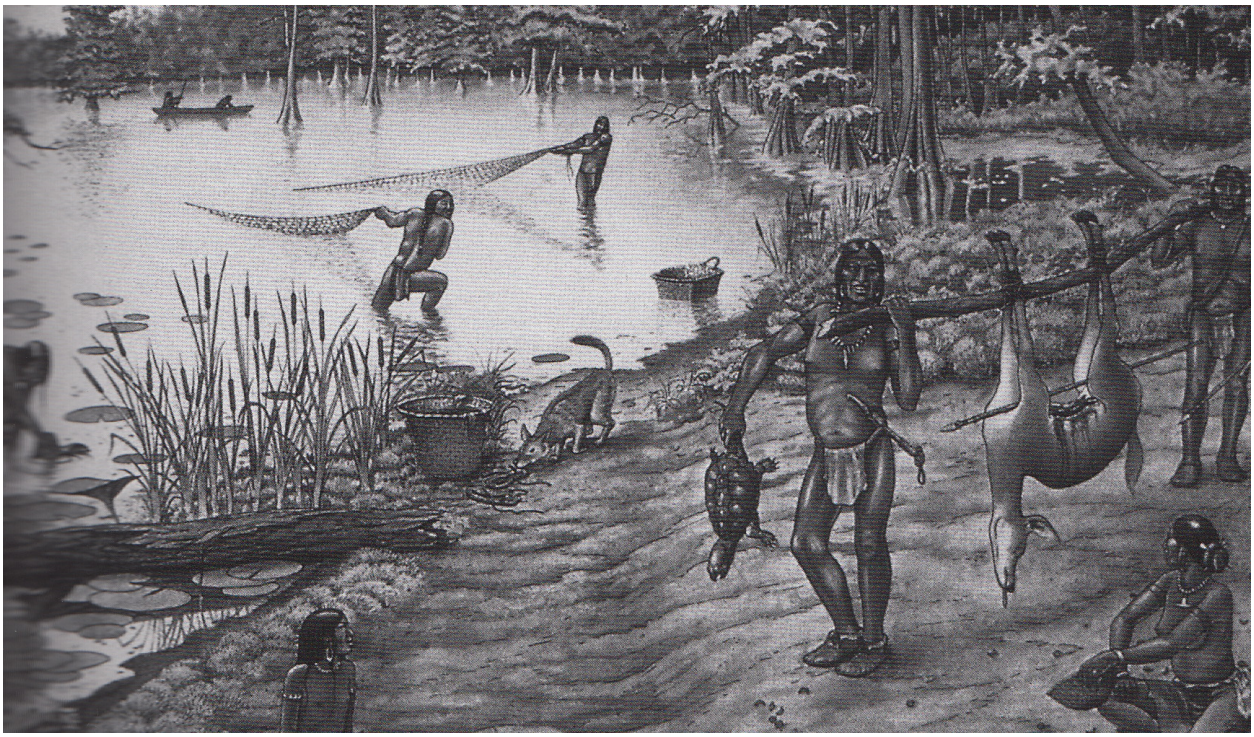


Figure 1-2. During Archaic times, people were attracted to wetlands and river valleys for the variety of edible plants, fish, and wildlife. The mix of resources provided security to the hunting and gathering lifestyle. (Milner, The Moundbuilders, 41).

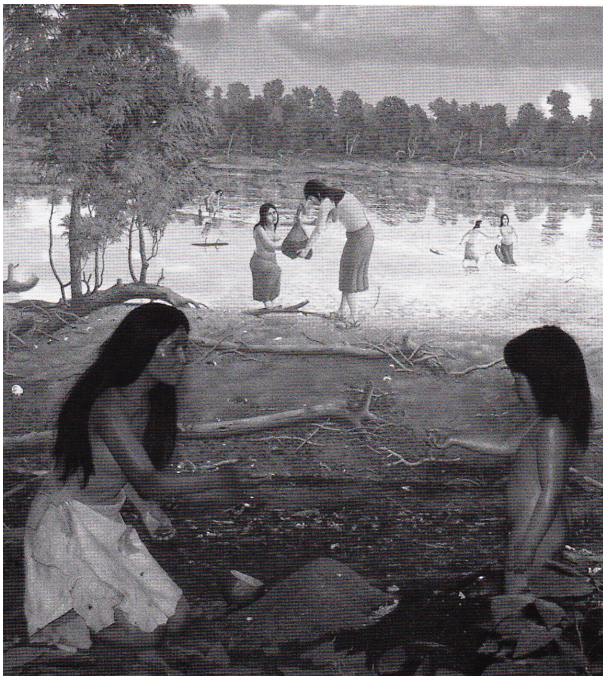


Figure 1-3. As people became more sedentary, they chose to live along waterways where food resources were plentiful and more reliable. Domesticated plants began to be cultivated during Late Archaic times. (Milner, The Moundbuilders, 53).



Figure 1-4. The name Adena comes from a large mound in Ohio (shown here being excavated in 1901). (Milner, The Moundbuilders, 55).

c. 1000 BC to AD 1

The Woodland Period (c. 1000 BC to 1000 AD) is generally divided into Early, Middle, and Late periods.[2.25] Woodland characteristics include use of pottery, settlement in camps or small villages, construction of earthwork complexes, and a generally increasing complexity of artistic, technological and ceremonial expressions.[2.26]

Changes in the environment and technological innovations encouraged more sedentary lifestyles, and as people learned to farm, they built settlements and established long-distance trade routes.[2.27]

800 BC to AD 1

The Early Woodland people of the Adena culture lived the Scioto-Paint Creek area. The Adena were noted for specialized treatment of their dead, buried with elaborate grave goods in large earthen mounds that were added onto over time.[2.28]

The Adena people cultivated squash, sunflowers, marsh elder, and knotweed to supplement their hunting and gathering activities.[2.29] Most of what is known about the Adena is from their mortuary practices. Adena mounds were accretional, usually beginning as a mound built over a subfloor log-lined tomb. Later, other tombs were excavated into the body of the mound, and the mound was capped and enlarged with more earth. The mounds were sometimes quite large, and clustered together in once area, and occasionally contained more than one burial. Mounds were built over many years by family members and small communities, whose members worked infrequently on the mounds.[2.30] Adena ceremonialism involved exotic raw materials such as copper and marine shell, and shamanic equipment such as smoking pipes. These practices show continuity with Hopewell practices, which became more elaborate in Hopewell times.[2.31]

2.25 The Hopewell Culture is included within the Middle Woodland Period, but discussed separately in the next section.
2.26 Milner, *The Moundbuilders,* 54.
2.27 Ibid.
2.28 Milner, *The Moundbuilders,* 60-61.
2.29 Ibid.
2.30 Milner, *The Moundbuilders,* 61.
2.31 Bret Ruby, *75% Review comments.*



Figure 1-5. The earthwork complexes constructed by the Hopewell were used for sacred and ceremonial purposes, for funerals, feasts, and rites of passage. (Hopewell Culture NHP Archives, original painting by Louis S. Glanzman)



Figure 1-6. Despite the fanciful nature of this drawing, it shows how the earthwork complexes were built above the floodplain of the rivers, with views to the waterways, valleys, and hillsides. This arrangement likely served a spiritual and symbolic purpose for the Hopewell. (Hopewell Culture NHP Archives, original painting by John J. Egan, *Panorama of the Monumental Grandeur of the Mississippi Valley,* ca. 1850)

Hopewell Culture (AD 1 to AD 400)
By AD 1 the Hopewell Culture emerged as the dominant culture of the Scioto River Valley. It was during this time that the landscape was greatly modified with the construction of the earthwork complexes of Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works. The earthwork complexes were monumental in scale, and would have dominated the landscape. The earthen architecture was set within a lush and varied forest, occasionally broken by pockets of prairie. Some of the prairie was natural and some was created by fires intentionally set by the native people to open the forest canopy to improve game habitat and to clear the forest for planting crops of squash and native seed-bearing annuals.[2.32]

AD 1 to AD 400
American Indians, referred to as the Hopewell, lived in the Scioto River Valley in southern Ohio and built earthwork complexes as assemblages, ceremonial centers, or burial sites. The Hopewell developed at least in part out of Adena predecessors, many Hopewellian cultural practices show continuity with the Adena. This period of development overlaps with the Middle Woodland Period.

In contrast to Adena ceremonialism, mound building climaxed during this period.[2.33] The Hopewell Culture was distinguished from its contemporaries by their construction of exceptionally large (more than 100 acres) earthwork complexes that included earthen walls , often in exact geometric shapes of a wide variety using a standard unit of measure. The earthwork complexes were used for ceremonial or community purposes, not for habitation or defense. Some were precisely aligned for astronomical purposes.[2.34]

Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, High Bank Works, and Spruce Hill were built during this time. Over the course of several years these earthwork complexes became large burial and ceremonial locations.

The Hopewell Culture was not a single group of people but rather was an 'interaction sphere' where many groups across the northeastern United States shared broad beliefs and practices and interacted socially and politically with one another.[2.35] The largest concentration of these groups was in present-day southern Ohio.[2.36] The Hopewell Culture engaged in long-distance trade and expeditions by Ohio Hopewell people. Excavated artifacts include mica, copper, obsidian, and seashells from what is now North Carolina, Michigan, Wyoming, and the Gulf Coast. Some materials were likely brought to Ohio as gifts by pilgrims from afar. The Hopewell peoples fashioned these objects, as well as local materials, into objects with a high level of workmanship that then were buried within the earthwork complexes.[2.37]

Mounds were typically built in successive stages, and are indications of where buildings once stood. They cover the floors and post holes of ceremonial buildings. The patterns show a variety of designs, though most often a rectangle with rounded corners. Inside, fires burned in shallow clay basins.

2.32 Bradley Lepper, *People of the Mounds: Ohio's Hopewell Culture* (Pennsylvania: Eastern National Park and Monument Association, 1995), 7.
2.33 Lepper, Ohio Archaeology.
2.34 Bret Ruby, "Authenticity and Integrity of the High Bank Works," *Draft World Heritage Nomination*, (2013).
2.35 Carr, Christopher and D. Troy Case, eds. Gathering Hopewell: Society, Ritual, and Ritual Interaction. New York: Kluwer Academic/Plenum Publishers, 2005.
2.36 Milner, *The Moundbuilders,* 60.
2.37 Seeman, Mark F. Hopewell Art in Hopewell Places. In Hero, Hawk, and Open Hand. New Haven and London: The Art Institute of Chicago in association with Yale University Press, 2004.

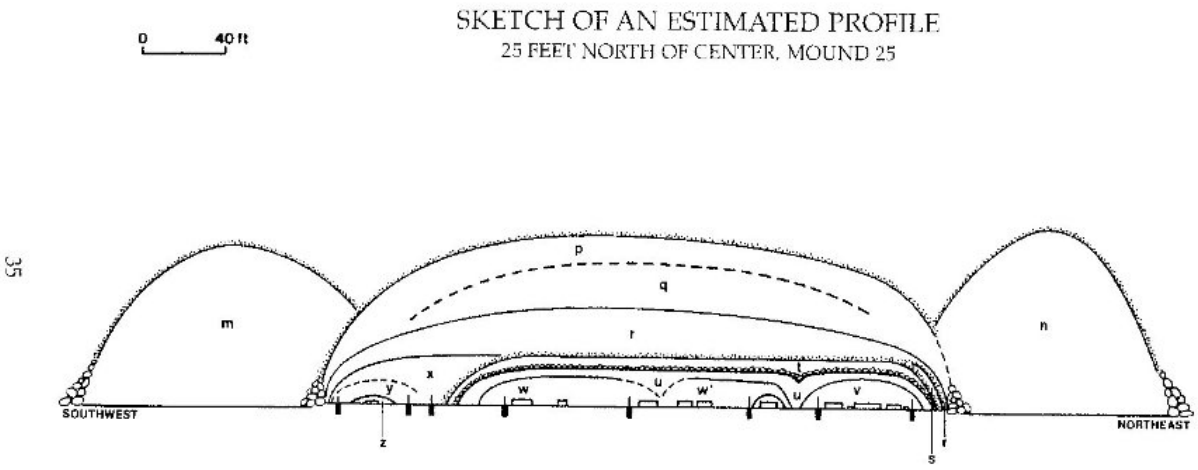


Figure 1-7. Mound 25 at Hopewell Mound Group was built in stages. The mounds were typically repeatedly used, and several of the mounds cover the floors and post holes of ceremonial buildings. (Greber and Ruhl, 1989)

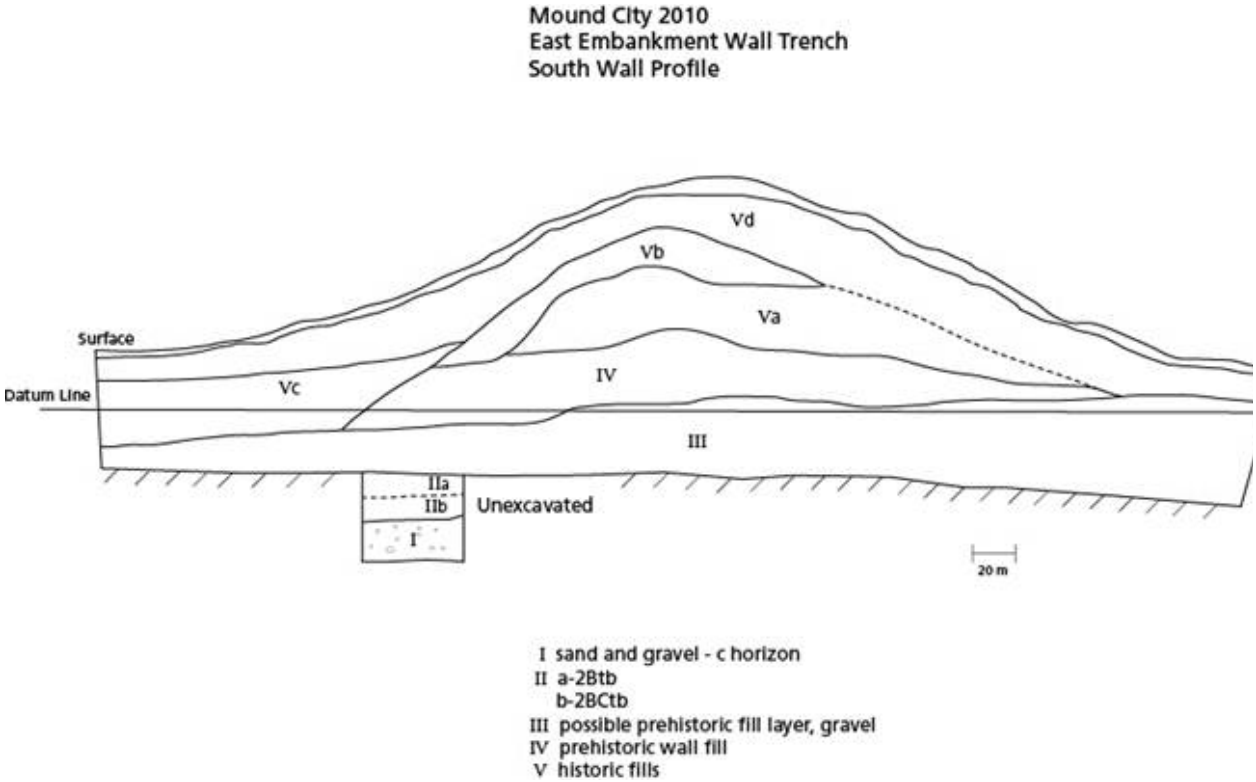


Figure 1-8. The mounds at Mound City Group were originally formed of layers of sand, gravel, and soil. Most mounds held numerous burials, where the deceased were interred with exotic trade goods. (Hopewell Culture NHP Archives, courtesy Mark J. Lynott)

The ceremonies included the cremation of the dead. Burials saw the body placed on bark, netting, or animal skins along with ornaments and implements. A covering of logs or stones encompassed the corpse, which in turn received a covering of bark or poles with a mound of earth topping the arrangement. While some burials were alone, others appeared in groups, usually in limited numbers. Cremations occurred in areas designated for the purpose. Within these "charnel houses," preparers molded damp clay into a basin within which the remains of their dead were cremated. Objects were ritually killed (broken or burned) to be left with them. The ash and remains were swept up, and placed carefully on the building floor, or on low earthen platforms. In a final ceremony, each building was taken down or burned, and a mound was built over its remains and contents. While the earthwork complexes were in use, visitors would have seen functioning buildings and also those already memorialized under mounds. There were likely various building projects going on simultaneously, and perhaps festivals, feasts, and other rituals would have taken place at these earthwork complexes.[2.38]

Since the earthwork complexes were built over many years, many of them had large burial populations. Seip-Pricer Mound contained the remains of at least 132 people; Mound 25 at Hopewell Mound Group contained the remains of at least 102 people.[2.39]

Less is known about the daily life of the Hopewell than about the ritual and funerary evidence that they left behind. Daily life for the Ohio Hopewell included living in scattered hamlets or farmsteads which were frequently located on or near floodplains, on natural levees and on previously inhabited sites.[2.40] Settlements were often clustered in the vicinity of the earthwork complexes, but households were usually widely scattered, as indicated by bits of pottery and stone distributed across farmers' fields.[2.41]

Houses were usually circular to oval, varying in size, and were light structures that could be moved with little effort and probably made of bent wooden poles covered with bark, sticks, or skins.[2.42] They made their living through gathering wild plants, hunting, fishing, and horticulture. They grew native seed-bearing annuals such as goosefoot, knotweed, marsh elder, sunflower, and squash. Very small amounts of maize first appear during the Middle Woodland period, but maize was not grown as a staple crop.

2.38 Lynott, Mark. Hopewell Ceremonial Landscapes of Ohio. Havertown, PA: Oxbow Books, 2014. Case, D. Troy and Christopher Carr. The Scioto Hopewell and their neighbors. Springer, New York: 2008. Lepper, Bradley T. Early Historic American Indian Testimony Concerning the Ancient Earthworks of Eastern North America. Journal of Ohio Archaeology, 3, 2014.

2.39 Milner, *The Moundbuilders*, 63.

2.40 *LRIP*, 16.

2.41 Milner, *The Moundbuilders,* 87.

2.42 Milner, *The Moundbuilders,* 85.

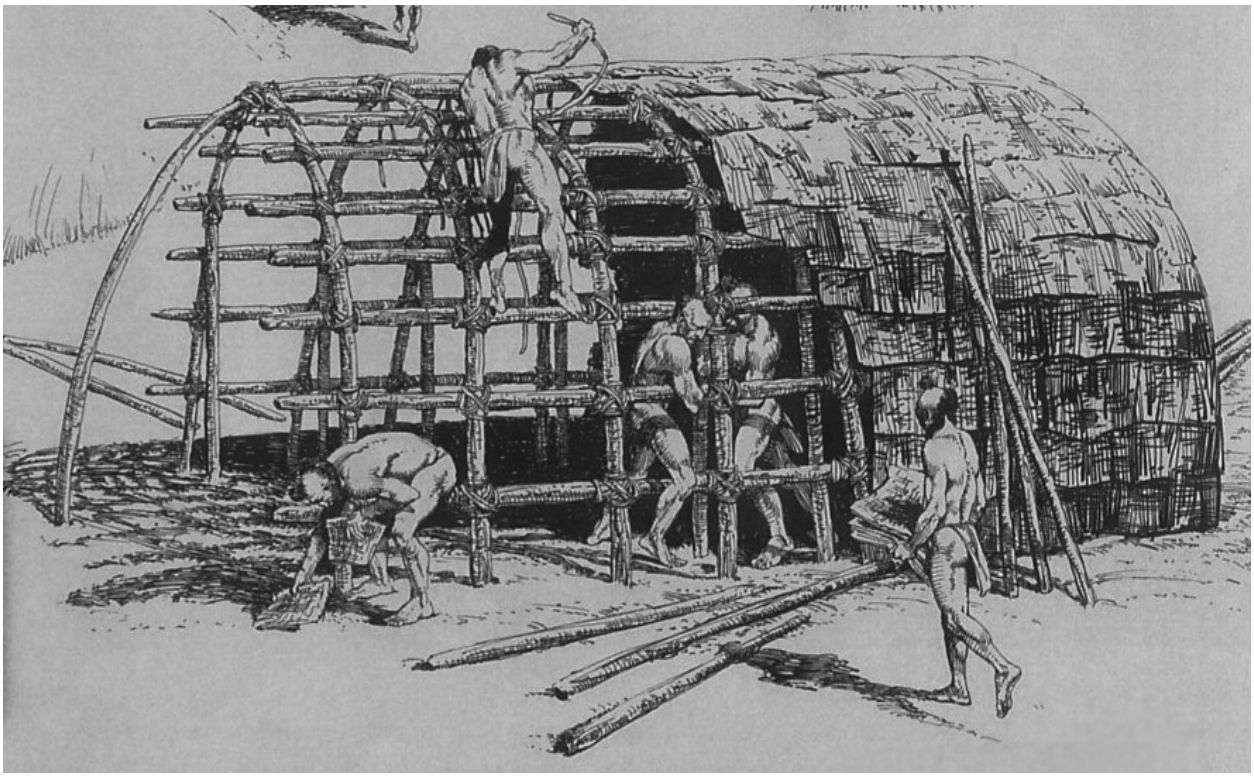


Figure 1-9. The earthwork complexes were accompanied by buildings — charnel houses, workshops, and ceremonial buildings. The buildings were typically burned or removed as part of the ritual use of the site. Occupation sites and dwellings were located nearby, but were not a part the ceremonial earthwork complexes. (Hopewell Culture NHP Archives)



Figure 1-10. Seip Earthworks was constructed on 236 acres in the shape of two immense circles and a precise square with astronomical alignments. The Seip-Pricer Mound was used for ceremonies and burials, and is the third largest burial mound the Ohio Hopewell are known to have built. (Digital reconstruction courtesy Center for the Electronic Reconstruction of Historical and Archaeological Sites, University of Cincinnati)



Figure 1-11. High Bank Works was constructed as a circle conjoined to a large octagon, formed by earthen walls. Additional earthen walls extended towards the river. (Digital reconstruction courtesy Center for the Electronic Reconstruction of Historical and Archaeological Sites, University of Cincinnati)



Figure 1-12. Archaeologists have estimated that the walls of the Great Enclosure at Hopewell Mound Group were originally 35 feet wide at the base, and enclosed an area of 111 acres. The largest known mound built by the Hopewell Culture is at Hopewell Mound Group. (Digital reconstruction courtesy Center for the Electronic Reconstruction of Historical and Archaeological Sites, University of Cincinnati)



Figure 1-13. After the decline of the Hopewell people, other aboriginal groups migrated into the area and used the earthwork features to bury their own dead. (Hopewell Culture NHP Archives, original painting by John J. Egan, Panorama of the Monumental Grandeur of the Mississippi Valley, ca. 1850)

Indigenous Occupation, post-Hopewell (AD 400 to c.1650)

After AD 400 the large-scale earthwork construction characteristic of the Hopewell Culture virtually ceased. The earthwork complexes were periodically used, but the landscape was no longer modified to the extent it had been during Hopewell times.

Around AD 900 the forests in the region were cleared as the agricultural landscape was expanded due to the intensive cultivation of maize. Agriculture faded by the 1400s when the region mysteriously depopulated, and the forest regrew. By the time of European contact in the seventeenth century, the sparsely-occupied landscape was described as a 'hardly used wilderness' by the first Europeans.[2.43]

AD 400 to 650 (early Late Woodland)

After AD 400 the elaborate ceremonialism and mound building characteristic of the Hopewell Culture virtually ceased, heralding the advent of the Late Woodland period. There is evidence of biological and cultural continuity into at least the first few centuries of the Late Woodland period: it seems the people of the Hopewell Culture did not move away or die off, but they abandoned their mound building and ceremonialism.

Disease, dwindling food supplies, changing climate, and pressure from outside enemies have all been suggested as reasons why the Hopewell Culture changed.[2.44] Subsistence practices remained much the same, but there is evidence for the emergence of larger and more permanent settlements — the first villages.

AD 650 to 900 (Late Woodland)

It is difficult to trace biological and cultural continuity in the latter half of the Late Woodland period. Significant changes in subsistence and settlement patterns, technology, ceremonialism, and migration contribute to a complex culture history. After AD 650 there is evidence that aboriginal groups occasionally used the earthwork complexes to bury their own dead, hence the name given to them, the "Intrusive Mound" people.[2.45]

AD 900 to 1450

The Fort Ancient culture occupied the Scioto River Valley. They were principally sedentary agriculturalists, and built earthwork complexes, but not at the same scale and frequency as the Hopewell. Fort Ancient villages were relatively large and consisted of circular or rectangular houses that surrounded an open central plaza. Archeological evidence suggests that during this period maize became a staple food for indigenous populations and villages became larger and more permanent.[2.46]

1450 to c.1650

The interior of Ohio depopulated after AD 1450. Fort Ancient peoples abandoned tributary valleys and coalesced into fewer and larger settlements along the main valley corridor of the Ohio River, perhaps in response to the cool, wet conditions of the Little Ice Age.[2.47]

By the time of the earliest European and European American incursions into the Ohio Country, the American Indians living there reported no traditions concerning who built the earthwork complexes, or why they had been built.[2.48]

2.43 Milner, *The Moundbuilders,* 192.
2.44 Milner, *The Moundbuilders,* 120-123.
2.45 Seeman and Dancey, 2000.
2.46 Milner, *The Moundbuilders,* 182-184.
2.47 Drooker and Cowan 2001; Warren 2014.
2.48 Dancey and Seeman 2005; Lepper 2014; Seeman and Dancey 2000.

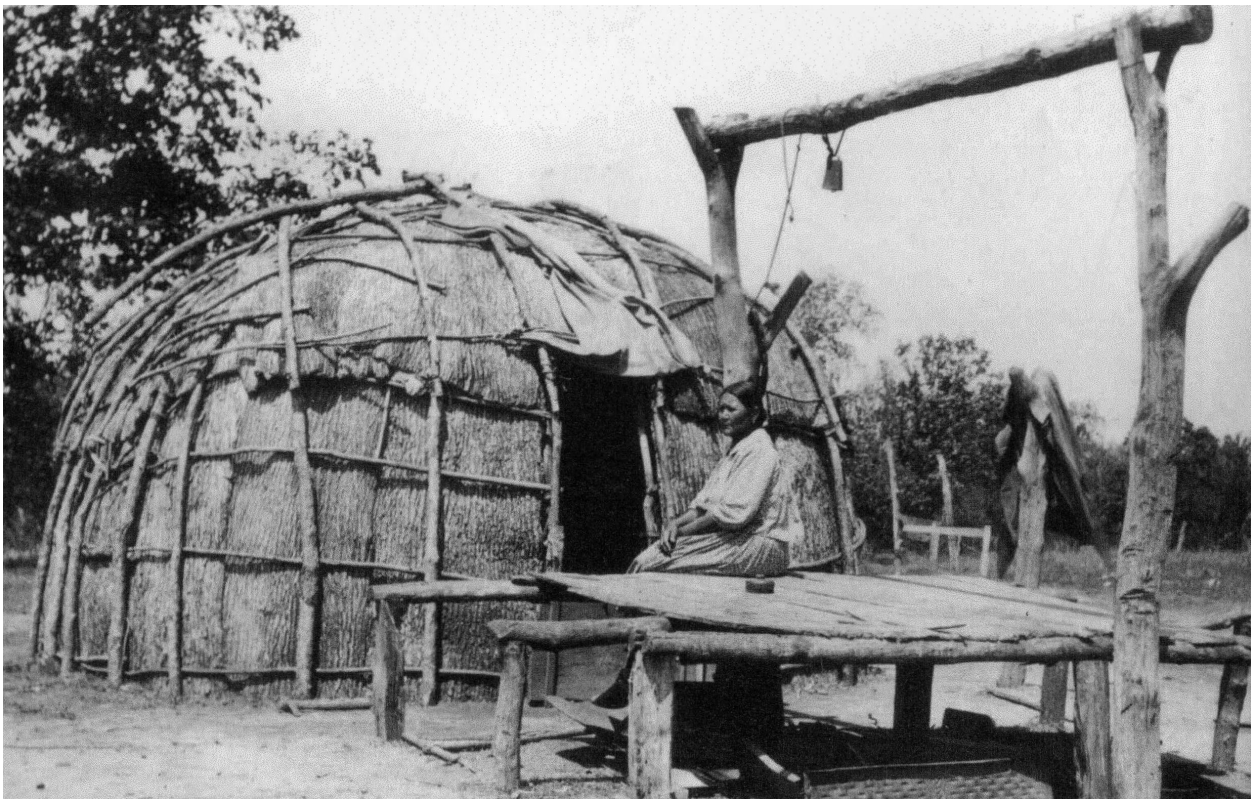


Figure 1-14. Peoples such as the Shawnee, Delaware, Miami, and Wyandotte were among those who had moved into present-day Ohio in the late 18th century. (Nabokov and Easton, 1989)

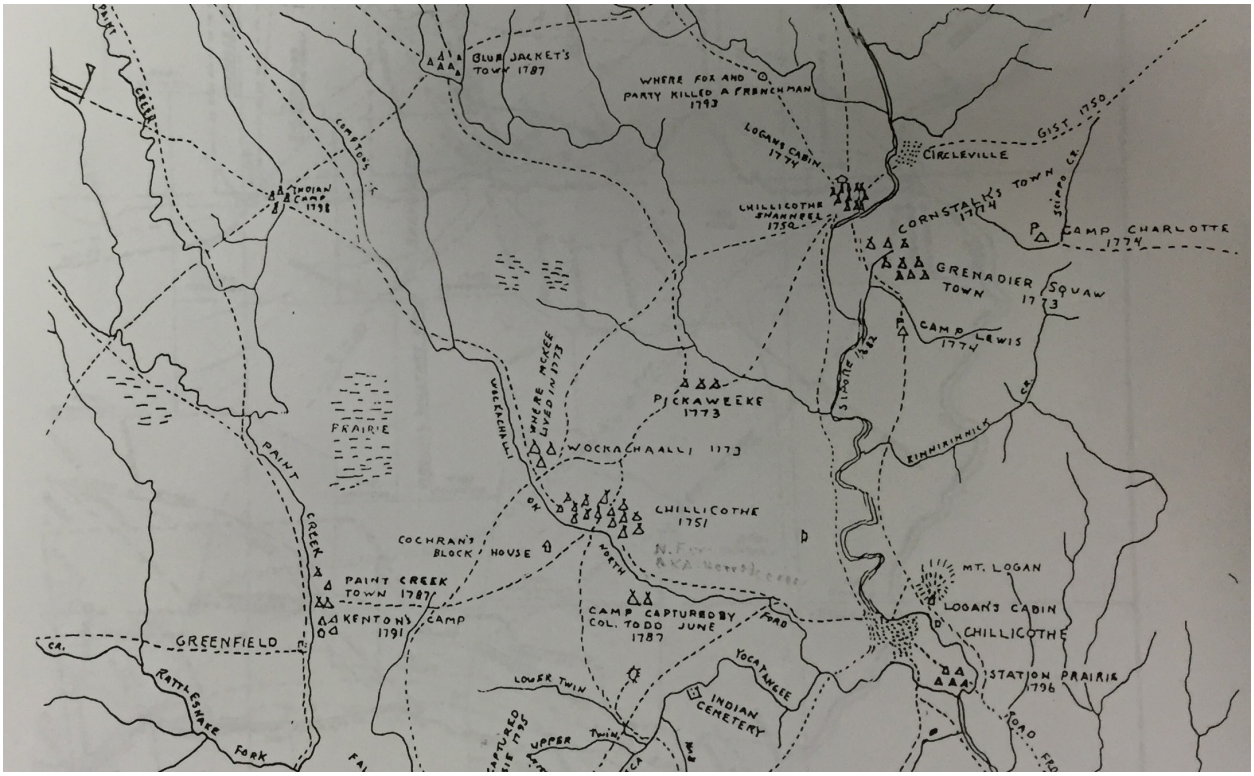


Figure 1-15. Map showing American Indian villages around the time of the Revolutionary War (Hopewell Culture NHP Archives, Copy on file, Catalog 36402)

Early Historic / European American Settlement (c.1651 to 1844)
This period of development begins in the mid-seventeenth century, when European explorers arrived in the Midwest. Upon their arrival, the landscape was occupied by the ancestors of the Shawnee, Delaware, Miami, and Wyandotte, who maintained small farms, growing corn, beans, squash, and pumpkins. The earthwork complexes were likely forested, as they were no longer in active use. By the late eighteenth century, European Americans settled in the Scioto River valley and the landscape was altered by the addition of large farms growing wheat, corn, and other grain crops. Towns, road networks, and the Ohio-Erie Canal greatly modified the appearance of the landscape.

c. 1651
The first Europeans arrived in the Midwest. They were primarily French and European American fur traders who engaged the American Indians in trade. They described and illustrated thousands of earthwork complexes in the region (many of these have since disappeared).[2.49] The Shawnee, Delaware, Miami, and Wyandotte were among those who lived in present-day Ohio.[2.50]

1763
The Treaty of Paris ceded control of the Ohio region from France to Great Britain. The British put Ohio Country in an 'Indian Reserve' stretching from the Appalachian Mountains to the Mississippi River, and prohibited colonists from settling west of the mountains. Despite this law, colonists began to settle in Ohio.

c.1770
Immediately prior to the American Revolutionary War, the Tshilikautha clan of Shawnee settled in present-day Frankfort. The clan's Anglicized name, Chillicothe, emerged near the end of the century.[2.51]

1783
After the American Revolutionary War, Britain ceded Ohio to the United States. The U.S. opened the area to settlement, with grants of land to citizens of Virginia, usually former soldiers. Some of these land grants included ownership of the Hopewellian earthwork complexes. The U.S. determined that the American Indian tribes living in Ohio no longer owned their lands. American Indians rejected this notion and tensions grew.

1785 to 1795
The Northwest Indian War was waged between the U.S. and the Western Confederacy a confederation of numerous American Indian tribes over the control of the Northwest Territory. The American Indian tribes of the Western Confederacy included the Miami, Wyandotte, and other members from over fifteen tribes.

1794 to 1795
Battle of Fallen Timbers, part of the Northwest Indian War, between the U.S. and the American Indian tribes of the Western Confederacy. Shawnee chieftain Blue Jacket participated in the Battle of Fallen Timbers in 1794. Following the U.S. victory at Fallen Timbers, the Treaty of Greenville in 1795 extinguished American Indian claims in the Scioto valley and most of Ohio.[2.52]

2.49 *LRIP*, 23. Dancey and Seeman 2005; Lepper 2014; Seeman and Dancey 2000.
2.50 Chief Glenna Wallace, Eastern Shawnee Tribe of Oklahoma, "Chief Glenna Wallace's Seip Earthworks Speech" http://www.nps.gov/hocu/learn/historyculture/seip-earthworks.htm#CP_JUMP_456345 Accessed 3-24-2015.
2.51 Cockrell, *Administrative History*, Chapter 1.
2.52 Cockrell, *Administrative History*, Chapter 1.



Figure 1-16. Ohio's first capital was in Chillicothe, from 1803-1810. This sketch shows the town in 1857. After statehood, the region's population grew and with construction of towns and farms, the earthwork complexes became threatened. (Ohio Historical Society)

1796
Nathaniel Massie of Virginia settled four miles south of Mound City Group and laid out the town of Chillicothe.[2.53]

1798
A 1300-acre section containing Mound City Group was surveyed for William Davies, but title soon transferred to Nathaniel Massie.[2.54] Davies was a Colonel in the American Revolutionary War and the land was granted to him due to his service.[2.55]

1800s, early
Beginning in the early 1800s, with additions and alterations continuing into the 1920s, a cluster of structures known as the Cryder Farm were built west of Hopeton Earthworks. The buildings were eventually demolished, but the sandstone foundation of the original house still remains.[2.56]

1803
Ohio's first capital was in Chillicothe, from 1803 to 1810. Zanesville served as the capital city from 1810 to 1812. In 1812, the capital was again moved to Chillicothe, where it remained until 1816.

1809
The Hopeton Earthworks were first recorded.[2.57]

1812-14
During the war of 1812, land near Mound City Group was used to house prisoners of war. It was referred to as Camp Bull.[2.58]

1820
Caleb Atwater authored "Description of Antiquities Discovered in the State of Ohio and Other Western States" describing the earthwork complexes located throughout the Ohio Valley. This publication included early illustrations and descriptions of the Hopewell Mound Group, Seip Earthworks, and Spruce Hill. These are the first known maps of these complexes.[2.59] Atwater assumes the Hopewell Mound Group had been built for defense; he names the earthwork complex "Clark Fort" after the owners of the farm.[2.60] Seip Earthworks is drawn as a 'fort' with walls of earth.[2.61]

1830
The Ohio-Erie Canal system followed the Scioto River valley south and connected Lake Erie to the Ohio River. Completed in 1832, it supported settlement and development of the area. Increased farming activities hastened the destruction of many Hopewellian earthwork complexes.[2.62] The Ohio-Erie Canal was built one-quarter mile west of Mound City Group.[2.63]

1832
George Shriver purchased land including Mound City Group, and the Shriver family held title to the land until 1917.[2.64]

1842
The U.S. and Wyandotte Tribe treaty of 1842 called for the cession of their lands in Ohio and Michigan and removal to west of the Mississippi River.

2.53 Cockrell, *Administrative History*, Chapter 1.
2.54 Ibid.
2.55 Ross County List of Deeds. *Deed 117-284, William Davies.*
2.56 *Brady-Rawlins, Kathleen and Jennifer Pederson. Phase I Archeological Survey Of The Cryder Farm Site. On file, Hopewell Culture National Historical Park, Chillicothe, Ohio, 2006.*
2.57 Oliver Oldschool, ed. The Port Folio, New Series, Vol II, No. 5, 1809.
2.58 "J.C." 1809
2.59 "Historic Figures in Hopewell Archeology," NPS, Hopewell Culture National Historical Park, Ohio, http://www.nps.gov/hocu/historyculture/historic-figures-in-hopewell-archeology.htm (accessed January 2015).
2.60 NPS, H*opewell Mound Group Site Bulletin (Hopewell Culture NHP brochure, 2010)*.
2.61 Atwater, "Antiquities Discovered in the State of Ohio," Plate 5.
2.62 *LRIP*, 19.
2.63 *GMP,* 22.
2.64 Cockrell, *Administrative History*, Chapter 1,2.

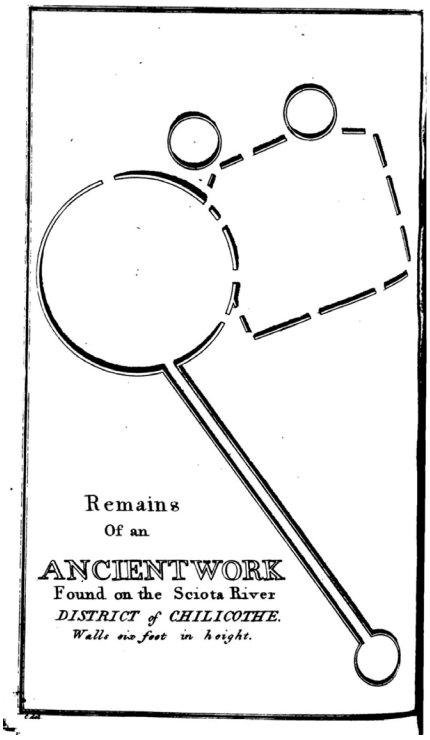


Figure 1-17. This is the first known map of Hopeton Earthworks, drawn in 1809. (Hopewell Culture NHP Archives, Oliver Oldschool, ed. The Port Folio, New Series, Vol II, No. 5, 1809.)

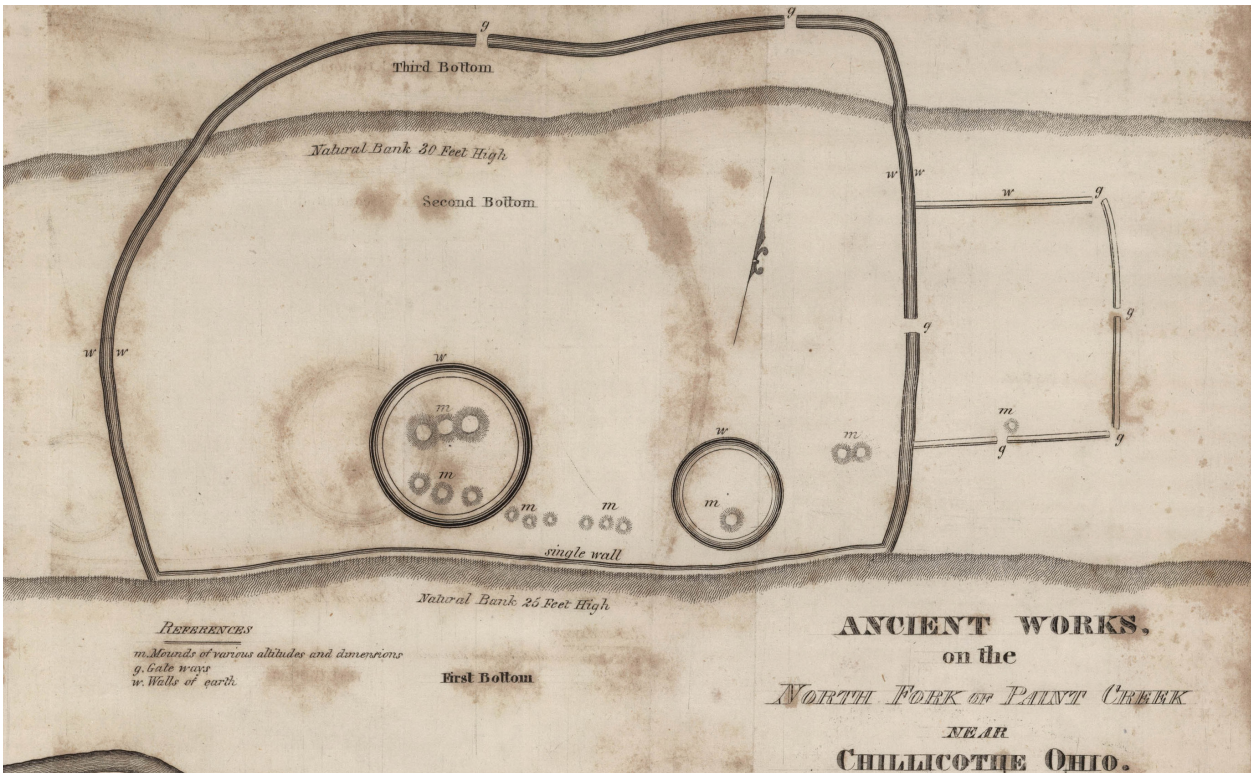


Figure 1-18. Caleb Atwater authored "Description of Antiquities Discovered in the State of Ohio and Other Western States" describing the earthwork complexes throughout the Ohio Valley, including Hopewell Mound Group, above. (Atwater, 1820)

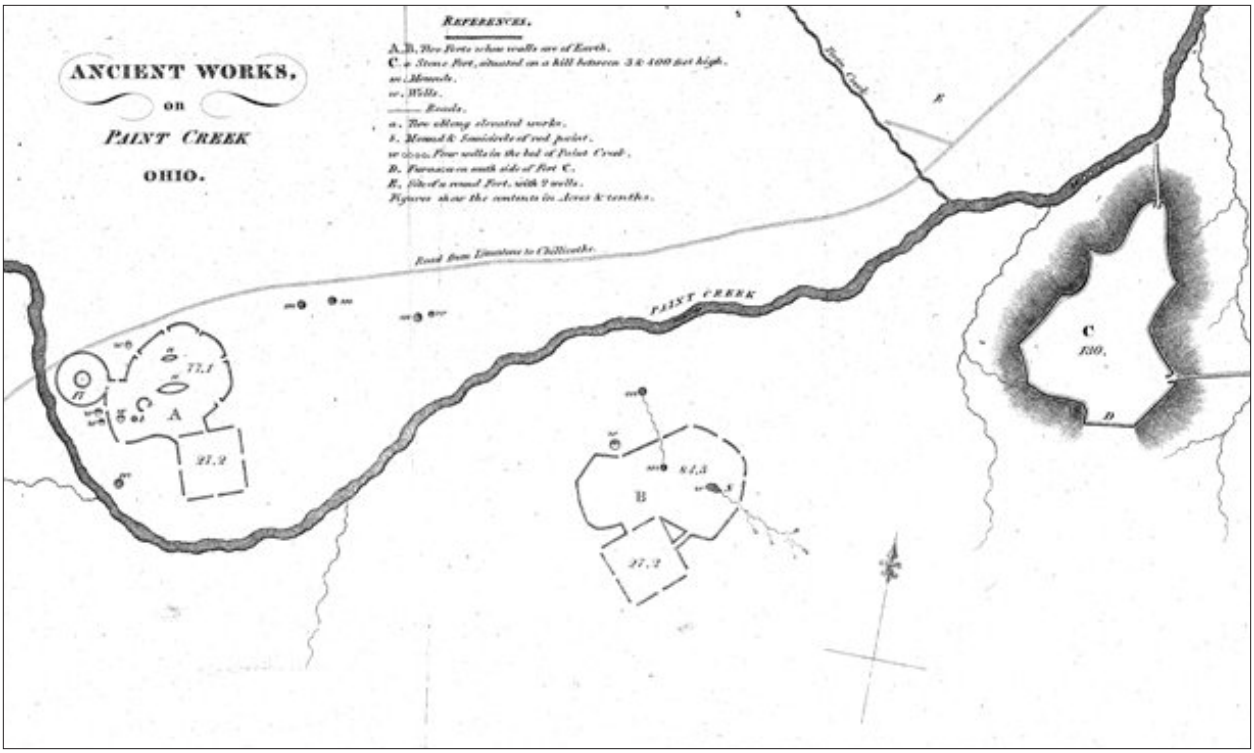


Figure 1-19. Caleb Atwater published the first illustrations and descriptions of Seip Earthworks, at far left, and Spruce Hill, at far right. (Hopewell Culture NHP Archives)

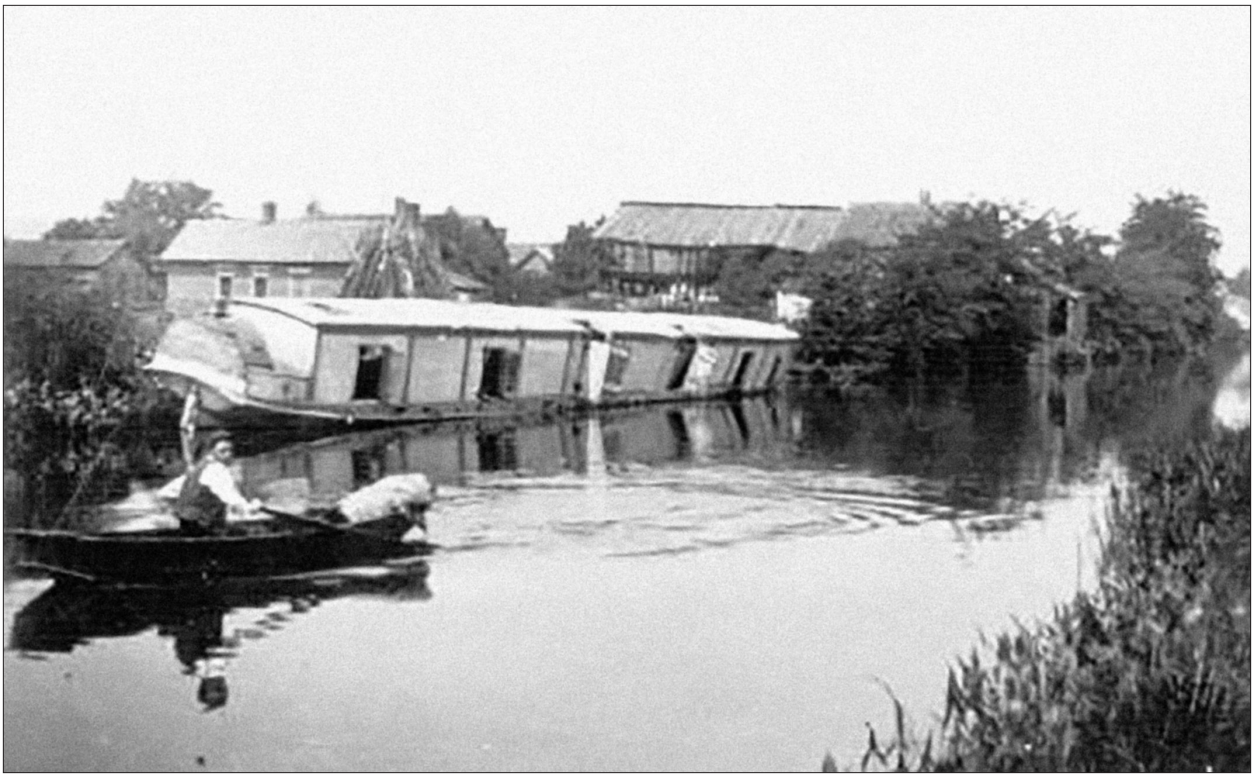


Figure 1-20. Completed in 1832, the Ohio-Erie Canal was constructed just to the west of Mound City Group. The canal supported settlement and development of the area, and the increased farming activities hastened the destruction of many Hopewellian earthwork complexes. (Ohio Historical Society)

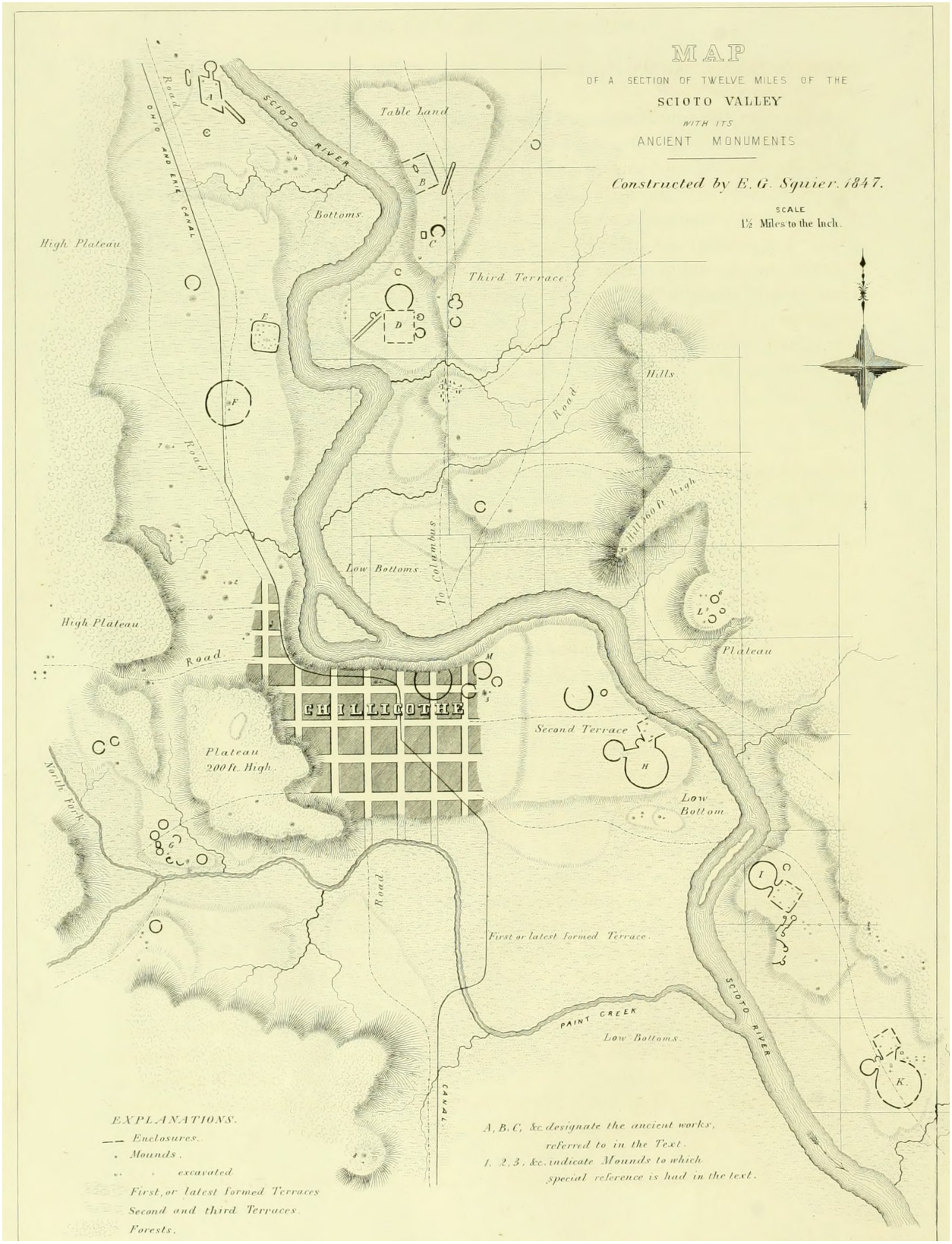


Figure 1-21. This map was drawn in by Squier and Davis in 1846. It shows the town of Chillicothe in relationship to the surrounding Hopewellian earthwork complexes. (Hopewell Culture NHP Archives)

Archeological Exploration / Early Agriculture (1845 to 1916)

This period begins with documentation and excavation of the Hopewellian earthwork complexes by Ephraim George Squier and Dr. Edwin Hamilton Davis, starting in 1845. During this period, the earthwork complexes were farmed, plowed over and tilled. Farms grew mostly grain crops, including wheat, oats, potatoes, barley, rye, and buckwheat; fruit orchards were also common. The earthwork complexes were hidden by the agricultural fields, which would have been edged with forest and farmsteads. Forest vegetation was harvested and cleared throughout this period along waterways and in the Appalachian foothills.

1845 to 1847

Exploration of the earthwork complexes along the Scioto River Valley began in 1845 when Ephraim George Squier and Dr. Edwin Hamilton Davis conducted an extensive investigation. Both men were amateur archeologists who explored similar Ohio antiquities from 1845 to 1847. The two documented the earthwork complexes of Hopewell Culture NHP, as well as many others in the region including Spruce Hill, Newark Earthworks, and Fort Ancient.

Mound City Group was mapped and partially excavated by Squier and Davis. Their sketch of the complex indicates the Ohio and Erie Canal, west of the area, as well as the Shriver Circle, an earthwork circle to the south of Mound City Group (not currently part of the NPS-owned land). [2.65] "From Mound Eight alone came a cache of two hundred stone-carved animal and human effigy pipes. They also reported cremated burials along with pipes, mica symbols, various copper objects, obsidian knives, and freshwater pearls."[2.66]

Squier and Davis's exploration and documentation of Hopeton Earthworks (called Hopeton Work at the time), reveal two structures and an orchard within the largest circular earthwork. Outside of the earthwork complexes, but nearby were two additional buildings, indicated as belonging to "Cryder's," the land owner at the time.[2.67] Squier and Davis also stated that the circle "has been much reduced of late years by the plough, it is still about five feet in average height."[2.68]

Squier and Davis surveyed, documented, and conducted the first excavations at Hopewell Mound Group. They named the "Clark's Work" after the then property owner, W.C. Clark. At this time, at least two structures had been built within the earthen walls of the largest earthwork / parallelogram at Hopewell Mound Group..[2.69]

Squier and Davis recorded Seip Earthworks. Their drawing indicates the 'Road to Chillicothe' to the north of the mounds, and Paint Creek to the south.[2.70] Their notes describe the complex as being situated on the estate of John Woodbridge, Esq. of Chillicothe.

2.65 Squier and Davis, *Ancient Monuments of the Mississippi Valley,* Plate XIX, 54.

2.66 Cockrell, *Administrative History*, Chapter 1, 2.

2.67 Brady, Kathleen and Jennifer Pederson Weinberger 10 Recent Investigations At The Mound City Group. Hopewell Archeology: The Newsletter of Hopewell Archeology in the Ohio River Valley 7(2):25-34, 2010.

2.68 Squier and Davis, *Ancient Monuments of the Mississippi Valley,* 51.

2.69 Squier and Davis, *Ancient Monuments of the Mississippi Valley,* 6.

2.70 Squier and Davis, *Ancient Monuments of the Mississippi Valley,* Plate XXI, No.2.

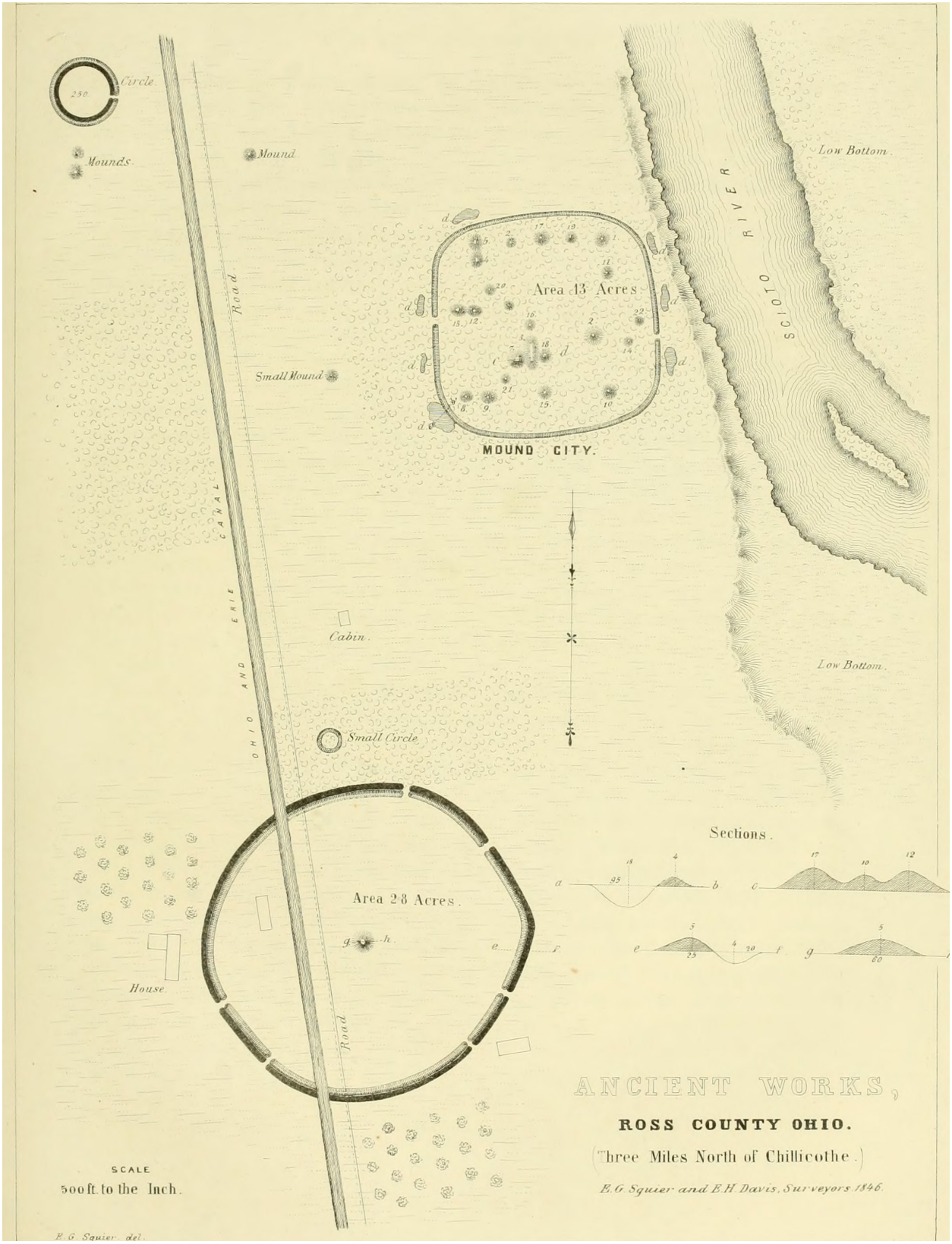


Figure 1-22. Mound City Group was mapped and partially excavated by Squier and Davis. Note the Ohio-Erie Canal to the west of the site, and the forest that still covered the mounds. (Squier and Davis 1848)

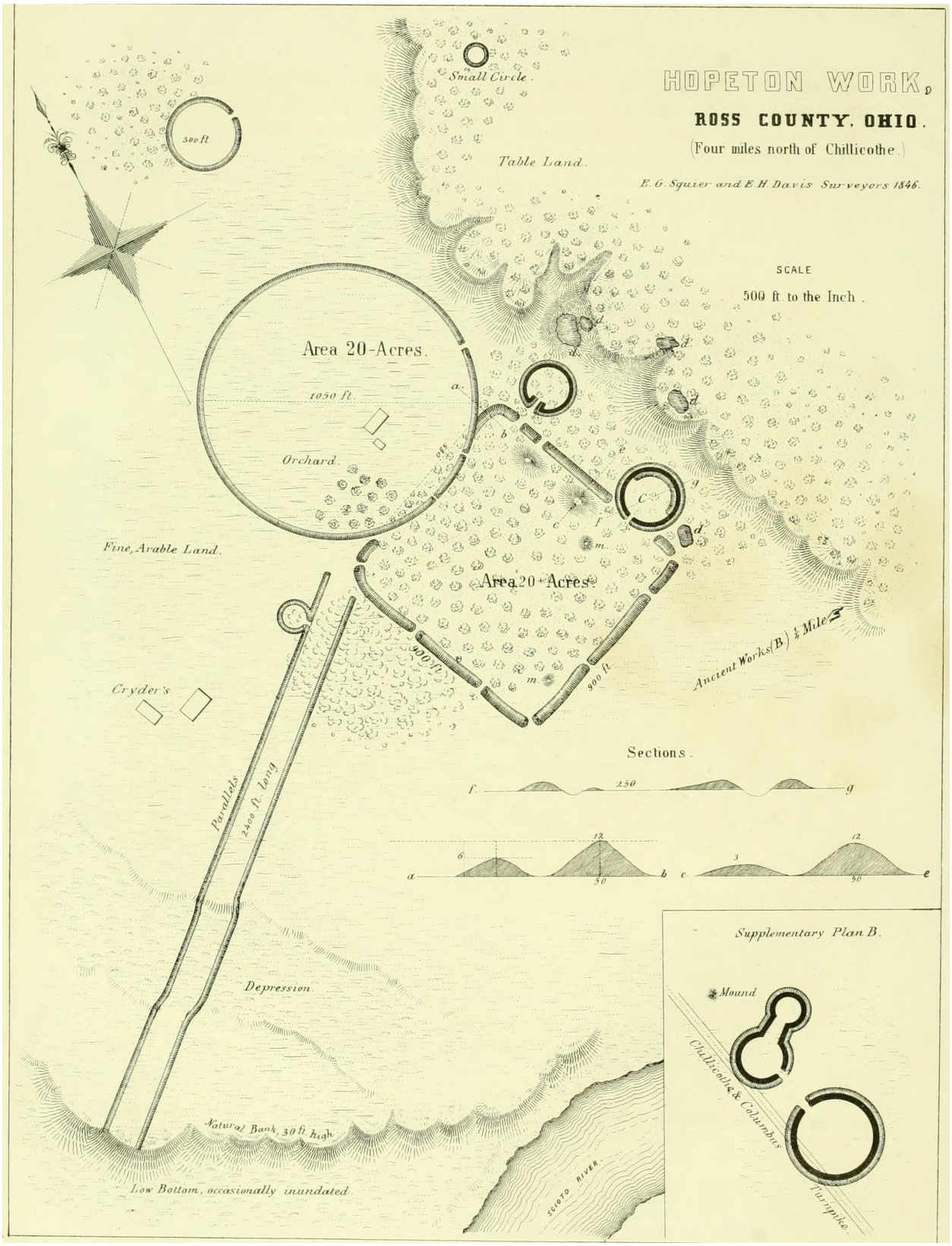


Figure 1-23. Squier and Davis explored and documented Hopeton Earthworks. Note the two structures and an orchard within the largest circular earthwork, belonging to the Cryder farm. (Squier and Davis 1848)

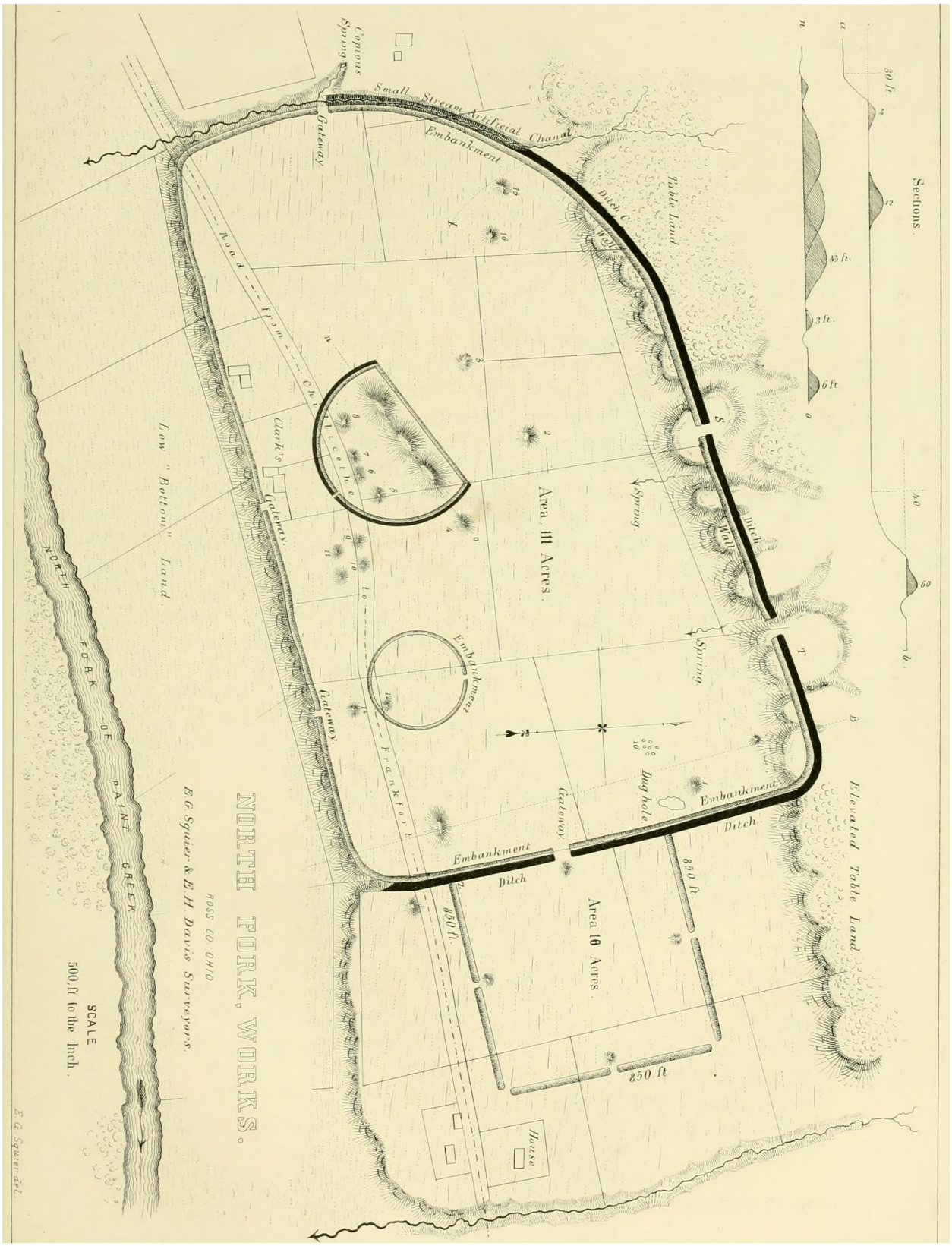


Figure 1-24. Squier and Davis surveyed, documented, and conducted the first excavations at the Hopewell Mound Group. They named the site "Clark's Work." Note the road across the earthwork complex. (Squier and Davis 1848)

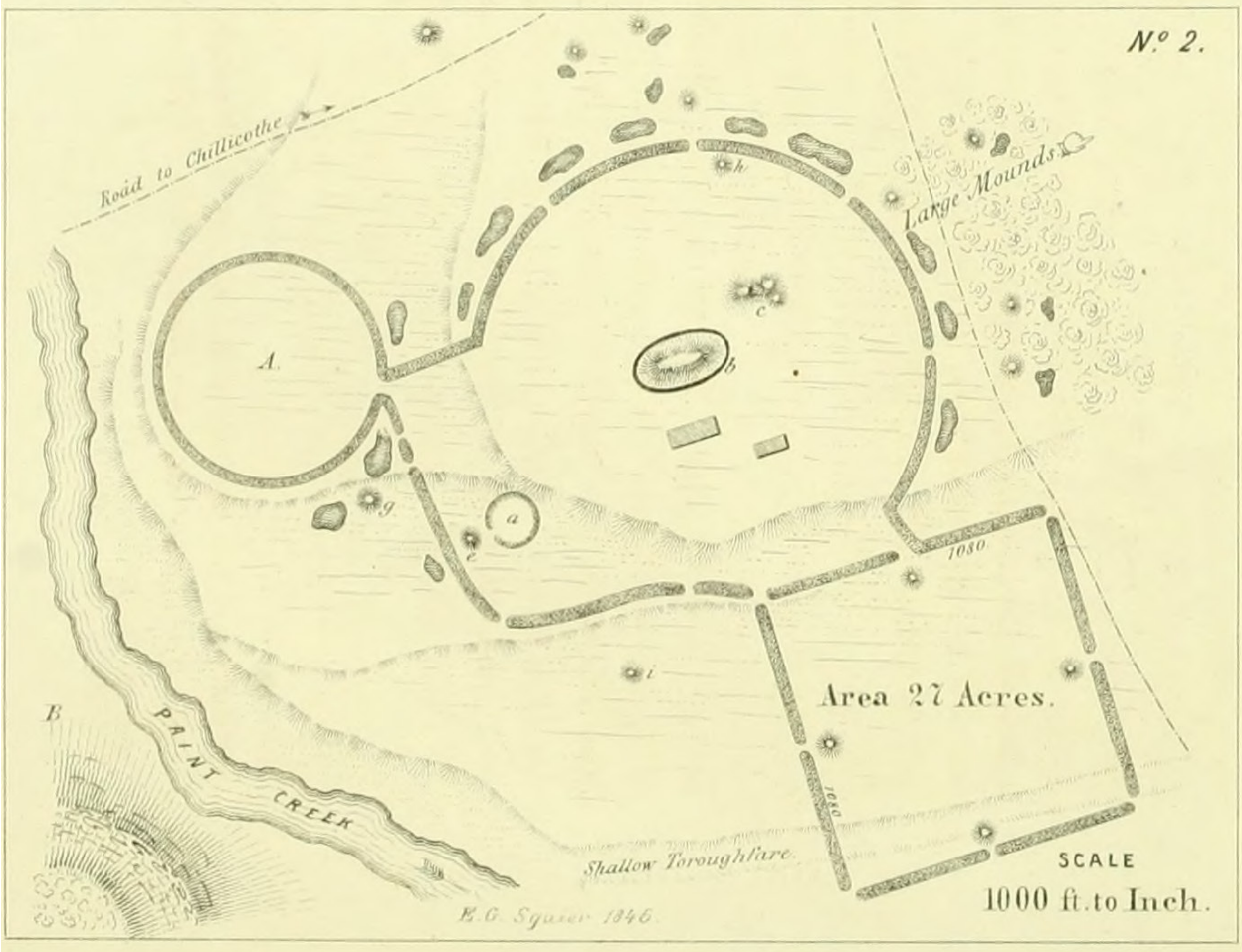


Figure 1-25. The Squier and Davis map of Seip Earthworks reveals the outlines of the large tripartite earthwork. (Squier and Davis 1848)

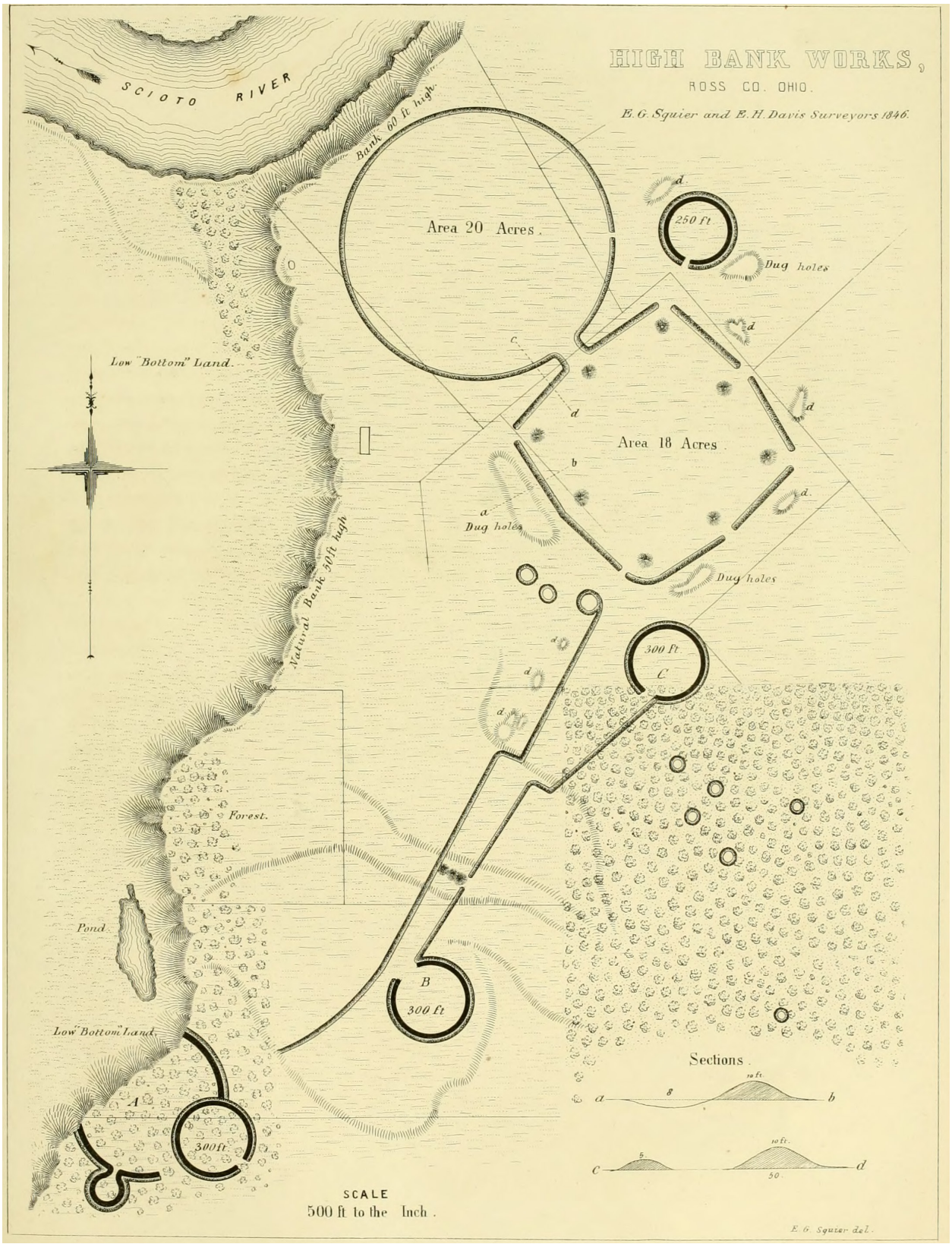


Figure 1-26. Squier and Davis documented High Bank Works, mapping the earthwork complex, even as it was being cultivated. They describe several archeological as 'reduced but traceable.' (Squier and Davis 1848)

Squier and Davis described High Bank Works: "the walls of the octagon are very bold; and, where they have been least subjected to cultivation, are now between eleven and twelve feet in height, by about fifty feet base."[2.71] They describe a small earthwork complex, 'reduced but traceable,' to the south that had been destroyed by the river. "The construction of a farm road down the bank disclosed a large quantity of human bones, accompanied by a variety of rude implements."[2.72]

A survey completed of Spruce Hill by Squier and Davis and subsequent drawing, labeled simply as "Ancient Stone Work near the Village of Bourneville," indicates a portion of the interior of the earthwork as farmland, with two structures within the stone walls.[2.73]

1848
Dr. Edwin Hamilton Davis (1811 to 1888) and Ephraim George Squier published "Ancient Monuments of the Mississippi Valley," the final document which recorded nearly 100 earthwork complexes surveyed between 1845 and 1847. It was the first publication of the newly founded Smithsonian Institution.[2.74]

1850
Dr. Edwin Hamilton Davis takes the artifact collection from the Mound City Group to New York.[2.75]

mid-1850s
The Baltimore and Ohio Railroad reached Ohio. By 1857 The Marietta and Cincinnati Railroad connected Chillicothe with Cincinnati.[2.76]

1861-65
During the Civil War, the land at Mound City Group was used by militia for drilling and training. It was referred to as Camp Logan. After the war, land reverted back to farm use until the early 20th century.[2.77]

1864
The artifact collection from Mound City Group was sold by Davis to William Blackmore who transported it to England.[2.78]

1889
Cyrus Thomas of the Smithsonian Institution described and surveyed Hopeton Earthworks and High Bank Works in "The Circular, Square, and Octagonal Earthworks of Ohio." He described Hopeton Earthworks: "The only parts of this group we notice here are the large circle and the connected square…. The walls of the circle and square are yet very distinct, and with the exception of a single break in the circle can be readily traced. In fact, the lowest point of the square is yet five feet high. The circle is more worn, the western half averaging about two feet high…".[2.79] He described High Bank Works: "These works occupy a broad, unbroken level of the drift terrace, which has been cultivated almost annually since 1845. The walls of the circle and octagon are still quite prominent, and are respectively two and five feet high.[2.80]

2.71 Squier and Davis, *Ancient Monuments of the Mississippi Valley,* 50.
2.72 Squier and Davis, *Ancient Monuments of the Mississippi Valley,* Plate X, 50.
2.73 Squier and Davis, A*ncient Monuments of the Mississippi Valley,* Plate IV. Ruby, 2009.
2.74 David Arbogast and Jill York, *National Register of Historic Places Inventory - Nomination: Mound City Group National Monument,* (Chillicothe: NPS, 1982)
2.75 *CLI Mound City Group,* 17.
2.76 William Prescott Smith, Ohio History Society Photograph in *The Book of the Great Railway Celebrations of 1857*. (New York: D. Appleton and Company, 1858).
2.77 "Camp Sherman," Hopewell Culture NHP, http://www.nps.gov/hocu/historyculture/camp-sherman.htm (accessed January 2015).
2.78 *CLI Mound City Group,* 17.
2.79 Cyrus Thomas, *The Circular, Square, and Octagonal Earthworks of Ohio,* 23.
2.80 Cyrus Thomas, *The Circular, Square, and Octagonal Earthworks of Ohio,* 20.



Figure 1-27. Hopeton Earthworks was surveyed, c. 1890. (Lynott, Mark Hopewell Ceremonial Landscapes of Ohio: More than Mounds and Geometric Enclosures. Havertown, PA: Oxbow Books, 2014; Fig 3.6.)



Figure 1-28. Hopeton Earthworks was surveyed, c. 1890. (Lynott, Mark Hopewell Ceremonial Landscapes of Ohio: More than Mounds and Geometric Enclosures. Havertown, PA: Oxbow Books, 2014; Fig 3.5.)

1890
Colonel Middleton completed a topographic survey of Hopeton Earthworks for the Bureau of American Ethnology.[2.81]

1891 to 1892
Warren K. Moorehead led excavations at Hopewell Mound Group, and changed the earthwork complex's name from "Clark's Works," to be named after the landowner Mordecai Cloud Hopewell.[2.82] Moorehead partially excavated several mounds at Hopewell Mound Group, including about a quarter of the largest mound— Mound 25.[2.83]

1893
After Warren King Moorehead excavated Hopewell Mound Group, the collected artifacts were displayed at the Columbian Exposition in Chicago, Illinois.[2.84] The abundance and exquisite craftsmanship of the artifacts enthralled visitors to the exposition, and the concept of the 'Hopewell Culture' was born. After the exposition, all artifacts were stored and displayed in Chicago's newly created Field Museum.[2.85]

1906 to 1909
William Mills of the Ohio Historical Society extensively excavated the Seip-Pricer Mound at Seip Earthworks. Much of the western half of the mound was removed, revealing large connected buildings, and artifacts including copper breast plates, and intact samples of Hopewell cloth.[2.86]

1912
By 1912, railroads carried most of the freight that had been formerly transported on the Ohio-Erie Canal. After the flood of 1913, the canal was no longer used or maintained.[2.87]

2.81 "Topographic Survey." NPS, Midwest Archeological Center, *MWAC Featured Projects , The Hopeton Earthworks and Hopewell Culture,* http://www.nps.gov/mwac/hopeton/topo_analy.htm (accessed January 2015).
2.82 *CLI, Hopewell Mound Group,* 24.
2.83 NPS, *Hopewell Mound Group Site Bulletin.*
2.84 Moorehead 1897, 1922.
2.85 NPS, *Hopewell Mound Group Site Bulletin.*
2.86 Mills 1909
2.87 G. Richard Peck, *The Rise and Fall of Camp Sherman* (Chillicothe: 1972).



Figure 1-29. Mound 23 at Hopewell Mound Group, before excavation by Warren Moorehead in 1891. (Hopewell Culture NHP Archives)

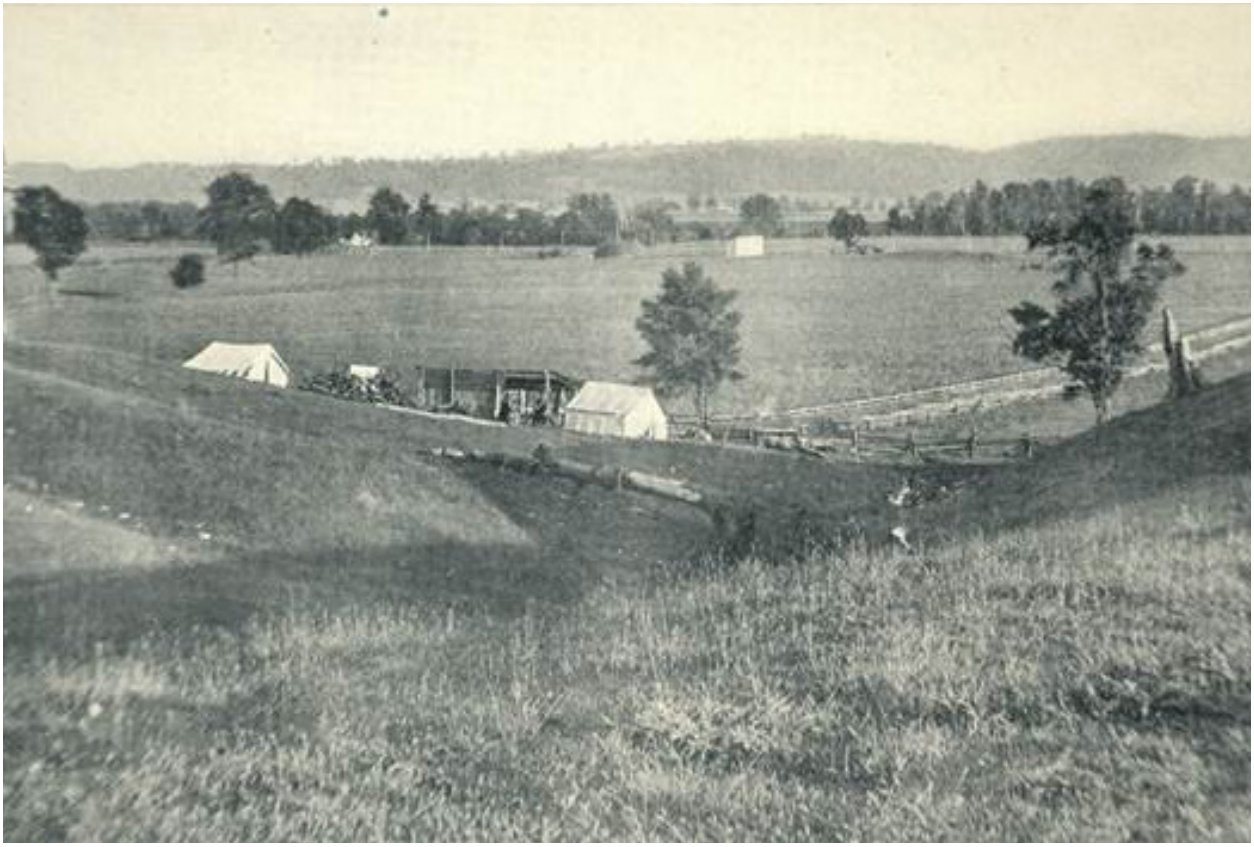


Figure 1-30. View of Hopewell Mound Group and the tents set up by Moorehead's archeology crew in 1891. (Moorehead, Warren K. The Hopewell Mound Group of Ohio. Chicago: Field Museum Natural History, 1922.)



Figure 1-31. Moorehead discovered a huge cache of flint bifaces at Hopewell Mound Group — they were later taken to Chicago and displayed in the Columbian Exposition of 1893. (Moorehead, Warren K. The Hopewell Mound Group of Ohio. Chicago: Field Museum Natural History, 1922.)

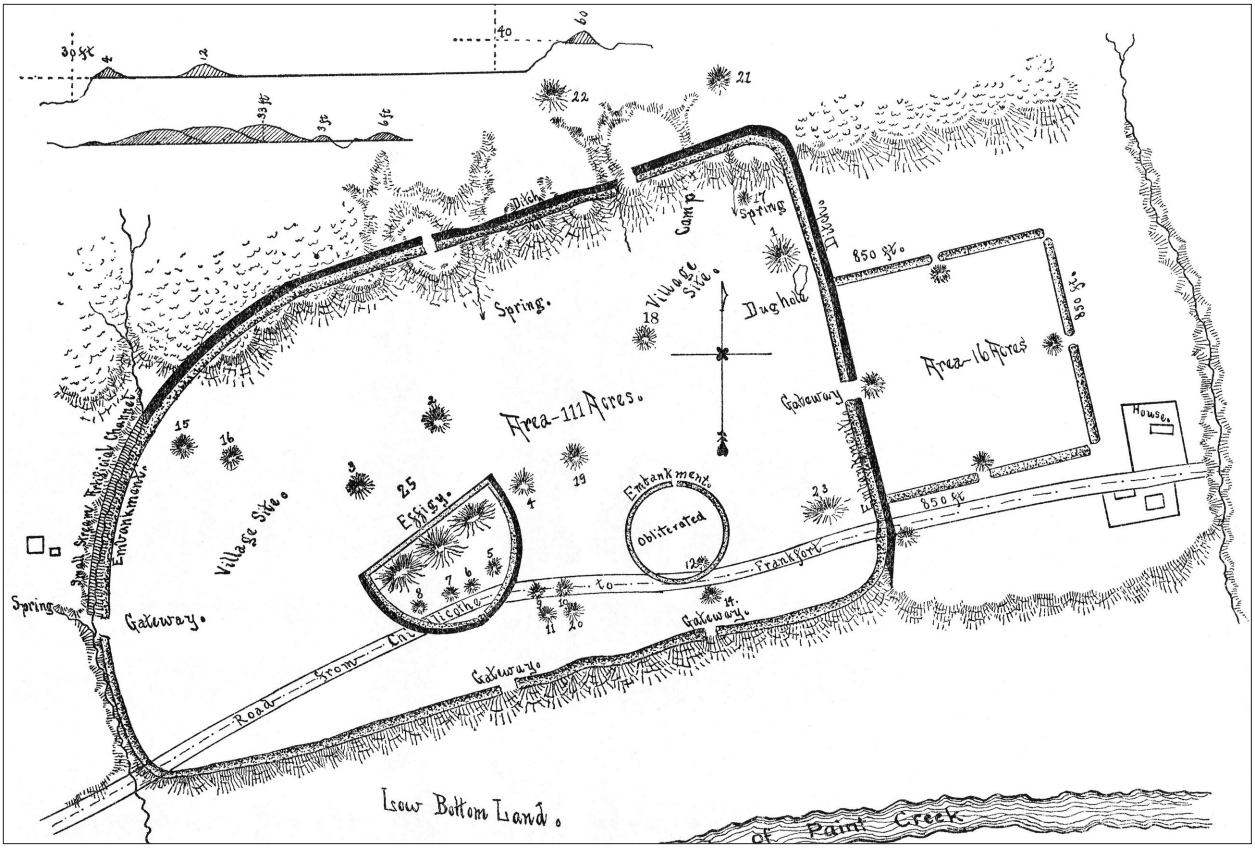


Figure 1-32. Moorehead's plan of Hopewell Mound Group, 1893. (Moorehead 1897)



Figure 1-33. Seip Earthworks under cultivation in the late 1800s. (Ohio History Connection, Ohio Historical Society Archaeology Photograph Collection)

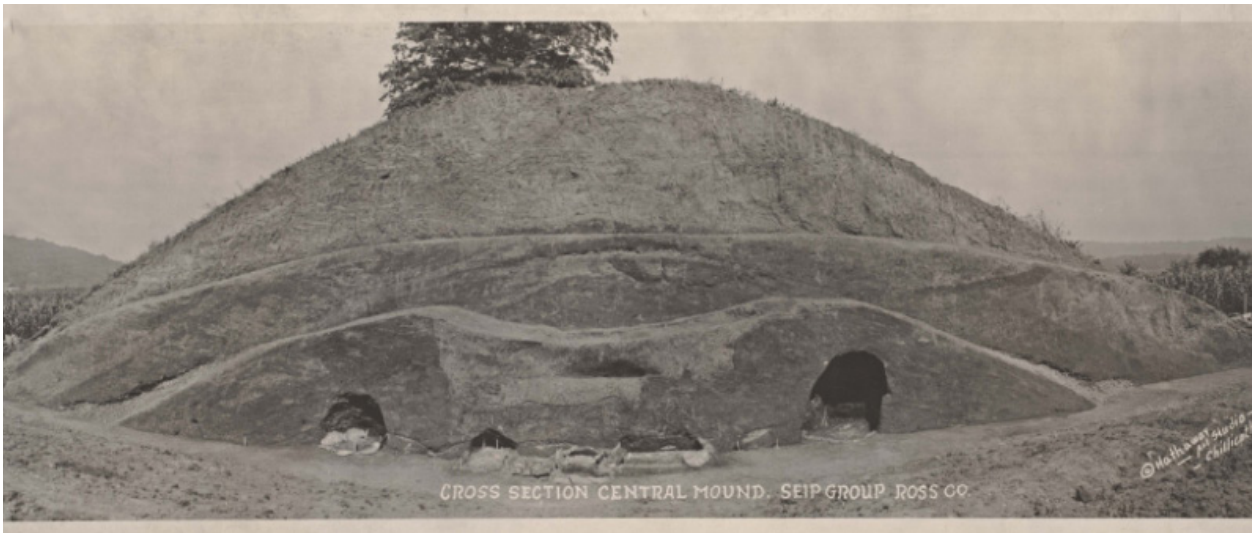


Figure 1-34. This photograph shows the excavation and removal of the west portion of the Seip-Pricer Mound at Seip Earthworks. The mound was partially reconstructed after excavation. (Hopewell Culture NHP Archives)



Figure 1-35. The Seip-Pricer Mound at Seip Earthworks was extensively excavated between 1906 and 1908 by William Mills. (Mills, William C. "Explorations of the Seip Mound." Ohio Archaeological and Historical Quarterly, 1909)



Figure 1-36. This photograph shows the excavation and removal of either the Seip-Pricer Mound or the Seip-Conjoined Mound, in the 1920s. (Shetrone, Henry C. "Explorations of the Hopewell Group of Prehistoric Earthworks," Ohio Archaeological and Historical Quarterly, 1926.)

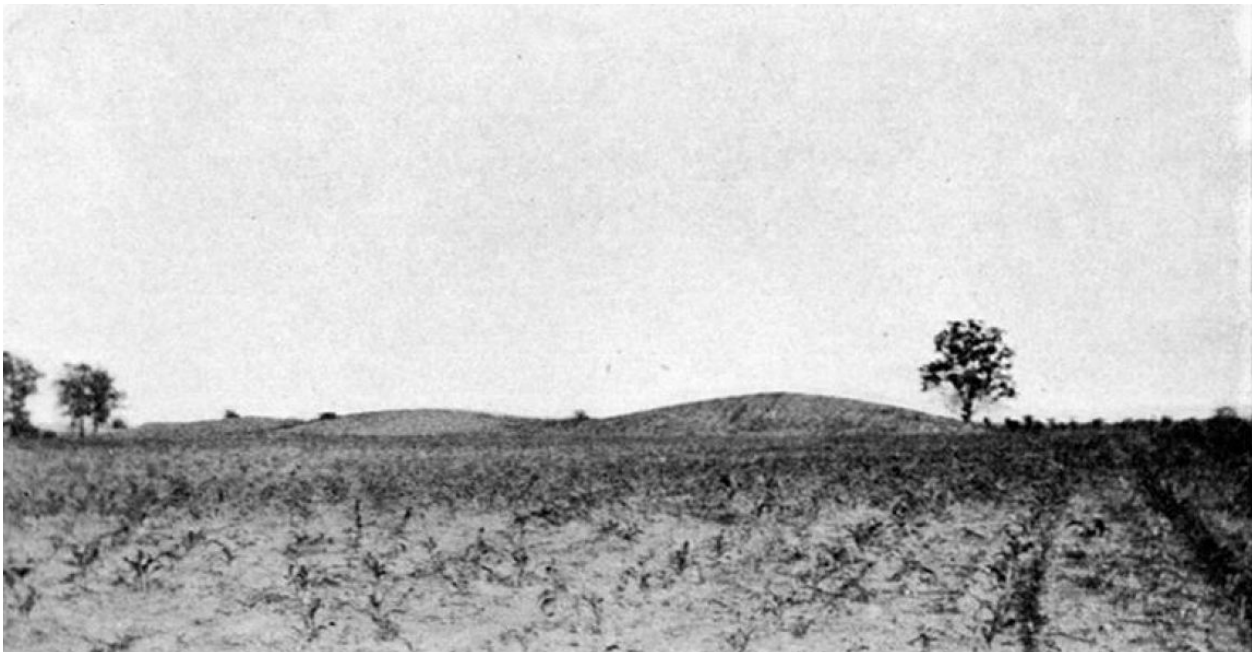


Figure 1-37. Seip-Pricer Mound under cultivation, prior to excavation. (Mills, William C. "Explorations of the Seip Mound." Ohio Archaeological and Historical Quarterly, 1909.)

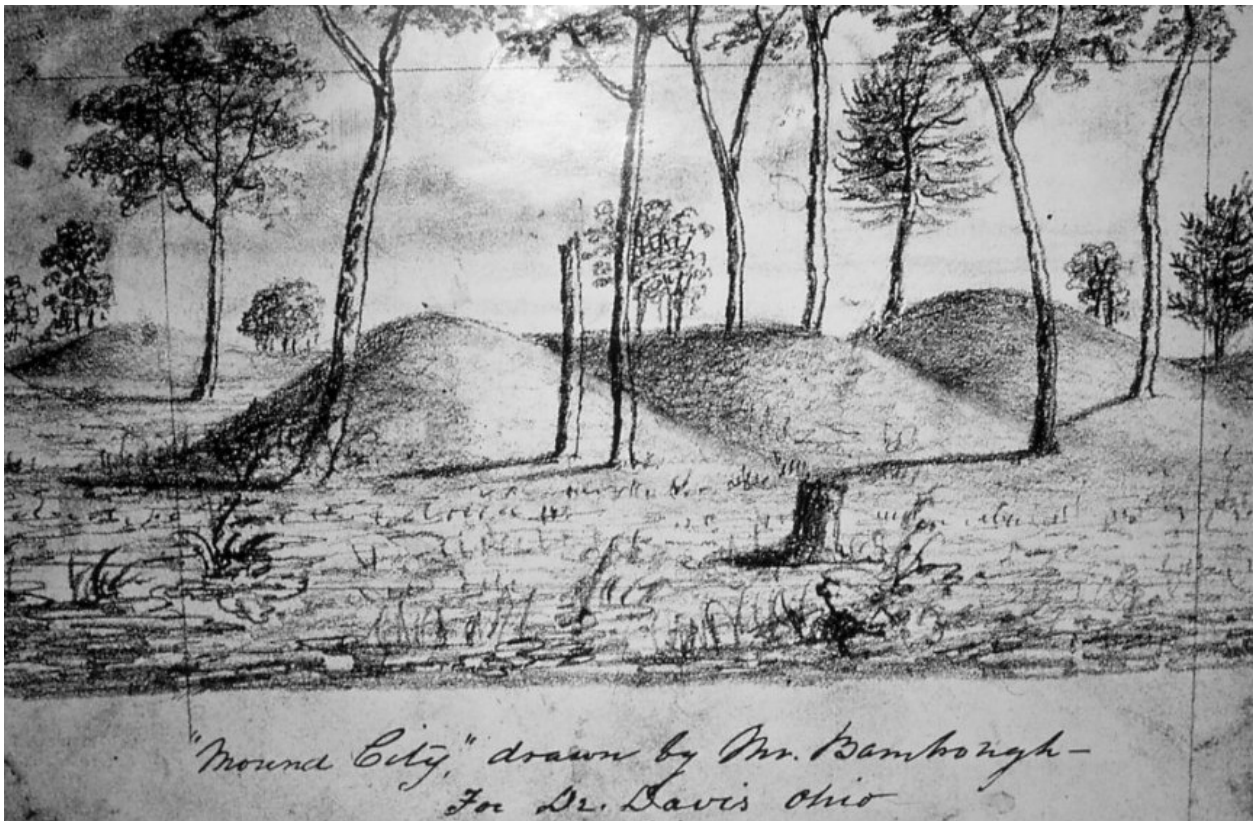


Figure 1-38. An early sketch of Mound City Group shows the site covered with trees and uncultivated in the late 1800s. (Brown 2012)



Figure 1-39. A railroad line was built as part of Camp Sherman, transecting the earthen walls. (Hopewell Culture NHP Archives)

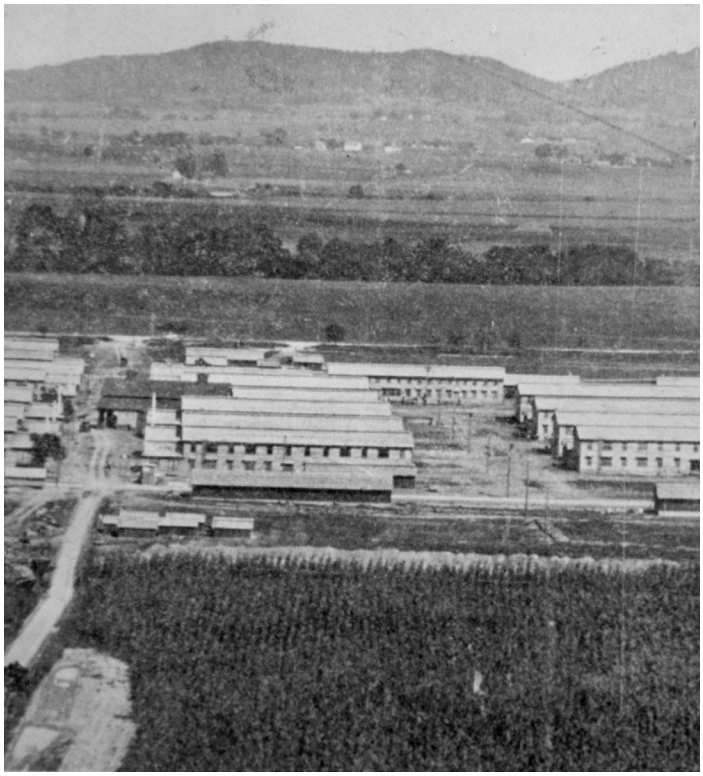


Figure 1-40. Over 2,000 buildings were built as part of Camp Sherman. (Hopewell Culture NHP Archives, 42384)



Figure 1-41. This photograph shows one of the extant mounds at Mound City Group, with a Camp Sherman building built on top. The buildings were hastily constructed and little time was spent leveling the mounds. (Mills 1922)

Camp Sherman (1917 to 1922)
This period includes the World War I Army cantonment named Camp Sherman, built at Mound City Group. During this time, the mounds at Mound City Group were taken out of agricultural production and were used as an active military site, with buildings and roads constructed near and on top of most of the mounds. The other park units continued in agricultural production.

1917 to 1920
World War I Army cantonment, named Camp Sherman, was established north of Chillicothe. Through purchase and eminent domain, the land at Mound City Group and adjacent properties was acquired by the War Department.[2.88] Approximately 2000 buildings were built on over 2000 acres of land, the camp accommodated up to 40,000 men. The camp was a small city unto itself, with barracks, hospital, railroad, prison, and sanitary and farming facilities.[2.89]

Two-story wooden barracks were proposed on top of the Mound City Group. Henry Shetrone, William Mills, and Albert Spetnagel of the Ohio Historical Society met with Army officials to determine an approach to allow construction of the barracks without harming the mounds. However, some mounds were damaged by the installation of pipelines, roads and railroad ties.[2.90] The construction and three-year occupation of Camp Sherman damaged many above-grade features, but not all of them, including the largest mound, Mound #7. Rather than take the time to level the big mound, the army turned one barrack perpendicular to the rest, leaving the mound intact.[2.91]

1918, November 11
Following the end of the war, an announcement was made that men would be discharged from Camp Sherman and the camp would close. A permanent Chillicothe Veterans Hospital was established near Mound City Group to care for wounded soldiers.[2.92]

1920
By July 1920, most discharges at Camp Sherman were completed, and the 19th Infantry took over as custodians, leaving Camp Sherman as one of the last World War I cantonments to be closed and its buildings razed or sold as surplus.[2.93] Mound City Group remained federally owned and was transferred to the Veterans Bureau in 1921.[2.94]

2.88 "Camp Sherman," Hopewell Culture NHP, http://www.nps.gov/hocu/historyculture/camp-sherman.htm (accessed January 2015).
2.89 Cockrell, *Administrative History*, Chapter 2.
2.90 "Camp Sherman," *Hopewell Culture NHP,* http://www.nps.gov/hocu/historyculture/camp-sherman.htm.
2.91 G. Richard Peck, *The Rise and Fall of Camp Sherman.*
2.92 Cockrell, *Administrative History*, Chapter 2.
2.93 Cockrell, *Administrative History*, Chapter 2.
2.94 "Camp Sherman," *Hopewell Culture NHP,* http://www.nps.gov/hocu/historyculture/camp-sherman.htm.

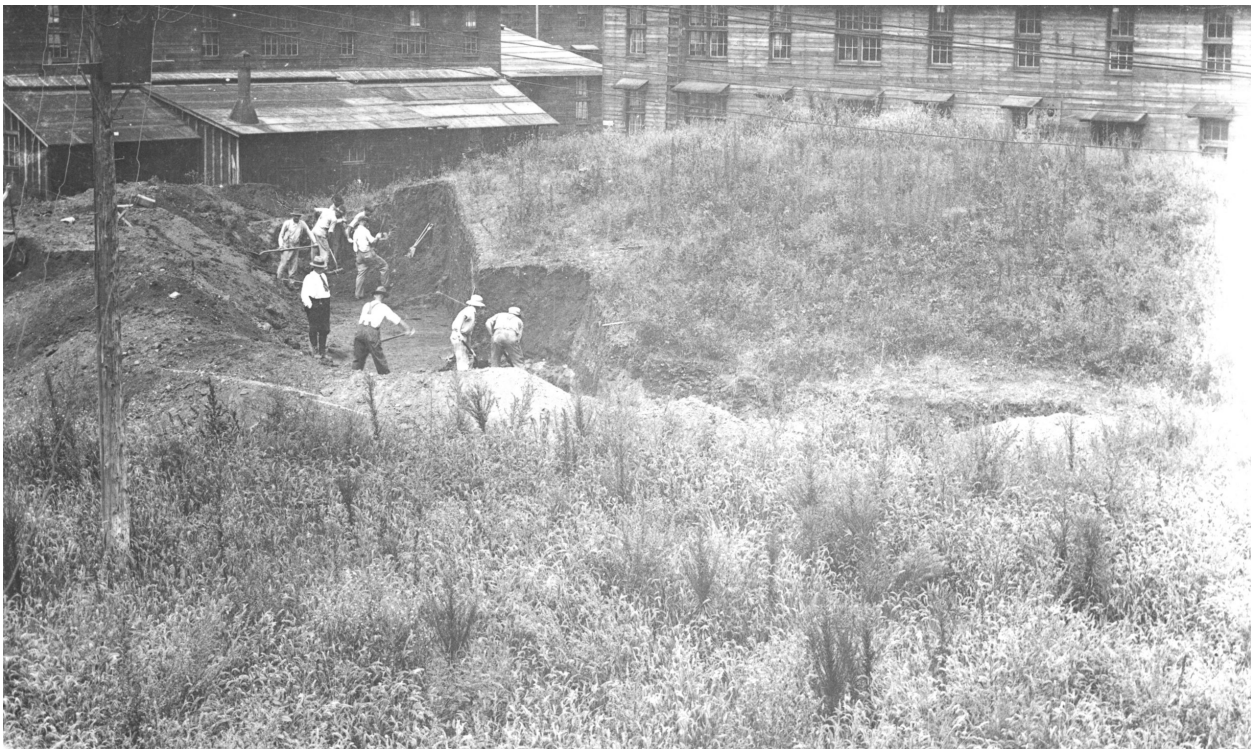


Figure 1-42. After Camp Sherman was disbanded, the Ohio Historical Society, led by William Mills, undertook archeological excavations, even while the Camp Sherman buildings still stood. (Mills 1922)



Figure 1-43. Between 1920 and 1922 William Mills excavated at Mound City Group, identifying building floors beneath the mounds. This is mound 18, note the post and pier foundations of the Camp Sherman building on top of the mound. (Mills 1922)

1920 to 1922

William Mills and Henry Shetrone of the Ohio State Archaeological and Historical Society conducted field investigations and excavated the mounds at Mound City Group. The largest mound, Mound #7, was the only untouched mound by the U.S. Army and was excavated at this time. Excavations amassed more than 167,000 museum objects and archival items. These archeological efforts reignited public interest in Hopewell studies, and launched a drive to preserve its remnants.[2.95]

Henry Shetrone also conducted excavations at Seip Earthworks. Seip-Pricer Mound was extensively excavated and revealed floors, fire pits, and burials of two very large connected buildings with a small building between them. Among the artifacts found was the famous clay Seip Head, copper breast plates, and intact samples of Hopewell cloth, woven of milkweed fibers. Seip-Pricer Mound was partially reconstructed after excavation.[2.96]

1922 to 1925

Shetrone conducted excavations at the Hopewell Mound Group.[2.97] These excavations and mapped earthwork locations remain as the authority on the Hopewell Mound Group. At the completion of the fieldwork, almost every mound at Hopewell Mound Group had been excavated.[2.98] By this time, many of the mounds and earthen walls of the square at Hopewell Mound Group had disappeared due to agricultural practices.

2.95 Cockrell, A*dministrative History,* Chapter 1; "Collections," *NPS, Hopewell Culture National Historical Park (OH)*, http://www.nps.gov/hocu/historyculture/collections.htm (accessed January 2015); C*LI Mound City Group,* 18.

2.96 Shetrone, *The Mound-Builders;* Shetrone and Greenman, "Explorations of the Seip Group of Prehistoric Earthworks," *Ohio Archaeological and Historical Quarterly;* The largest mound at Seip Earthworks is alternately referred to as Mound 1, Central Mound, Seip Mound, and Pricer Mound. In this document it is referred to as Seip-Pricer Mound.

2.97 Shetrone, Explorations of the Hopewell Group of Prehistoric Earthworks,1926.

2.98 *Ibid*



Figure 1-44. Hopewell Mound Group, circa 1922. This is the view from the north wall, looking west. (Ohio Historical Society)



Figure 1-45. Hopewell Mound Group, mound 7 under excavation in 1922. (Ohio Historical Society)

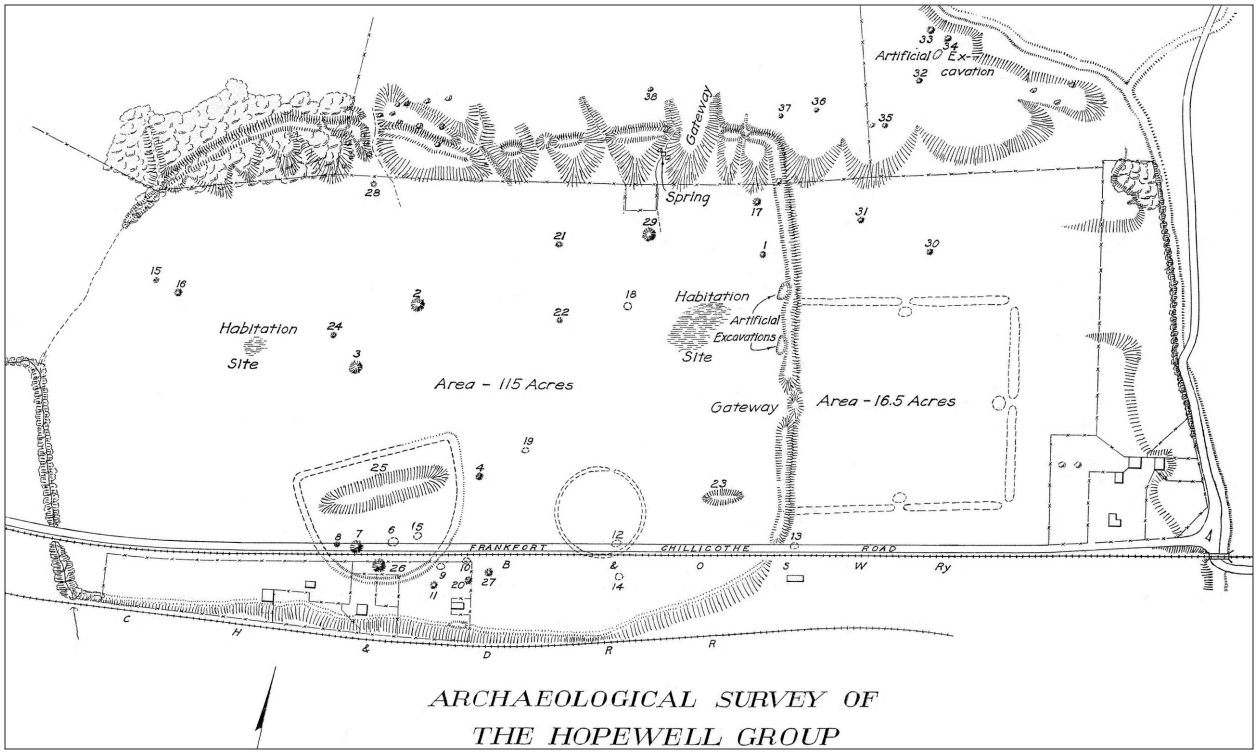


Figure 1-46. Between 1922 and 1925 Henry Shetrone conducted excavations at the Hopewell Mound Group. This map shows the earthwork locations; at the completion of their fieldwork nearly all the mounds had been excavated. (Shetrone 1926)

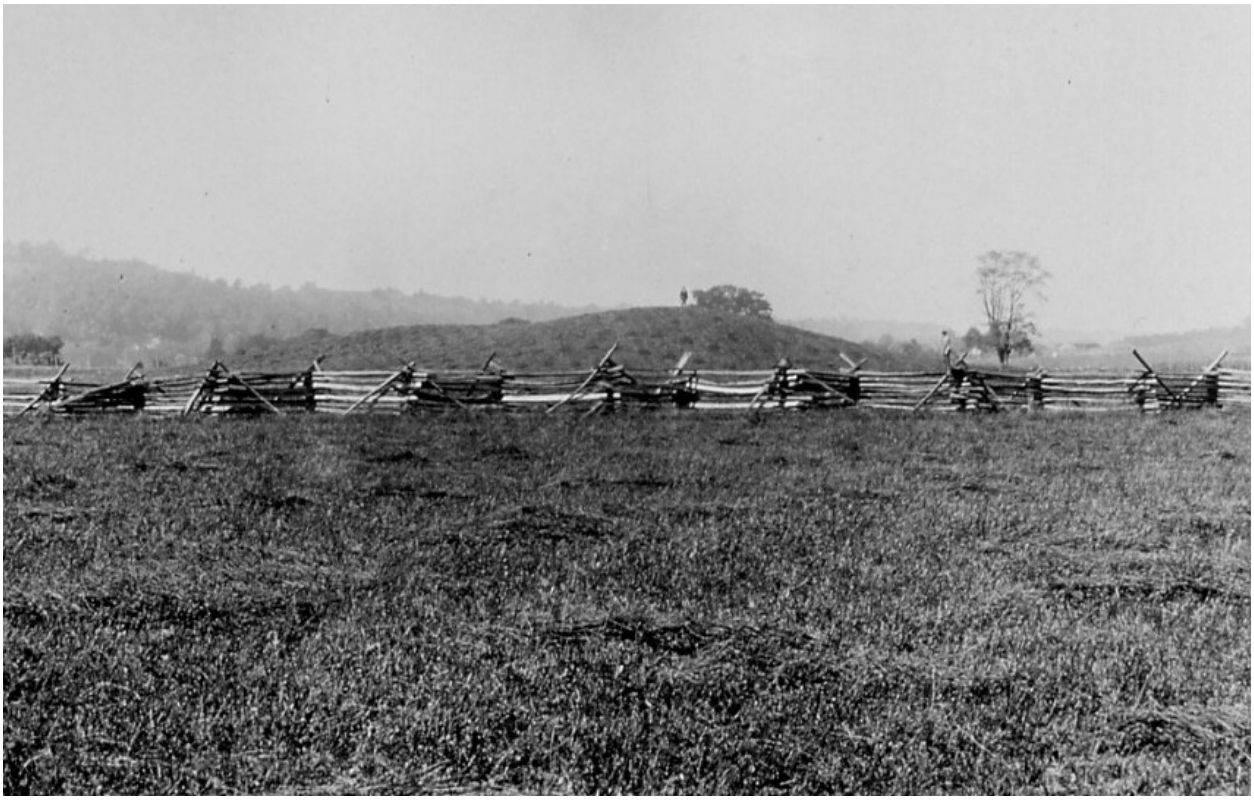


Figure 1-47. Mound 25 at Hopewell Mound Group, c. 1922. (Moorehead, Warren K. The Hopewell Mound Group of Ohio, 1922.)

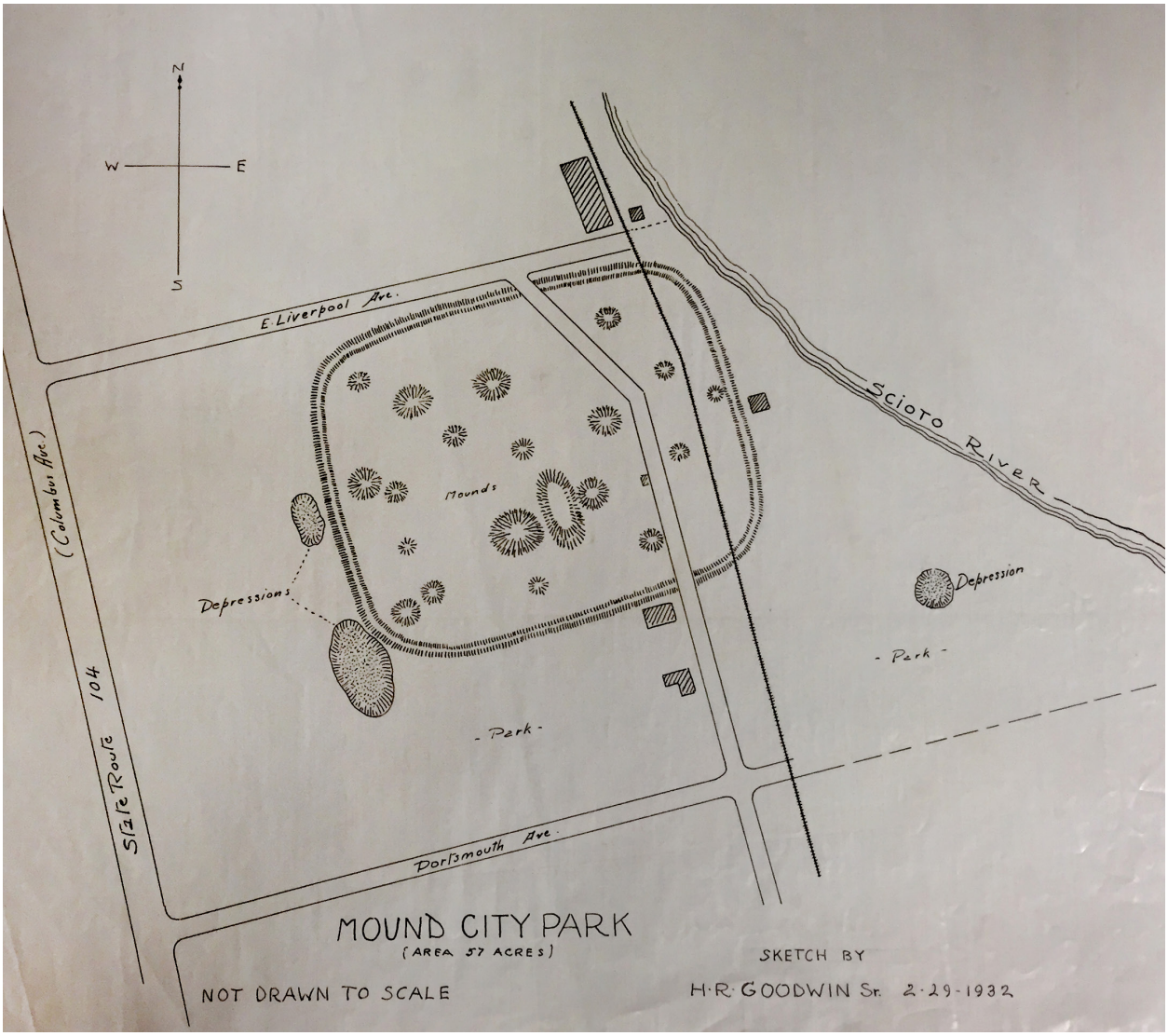


Figure 1-48. This map is from 1932 and shows two of the Camp Sherman roads and railroad that were extant at that time. (Hopewell Culture NHP Archives)



Figure 1-49. The site was cleared of Camp Sherman buildings and the mounds, earthen walls, and borrow pits of Mound City Group were reconstructed, based on the 1848 map by Squier and Davis. (Hopewell Culture NHP Archives)



Figure 1-50. Most of the earthwork complexes were heavily cultivated in the eighteenth and nineteenth centuries, as depicted in this Hopewell Mound Group photograph from the 1920s. (Ohio Historical Society)

Preservation / Late Agricultural (1923 to 1992)

This period of development begins with the establishment of Mound City Group National Monument in 1923. Soon after, a portion of Seip Earthworks became a State Memorial in 1927.

These two earthwork complexes were transformed into recreational parks with picnic areas, shade trees, and open lawn on the mounds. The other complexes continued to be farmed. After the introduction of high-powered tractors in the 1950s the earthwork complexes were increasingly widened and flattened. This period includes the transfer of Mound City Group to the NPS, and reconstruction of most of the mounds at that unit in the 1960s and 1970s.

1923

Mound City Group was established as a National Monument by President Warren G. Harding, "to preserve the pre-historic mounds of 'great historic and scientific interest' from 'all depredations and from all changes that would to any extent mar or jeopardize their historic value'."[2.99] The land remained federally-owned, but was managed by the stewardship of the Ohio State Archaeological and Historical Society.[2.100]

1925 to 1926

The mounds, earthen walls, and borrow pits at Mound City Group were reconstructed, loosely based on the 1848 map by Squier and Davis.[2.101] Mounds 4, 5, 6, 11, 13, 14, 19, 20, 21, 24, and parts of 15 were reconstructed. Most of the mounds and the southern wall of the outer enclosure were placed in the wrong locations (subsequently corrected between 1963 and 1975).[2.102] The complex was cleared of any remaining Camp Sherman debris, and laborers deep-plowed the area before reconstruction.

1927

The Ohio Historical Society erected stairs and a viewing platform on 'Death Mask Mound,' or Mound 7, at Mound City Group.[2.103] A stone gateway and entrance drive were built, that tied into the then-existing Camp Sherman roads to form a loop drive past Mound City Group, paralleling the active railroad spur, and then exiting through the north boundary road. A rustic shelter and picnic grounds were built alongside a baseball diamond.[2.104]

1927

Seip Earthworks became a State Memorial.[2.105]

Reformatory workers from the Chillicothe Correctional Institute planted and harvested an oat crop at Mound City Group, before cultivating a mixture of timothy and blue grass.[2.106]

1928-32

At Hopeton Earthworks, between 1928 and 1932,"three north-south aligned mounds in the eastern portion of the square enclosure were removed for fill," for the construction of the railroad at side of the park unit.[2.107]

2.99 *LRIP*, 6.
2.100 Cockrell, *Administrative History*, Chapter 2.
2.101 Cockrell, *Administrative History*, Chapter 2. Ruby 2013d
2.102 "Mound #22, Mound City Group," *List of Classified Structures, Ohio, Hopewell Culture National Historical Park (OH).* http://www.hscl.cr.nps.gov (accessed October 2014).
2.103 Cockrell, *Administrative History*, Chapter 2 Figure 15.
2.104 Cockrell, *Administrative History*, Chapter 2.
2.105 Oral communication, Bret Ruby, site visit, 10/21/2014.
2.106 Cockrell, *Administrative History*, Chapter 2.
2.107 David Brose, "An Historical Archaeological Evaluation of the Hopeton Works, Ross County, Ohio," (Cleveland: Department of Archaeology, Cleveland Museum of Natural History, 1976).



Figure 1-51. Aerial photograph of Hopeton Earthworks, c.1930s. (Dache Reeves, 1934)

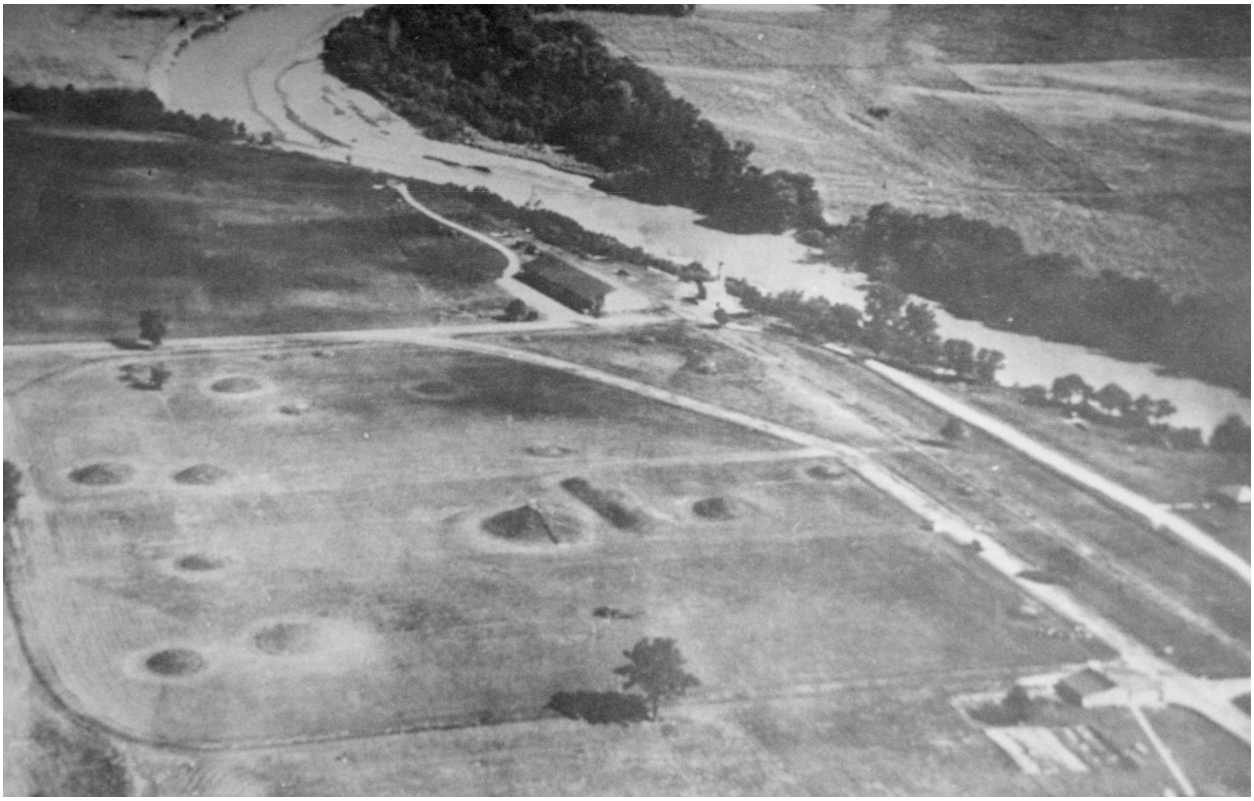


Figure 1-52. This circa 1930s aerial shows the reconstructed Mound City Group earthwork complex. Camp Sherman road traces can still be seen. (Hopewell Culture NHP Archives)

1929
Mound City State Park opened to visitors for the first time.[2.108]

1930
Lock No. 35 of the Ohio-Erie canal was disassembled. Stones from the lock were placed along a nature trail at Mound City Group.[2.109]

1930s
Steps, platforms, walks, and dock were built by the Works Progress Administration (WPA) on the Scioto River at the Mound City Group.[2.110]

1933
Mound City Group was transferred from the War Department to the Department of the Interior, however it remained under the management of the Ohio State Archaeological and Historical Society..[2.111]

1935
A one-story, two-room masonry comfort station and a maintenance garage were built at Mound City Group, funded by New Deal emergency relief programs.[2.112] The garage was a massive two-story building, with temporary quarters for the caretaker were placed on the second floor.[2.113]

1937
WPA workers built a one and one-half story wood frame residence at Mound City Group, adjacent to the maintenance building.[2.114] A picnic shelter measuring over 2,000 square feet with a kitchenette was built. A six-foot cobblestone walk connected the east, south, and west sides.[2.115] State workers added soil to many of the mounds, most without consulting historic documentation.[2.116]

1942
The picnic shelter kitchen at Mound City Group was modified into the Mound City museum, which opened May 26, 1942.[2.117]

1946
The Ohio Historical and Archaeological Society transferred stewardship of Mound City Group to the NPS.[2.118] The NPS added a large entrance sign and an interpretive marker near the complex. Clyde B. King became the first NPS superintendent.[2.119]

King began a long-term program to remove any elements that would detract from the visitor's understanding of the earthwork complex. During his tenure he removed any remaining Camp Sherman-era buildings and roads, and the picnic shelter and restroom that had been constructed in 1927. He initiated efforts to establish screening of adjacent land uses, planting trees in areas surrounding the earthwork complex.

1952
A boundary adjustment was made to Mound City Group. A 10.5 acre tract bordering State Highway 104 was added as scenic protection.[2.120]

2.108 *CLI Mound City Group,* 18.
2.109 *GMP,* 22.
2.110 Arbogast and York, *NRHP Inventory - Nomination: Mound City Group National Monument,* 7.
2.111 Cockrell, *Administrative History*, Chapter 2.
2.112 Arbogast and York, *NRHP Inventory - Nomination: Mound City Group National Monument,* 5.
2.113 Cockrell, *Administrative History*, Chapter 2.
2.114 Cockrell, *Administrative History*, Chapter 2.
2.115 Cockrell, *Administrative History*, Chapter 2.
2.116 Cockrell, *Administrative History*, Chapter 2.
2.117 Cockrell, *Administrative History*, Chapter 2.
2.118 Cockrell, *Administrative History*, Chapter 2.
2.119 Cockrell, *Administrative History*, Chapter 2.
2.120 Cockrell, *Administrative History*, Chapter 4.



Figure 1-53. Aerial showing 1948 layout of Mound City Group. Note the removal of the Camp Sherman roads, and visitor parking lot at the southeast corner. (Hopewell Culture NHP Archives)



Figure 1-54. 1940 view of Mound City Group. In 1946 Mound City Group was transferred to the NPS. At this time an effort was made to remove any remaining Camp Sherman debris, and to initiate a program of securing adjacent lands and planting trees. (Columbus Citizen Journal)



Figure 1-55. The Ohio Historical Society built a picnic shelter in 1927 at Mound City Group, along with a baseball diamond (Hopewell Culture NHP Archives)



Figure 1-56. A Superintendent's residence (at left, extant) and a maintenance building (at right, extant but the roof has been modified) were built at Mound City Group, funded by New Deal emergency relief programs in the mid 1930s. (Hopewell Culture NHP Archives)



Figure 1-57. As part of the NPS Mission 66 plans, a visitor center and museum was developed at Mound City Group in 1959. (Hopewell Culture NHP Archives)



Figure 1-58. The new Mission 66 visitor center at Mound City Group included a panoramic viewing platform on the roof. (Hopewell Culture NHP Archives)



Figure 1-59. Throughout the 1960s and 1970s Mound City Group was re-excavated. Archeologists verified locations of mounds, gateways, borrow pits, and conducted radiocarbon dating. (Hopewell Culture NHP Archives)

1957
Mission 66 plans were revealed for Mound City Group. The plans called for site improvements, including paths connecting the earthwork complex to the river, a new parking area, and a museum and visitor center with a rooftop overlook.[2.121] The master plan aimed to focus the visitor experience on the earthwork complex, rather than recreation, and the plans called for the removal of the existing picnic pavilion and parking area.

1959
A site survey was completed of Hopeton Earthworks by NPS archeologist John L. Cotter.[2.122]

Removal of a 1930s roadbed to the picnic shelter and 40-car parking lot was completed at Mound City Group.[2.123]

1959 to 1960
The National Park Service visitor center at Mound City Group was built.[2.124] The Mission 66-styled building included a panoramic viewing platform on the roof.[2.125]

1960s
A great amount of archeological investigation and restoration began in the early 1960s at Mound City Group, as part of the Mission 66 master plan. Work was undertaken by Raymond Baby of the Ohio Historical Society, who was contracted to rectify the differences between the Squier and Davis survey with the restoration work completed by Mills and Shetrone in the 1920s.[2.126] James A. Brown from the Illinois State Museum and Northwestern University served as Baby's on-site project manager. They clarified locations of mounds, gateways, and borrow pits, conducted radiocarbon dating, and reconstructed mounds in their correct locations.[2.127] How the reconstructions were built was not well documented.

1961
A new stone entrance gate and sign replaced the original configuration at Mound City Group.[2.128]

In 1961, a landowner leveled one of the square enclosure walls with a bulldozer at Hopeton Earthworks, as part of developing his property. The threat posed by this destructive action led to a collaborative preservation effort between the NPS and the Ohio Historical Society.[2.129]

1962
The rustic picnic pavilion and walks were removed at Mound City Group, per the Mission 66 plans (built in 1930s).[2.130]

1963
At Mound City Group, the earthen walls at the southeast and east of the enclosure were excavated.[2.131] Mounds #10, #12 and #13 at Mound City Group were excavated and reconstructed.[2.132]

A visitor observation deck was built at Mound City Group, placed just inside the entrance to the western gateway of the enclosure.[2.133]

2.121 Cockrell, *Administrative History*, Chapter 3.
2.122 *CLI Hopeton Earthworks,* 18
2.123 Cockrell, *Administrative History*, Chapter 2.
2.124 *CLI Mound City Group,* 18.
2.125 Cockrell, *Administrative History*, Chapter 3.
2.126 Brown and Baby, *Mound City Revisited.*
2.127 *CLI Mound City Group,* 18, 24.
2.128 Cockrell, *Administrative History*, Chapter 7.
2.129 *CLI Hopeton Earthworks,* 18
2.130 Cockrell, *Administrative History*, Chapter 3.
2.131 LCS *"Earth Walls, Mound City Group."*
2.132 LCS, "*Mound #12, Mound City Group.*"; LCS, *"Mound #10, Mound City Group."*; LCS, *"Mound #13, Mound City Group."*
2.133 Cockrell, *Administrative History*, Chapter 6.

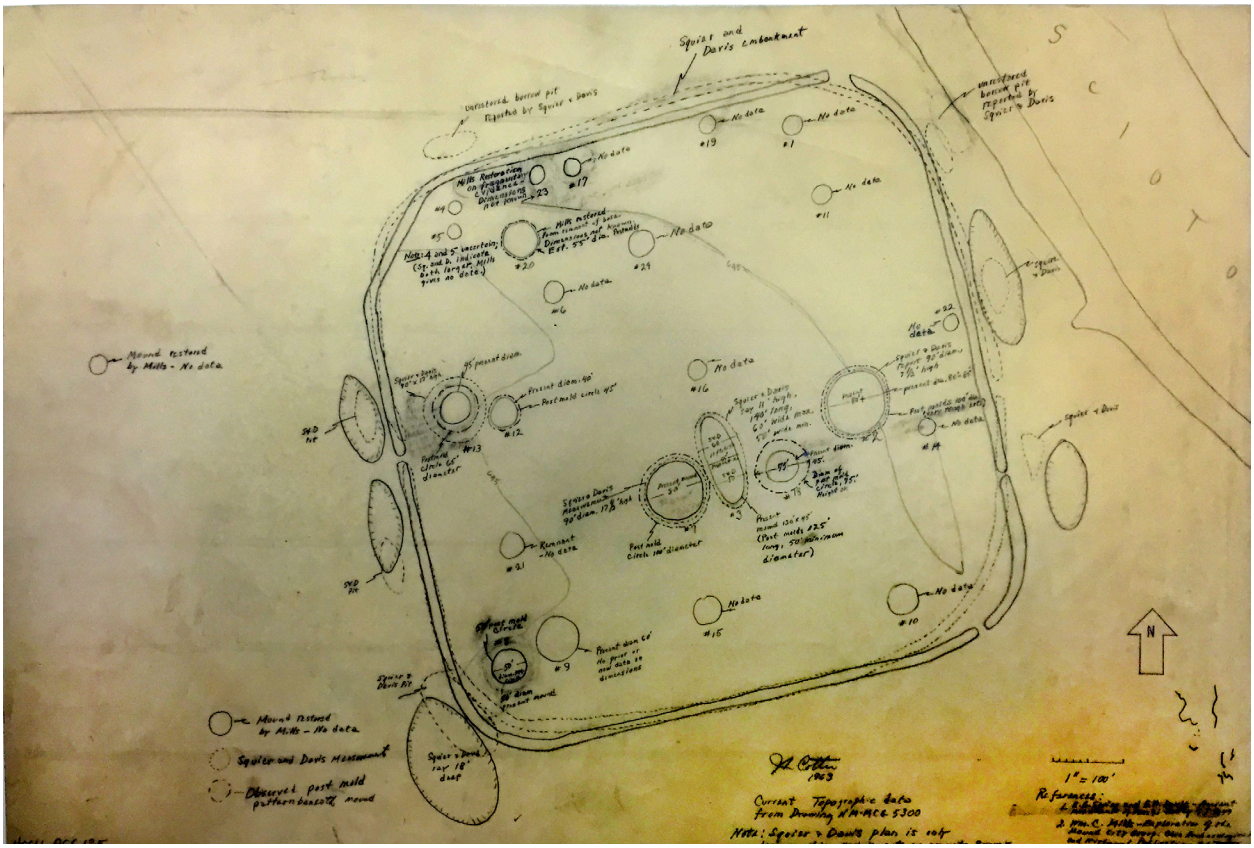


Figure 1-60. From the mid-1960s through the 1970s, the locations of the reconstructed mounds at Mound City Group were verified archeologically and the mounds were reconstructed in their proper locations. (Hopewell Culture NHP Archives)



Figure 1-61. The Mica Grave exhibit was added in 1964, reconstructing the interior of the inside of a mound. (Hopewell Culture NHP Archives)

1963 to 1966
At Mound City Group an ethnobotanical trail was installed. Reforestation, 'back to the days of Squier and Davis' included planting of 139 large trees, along with 1,400 seedlings.[2.134] A split-rail fence was added along the north, south, and west boundaries.[2.135]

1964
Hopeton Earthworks was listed as a National Historic Landmark (NHL).[2.136]

Mounds #4 and #5 were excavated and reconstructed at Mound City Group by Raymond Baby of the Ohio Historical Society.[2.137]

The mica grave exhibit was built at Mound 13, Mound City Group. The purpose was to portray a group of Hopewell burials as they were discovered inside the mound. The exhibit included a concrete structure with glass front to reveal in-situ ashes in four burial pits. It was connected to the visitor center via a concrete walkway.[2.138] It was removed in 1996 by request of the American Indian community.[2.139]

1965
The northeast earthen wall of the enclosure at Mound City Group was excavated.[2.140] Mound #5 at Mound City Group was excavated, and reconstructed by the NPS.[2.141]

1966
The east earthen wall of the enclosure at Mound City Group was excavated.[2.142]

1968
Mound #17 at Mound City Group was excavated, and restored to a diameter of 55-feet.[2.143] Mound 23 was excavated and reconstructed.

1969
Mound #1 and Mound #19 at Mound City Group were excavated and reconstructed.[2.144]

1970
Mounds #6, #20, and #24 at Mound City Group were excavated and reconstructed.[2.145]

1970s
A landowner used a bulldozer to displace a portion of the earthen wall at Hopewell Mound Group.[2.146]

1971
Mounds #11 and #16 at Mound City Group were excavated and reconstructed.[2.147]

1971
Seip Earthworks was listed in the National Register of Historic Places.[2.148]

1972
Nine acres was added to the northern boundary of Mound City Group.[2.149]

2.134 Cockrell, *Administrative History*, Chapter 3.
2.135 Cockrell, *Administrative History*, Chapter 3.
2.136 NPS, *MWAC Featured Projects, The Hopeton Earthworks and Hopewell Culture,* "An Endangered Resource." http://www.nps.gov/mwac/hopeton/end_resource.htm.
2.137 LCS, *"Mound #4, Mound City Group."*; Cockrell, *Administrative History,* Chapter 4.
2.138 Cockrell, *Administrative History*, Chapter 4.
2.139 Oral communication, Bret Ruby, Hopewell Culture NHP CLR/EA Site Visit November 2014.
2.140 LCS, *"Earth Walls, Mound City Group."*
2.141 LCS, *"Mound #5, Mound City Group."*
2.142 LCS, *"Earth Walls, Mound City Group."*
2.143 LCS, *"Mound #17, Mound City Group."*
2.144 LCS, *"Mound #1, Mound City Group;"* LCS, *"Mound #19, Mound City Group."*
2.145 LCS, *"Mound #16, Mound City Group;"* LCS, *"Mound #20, Mound City Group;"* LCS *"Mound #24, Mound City Group."*
2.146 *CLI Hopewell Mound Group,* 42.
2.147 LCS, *"Mound #11, Mound City Group;"* LCS, *"Mound #16, Mound City Group."*
2.148 Arbogast and York, *NRHP Inventory - Nomination: Mound City Group National Monument.*
2.149 Cockrell, *Administrative History*, Chapter 4.



Figure 1-62. The Seip-Pricer Mound at Seip Earthworks, was preserved as a State Memorial in 1927. In the 1960s, a loop drive directed visitors around the mound. In 1971, it was listed in the National Register of Historic Places. (Ohiomemory.org)



Figure 1-63. In the 1970s, structures that were discovered in the open space north of the Seip-Pricer Mound at Seip Earthworks were outlined with posts and interpreted for visitors. (Ohiomemory.org)

1973
High Bank Works was listed in the National Register of Historic Places.[2.150]

1974
Hopewell Mound Group was listed in the National Register of Historic Places.[2.151]

1974
Mounds #14, #21, and #22 at Mound City Group were excavated and reconstructed.[2.152]

1975
Hopeton Earthworks was listed in the National Register of Historic Places.[2.153]

1975
Mounds #8 and #9 at Mound City Group were excavated and reconstructed.[2.154]

1976
David Brose of the National Park Service prepared an assessment of condition and significance for a proposal to acquire the Hopeton Earthworks.[2.155] Archeological testing was completed in order to determine the integrity and significance of the site.[2.156]

1977
The stone steps to the summit of Mound #7 at Mound City Group were removed.[2.157]

1978
Mound City Group was listed in the National Register of Historic Places.[2.158]

1980 to 1981
Dr. Mark Seeman, Kent State University, conducted a site survey of the Hopewell Mound Group, accurately locating most of the mounds through aerial photography and surface survey.[2.159] By this time, the only part of the earthwork complex left intact was the wall and adjacent ditch, on the north side of the enclosure earthwork.[2.160]

1980
On December 28, the United States Congress authorized the purchase of 150 acres of the Hopeton Earthworks. However, funding was not available for another ten years. During that time, the complex remained in private ownership, and continued to be farmed.[2.161]

An additional 52.7 acres was added to Mound City Group to the north of the earthwork complex.[2.162]

1980
Hopewell Mound Group was purchased by the non-profit Archaeological Conservancy from private landowners.[2.163]

2.150 Arbogast and York, *NRHP Inventory - Nomination: Mound City Group National Monument.*
2.151 Arbogast and York, *NRHP Inventory - Nomination: Mound City Group National Monument.*
2.152 LCS, *"Mound #14, Mound City Group."*
2.153 Arbogast and York, *NRHP Inventory - Nomination: Mound City Group National Monument.*
2.154 LCS, *"Mound #8, Mound City Group;"* LCS, *"Mound #9, Mound City Group."*
2.155 NPS, Midwest Archeological Center, *MWAC Featured Projects , The Hopeton Earthworks and Hopewell Culture,* "An Endangered Resource." http://www.nps.gov/mwac/hopeton/end_resource.htm.
2.156 *CLI Hopeton Earthworks,* 28.
2.157 Cockrell, *Administrative History*, Chapter 4.
2.158 Arbogast and York, *NRHP Inventory - Nomination: Mound City Group National Monument.*
2.159 *CLI Hopewell Mound Group,* 24
2.160 NPS, *Hopewell Mound Group Site Bulletin*.
2.161 *MWAC Featured Projects, The Hopeton Earthworks and Hopewell Culture,* "An Endangered Resource."
2.162 Cockrell, *Administrative History*, Chapter 4.
2.163 *Hopewell Culture National Historical Park Conservation of Archaeological Resources Environmental Assessment* (Dayton, OH: Woolpert Consultants, 2006), 3-1.

1982
Road repairs, replacement of the visitor center viewing deck, and the addition of accessible and bus vehicle parking were added at Mound City Group.[2.164]

1984
Commercial gravel quarry operations began along the western edge of Hopeton Earthworks' river terrace.[2.165] Despite legal efforts by the NPS to halt the mining, the company continued its operations.[2.166] The activity has not only compromised the integrity of the associated landscape, but has also stripped over 70 acres of land that possessed archeological value[2.167]

1988
The superintendent's residence at Mound City Group was converted into a new administrative headquarters.[2.168]

1990
The Chillicothe Sand and Gravel Company, formerly Chief Cornstalk Sand and Gravel, expanded their quarry operations at the Hopeton Earthworks.[2.169] Acquisition of Hopeton Earthworks was completed on January 9.[2.170]

1991
The Chillicothe Sand and Gravel Company, operating adjacent Hopeton Earthworks, reportedly exposed human remains during quarrying activities.[2.171]

2.164 Cockrell, *Administrative History*, Chapter 4.
2.165 *MWAC Featured Projects, The Hopeton Earthworks and Hopewell Culture,* "An Endangered Resource."
2.166 *CLI Hopeton Earthworks,* 18
2.167 Cockrell, *Administrative History.*
2.168 Cockrell, *Administrative History*, Chapter 4.
2.169 *MWAC Featured Projects, The Hopeton Earthworks and Hopewell Culture,* "An Endangered Resource."
2.170 *CLI Hopeton Earthworks,* 19.
2.171 *CLI Hopeton Earthworks,* 17.

Hopewell Culture NHP to present-day (1992 to present)
This period begins with the establishment of Hopewell Culture National Historical Park and the acquisition of High Bank Works, Hopeton Earthworks, Hopewell Mound Group, and Seip Earthworks by the NPS. Since the 1990s, the landscape has taken on its current appearance of mown grasses on the earthwork complexes, portions of restored native grasslands, hay fields, woodland forest, and riparian vegetation along the waterways.

1992
Hopewell Culture National Historical Park was established on May 27, 1992. The new name recognized the larger size and greater complexity of the park resulting from the acquisition of Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works to the Mound City Group.[2.172]

The visitor center at Mound City Group was modified by the addition of a new, pitched roof.[2.173]

1994
NPS Midwest Archeological Center initiated a long-term research study of the Hopeton Earthworks, and completed geophysical surveys and strategic testing to determine earthwork function and construction.[2.174]

A new maintenance building was built at Mound City Group.[2.175]

1995 to 1996
A site survey was conducted of Hopewell Mound Group for boundary adjustments.[2.176]

2.172 *Lynott and Midwest Archeological Center (U.S.) 2009*
2.173 Cockrell, *Administrative History*, Chapter 7.
2.174 *CLI Hopeton Earthworks,* 19
2.175 Cockrell, *Administrative History*, Chapter 7.
2.176 Dancey 1996

The park hired the first professional archeologist on staff since 1972 and instituted an active program of archeological research in support of resource preservation and interpretation.

Archeological surveys and excavations, and geophysical remote sensing projects were conducted at Mound City Group, Hopeton Earthworks and the Spruce Hill in 1995-1996.[2.177]

1996
The Mica grave exhibit at Mound 13, Mound City Group, was removed.[2.178]

Archeological fieldwork was undertaken at Spruce Hill.[2.179]

1997
The NPS purchased the Archaeological Conservancy's property at Hopewell Mound Group.[2.180]

Dr. N'omi Greber of the Cleveland Museum of Natural History instituted a long-term program of geophysical survey and small-scale excavations intended to clarify the nature and chronology of earthwork construction at the High Bank Works.[2.181]

1997
The General Management Plan / Environmental Assessment recommended alternative 2 to establish a national center for interpretation at Mound City Group, and to open Seip Earthworks and Hopewell Mound Group for visitation. Hopeton Earthworks and High Bank Works were recommended for preservation and research, with limited access.[2.182]

1997 to 1998
Archeological testing was conducted at Hopeton Earthworks.[2.183]

1998
Summary Report on the Significance, Suitability and Feasibility of the Spruce Hill as a Potential Addition to Hopewell Cultural NHP was authored by the National Park Service.[2.184]

1998-2004
Excavations at Hopewell Mound Group continued in attempts to gain further knowledge about the Hopewell Culture and occupation.[2.185]

2000
NPS expanded its boundaries at Hopewell Mound Group, gaining a greater portion of the earthwork complex.[2.186]

1999
One mile of the Adena Recreational Trail was extended through Hopewell Mound Group. The multi-use trail connects the towns of Chillicothe and Frankfort, Ohio, and Washington Courthouse via a 28 mile paved route that utilizes the abandoned railroad.[2.187]

2001 to 2002
Geophysical and magnetic surveys were completed for Hopeton Earthworks. Surface collection and excavations conducted at the south portion of the earthwork complex were undertaken to better understand how they were built, and to explore the existence of any anomalies in the geophysical readings.[2.188]

2.177 Ruby 1997.
2.178 Cockrell, *Administrative History*, Chapter 6.
2.179 Ruby 2009
2.180 *Conservation of Archaeological Resources, Environmental Assessment,* 3-1.
2.181 Greber 2002; Greber and Shane 2009; Ruby 2013a.
2.182 *General Management Plan. Hopewell Culture National Historical Park,* Ohio, ii.
2.183 Mark J. Lynott, "The Hopeton Earthworks: An Interim Report," *Hopewell Archeology* (2001), 4(2).
2.184 "Introduction," *NPS, Midwest Archeological Center, MWAC Featured Projects , The Hopeton Earthworks and Hopewell Culture,* http://www.nps.gov/mwac/hopeton/topo_analy.htm (accessed January 2015).
2.185 Pederson and Burks 2001; Pederson Weinberger 2006
2.186 *CLI Hopewell Mound Group,* 24.
2.187 *Tri-County Triangle Trail, Inc.*, http://www.tricountytriangletrail.org/page4.html. (accessed October, 2014).
2.188 Lynott and Midwest Archeological Center (U.S.) 2009



Figure 1-64. Archeological investigations continue. Here a crew investigates Hopeton Earthworks, in 1998. (Hopewell Culture NHP Archives)

At Hopewell Mound Group, archeologists from the NPS and Ohio State University used magnetometry to investigate the earthwork complex and archeological features. They found no evidence of long-term settlement within the earthen walls. They also discovered a 90 foot diameter circular earthwork within the Great Enclosure (between Mounds 2 and 23).[2.189]

The NPS conducted salvage excavations along the eroding banks of North Fork Paint Creek at the southern boundary of the Hopewell Mound Group.[2.190]

2008
The Hopewell Ceremonial Earthworks were placed in the United States' Tentative List, the first step in preparation of a World Heritage site nomination. The proposed nomination is comprised of three units: the five discontiguous complexes of the Hopewell Culture NHP (Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works), along with Fort Ancient State Memorial and Newark Earthworks State Memorial.

2009
The Arc of Appalachia Preserve System purchased Spruce Hill and established it as an archeological complex.[2.191]

2009 to 2012
Mound City Group was magnetically mapped, revealing below-grade features. The area outside of the enclosure wall was not surveyed.

Magnetic surveys and small-scale surveys were undertaken on the "North Forty" tract immediately north of the Mound City Group enclosure.[2.192]

An archeological field school from SUNY Geneseo and Bloomsburg University conducted excavations at a small, specialized occupation just outside the Hopewell Mound Group enclosure.[2.193]

2012
A native grassland was established at High Bank Works, consisting of native grasses and forbs.

The NPS commissioned high-resolution LiDAR imagery for all of the park units.

Permanent datum points (3-1/4" x 30" aluminum pipe monuments with magnetic locators, buried flush with the ground surface) were installed and professionally surveyed at Mound City Group, Hopeton Earthworks, High Bank Works, Hopewell Mound Group, and Seip Earthworks. These are intended to serve as permanent reference points for archeological investigations and other resource management activities.

2013
Large-scale magnetic surveys were commissioned at Hopeton Earthworks, Hopewell Mound Group and High Bank Works.

2.189 Pederson and Burks 2001; Pederson Weinberger 2006; Ruby 2013c
2.190 Bauermeister 2006, 2010
2.191 "Our Partners" *NPS, Hopewell Culture National Historical Park (OH),* http://www.nps.gov/hocu/parkmgmt/partners.htm (accessed January 2015.)
2.192 Brady and Pederson Weinberger 2010.
2.193 Pacheco, et al. 2012



Figure 1-65. A LiDAR survey, completed at Seip Earthworks in 2012, depicts the topographic forms of the earthwork complex. (GIS Hopewell Culture NHP 2012 LiDAR)



Figure 1-66. The magnetic survey was taken at High Bank Works in 2013. (Hopewell Culture NHP Archives)

2014

Seip Earthworks was officially transferred to the NPS from the Ohio Historical Society.

Excavations at Hopewell Mound Group revealed a possible 'woodhenge' at the Great Circle, which may have been a circular enclosure of wooden posts. More testing and analysis is needed to confirm, but NPS archeologists believe the stains of darker soil they revealed, occurring at regular intervals, are evidence of wood posts.



Figure 1-67. Seip Earthworks, 2014. (Mundus Bishop 2014)

Chapter 3. Existing Condition and Analysis / Affected Environment

Introduction

This chapter presents the summary and analysis of the current condition of the archeological landscape of Hopewell Culture NHP. Narrative text, diagrams, and photographs describe the existing condition using a series of landscape characteristics.

The condition assessment is undertaken to understand the archeological landscape as a whole. It identifies and documents those qualities and features that contribute to the park's historic character, retain integrity, and contribute to the significance of the landscape. Field reconnaissance, undertaken in October 2014, assisted in the recording of the archeological landscape.

This chapter is organized to present the existing condition and analysis evaluation for the study area first, which includes the evaluation of landscape characteristics that relate to the study area as a whole. This is followed by a condition assessment and analysis for each of the five park units.

The existing condition and analysis of the archeological landscape is evaluated using the following criteria.

Good – Those features that do not require intervention. Only minor or routine maintenance is needed at this time.

Fair – Some deterioration, decline, or damage is noticeable; the feature may require immediate intervention. If intervention is deferred, the feature will require extensive attention in a few years.

Poor – Deterioration, decline, or damage is serious; the feature is seriously deteriorated or damaged, or presents a hazardous condition. The feature requires extensive and immediate attention.

The archeological landscape is documented and assessed according to these landscape characteristics:

- Natural Systems and Features
- Spatial Organization / Topography / Views
- Land Use
- Archeological Features
- Circulation
- Vegetation
- Buildings and Structures
- Small Scale Features

Natural systems and land use are evaluated for the study area as a whole. All other landscape characteristics are also evaluated individually for each earthwork complex.

Natural Systems and Features are those natural aspects that have influenced the development and physical form of the study area including the river courses and terraces, and floodplains, as well as the native hardwood forests and adjacent uplands of the Allegheny foothills.

Spatial Organization / Topography / Views are evaluated as a singular landscape characteristic as these three are inherently intertwined in the development of the archeological landscape. Spatial organization is the arrangement of elements creating the ground, vertical and overhead planes that define and create space, including topography, natural systems, vegetation, and archeological features. Topography is the three-dimensional configuration of the landscape surface characterized by slope and orientation. Views are a range of vision, natural or man-made.

Land Use is the organization, form and shape of the landscape in response to land use.

Archeological Features are ruins, traces, or elements that exist from early American Indian periods, primarily associated with Hopewell Culture including earthen walls, mounds and borrow pits. These include above-grade visible features (visible forms on the surface, i.e. visible above the adjacent grade) and below-grade features identified by magnetic survey, other geophysical remote sensing techniques, or by traditional archeological survey, not visible on the surface.[3.1] Unverified features are also covered, including those identified by previous archeological investigations but are not visible, and those on private property not reviewed as part of the CLR / EA.[3.2]

Circulation are features and materials that constitute systems of movement including vehicular routes such as roads and parking areas, and pedestrian routes such as trails and walkways. Circulation includes patterns of movement across the earthwork spaces and the transportation routes over land and water.

Vegetation is indigenous or introduced trees, shrubs, vines, ground covers, herbaceous materials, croplands and fields.

Buildings and Structures are three-dimensional man-made constructs of contemporary time, including park administrative and maintenance buildings, older, pre-park buildings and structures.

Small Scale Features are the human-scaled elements of contemporary use that provide specific functions and include fences, signs and overlooks.

3.1 For the purpose of this report, above-grade archeological features include mounds,and earthen walls that are visible forms on the surface, i.e. visible above the adjacent grade.

3.2 Some archeological features recorded by Squier and Davis in 1848 have been verified through recent testing, while others have not been recently investigated to determine their current condition.

Assessment of Integrity

Integrity is the ability of a property to convey its significance. In addition to being listed in the National Register of Historic Places, a property must also have integrity, which is grounded in a property's physical features and how they relate to its significance. Essentially, the question of integrity is answered by whether or not the property retains the identity for which it is significant. Integrity is defined by seven aspects or qualities: location, design, setting, materials, workmanship, feeling, and association.

Location is the place where the archeological landscape was constructed or where an historic event occurred.

Design is the combination of elements that create the form, plan, space, structure and style of the archeological landscape.

Setting is the physical environment of the archeological landscape.

Materials are the physical elements that were combined or deposited during the particular period (s) of time and in a particular pattern or configuration to form the archeological landscape.

Workmanship includes the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.

Feeling is the archeological landscape's expression of the aesthetic or historic sense of a particular period of time.

Association is the direct link between the important historic event or person and a archeological landscape.

The study area maintains many of its spatial, topographic and visual relationships, archeological features (some above-grade and many known below-grade), use patterns, and vegetation types. The study area retains integrity as a significant archeological landscape. Modern intrusions and alterations to the vegetation have altered the setting, however at a larger scale, the hills, terraces, and rivers retain integrity.

The study area retains integrity in location, setting, and design. It has diminished integrity in feeling, material, workmanship, and association.

The key acreages associated with the development of the Hopewell Culture in the five earthwork complexes—Mound City Group, Hopeton Earthworks, Hopewell Mound Group, Seip Earthworks, and High Bank Works—and their extant features remain in their original locations. The setting of each earthwork complex reflects original characteristics, particularly relationships to rivers, foothills, and natural features.

Contributing archeological features or early historical reconstructions of these features remain in original locations and retain their relationships to one another. These include earthen walls, mounds, and borrow pits. In all earthwork complexes, vegetation obscures many contributing features and diminishes the visibility of the relationships between elements.

Integrity of setting is retained at all the earthwork complexes due to the surrounding woodlands, nearby waterways, the extant topography of the river terraces, and views to the foothills that remain from the time of the Hopewell.

The study area retains integrity of design, as the arrangement and layout of the original earthwork complexes remain. Some features remain extant above-grade. Although certain elements cannot be seen, the form, plan, and scale of extant below-grade features provide evidence of the initial design of each earthwork complex.

Integrity of materials has been compromised due to agricultural practices, intrusive archeological excavations, and the presence of buildings, roads and other features built upon the earthwork complexes. As a result, some archeological features have been removed, damaged, or destroyed. Some of the earthwork complexes have not been excavated and may retain all original materials. The sub-base of the many archeological features is evident on magnetic surveys, and while some earthen walls and mounds are no longer visible on the surface, their historic fabric appears to be extant below-grade.

Contributing features retain original workmanship. The five archeological earthwork complexes, consisting of site design, earthen walls, mounds, and borrow pits, reflect the building practices and workmanship of the Hopewell. Workmanship has been diminished due to damage by plowing, excavations and reconstructions, some of which has removed the original craftsmanship. The original layering of materials —clay, gravel, and soil— has been removed for some features. A large number of artifacts have been removed from the earthwork complexes, which diminishes their original context.

The archeological landscape has diminished feeling where above-grade archeological features are missing or not readily visible. Reconstructed earthwork complexes assist in providing a sense of how the earthwork complexes may have appeared to the Hopewell.

The archeological landscape has diminished integrity of association. The earthwork complexes are extant archeological features that have existed since the time of the Hopewell, however their association with a specific tribal lineage has been lost. The specific meaning and relationships that they had to the natural world and spiritual beliefs of the Hopewell have been lost.

Contributing and Non-Contributing Features

Contributing features are defined as features that contribute to the archeological landscape of Hopewell Culture NHP. They include individual elements and physical characteristics remaining from the period of significance. Contributing features include earthen walls, mounds, borrow pits, extant below-grade earthen wall foundations, postholes, structure floors, and other below-grade features and artifacts. Reconstructed earthen walls and mounds, at Mound City Group and Seip Earthworks, are considered contributing features for their role in interpretation of the archeological landscape.

Non-contributing features are recent additions that do not assist in maintaining the historic character of the archeological landscape of Hopewell Culture. These include contemporary buildings, structures, circulation routes, signs and fences.

Other features may be found to be significant in their own right, but do not contribute to the archeological landscape. This includes agricultural buildings such as the Blackstone House, WPA buildings and features, and buildings and features from the Mission 66-era.

Feature names, i.e. Square Enclosure or Circle A, were provided by the park and reflect the most current naming conventions informed by archeological studies. A list of terminology used to describe the archeological landscape is included in Appendix F of this CLR / EA.

Study Area

Contributing Features

- Relationship of earthwork complexes to river terraces and foothills
- Earthwork complex of archeological features (above- and below-grade features)

Mound City Group

Contributing Features

- Enclosure
- Gateways (two)
- Mounds (25)
- Reconstructed mounds (22)
- Extra-mural mounds (two)
- Borrow pits (eight)
- Areas of archeological scatter

Non-Contributing Features

- State Highway 104
- Entry drive
- Service drives
- Parking areas
- Pedestrian routes
- Vegetation
- Visitor center building
- Resource management building
- Administrative building
- Maintenance building
- Maintenance storage
- Flammable storage building
- Small scale features (signs, lights, etc.)
- CCC and WPA era walls, steps, stone grill

Hopeton Earthworks

Contributing Features

- Square Enclosure
- Great Circle
- Circle A
- Circle B
- Circle C
- Parallel Walls
- Mounds (three)
- Gateways (19)
- Borrow pits (five)
- Areas of archeological scatter

Non-Contributing Features

- Hopetown Road
- Pit Road
- Access Road
- Vaughan Road

- Vegetation
- Small scale features

Potentially Historic Features
- Cryder Farmstead

Hopewell Mound Group
Contributing Features
- Great Enclosure
- Square Enclosure
- Small Enclosure
- Mounds (30 to 40)
- Gateways (11)
- Borrow pits
- Natural springs
- Areas of archeological scatter

Non-Contributing Features
- Sulphur Lick Road
- Maple Grove Road
- Cydrus Lane
- Maintenance roads
- Parking area
- Pedestrian routes
- Vegetation
- Comfort station
- Picnic shelter
- Cow shed remnant
- Private buildings
- Steel lattice transmission towers
- Small scale features
- Corn crib

Potentially Historic Features
- Barn

Seip Earthworks
Contributing Features
- Large Circle
- Large Square
- Small Circle
- Seip-Pricer Mound
- Seip-Conjoined Mound
- Gateways
- Borrow pits
- Hopewellian structure foundations
- Areas of archeological scatter

Non-Contributing Features
- U.S. Highway 50
- Dill Road
- Entrance loop / parking area
- Asphalt drive
- Remnant drive
- Service / access road
- Pedestrian routes
- Vegetation
- Picnic shelter
- Porta potty
- Fish camp building
- Shed privy
- Privy
- Building remnant
- Small scale features

Historic Features
- Old Seip Farm House / Blackstone House[3.3]
- Outbuildings

High Bank Works
Contributing Features
- Great Circle
- Octagon
- Parallel Walls
- South Earthworks
- Mounds (eight)
- Gateways
- Borrow pits
- Areas of archeological scatter

Non-Contributing Features
- Gravel road
- Dirt road
- Vegetation
- Small scale features

3.3 The Blackstone House has been determined eligible for the NRHP.

Study Area

Introduction

This section describes the existing condition of the study area as an archeological landscape, documenting the influences of the overall setting, and the characteristics of the Hopewell development as one system of earthwork complexes. The individual park units are described in more detail later in this chapter.

The evaluation of the study area is broad in scope, with documentation on the archeological landscape as an overall description. The existing condition of the study area is assessed according to the following landscape characteristics.

Natural Systems and Features

Spatial Organization / Topography / Views

Land Use

Archeological Features

Circulation

Vegetation

Natural Systems and Features

Existing Condition

Hopewell Culture NHP is located within the Scioto River Valley, an area with rich soils and occasional flooding. The study area is on the west edge of the West Allegheny Plateau with the Allegheny Mountains to the south and east, and the Till Plains / East Cornbelt Plains to the north.[3.4]

The intersection of these geologic features and a continental climate has resulted in a unique ecosystem with diverse plant and animal life. The lower section of Paint Creek has high water quality and provides valuable habitat.[3.5] The broader landscape is organized by rivers and streams, mountains, geology and soils, climate, and native flora and fauna.

The study area is located within the Scioto River Valley, a tributary of the Ohio River. Each of the five archeological earthwork complexes is located along the river and stream corridors associated with this valley. The study area includes the tributaries of the Scioto River, Paint Creek, and the North Fork Paint Creek, which connect the park units.

Scioto River floods can occur during any season, with flooding typical every two to three years.[3.6] Historically, the river and its tributaries would naturally meander across their floodplains, creating river terraces and areas of wetland vegetation. River embankments vary, and the riverbank of the Scioto River is typically steep and subject to erosion.[3.7]

3.4 David Diamond et al., *Vegetation Classification and Mapping of Hopewell Culture NHP* (Fort Collins: NPS, 2014), 3.

3.5 Ohio EPA, Paint Creek Watershed Final TMDL Report, 2012.

3.6 NPS, *Hopewell Culture National Historical Park Ancillary Map Information Document - Geological Resource Inventory* (2009), 7.

3.7 Army Corps of Engineers, *Engineering Report Scioto River Bank Erosion and Failure Mound City Group,* (Huntington: 1985), 1.



Figure 3-1. Each archeological earthwork complex is located along river and stream corridors associated with the Scioto River Valley, a tributary of the Ohio River. North Fork Paint Creek is adjacent to Seip Earthworks, above. (Mundus Bishop 2014)



Figure 3-2. The foothills of the Appalachian Mountains are distinct landforms in each of the park units. The hills rise dramatically around Seip Earthworks, above. (Mundus Bishop 2014)

The lower portion of Paint Creek is among the highest quality large rivers in the state, with high water quality and a diverse fish species population.[3.8] While these streams flow adjacent to park lands, the park has no direct management responsibilities for these rivers.

Relatively flat terraces rise above and flank either side of the Scioto River and Paint Creek. These terraces were created by glaciers in the last ice age that extended to the north edge of the Appalachian Plateau. The Hopewellian earthwork complexes were typically built on the first or second terrace above the river.

The rising foothills of the Appalachians in the distance contrasts with the river drainages. These foothills include Mt. Logan, Sand Hill, Bald Hill, Sugarloaf, Mt. Ives, and Bunker Hill to the east of Mound City Group, Farrell Hill and Copperas Mountain near Seip Earthworks, and Spruce Hill above Paint Creek. The elevation at park headquarters is 650 feet above sea level. Other portions of the study area are at a similar elevation.

The study area is on the north edge of the Appalachian Plateau, on floodplains and Wisconsin age glacial terraces consisting of predominately of sands and gravels. The surrounding are predominately shale capped by resistant sandstone. The rock units within, and surrounding the park can be divided into three main types: Very old sedimentary rocks of mid-Paleozoic age (approximately 420 to 330 million years old); Ice age deposits from the Illinoian and Wisconsinan glacial periods (less than 2.6 million years old); Modern fluvial deposits associated with stream channels dating to the past 17,000 years.[3.9]

Sedimentary rocks of the Mississippian Period of the Paleozoic Era are exposed in outcrops near Chillicothe. An exposure of Paleozoic-aged bedrock is exposed on the slopes of Copperas Mountain. Although not within the park, Copperas Mountain is visible from Seip Earthworks, and the colored runoff from the sediments may have been used by Hopewell peoples for paints or dyes.[3.10]

Approximately two million years ago, glacial ice repeatedly advanced and retreated over the area, sculpting the landscape and leaving glacial deposits and sediments, creating the characteristic, relatively flat terraces above the rivers.[3.11] The Hopewell people built earthwork complexes on top of these terraces of glacial deposits.

The glacial outwash terraces and moraines are covered by silt-loam soils underlain by sand and gravel; silt-loam soils lay over sandstone and shale on the surrounding hills.

The park is located in a temperate climate zone characterized by extreme heat and humidity in the summer, and cold, icy winters. Annual precipitation averages 37.8 inches.[3.12] The average daily temperature for the month of January is 33.7 degrees Fahrenheit the average daily temperature for the month of July is 76.2.[3.13]

The study area is located at the intersection of the Till Plains and the Glaciated and Unglaciated Appalachian Plateaus.[3.14] These areas are typified by oak-hickory forest in the Appalachian Plateaus, and tall grass prairie and savanna on the Till Plains.

Vegetation is characterized by farmland and pasture in the river valleys, with upland wooded forest on the adjacent Allegheny

3.8 Myra Vick, Inventory of Distribution, Composition, and Relative Abundance of Mammals at Hopewell Culture National Historical Park (Republic, MO: 2004), 4.

3.9 NPS, G*eologic Resources Inventory*, v.

3.10 NPS, G*eologic Resources Inventory*, 2.

3.11 NPS, G*eologic Resources Inventory*, v.

3.12 NPS, Wildland Fire Management Plan, 13.

3.13 Army Corps of Engineers, *Scioto River Bank Erosion and Failure Mound City Group,* 1.

3.14 Brockman 1998.



Figure 3-3. Paleozoic-aged bedrock is exposed on the slopes of Copperas Mountain, visible from Seip Earthworks. (Mundus Bishop 2014)

foothills. Within the park, vegetation includes woodlands, field grasses and forbs, and riparian vegetation.

Dominant tree species in the upland, or hardwood forest include sugar maple (*Acer saccharum*), chinkapin oak (*Quercus muehlenbergii*), white oak (*Quercus alba*), hackberry (*Celtis occidentalis*), black walnut (*Juglans nigra*), black cherry (*Prunus serotina*), boxelder (*Acer negundo*), and Ohio buckeye (*Aesculus glabra*).[3.15]

Dominant tree species in the floodplains include hackberry, pawpaw (*Asimina triloba*), American sycamore (*Platanus occidentalis*), cottonwood (*Populus deltoides*), and silver maple (*Acer saccharinum*).[3.16]

Orchardgrass, Timothy grass, and fescue species occupy former croplands, and this vegetation type occurs on all of the park units. Invasive plant species have encroached into former croplands and threaten native species, a management concern.

Riparian vegetation occurs along the Scioto River, North Fork Paint Creek, and Paint Creek. The riparian vegetation contains a wide diversity of species that provide important wildlife habitat.

The study area provides habitat for a wide variety of wildlife. Over 35 mammal species, and 172 bird species have been observed.[3.17] Several endangered and threatened species have been recorded in the study area, and several bird species of continental importance. The park is an important refuge for migrating birds, and former agriculture fields provide habitat as nesting sites.[3.18]

Analysis

Hopewellian society benefited from the fertility of the region's ecosystem. Rich soils, long growing season and abundant water made the region suitable for hunting, gathering, and agriculture for more than 1,000 years. A rich forest habitat supported diverse plant and animal life. During the period of significance the system of waterways and overland routes were likely used for transportation, and were organizing elements for the construction of the earthwork complexes. Overland routes also likely influenced the location of the complexes.

Earthwork complexes were built above the floodplains, and set adjacent to the natural river systems. Since the period of significance, much of the natural vegetation has been cleared for agricultural uses. Woodland, riparian, and wetland areas occur in association with existing forests and river corridors.

The natural systems continue to influence the character and condition of the study area. The waterways, geology, plants, and wildlife retain their essential character. Natural systems contribute to the historic landscape character of Hopewell Culture NHP.

3.15 Diamond, *Vegetation Classification and Mapping*, 22.
3.16 Diamond, *Vegetation Classification and Mapping*, 22.
3.17 Myra Vick, Inventory of Distribution, Composition, and Relative Abundance of Birds at Hopewell Culture National Historical Park (Republic, Missouri: Heartland Network Inventory and Monitoring Program, 2004).
3.18 David Peitz, *Bird Monitoring at Hopewell Culture National Historical Park, Ohio: 2005-07 Status Report* (Republic, MO: 2008), 29.

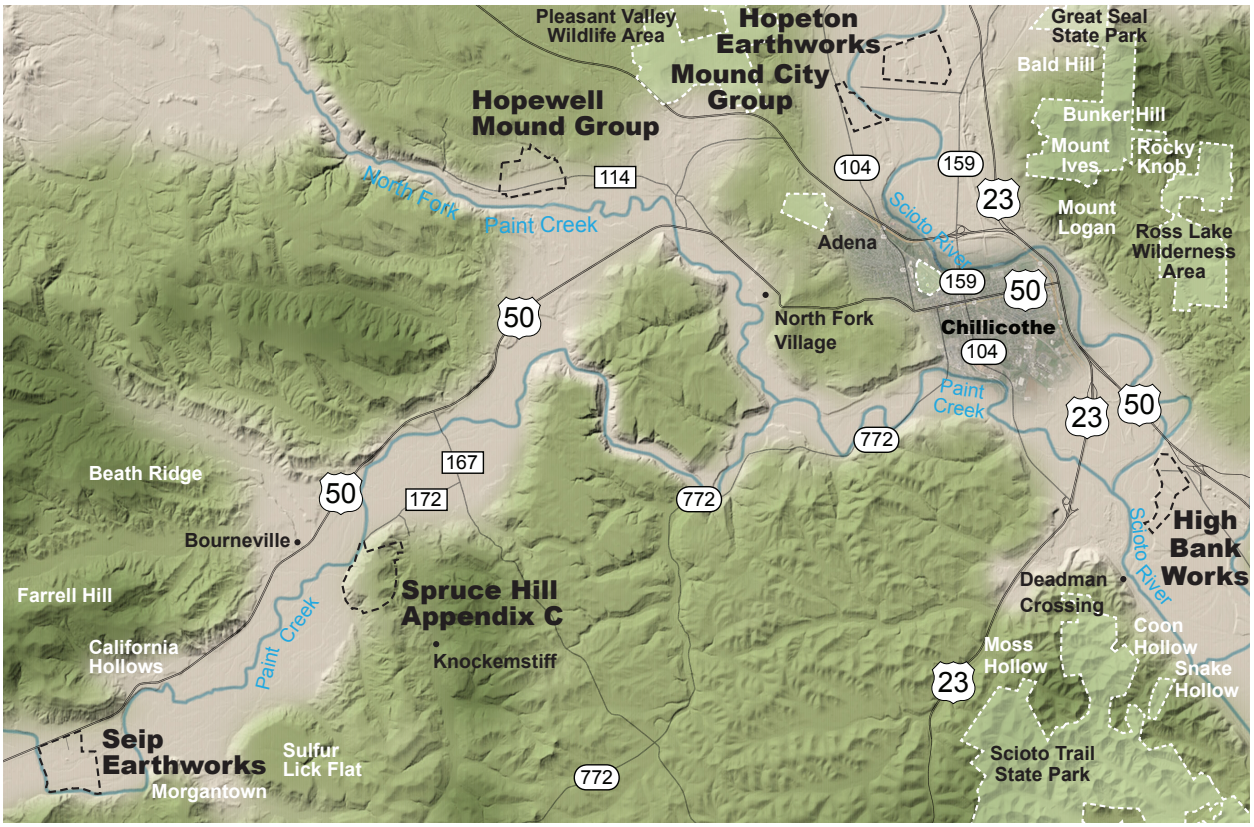


Figure 3-4. Each of the archeological earthwork complexes is located along river and stream corridors associated with the Scioto River Valley, a tributary of the Ohio River. (Mundus Bishop 2014)

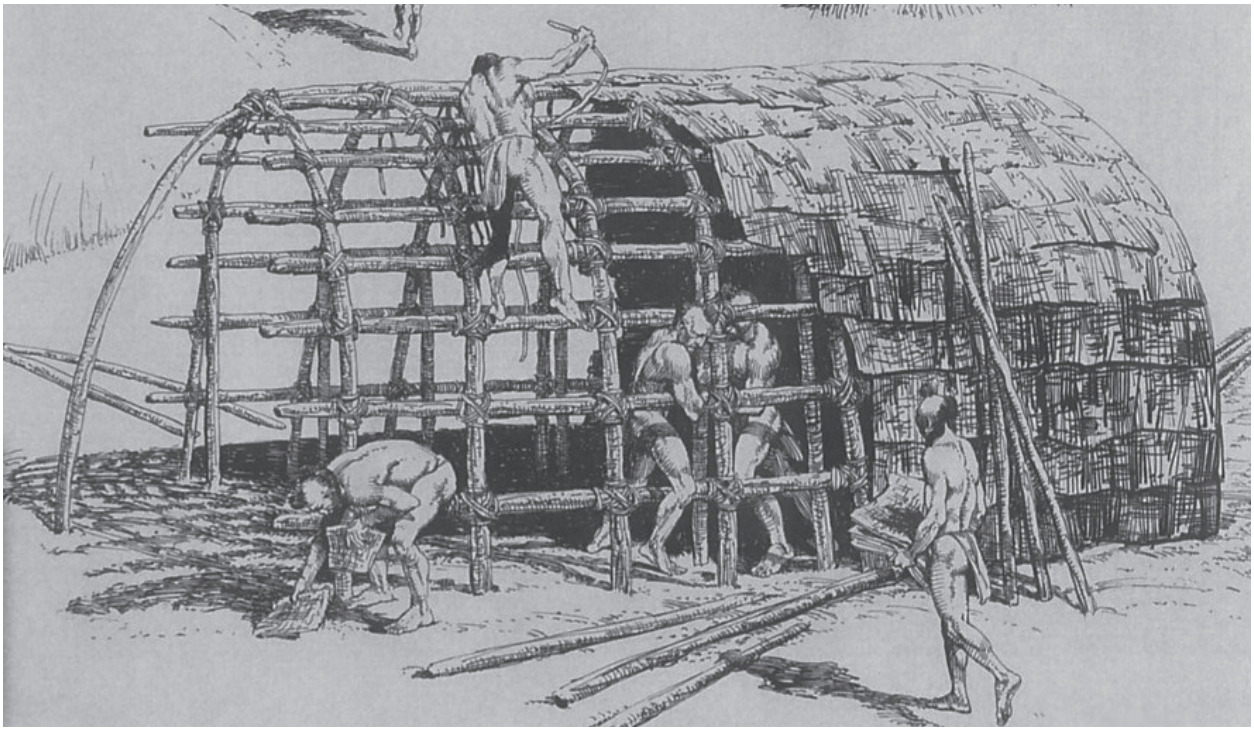


Figure 3-5. During the period of significance the earthworks would have included buildings — charnel houses, workshops, and ceremonial buildings — in association with the arrangement of mounds and earthen walls. (Hopewell Culture NHP Archives)

Spatial Organization / Topography / Views

Existing Condition

The study area is comprised of five discontiguous earthwork complexes, all built upon relatively level terraces adjacent to, and above the river and creeks. All earthwork complexes have views to mountain ridges and peaks, across the river terraces, and up and down valley floors. Views to the water courses from the earthwork complexes are obscured by vegetation.

In general, the five earthwork complexes are not visible from one another, but are related and connected through the river and stream courses. Two earthwork complexes, Mound City Group and Hopeton Earthworks, are across the Scioto River from one another. The arrangement of the gateway at Mound City Group and the alignment of the parallel walls at Hopeton Earthworks appear to connect or point to one another.

The earthwork complexes are located within river valleys, above the riparian edge of adjacent rivers and streams, but lower in elevation than adjacent foothills. These valleys are mostly open farmland, which contrast with the Appalachian foothills and other forested ridgelines in the distance. The surrounding hills are generally 1,000 to 1,300 feet above sea level, and include landforms such as Copperas Mountain, visible from Seip Earthworks, that appear to have influenced the design and layout of the earthwork complexes.

The earthwork complexes, grand in size and scope, are generally large open spaces, oriented to the waterways and the horizons, and possibly specific peaks and ridges.[3.19] The geometric forms of each earthwork were placed with a clear relationship to their corresponding stream, either paralleling the river course, or mimicking its form.

The design of the earthwork complexes suggest a relationship with distant natural forms, including the Alleghenies, the horizon beyond, celestial events, and the sun and moon.[3.20] The design and layout of earthwork complexes appear to be a response to water and mountain, because they reflect the shape and arrangement of the natural topography. The grand scale of most of the earthen walls suggests that they were designed to extend beyond the horizon, and as if they were designed to be infinite.[3.21]

Analysis

When first built between 1 AD and 400 AD, the earthwork complexes were strategically placed to have direct spatial relationships to the Scioto River and Paint Creek, and surrounding landforms.[3.22] The earthwork complexes were built above the floodplain of the rivers on upper river terraces, with views to the waterways, valleys, and hillsides. The water courses served as organizing elements for the design of the earthwork complexes, which often align or mimic the shape of the waterway. This arrangement likely served a spiritual and symbolic purpose for the Hopewell people. The size and arrangement of the earthwork complexes were based on an established system of metrics, common among Hopewellian earthwork complexes.[3.23]

During the period of significance the earthwork complexes would have included buildings — charnel houses, workshops, and ceremonial buildings — in association with the arrangement of mounds and earthen walls. During the active use of these earthwork complexes, the buildings would have reinforced the spatial arrangement of

3.19 Hively and Horn 1984; Hively and Horn 2010.

3.20 Hively and Horn 1984; Hively and Horn 2010.

3.21 Ibid.

3.22 Hively and Horn 1984; Hively and Horn 2010; Marshall 1996; Romain 2000.

3.23 The diameters of circles, length and shapes of earthwork complexes is often the same throughout the region.

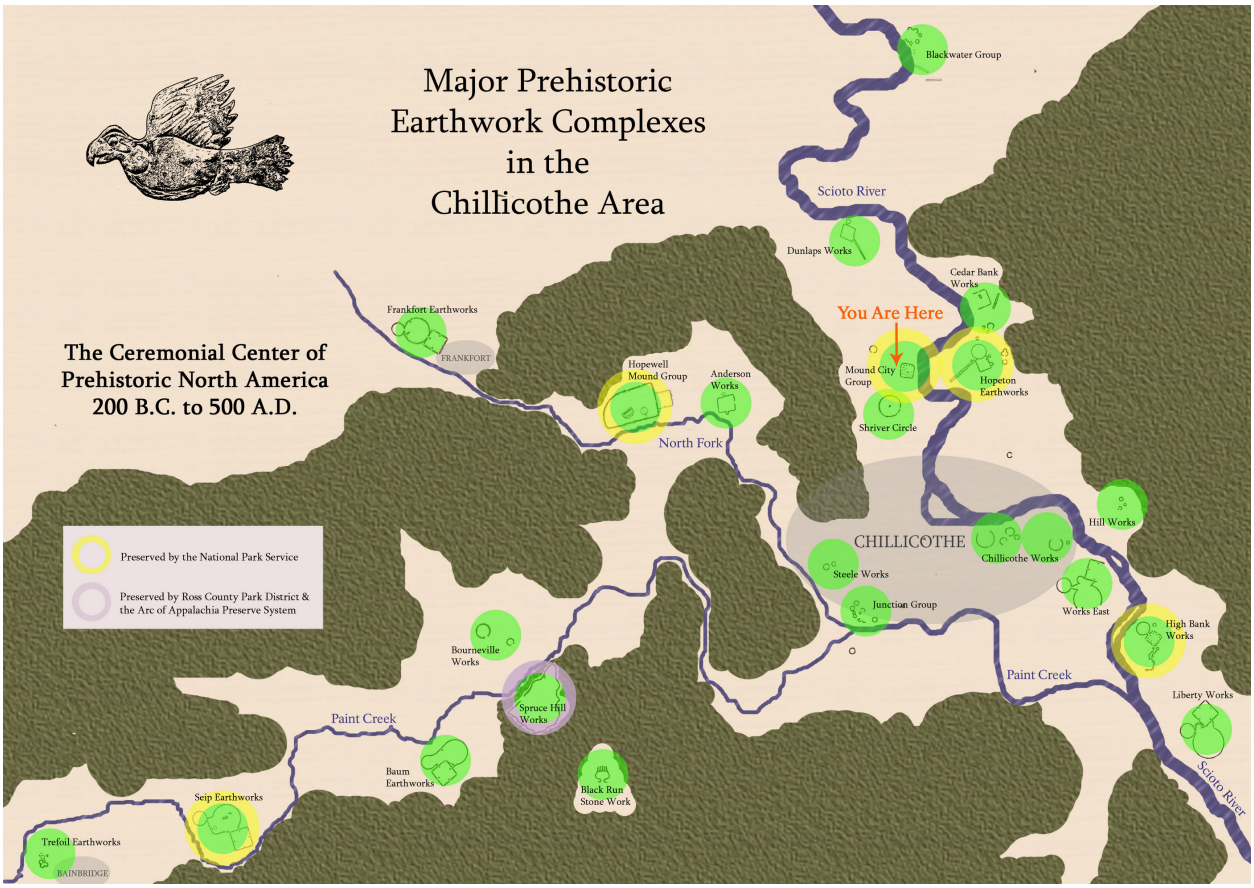


Figure 3-6. The Hopewell constructed several ceremonial and burial complexes throughout the Scioto River Valley. Today, most complexes are in private ownership. (Hopewell Culture NHP Archives)

the earthwork complexes. New buildings were often constructed on top of existing mounds, which would have enhanced the earthwork's visibility.

After the decline of the Hopewell Culture, post-400 AD, the earthwork complexes were no longer used or maintained, and features began to erode.

The rate of slow erosion was quickened by agricultural practices in the eighteenth through twentieth centuries that damaged above-grade earthwork complexes. Further damage to the earthwork complexes came from the construction of roads, railroads, buildings, and utility lines.

The topography has been changed due to periodic flooding, naturally occurring erosion, and agricultural cultivation. In the twentieth century portions of the earthwork complexes at Seip Earthworks and Mound City Group were reconstructed. Theses features were rebuilt to resemble their appearance as recorded by Squier and Davis in the 1800s. The reconstructed mounds, earthen walls, and borrow pits assist in strengthening the spatial organization at these earthwork complexes. At the other earthwork complexes, although the archeological landscape has eroded, significant archeological features and their distinctive spatial arrangement remain.

Views have been altered since the period of significance due to changes in vegetation and contemporary intrusions. Views have been negatively impacted by roads, private development, and governmental facilities. The gravel quarry at Hopeton Earthworks, and the State prisons adjacent to Mound City Group both negatively impact the views and setting of these ceremonial landscapes.

Wide and distant views to adjacent hills are visible from all of the earthwork complexes, and likely have remained since the period of significance. These include the view to Copperas Mountain visible from Seip Earthworks, and the view of the Mount Logan Range, which inspired the Ohio state seal, visible from Mound City Group.

The spatial organization, topography, and views retain integrity, and contribute to the significance of the Hopewell Culture NHP. The archeological features remain in their original locations with the original spatial arrangements intact. Views from the earthwork complexes retain their connections to waterways, valleys, and hills in the distance, although some have been negatively impacted by adjacent land uses. The level and elevated terraces where the earthwork complexes were built remain from the period of significance and contribute to the character of the setting.

Land Use

Existing Condition

The study area includes lands managed by the NPS, and areas of private property adjacent to park lands. The park is 1,828 acres in size, divided into six discontiguous park units with a current land use as protected lands within the national park system.

The five park units serve as the center for archeological research on the Hopewell Culture, and preserve significant earthwork complexes. Three park units are open to the public and provide visitor services. Park functions include maintenance and administrative uses at Mound City Group. Maintenance equipment and personnel are transported to the other park units as necessary. A visitor center and museum are at Mound City Group.

The study area is surrounded by privately-owned land that is both agricultural and forested areas. Ongoing residential development occurs close to some park units. Mound City Group is adjacent to three government-owned institutional facilities, including two state prisons and a Veterans Administration hospital. A privately-owned gravel pit is adjacent to Hopeton Earthworks. A public bikeway traverses Hopewell Mound Group. Other public and private roads, and utilities have rights of way across the park units.

The archeological features are primarily within lands owned by the NPS, but some portions of earthwork complexes remain in private ownership. Archeological features in private ownership include inholdings at Hopewell Mound Group, three inholdings at Seip Earthworks, and two inholdings with most of the Parallel Walls at High Bank Works. Spruce Hill Works is owned by a cooperating partner.

At Seip Earthworks, two portions are owned by a private individual. The NPS has a cooperative agreement with the Ohio Historical Society covering interpretive resource management and maintenance issues. The cooperative agreement expires on December 31, 2020.

Analysis

When first built, the earthwork complexes were for sacred and ceremonial purposes, including funerals, feasts, and rites of passage. Some earthwork complexes also functioned as a final resting place for certain individuals. Other portions of the landscape were likely used for agricultural purposes, while habitation sites likely occurred in surrounding areas.

After 400 AD, the earthwork complexes were periodically used for burials by other American Indian tribes. Once European Americans settled in the Ohio River Valley in the 1700s, the landscape was largely converted to farmland. Portions of the study area —Mound City Group and Seip Earthworks — were set aside in the early twentieth century as historic landscapes and developed as public parks. The other park units continued in private ownership. A quarry located adjacent to Hopeton Earthworks, established in 1984, damaged archeological resources at that park unit.

Today, the land use of the study area is a national park, managed as a significant archeological landscape, with portions open for public use. Although the study area no longer functions as an active ceremonial site, Hopewell burials remain in-situ, and neighboring properties continue to be farmed. The land use of the study area as a sacred place and burial ground is significant and contributes to the archeological landscape.

Archeological Features

Existing Condition

The study area contains five archeological earthwork complexes, each comprised of ruins, traces, or elements that exist from early American Indian periods, primarily the Hopewell Culture. These archeological features are typically earthen walls built in geometric shapes, mounds, and borrow pits. For a detailed description of archeological features, refer to individual park units.

The archeological features consist of:

- Above-grade features, e.g. visible mounds.
- Below-grade features, e.g. post-holes, mound sub-bases, structure floors, not visible on the surface. Recent magnetic surveys was used to confirm below-grade archeological features.
- Unverified features, e.g. features identified by previous archeological investigations or LiDAR, but not currently visible on the surface or on magnetic surveys. Archeological features on private property were not verified and were not reviewed as part of this CLR / EA.

The archeological features of Mound City Group include archeological evidence of at least 25 mounds enclosed within an earthen wall, eight borrow pits located outside the perimeter wall, and two outlying mounds. The wall and most mounds have been reconstructed to appear as they may have appeared during their use by the Hopewell.

The archeological features of Hopeton Earthworks include a circle formed by earthen walls which enclose a central open space. The circle is conjoined to a square built of earthen walls.

Three other extant circular enclosures occur, and two parallel earthen walls extend from the northwest corner of the square towards the Scioto River.

The archeological features of Hopewell Mound Group include the earthen walls of a parallelogram, connected to a smaller Square Enclosure also built of earthen walls. Two archeological features occur within the parallelogram. One is a circular earthen wall, and the other D-shaped. In total, more than 30 mounds are scattered in and around the enclosures.

Seip Earthworks includes earthen walls that form a Great Circle, which is connected to a smaller circle and square both built of earthen walls. Two mounds occur within the Great Circle, including the reconstructed Seip-Pricer Mound and a Conjoined Mound, called the Seip-Conjoined Mound.

At High Bank Works, the archeological features include a conjoined Great Circle and Octagon, both built of earthen walls. Two parallel walls extend south from the Octagon. Three conjoined circles occur as below-grade features to the south of the Parallel Walls.

Analysis

Earthwork complexes were carefully built of layers of sand, clay, gravel, and soil. The study area's archeological features were built and added on to during the period of significance for hundreds of years, between 1 AD to 400 AD.

Other archeological features were associated with buildings — charnel houses for storing bones of the deceased, workshops, and ceremonial buildings — used for funerals and ceremonies, after which the buildings would have been removed or burned and a mound built over the top.



Figure 3-7. Above-grade features include visible mounds at Mound City Group. (Mundus Bishop 2014)

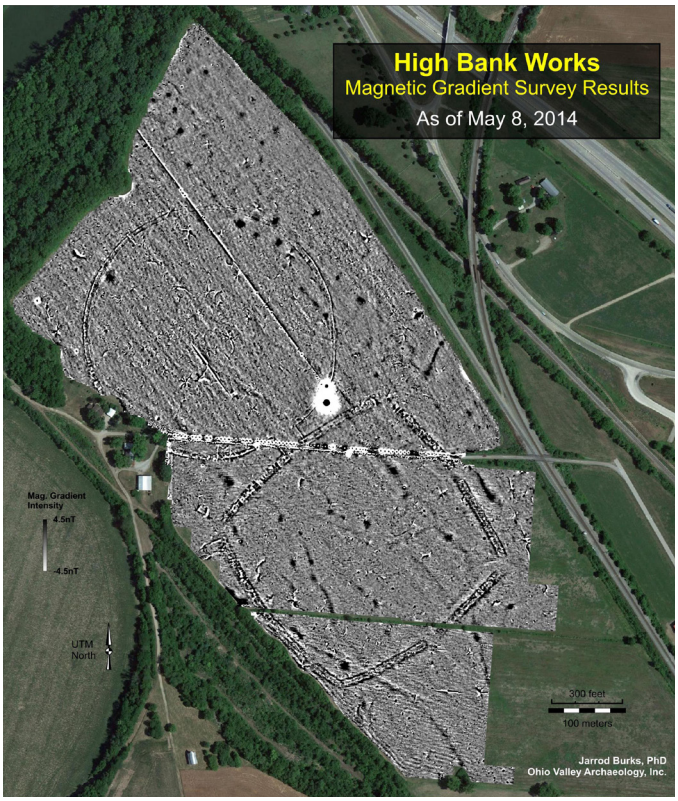


Figure 3-8. Below-grade features, not visible on the surface, are confirmed by magnetic surveys. (Hopewell Culture NHP Archives)

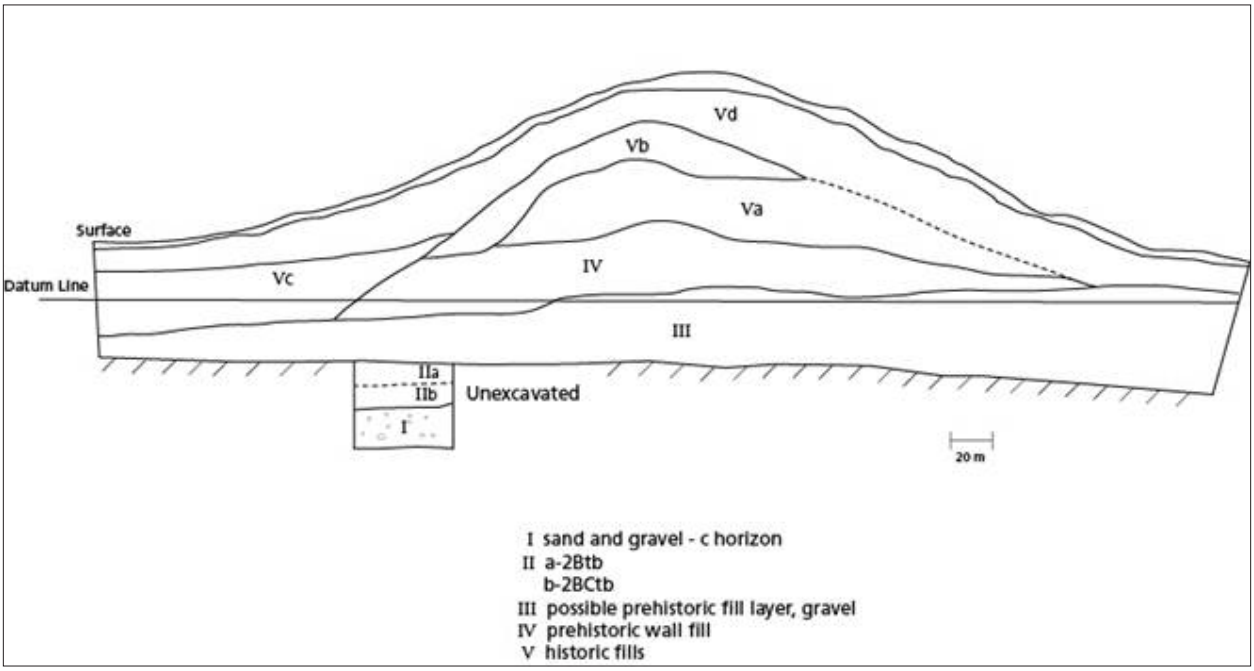


Figure 3-9. Earthworks were carefully constructed of layers of sand, clay, gravel, and soil. (Hopewell Culture NHP Archives)

Other earthwork complexes were not used for burials but were built for other scared or ceremonial purposes.

After the decline of the Hopewell Culture from 700 AD to 1000 AD, aboriginal groups migrated into the region from the north. They modified mounds to bury their own dead, hence the name given to them – the "Intrusive Mound" people.

During the eighteenth, nineteenth, and into the twentieth centuries, most of the earthwork complexes were farmed, with cultivation activities degrading extant above-grade features. Once motorized tilling equipment was developed in the twentieth century, the rate of erosion accelerated. These actions reduced the height of the earthwork complexes, and increased the width, as the features leveled.

Archeological features have also been negatively impacted by development of buildings, structures, roads, railroads, and quarries which have all damaged the archeological features. Some previous archeological investigations were invasive, resulting in removal of vast amounts of archeological artifacts and material. Damage from tree roots and animals burrowing into the earthwork complexes has occurred in the past. Ancillary features to the earthwork complexes (smaller mounds and earthen walls) have been lost due to erosion and cultivation.

The archeological features that remain from the period of significance contribute to the significance of the Hopewell Culture NHP. Although extant above-grade archeological features have been degraded by erosion and agricultural cultivation, and other intrusions have destroyed above-grade resources, the below-grade archeological features have been recorded by magnetic survey and other geophysical techniques, which indicate that the extant below-grade archeological features have retained their essential form, mass, and scale, and reflect their Hopewell appearance. The below-grade archeological features have integrity and are contributing features of the archeological landscape.

Circulation

Existing Condition

The circulation system of the study area is composed of vehicular, bicycle, pedestrian, and train routes. Vehicular routes occur along state and federal highways, local roads, and the park's entry drives, and parking areas. These routes connect the five discontiguous park units, and are part of the area's regional circulation system. Features that provide access to park headquarters, and one or more of the park units are highways, access roads, scenic routes, and railroads that are part of the regional network of circulation. Circulation specific to a park unit, such as service drives, trails and parking areas, are described in more detail in each park unit.

The Ancient Ohio Trail is a collaborative program by land owners and managers of historic landscapes who have designated driving routes throughout Ohio to link historic places. For Hopewell Culture, the driving routes associated with the Ancient Ohio Trail include routes through the Chillicothe area that direct visitors to Hopewell Culture NHP.

The study area is near Chillicothe, Ohio, where several state and federal highways intersect. These routes connect the five park units, and provide access to nearby cities and rural areas.

The following highways are adjacent to the park, and provide a connection or partial connection to one or more of the earthwork complexes.

U.S. Highway 35 extends southeast to northwest, and connects the study area with Dayton, Ohio to the northwest. Vehicular access to High Bank Works is via Highway 35 from Chillicothe.

U.S. Highway 32 extends north south, and connects Chillicothe with Columbus, Ohio. Vehicular access to Hopeton Earthworks from either city is via Highway 32, located just to the east of the earthwork complex.

U.S. Highway 50 provides vehicular access to Seip Earthworks. Highway 50 connects the study area with Cincinnati, Ohio to the west.

Hopetown Road provides vehicular access to Hopeton Earthworks from its intersection with U.S. Highway 23 and State Highway 159. The asphalt-paved road follows the south boundary of Hopeton Earthworks. At the park's southwest boundary, Hopetown Road curves, and becomes a dirt road where it provides access into the earthwork complex.

Sulphur Lick Road is a narrow, asphalt paved two-lane road that provides vehicular access to Hopewell Mound Group. It traverses the south portion of the Hopewell Mound Group, where it provides access.

County Road 900 connects with Old Route 35, and parallels the railroad tracks at High Bank Works. Vehicular access to the park unit is via this narrow, asphalt paved road that ends just east of the earthwork complex, where a smaller, private gravel road crosses the railroad tracks and provides access to High Bank Works and the private property.

Public access is limited to three of the five park units: Mound City Group, Hopewell Mound Group, and Seip Earthworks. Each has an asphalt paved parking area, and a network of trails that facilitate visitor movement, to the earthwork complexes, and to natural areas and overlooks. In all, the study area includes three pedestrian trails, all soft surface or gravel paved, and four parking areas, including the visitor center.

Tri-County Trail extends through Hopewell Mound Group, it is now a publicly accessible multiple use trail that connects Chillicothe and Frankfort, Ohio, and Washington Courthouse. The trail is 28-plus miles, built on an abandoned railroad grade.

Two major railroads haul coal and other freight across the study area. The Baltimore and Ohio / Chesapeake and Ohio railroads occur on the east side of High Bank Works and at Hopeton Earthworks. Access across the railroad tracks at High Bank Works is at-grade. An underpass for Hopetown Road provides access across the railroad tracks to Hopeton Earthworks.

Analysis

The original primary access to, and from the earthwork complexes was likely along the waterways of the Scioto River and Paint Creek, supported by overland routes. The water routes would have been primarily by canoe rather than by land, with Hopewellian people traveling between earthwork complexes and their homelands. Land routes likely existed during the period of significance, but their locations are unknown.

During the period of significance, paths within the earthwork complexes and patterns of movement throughout the landscape would have occurred, but these routes are unknown. The gateways in the earthen walls were likely used as circulation by the Hopewell to gain access into the interior of the enclosures.

Mound City Group and Hopeton Earthworks are approximately one mile apart, separated by the river. The east gateway at Mound City Group faces the river, and seems to connect to the parallel walls at Hopeton Earthworks on the opposite side of the river bank. Other connections between the earthwork complexes are less obvious. High Bank Works and Mound City Group are approximately seven miles apart, connected by the Scioto River. Hopewell Mound Group is approximately five miles from Mound City Group, and Seip Earthworks is another ten miles distant.

The land routes that exist today are not from the period of significance. Many of the vehicular routes appear on maps drawn by Squier and Davis in the mid 1800s. These include State Highway 104, U.S. Highway 50, Dill Road, and Sulphur Lick Road, although they had different names at the time. Over time, travel by water decreased and the road network increased. Roads throughout the study area were built as part of European American settlement, to access farms and other settlements.

The railroads at Hopeton Earthworks, Hopewell Mound Group, and High Bank Works were built after the 1850s, when railroads were first constructed through Chillicothe. One of the railroads at High Bank Works has since been abandoned, as has the line at Hopewell Mound Group, which now is a publicly accessible multi-use path, installed in 1999.

The circulation routes that exist today are not from the period of significance. All features are non-contributing. Roads traverse the earthwork complexes and damage the archeological features; railroads distract from the archeological landscape.

Today circulation along the waterways is possible; although, only one launch exists, at the canoe launch at Seip Earthworks. The pedestrian paths that exist today are contemporary additions to provide visitor access to the earthwork complexes, and are non-contributing features.

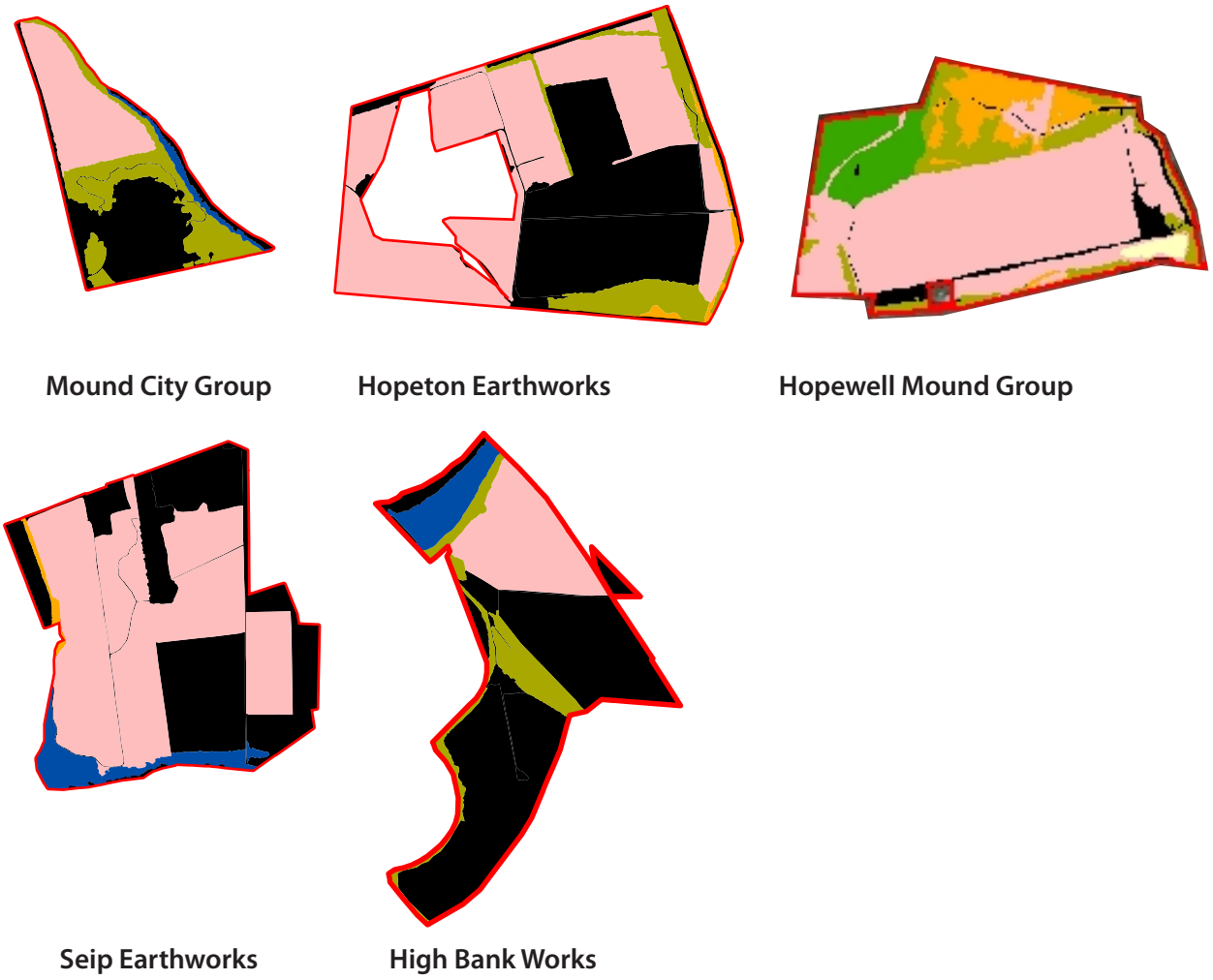


Figure 3-10. Existing vegetation in the study area includes hardwood forest, hayfields and former agricultural fields, areas of native grasslands, shrubland, regularly mown lawn and ornamental plantings (cultural), and riparian vegetation. Ruderal species are those that first colonize formerly disturbed land. (Diamond, Vegetation Classification and Mapping, Figure 8.)

Vegetation

Existing Condition

Existing vegetation in the study area includes hay fields, former and agricultural fields, regularly mown lawn, ornamental plantings, woodlands or hardwood forests, shrublands, riparian vegetation, and planted native grasslands.

Hay fields are composed of orchard and pasture grasses that are harvested for hay. Most of the earthwork complexes are located within open fields of this type. The hay fields are generally in good condition, with some exotic vegetation occurring particularly along field edges.

Portions of park are cultivated yearly with corn and soybean fields. Crop cultivation may promote soil erosion and damage earthwork complexes.

Interpreted areas, such as the visitor center at Mound City Group, or the front sections at Seip Earthworks, are maintained as regularly mown lawn, noted as 'Cultural' on Figure 3-10. This same lawn (predominately fescue) is the same treatment and maintenance practice used on the earthwork complexes and individual archeological features including mounds and earthen walls throughout the study area. Large deciduous trees are scattered across the manicured lawns, particularly at Mound City Group and Seip Earthworks. Ornamental shrub and small tree plantings are few in number and are mostly clustered around interpretive areas such as the visitor center.

Woodland or hardwood forest vegetation include two types — Appalachian Sugar Maple / Chinkapin Oak Limestone Forest and ruderal woodlands. Common species to the Appalachian Sugar Maple / Chinkapin Oak Limestone Forest are sugar maple, chinkapin oak, white oak, hackberry, black walnut, black cherry, boxelder, and Ohio buckeye. The shrub layer is typically composed of tartarian honeysuckle (*Lonicera tatarica*) and multiflora rose (*Rosa multiflora*).[3.24] The woodland forests of the study area show evidence of past clearing, and some exotic plant species occur.[3.25] Invasive species such as honeysuckle and garlic mustard are removed by the NPS.

Shrubland occurs in areas that were heavily used by humans in the past, mainly through clearing, plowing, and grazing. Shrubland vegetation includes ruderal low woodland/ shrubland and is dominated by ruderal or exotic species.[3.26]

The riparian areas include the Silver Maple / Green Ash / Sycamore / Hackberry floodplain vegetation that is composed of smaller boxelder and hackberry, pawpaw, American sycamore, cottonwood, and silver maple. Plants in on the riparian floor are garlic mustard (*Alliaria petiolata*), common blue violet (*Viola sororia*), smooth sweet cicely (*Myrrhis odorata*), and tall fescue (*Festuca arundinacea*).[3.27]

Prairie is composed of a combination of grasses and forbs. Dominant species include big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), and Canada goldenrod (*Solidago canadensis*). Other important species included sideoats grama (*Bouteloua curtipendula*), black-eyed and brown-eyed Susan (*Rudbeckia hirta and Rudbeckia triloba*), wild bergamot (*Monarda fistulosa*), and stiff goldenrod (*Oligoneuron rigidum*).[3.28]

3.24 Diamond, *Vegetation Classification and Mapping*, 22.
3.25 Diamond, *Vegetation Classification and Mapping*, 34.
3.26 Diamond, *Vegetation Classification and Mapping*, 31.
3.27 Diamond, *Vegetation Classification and Mapping*, 5.
3.28 Diamond, *Vegetation Classification and Mapping*, 28.

Exotic plant species of special concern include Japanese honeysuckle (*Lonicera japonica*), bush honeysuckle species (*Lonicera spp.*), Canada thistle (*Cirsium arvense*), garlic mustard, multiflora rose, autumn olive (*Elaeagnus umbellata*), and Johnson grass (*Sorghum halepense*).[3.29] These plants invade disturbed areas and compete with native plants.

Analysis

No definitive information exists to indicate the type of vegetation on the mounds and earthwork complexes during the period of significance. Archeological data suggests that large-scale disturbance of the forest in the vicinity of the earthwork complexes and throughout the region occurred during the Woodland Period (1000 BC to 1000 AD). This indicates an increasing reliance on cultivated plant foods. Wood charcoal, seed, and pollen spectra all indicate large-scale forest clearing and an increase in second-growth and forest-edge species during this period.

Some archeologists theorize that the earthwork complexes were periodically burned to keep the forest away, but the scale and frequency is unknown. It is possible that maintained groves of trees were within the earthwork complexes. The opposite is also theorized, that the topsoil was stripped to retard vegetation growth altogether. Foot traffic, with resultant soil compaction, may have played a role in controlling vegetation. Some of the mounds were covered with a final layer of gravel or river cobble, implying that they were unvegetated.

Even after the decline of the Hopewell Culture in 400 AD and the arrival of Europeans in the sixteenth century, the vegetation type is unknown. During European American settlement after the Revolutionary War, people reported the land to be a heavily forested wilderness. Some research has attempted to reconstruct the natural vegetation of Ohio in pioneer days using early historic accounts.[3.30]

In the nineteenth and twentieth centuries much of the land was cleared — trees were cut for lumber and large riparian area were cleared for growing crops and raising animals. The 1848 maps by Squier and Davis indicate that most of the earthwork complexes were under cultivation, with the exception of Hopeton Earthworks and Mound City Group which were still partially forested.

By the late 1800s the earthwork complexes were under cultivation. Some land was cleared of vegetation and maintained as part of a working farm — farmhouses, barnyards, gardens, etc. Throughout the historic period the vegetation along the river corridors was likely logged periodically. Increasingly the native vegetation would have been in competition with exotic, non-native plants brought in by settlers. Once the earthwork complexes were acquired by the OHS (1923 at Mound City Group, 1927 Seip Earthworks) or the NPS (1992 for Hopewell Mound Group, Hopeton Earthworks, and High Bank Works), agriculture ceased in most areas.

It is unknown if the vegetation of the study area reflects the original pattern. Adjacent lands, including hills and riverbanks, were likely forested during the period of significance as they are now, but this is unconfirmed. The vegetation and vegetation patterns of the study area of the study area do not contribute to the archeological landscape.

3.29 Diamond, *Vegetation Classification and Mapping*, 26.

3.30 Gordon, The natural vegetation of Ohio in pioneer days. Bulletin of the Ohio Biological Survey, New Series, Volume III, Number 2. Ohio State University, Columbus, 1969. Ohio Dept. of Natural Resources, adaptation of Robert Gordon's map published by the Ohio Biological Survey. Original Vegetation of Ohio at the Time of the Earliest Land Surveys, 1966.

Mound City Group

Introduction

Mound City Group is an earthwork complex enclosed by a large earthen wall, with archeological evidence of at least 25 mounds inside the 15.6 acre enclosure; 22 of these have been reconstructed. Set on a terrace above the west bank of the Scioto River, the 120-acre park unit is four miles north of Chillicothe, Ohio, and is one of the three park units with visitor facilities. The earthwork complex is on the east side of State Highway 104, accessed by an entry drive from the highway. Mound City Group is park headquarters, and the main visitor, administrative, and maintenance center for the entire park. The park unit has a visitor center and museum, administrative offices, and maintenance buildings.

This archeological landscape consists of many archeological features — mounds, an earthen wall, borrow pits, and two outlying mounds. The archeological features are mostly visible, as the majority of these have been reconstructed. Extensive archeological resources, including ceremonial deposits, also occur below-grade.

Mound City Group represents a distinctive building style that reflects a ceremonial landscape used and built over several centuries for social and religious ceremonies, and uniquely Hopewellian funerals.

This section evaluates the existing condition and presents an analysis of Mound City Group using six landscape characteristics:

- Spatial Organization / Topography / Views
- Archeological Features
- Circulation
- Vegetation
- Buildings and Structures
- Small Scale Features



Figure 3-11. A earthen walls encloses 25 mounds at Mound City Group. (Mundus Bishop 2014)



Figure 3-12. Mound City Group has a distinctive building style due to the many earthen burial mounds clustered together. (Mundus Bishop 2014)



Figure 3-13. Mound City Group is set on the river's west terrace. (Mundus Bishop 2014)



Figure 3-14. The complex wall is in the shape of a square with rounded corners, defined by an earthen wall that encloses 22 reconstructed mounds. Extensive below-grade features and artifacts occur throughout the park unit. (Mundus Bishop 2014).

Spatial Organization / Topography / Views

Existing Condition

Mound City Group is organized in relationship to the Scioto River, set on the river's west terrace; the earthwork complex is separated from the river by a steep slope. To the east are views of the Appalachian foothills. Hopeton Earthworks is located across the river to the east, and while it is not visible, the two park units are spatially connected by the orientation of the archeological features.

The park unit consists five distinct spatial areas:

- Earthwork complex
- Scioto River and riverbank terrace
- Visitor center, picnic and parking area
- Administration / Maintenance area
- Open field, north end of the park unit

The earthwork complex of Mound City Group is situated adjacent and parallel to the river's edge. The earthwork complex is in the shape of a square with rounded corners, created by earthen walls that create an enclosure. The earthwork walls are pierced by openings that form gateways to the east and west. The east gateway aligns with a natural gully in the riverbank. The 22 reconstructed mounds are clustered within the 15.6 acre space of the enclosure. The space is open, mown lawn that contrasts with the dense, tall forest surrounding the earthwork.

The Scioto River and riverbank are spatially distinct from the rest of the park unit. The steep riverbank physically separates the river from the rest of the park, and views are focused along the water and to the east, across the river. The river extends north south and serves as an organizing element for the earthwork complex. The walls of the square enclosure are parallel to the river course.

The visitor center, picnic and parking area are on the west side of the earthwork complexes, in an open space maintained as mown lawn and surrounded by woodland vegetation. The visitor center was built on axis with the west gateway and is the current-day entrance to the earthwork complexes. From the visitor center, the earthwork complexes are visible to the east and State Highway 104 and the prison are visible to the west.

The Administration / Maintenance Area is a distinct spatial area, created by the cluster of buildings, set in a clearing of the woodland forest. It is connected to the remainder of the park unit by the service drive and trails.

The north of the park unit is maintained as a hay field, surrounded by forest vegetation. It is spatially distinct from the rest of the park unit.

Analysis

The spatial organization / topography / views at Mound City Group is strong, primarily due to the presence of reconstructed mounds. The spatial organization / topography / views at Mound City Group contribute to the archeological landscape.

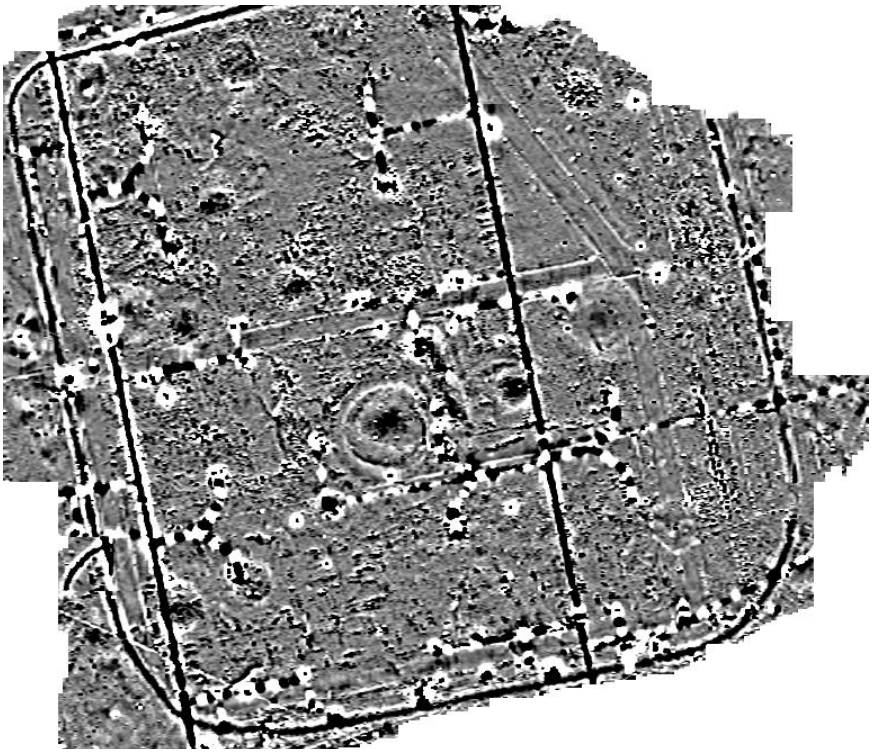


Figure 3-15. Magnetic maps of Mound City Group revealed below-grade archeological features of the enclosure walls, mounds, and portions of the borrow pits. (Ruby 2013 Authenticity and Integrity - Mound City Group-Revised 25JUL13)



Figure 3-16. The interior space of the enclosure is 15.6 acres. (Mundus Bishop 2014)



Figure 3-17. Two gateways on the east and west sides of the enclosure are 10- to 15 feet wide. (Mundus Bishop 2014)

Archeological Features

Existing Condition

The archeological features of Mound City Group consist of earthwork complexes— large structures made of sand, gravel, and soil— that define the space and the individual features of the earthwork complexes— earthen walls, mounds, and gateways.

The archeological features are of three types: extant (visible and above-grade); extant (below-grade); and unverified. Magnetic maps of Mound City Group revealed below-grade archeological features of the enclosure walls, mounds, and portions of the borrow pits.

Mound City Group has 34 archeological features. A two-part earth and gravel wall surrounds 22 reconstructed mounds, eight borrow pits are outside of the wall, as are two reconstructed outlying mounds. Other archeological features include building post-holes, a crematory basin, and structure floors associated with the mounds.

Archeological evidence exists for 25 mounds at Mound City Group. Each mound covered the remains of a ceremonial structure, cremated burials, and ritual deposits. The below-grade features, including post-holes associated with each of the mounds are extant.[3.31]

The Mound City Group archeological features are extant and visible. The wall of the enclosure, and 22 of the mounds were reconstructed to resemble their original appearance during use by the Hopewell Culture. However, all archeological features have been modified by land use practices, particularly the construction of Camp Sherman buildings that were built on top of all the mounds (except Mound 7) and removed most of the above-grade features.

Based upon the magnetic survey, below-grade archeological features, Camp Sherman-era roads and utility corridors appear to be extant.[3.32] Other below-grade archeological features and resources likely exist throughout the earthwork complex.

The enclosure is the largest earthwork at Mound City Group. It is formed of an earth and gravel wall, organized as a large square with rounded corners, with an interior space of 15.6 acres. The above-grade portion of the enclosure was reconstructed on top of extant below-grade features (verified by recent archeological work). The above-grade wall is approximately 3 feet high by ten feet wide. The wall has two gateways on the east and west, each is approximately 10- to 15 feet wide. The wall is easily visible, except in the northeast corner, as the vegetation is maintained as mown lawn. The above and below-grade features of the enclosure are in good condition. However it is impacted by several large trees growing along the edges of the wall, particularly in the northeast corner.

Twenty-two mounds are reconstructed features on top of the corresponding below-grade features (the ceremonial structures and burials). The mounds vary in height and size, and are dispersed within the enclosure in a distinct pattern.

The reconstructed mounds are vegetated with mown lawn. The above and below-grade portions of the mounds are in good condition. However, they continue to be impacted by foot-traffic and mowing. Roots of mature trees within the enclosure maybe negatively impacting extant below-grade features.

3.31 The mounds have been excavated, verifying their locations, and recently magnetically mapped — the magnetic survey revealed the below-grade archeological features associated with the mounds.

3.32 NPS, *Magnetic Survey of Mound City Group,* (Chillicothe: 2009 and 2012), images on file in Hopewell Culture NHP Archives.

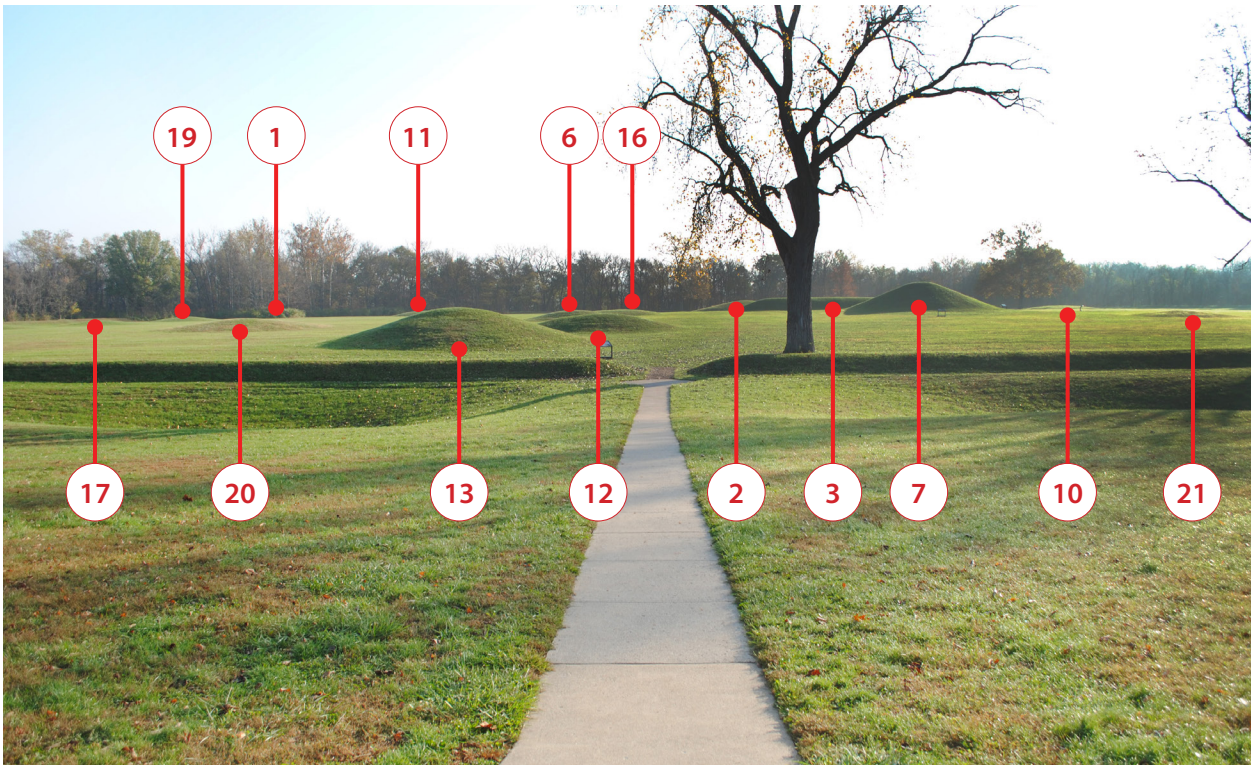


Figure 3-18. Mounds 17, 19, 20, 1, 11, 13, 6, 12, 16, 2, 3, 7, 10, and 21 are visible from the visitor center. (Mundus Bishop 2014)

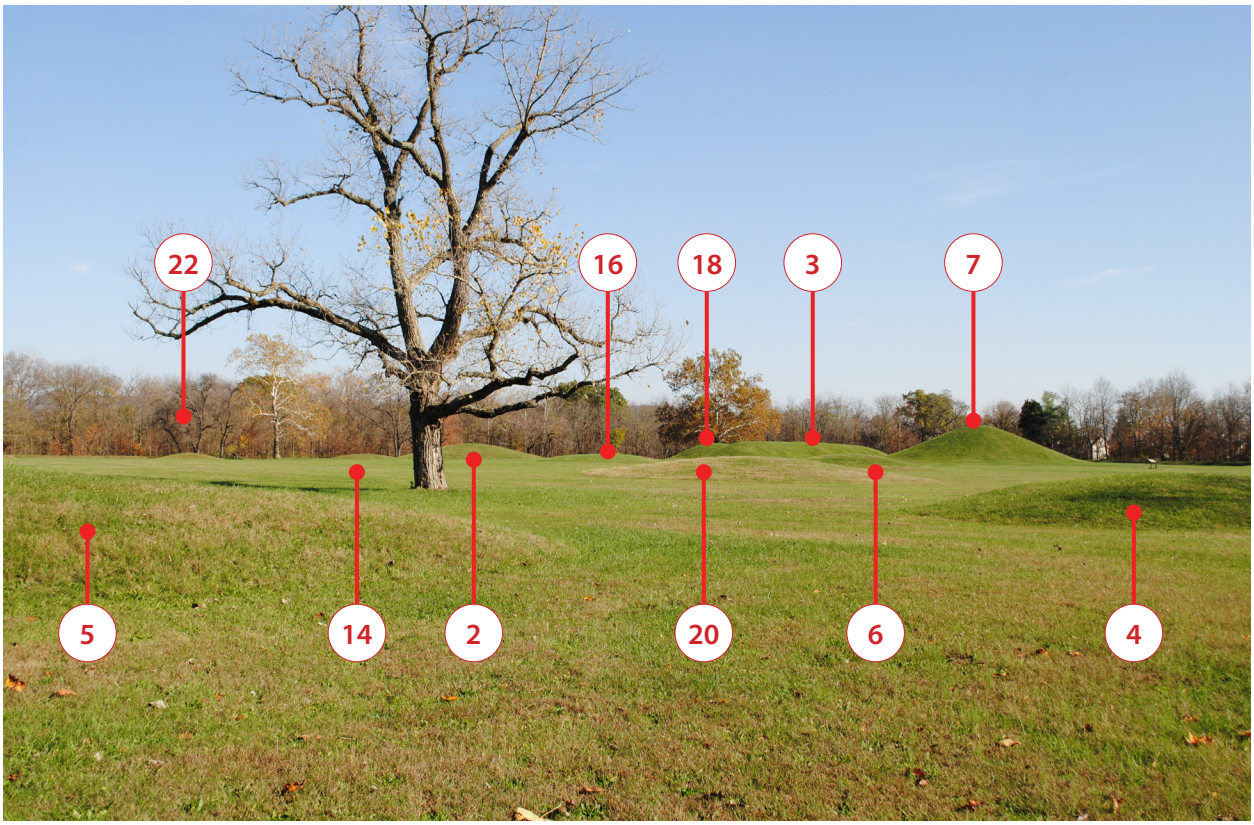


Figure 3-19. Mounds 5, 22, 14, 2, 16, 20, 18, 3, 6, 7, and 4. (Mundus Bishop 2014)

Mound 1 is a conical burial mound with a diameter of 35 feet and is seven feet in height. The mound is covered with vegetation including trees, understory, and invasive honeysuckle. Below-grade features are unverified. This mound was leveled in 1917 for the construction of Camp Sherman. It was reconstructed in the wrong location in 1921 by the Ohio State Museum. Mound 1 was reconstructed again in 1969 in its original location. Mound 1 is in good condition.

Mound 2 is a conical burial mound with a diameter of 90 feet and height of 10-feet. Below-grade features are unverified. This mound was leveled in 1917, and reconstructed in 1921 by the Ohio State Museum. Mound 2 is in good condition.

Mound 3 is an oval burial mound, 50 feet by 140 feet wide, and ten feet in height. Below-grade features are unverified. This mound was leveled in 1917, and reconstructed in 1921 by the Ohio State Museum. Mound 3 is in good condition.

Mound 4 is an oval burial mound, 60 feet by 90 feet wide, and six feet in height. Below-grade features are unverified. Mound 4 was leveled in 1917, and reconstructed in 1921 by the Ohio State Museum in the wrong location. Mound 4 was reconstructed in 1964 in its original location. Mound 4 is in good condition.

Mound 5 is 60 feet by 90 feet wide, and six feet in height. Below-grade features are extant. Mound 5 was leveled in 1917, and reconstructed in 1921 by the Ohio State Museum in the wrong location. Mound 5 was reconstructed in 1965 in its original location. Mound 5 is in good condition.

Mound 6 is a conical burial mound, 50 feet in diameter and five feet in height. Below-grade features are extant. Mound 6 was leveled in 1917, and reconstructed in 1925 by the Ohio State Museum in the wrong location. Mound 6 was reconstructed in 1970 in its original location. Mound 6 is in good condition.

Mound 7 is the tallest mound in Mound City Group. It is a conical burial mound with a 100 foot diameter, and a height of 17 feet. Below-grade features are extant. This was reconstructed in the 1920s. Mound 7 is in good condition.

Mound 8 is a conical burial mound, 55 feet in diameter and eight feet in height. Below-grade features are extant. Mound 8 was leveled in 1917, and reconstructed in 1926 by the Ohio State Museum. Mound 8 is in good condition.

Mound 9 is a conical burial mound, 50 feet in diameter and four feet in height. Below-grade features are extant. Mound 9 was leveled in 1917, a portion of the military plumbing system disturbed below-grade features. Mound 9 was reconstructed in 1926 by the Ohio State Museum. It is unverified if this mound was reconstructed in the 1960s or 1970s. Mound 9 is in good condition.

Mound 10 is a conical burial mound 60 feet in diameter, and three feet in height. Below-grade features are extant. Mound 10 was leveled in 1917, and reconstructed in 1922 by the Ohio State Museum in the wrong location. Mound 10 was reconstructed in 1963 in its original location. Mound 10 is in good condition.

Mound 11 is a conical burial mound 55 feet in diameter and five feet in height. Below-grade features are extant. Mound 11 was leveled in 1917, and reconstructed in 1922 by the Ohio State Museum in the wrong location. Mound 11 was reconstructed in 1971 in its original location. Mound 11 is in good condition.

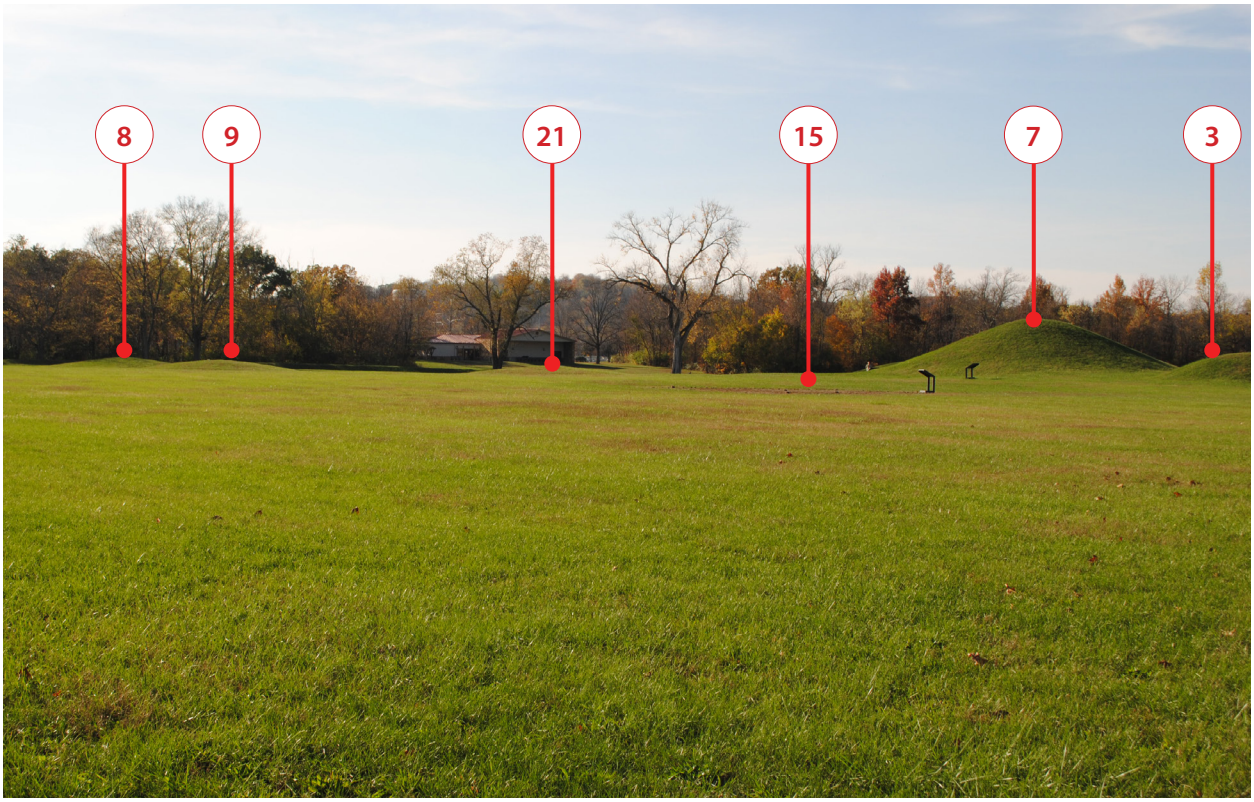


Figure 3-20. Mounds 8, 9, 21, 15, 7, and 3. (Mundus Bishop 2014)



Figure 3-21. Mounds 18,15, and10. (Mundus Bishop 2014)

Mound 12 is a conical burial mound 55 feet in diameter and six feet in height. Below-grade features are extant. Mound 12 was leveled in 1917 and portions of the below-grade features were damaged by the military plumbing system. Mound 12 was reconstructed in 1922 by the Ohio State Museum. It is unverified if this mound was reconstructed in the 1960s and 1970s. Mound 12 is in good condition.

Mound 13 is a conical burial mound 70 feet in diameter, and nine feet in height. Below-grade features are extant. Mound 13 was leveled in 1917, and reconstructed in 1922 by the Ohio State Museum in the wrong location. Mound 13 was reconstructed in 1963 in its original location. This mound contained the 'Great Mica Grave' exhibit, since removed. Mound 13 is in good condition.

Mound 14 is a conical burial mound 50 feet in diameter and five feet in height. Below-grade features are extant. Mound 14 was leveled in 1917, and reconstructed in 1922 by the Ohio State Museum in the wrong location. Mound 14 was reconstructed in 1974 in its original location. Mound 14 is in good condition.

Mound 15 is outlined on the ground as an interpretive exhibit illustrating the sub-mound post-hole pattern of the building that once stood in this location. The exposed sub-mound posthole pattern is a round cornered rhomboid with dimensions of 40 feet by 27.5 feet on the north and 40.5 feet on the south. The pattern of post-holes is typical for structures at Mound City Group. Mound 15 was leveled in 1917, and was reconstructed in 1921 by the Ohio State Museum, and removed in 1963 to create the post-hole exhibit. The below-grade features of Mound 15 are in good condition.

Mound 16 is a conical burial mound 55 feet in diameter, and five feet in height. Below-grade features are extant. Mound 16 was leveled in 1917, and military ditches greatly disturbed below-grade features. The mound was reconstructed in 1922 by the Ohio State Museum. It is unverified if this mound was reconstructed in the 1960s / 1970s. Mound 16 is in good condition.

Mound 17 is a conical burial mound 55 feet in diameter and three feet in height. Below-grade features are extant. Mound 17 was leveled in 1917, and reconstructed in 1922 by the Ohio State Museum in the wrong location. Mound 17 was reconstructed in 1968 in its original location. Mound 17 is in good condition.

Mound 18 is a conical burial mound 90 feet in diameter and ten feet in height. Below-grade features are extant. Mound 18 was leveled in 1917, and reconstructed in 1922 by the Ohio State Museum. It is unverified if Mound 18 was reconstructed in the 1960s / 1970s. Mound 18 is in good condition.

Mound 19 is a conical burial mound 45 feet in diameter and three feet in height. Below-grade features are extant. Mound 19 was leveled in 1917, and reconstructed in 1922 by the Ohio State Museum in the wrong location. Mound 19 was reconstructed in 1969 in its original location.) Mound 19 is in good condition.

Mound 20 is a conical burial mound 65 feet in diameter, and four feet in height. Below-grade features are extant. Mound 20 was leveled in 1917, and reconstructed in 1925 by the Ohio State Museum in the wrong location. Mound 20 was reconstructed in 1970 in its original location. Mound 20 is in good condition.

Mound 21 is a conical burial mound 50 feet in diameter and three feet in height. Below-grade features are extant. Mound 21 was leveled in 1917, and reconstructed in 1922 by



Figure 3-22. Outlying mound X1 at Mound City Group. (Mundus Bishop 2014)



Figure 3-23. Eight borrow pits, varying in size, are outside the enclosure. (Mundus Bishop 2014)

the Ohio State Museum in the wrong location. Mound 21 was reconstructed in 1974 in its original location. Mound 21 is in good condition.

Mound 22 is a conical burial mound 40 feet in diameter, and five feet in height. Below-grade features are extant. Mound 22 was leveled in 1917, and reconstructed in 1922 by the Ohio State Museum in the wrong location. Mound 22 was reconstructed in 1974 in its original location. Mound 22 is in good condition.

Mound 23 is a conical burial mound 60 feet in diameter and 3.five feet in height. Below-grade features are extant. Mound 23 was leveled in 1917, and reconstructed in 1922 by the Ohio State Museum in the wrong location. Mound 23 was reconstructed in 1968 in its original location. Mound 23 is in good condition.

Two mounds at Mound City Group are outside of the enclosure. Outlying mound X1 is southwest of the visitor center, in a small forest clearing. This mound is a conical mound with a 30 foot diameter and five feet in height. It is a reconstruction but is not in the same location as the original mound.

Outlying mound X2 is outside the enclosure. It is conical mound with a 40 foot diameter and seven feet in height. It is northwest of the visitor center. This is a reconstructed mound, but is not in the same location as the original mound.

Mound City Group includes eight borrow pits outside the enclosure. The borrow pits vary in size. The largest is approximately 200 feet by 80 feet wide, and 18 feet deep. The smallest is approximately 80 feet by 24 feet wide, and 10 feet deep. Seven borrow pits have been reconstructed; one is extant below-grade.

Below-grade features associated with the borrow pits likely exist. The 2010 magnetic survey is limited to within the enclosure, but does appear to indicate the two borrow pits that flank the west gateway. The borrow pits are maintained as mown lawn. These features are in good condition. The borrow pits have not been magnetically mapped to verify locations and full extent of the features.

Recent NPS investigations have revealed archeological deposits within the tract to the north of Mound City Group. These are relatively unexplored resources.

Analysis

The archeological features of Mound City Group have been altered since the period of significance. Prominent, above-grade features have been modified. However, below-grade archeological features remain intact from the original construction by the Hopewell.

During the period of significance, the archeological features at Mound City Group formed a sacred necropolis of at least 25 mounds enclosed within a large earthen wall. Buildings and earthwork complexes were built to support spiritual ceremonies and burials of important family and community members. The mounds were basically commemorative — they marked locations where buildings once stood. The Hopewell built these buildings for ceremonies and contained clay basins or altars where artifacts and ancestral bones were burned in rituals that have a strong sacrificial character. Once ceremonies were completed, the wooden buildings were dismantled, and their locations covered with a mound of earth. The dead were either cremated or buried on-site with valuable objects of copper, stone, shell, and bone accompanying them. The large mounds (>6 feet tall; n = 9) were originally capped with a one foot layer of cobble sized river rocks.[3.33]

3.33 Brown, *Mound City: The Archaeology of a Renown Ohio Hopewell Mound Center*, 115.

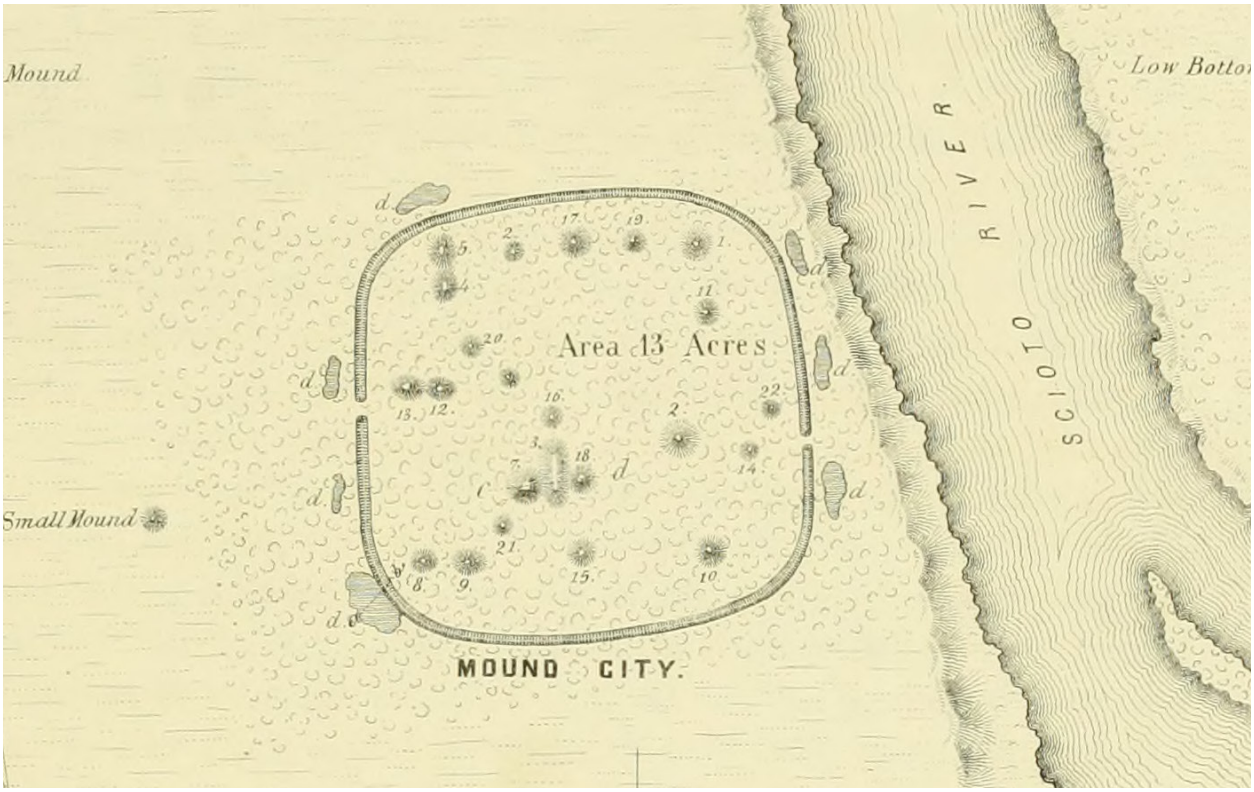


Figure 3-24. Mound City Group was mapped and partially excavated by Squier and Davis. Note the Ohio-Erie Canal to the west of the park unit, and the forest that still covered the mounds. (Hopewell Culture NHP Archives)

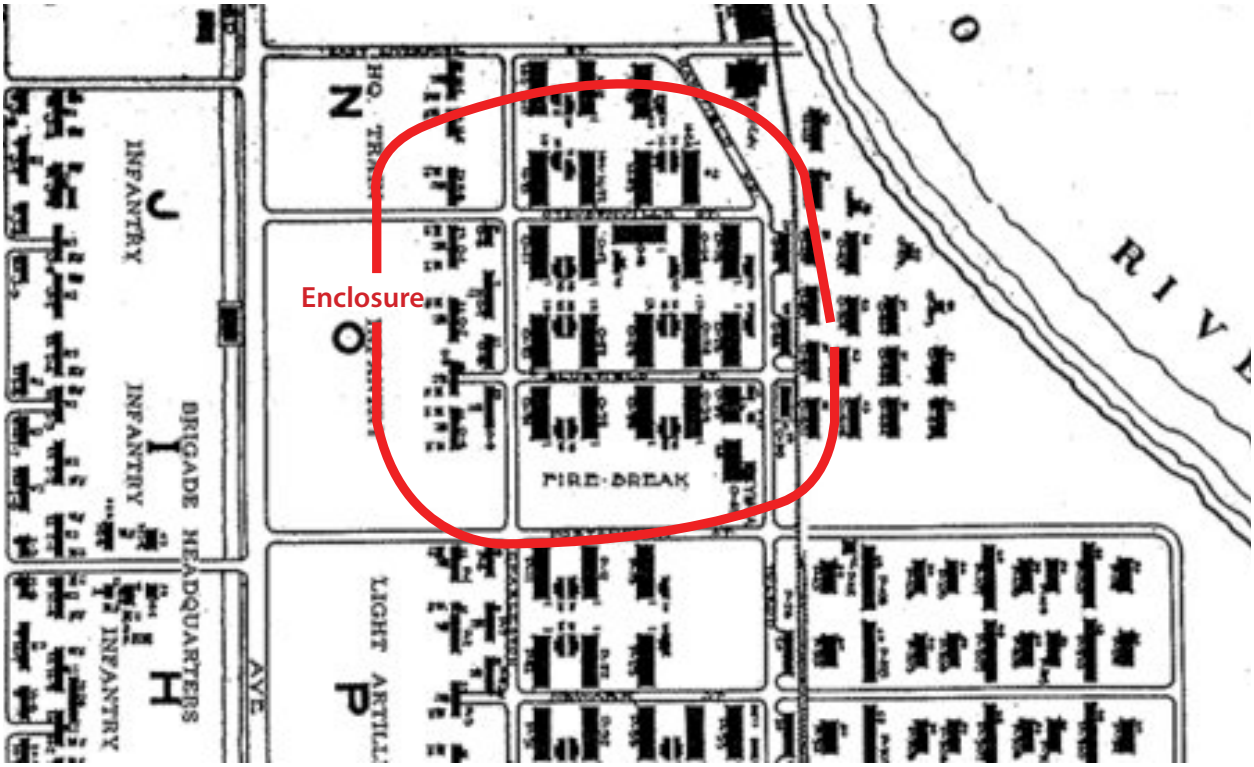


Figure 3-25. Above-grade features were leveled and removed for the construction of Camp Sherman during World War I. Only Mound 7 was not fully removed. (Hopewell Culture NHP Archives)

Major changes have occurred since the period of significance. This includes late 19th and early 20th century farming impacts, as well as alterations by the construction of Camp Sherman in 1917, and extensive archeological excavations and reconstructions during the 1920s, 1960s, and 1970s.

Above-grade features were leveled and removed for the construction of Camp Sherman during World War I. The camp's buildings were built on top of the mounds, enclosure, and borrow pits. Most of the earthwork complex's features were disturbed by the camp construction. Only Mound 7 was preserved. The army turned one of the barracks perpendicular to the others so it wouldn't cover the mound. The construction of a railroad line and utility corridor for the military camp through the earthwork complexes also partially damaged below-grade resources. Since the Camp Sherman buildings were inexpensive and quickly built, little site preparation occurred. The post and pier foundations caused only minor impacts on the upper mound strata, leaving the lower mound floors intact.

In the 1920s, Camp Sherman was decommissioned, and the buildings eventually were removed. In the 1920s twelve archeological features were extensively excavated, and all twelve were reconstructed at a later date. Although the reconstructions were based on known information, most were erroneous. The south wall of the enclosure was reconstructed north of its original position due to there already being a quantity of fill in that area. The northwest corner was reconstructed at a sharper angle than the original.

Archeological investigations between 1963 and 1975 were undertaken to explore the accuracy of the 1920s reconstruction and to identify intact archeological deposits found beneath reconstructed mounds, and inaccuracies in the alignments of the reconstructed enclosure wall. The earthwork complex was then reconstructed in the 1960s to 1970s to reflect the more accurate location and appearance. All but four mounds within the enclosure (Mounds 2, 3, 7, and 18), and the two outlying mounds were re-excavated during this period and reconstructed. The reconstructed Mound 15 was removed in the 1960s to become the posthole exhibit. There is archeological evidence of two mounds (Mound 24 aka 'Mills 21,' and Mound 25 aka 'H3 Mills 23') that were not reconstructed, and least one of the borrow pits shown on Squier and Davis' map was not reconstructed.

A magnetic survey completed in 2009 to 2012 confirms that extant below-grade archeological features of the enclosure and mounds are intact, and that the reconstructed mounds are located in correct positions.

The archeological features at Mound City Group have been modified since the period of significance. Extant below-grade features of Mound City Group retain integrity, and contribute to the significance of the earthwork complex as they are original features. Above-grade reconstructed features have gained significance for their role in aiding interpretation of the landscape.



Figure 3-26. Mounds and earthworks were reconstructed in the 1920s, but not at the precise location of the original mounds and earthworks. Note the picnic shelter at the southeast corner of the earthwork and the angled earthen wall at the northwest corner. 1948. (Hopeton Culture NHP Archives)

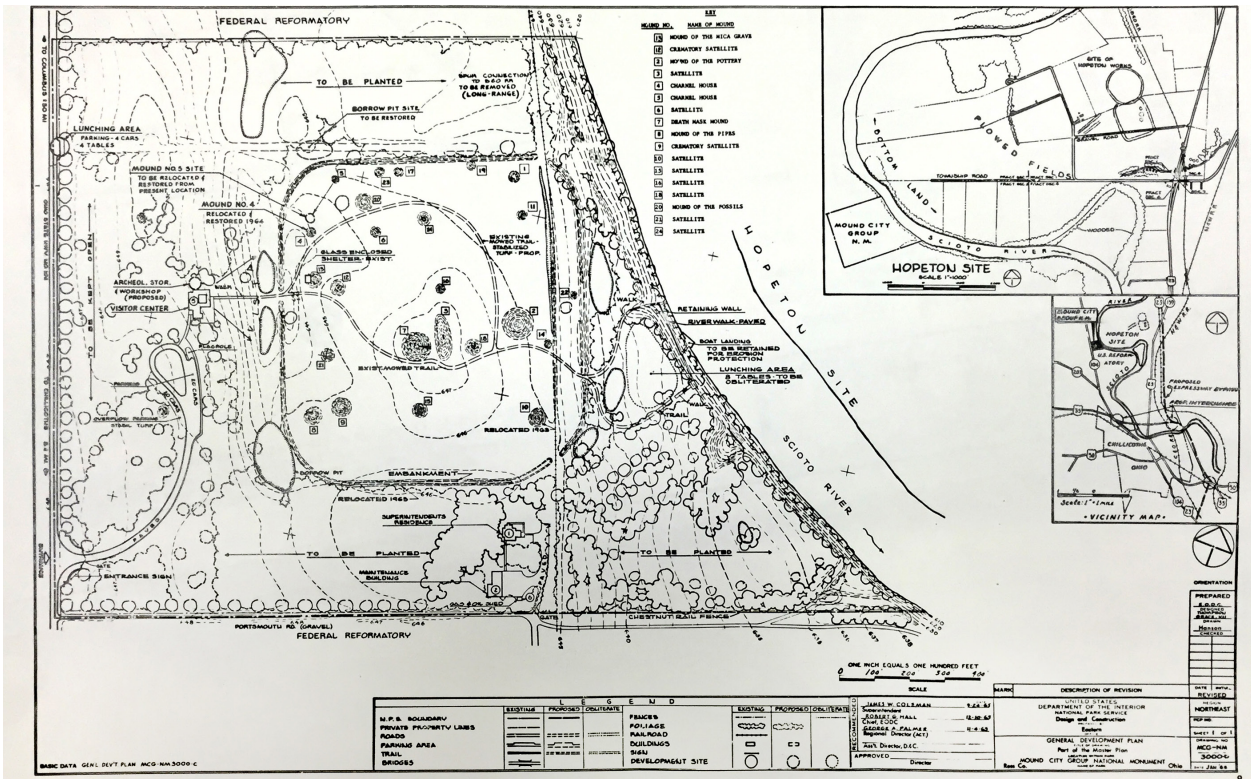


Figure 3-27. By the 1960s, mounds were reconstructed in the correct archeological locations. Note the visitor center and parking area west of the earthworks. (Hopeton Culture NHP Archives)



Figure 3-28. Magnetic survey confirmed that the reconstructed mounds evident today are archeologically accurate. (Google Earth)



Figure 3-29. The entry drive is the only vehicular access into Mound City Group from State Highway 104. (Mundus Bishop 2014)

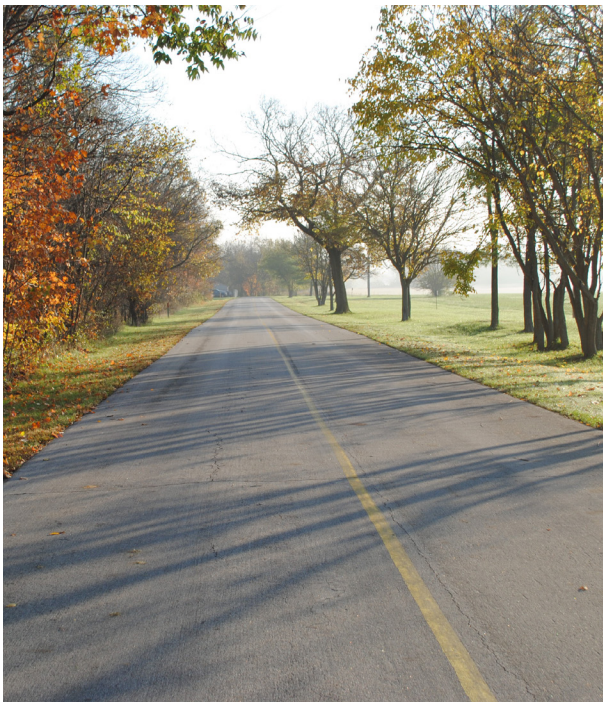


Figure 3-30. The service drive along the park's south edge leads to the Administration / Maintenance Area. (Mundus Bishop 2014)



Figure 3-31. The parking area at the visitor center includes 19 spaces. (Mundus Bishop 2014)

Circulation

Existing Condition

The circulation system of Mound City Group is composed of vehicular and pedestrian routes. The vehicular system includes access roads, as entry and service drives, and parking areas. The pedestrian system includes paved sidewalks, informal mown lawn paths, and dirt / gravel trails, and an asphalt walkway and staircase to the Scioto River.

State Highway 104 extends from Chillicothe, Ohio north to Mound City Group. It is the west edge of the park and is a four-lane highway.

The *entry drive* is the only vehicular access into Mound City Group. It extends from Highway 104 on the east side of the park to the visitor center. It is an asphalt-paved two-lane road in good condition.

A *service drive* is along the park's south edge, connected to the entry drive. This route extends to the Administration / Maintenance area. This is a two-lane, 16 feet wide asphalt paved road in good condition.

A second *service drive* is an 8 foot wide gravel surface drive that connects the maintenance area to the earthwork complexes, provides access for mowing equipment, and doubles as a pedestrian route. This route is in good condition.

The *parking area* at the visitor center includes 19 spaces, including two accessible spaces and one eco car space. The parking area is asphalt paved with a concrete curb and continuous sidewalk and accessed by a one-way loop road. Part of this loop road is paved with turf pavers, for overflow parking. The visitor parking area is in good condition.

The parking area at the administration / maintenance area has 29 spaces with two accessible spaces. The parking area occurs in three locations: in front of the resource management building, administration building, and maintenance building. The parking area is asphalt paved with a stone curb. It is in fair condition, with some spalling of the concrete at the accessible spaces, and asphalt paving covering some of the stone curb.

Pedestrian circulation is associated with visitor and maintenance access. A network of paved and soft-surface paths provides access to the earthwork complexes, natural areas, and the Scioto River. The paths for visitor access include a sidewalk from the visitor center to the west gateway of the enclosure. A nature path begins and ends at the visitor center, forming a loop around the earthwork complex.

Visitor center sidewalks include a 4 foot wide concrete sidewalk from the parking area to the visitor center. The sidewalk continues around the exterior of the building on the south and east edges. A second concrete sidewalk, five feet wide, connects to the flagpole within the entry loop. A 4 foot wide concrete sidewalk connects the visitor center to the earthwork complexes. The concrete paving ends just outside of the west gateway, where it becomes an informal route through the gateway and into the enclosure. Another four foot wide concrete paved path connects the visitor center to a picnic area, located north of the building. These sidewalks are in good condition.



Figure 3-32. Granite walls, planting, and a small terrace mark the entry to the visitor center. (Mundus Bishop 2014)



Figure 3-33. The nature trail meanders through the woodland forest surrounding the earthworks. (Mundus Bishop 2014)



Figure 3-34. The lower overlook provides a view of the Scioto River. (Mundus Bishop 2014)

A *small terrace* of red-colored exposed aggregate concrete pavers is at the visitor center entrance. The terrace is framed by granite walls, and planting areas around the building. The visitor center entrance terrace is in good condition.

Another *terrace* is on the east side of the visitor center. It is a concrete paved rectangular space of 2,000 square feet. Two granite walls occur on its west edge. A portion of the terrace is covered by a canopy that covers approximately 500 square feet, and the rest of the area is open. The terrace is in good condition.

A 3 foot concrete *sidewalk* connects the administration building with the resource management building. Another sidewalk extends from the parking area to the administration building, and connects to an accessible ramp on the building's north side. Both the ramp and the sidewalk are in good condition.

The *nature trail* is an 8 foot wide soft surface path that meanders through the woodland forest surrounding the earthwork complexes, in loop around the park unit. The path is a decomposed granite / crusher fines trail along the upper edge of the river terrace. The trail widens where it connects to the river overlook. The nature trail is in good condition.

A *river trail* follows the river's edge and forms a loop, connecting to the nature trail on both ends. The river trail is asphalt-paved, and descends down the steep riverbank in a series of concrete staircases with pipe handrails. The trail is 4 foot wide, follows the river for approximately 200-feet, and is edged with stone retaining walls on either side. The stone retaining walls are built of mortared cobblestones, and are 6-inches wide and vary in height along the edge of the steep slope. On average the stone walls are two feet high.

The river trail has two overlooks, lower and upper, connected by stone steps. The overlooks are paved in concrete, and are approximately 15 feet by ten feet wide. The lower overlook is connected to the stone retaining walls, at an approximate height of 5-feet. The stone walls are in good to fair condition. The concrete-paved overlooks are in good condition. Portions of the asphalt paving are cracked and heaved, and are in poor condition.

An 8 foot wide soft surface trail connects the administration area to the visitor center. It covered with mulch set over a fabric. This trail is in good condition.

A dirt path occurs at the east gateway and connects to the nature trail to the east. This path measures approximately six feet wide.

A dirt path connects the enclosure's north edge to the nature trail. The dirt path continues into the field at the north of the park unit.

Analysis

Modifications to the circulation system at Mound City Group since the period of significance include the grid of streets installed as part of Camp Sherman in 1917. This system was changed to the current routes in the late 1950s, as part of the Mission 66-era development. There is no longer an established water route to Mound City Group.

The circulation routes that exist today are not from the period of significance and are non-contributing features.

The stone retaining walls at the river trail were built by the Civilian Conservation Corps (CCC). While they are non-contributing to the archeological landscape, they may have historical significance for their association with the WPA.



Figure 3-35. Periwinkle was planted for erosion control along the Scioto River bank. (Mundus Bishop 2014)



Figure 3-36. Mature trees occur on the earthen wall and may be negatively impacting the archeological landscape. (Mundus Bishop 2014)

Vegetation

Existing Condition

The vegetation of Mound City Group consists of mown lawn and ornamental plantings, woodlands, riparian areas, and hay fields. Nearly half the land is cleared. Mown lawn covers most of the earthwork complexes; a mown hay field covers the north end of the park unit. A hardwood forest surrounds the earthwork complexes and extends along the riverbank.

Visitor areas and the earthwork complexes are both maintained as regularly mown lawn. Areas around parking areas, picnic areas, and the Administration / Maintenance area consist of mown lawn. The edge of the mown lawn ends abruptly at the forest edge, with no transition. A few ornamental plantings occur around the visitor center. A traditional food, fiber and medicinal plant garden is grown in raised plots near the visitor center. This is maintained by Natural Resources staff. Plants include common milkweed, Indian corn, chenopodium, and gourds.

The enclosure includes mature trees primarily set in mown lawn. The trees occur along the edge of the wall within and near some of the mounds. Most are American sycamore, white ash (*Fraxinus americana*), and common hackberry and are healthy and in good condition. However, root systems of these trees may be negatively impacting archeological features.

Woodland forests surround the earthwork complexes. A wide variety of woody species is present, occurring as monodominant or mixed stands. Theses communities are rather open, low, young woodlands, and the canopy is closed in some places. Dominant trees include common hackberry, black walnut, sugar maple, and black locust (*Robinia pseudoacacia*).[3.34] Invasive exotic vegetation occurs, and is removed by NPS staff by hand-pulling for honeysuckle and garlic mustard. The hardwood forest encroaches on the northeast corner of the enclosure.

Riparian areas occur along the bank of the Scioto River within the floodplain. Dominant species include common hackberry, American sycamore, silver maple, and boxelder.[3.35] This is similar to a variety of floodplain forests of east North America and areas are often under water for some period each spring. Periwinkle (*Vinca minor*), an invasive species, grows throughout the understory along the nature trail near the river for erosion control.

The northernmost area of the park unit is maintained as a hay field. The vegetation includes Orchardgrass (*Dactylis glomerata*) as the most common species, followed by Canada goldenrod, meadow fescue (*Schedonorus pratensis*), Timothy grass (*Phleum pratense*), and black medick (*Medicago lupulina*).[3.36] The field is in good condition.

Analysis

It is unknown what the vegetation was like during the period of significance. The 1848 maps by Squier and Davis indicate that Mound City Group was forested. Soon afterwards the land was plowed and planted with crops, until the Army took over in 1917.

Extant vegetation includes trees planted at Mound City Group in the 1940s and 1970s to screen views in and out of the earthwork area. Trees and shrubs in the northeast corner of the enclosure were intentionally planted in the 1960s, in an attempt to reconstruct the scene as Squier and Davis experienced it. A few ornamental plantings were added to the

3.34 Diamond, *Vegetation Classification and Mapping*, 21.
3.35 Diamond, *Vegetation Classification and Mapping*, 21-22.
3.36 Diamond, *Vegetation Classification and Mapping*, 26.



Figure 3-37. The visitor center serves as the main visitor contact point for the entire park. It includes an information desk, museum, restrooms, gift shop, and offices for interpretive staff. (Mundus Bishop 2014)



Figure 3-38. The resource management building has offices, library, archive and storage. (Mundus Bishop 2014)

visitor center at Mound City Group in 1959. It is unknown if the vegetation at Mound City Group reflects its original pattern. The vegetation and vegetation patterns of Mound City Group are non-contributing to the archeological landscape.

Buildings and Structures

Existing Condition

Mound City Group includes several buildings and structures for visitor, administrative, and maintenance functions. The visitor center is at the west edge of the park unit, adjacent to the earthwork complexes. The administrative and maintenance buildings are clustered at the south end, away from the earthwork complexes and visitor areas.

The Mission 66-era *visitor center* serves as the main visitor contact point for the entire park. It includes an information desk, museum, restrooms, gift shop, and offices for interpretive staff. It is a cement block, masonry building with granite and masonry accents, and a red metal roof. The visitor center was built in 1959 and modified in 1992. It is in good condition.

The *resource management building* is a single-story, vinyl-sided building. It houses offices, library, and storage. This building is in good condition.

The *collections storage building* is a single-story, vinyl-sided building, connected to the resource management building to the north. It houses the archives and storage. This building is in good condition.

The *administration building* houses administrative offices. It is a two-story wood building with an asphalt shingle roof, a stone foundation, and stone porch and steps. Three stone steps with painted steel railing descend to a basement on the south exterior of the building. An accessible ramp is on the north side. This building is in good condition.

The *maintenance building* provides vehicular and equipment storage, and a maintenance shop. A fenced parking area and maintenance yard is on the building's south side. The building is 3,200 square feet, vinyl sided with an asphalt roof. This building is in good condition.

The *maintenance storage structure* is a single-story, vinyl-sided tool shed with an asphalt roof. It is within the maintenance yard. It is an open-sided, used for equipment storage. The shed is in good condition.

The *storage building,* 280-square foot vinyl sided shed with an asphalt roof, is adjacent the administration building. This building is in good condition.

A wood-frame *shelter* is adjacent to the Ohio Erie canal stones. The structure measures 16 feet by 12-feet. The roof is supported by six beams. It has a decomposed granite / crusher fines floor. The shelter is in good condition.

Analysis

Since the period of significance, buildings were built at Mound City Group as part of Camp Sherman in 1917. These were mostly removed in the 1920s.

The administrative building and resource management building were originally built in the 1930s, and have since been remodeled. The collections storage building was added in 1999. The visitor center was built in 1959 as part of the Mission 66-era development, and was modified from its original design in 1992.

These buildings have not been formally evaluated for significance but may be of historical significance for their association with park development and Mission 66. They are non-contributing to the archeological landscape.



Figure 3-39. Administration building has offices. (Mundus Bishop 2014)



Figure 3-40. The maintenance building and yard. The maintenance storage shed is in the background. (Mundus Bishop 2014)



Figure 3-41. A wood frame shelter at the Ohio Erie canal stones wall. (Mundus Bishop 2014)



Figure 3-42. Stone entrance walls flank the entrance into the park. (Mundus Bishop 2014)



Figure 3-43. Granite walls and planters frame the entry terrace at the visitor center. (Mundus Bishop 2014)

Small Scale Features

Existing Condition

The small scale features of Mound City Group include stone walls, regulatory and interpretive signs; visitor amenities such as outdoor furniture and picnic tables, fences, a flagpole; and canal lock stones remaining from the original Ohio Erie Canal.

Stone entrance walls flank the entrance into the park at the intersection of the entrance drive with the highway. The two stacked sandstone walls, are curved and two feet in height with 3 foot tall columns at the ends. The walls are in good condition.

Granite walls and planters frame the entry terrace at the visitor center. The walls create five planting areas. The walls are 8-inches wide, with 20-inch columns with 24-inch by 4-inch caps. The granite planters have built-in Trex benches.

Canal lock stones from the Ohio and Erie Canal are along the nature trail, north of the visitor center. The limestone slabs include a partial stack stone wall on several engraved top stones. It is L-shaped, and measures 11 feet by 12-feet. These have not been formally evaluated for significance, but may be of historical significance for their association with Ohio history and development.

Two *entry signs* occur at the park entrance. They are standard brown NPS signs, placed to be visible from the highway. They are in good condition.

A *kiosk* with visitor information is at the visitor center. The kiosk is wood frame on painted steel, set on a concrete pad. It is in good condition.

There are ten *interpretive waysides* placed throughout the park unit to interpret the archeological landscape.

Regulatory signs include those devoted to public safety and vehicular regulations, and others marking trails, service drive, and parking.

Four *vegetable planters* are near the visitor center, built of Trex with seasonal plantings. The overall dimension of the planting area is 16 feet by 10-feet.

Picnic tables are at the visitor center and the adjacent picnic area. The picnic tables at the picnic area are built of Trex slats on galvanized steel bases. Two are set on a concrete pad, others are on mown lawn.

Four picnic tables, built of Trex slats with painted steel legs are near the visitor center. Three are standard, one is accessible. The tables are dispersed: one on the terrace, two in the lawn, one at the entry terrace.

There are six picnic tables built of Trex slats on galvanized steel bases placed in the lawn between the resource management building and the administration building.

This park unit includes three types of benches in different areas. One bench, built of Trex slats with a back on standard supports is along the east portion of the nature trail, at the top of the river bank. A wood slat bench with decorative steel is outside the east entrance of the resource management building. A dual-colored bench, built of Trex slats is on the south side of the administration building.

A *stone grill* is near the administration building and picnic tables. The grill has a concrete base and is L-shaped, measuring 5 feet long by 3- to 5 feet high.

A *flagpole* is near the visitor center. It is 25 feet tall, and placed on a concrete pad, connected by sidewalk to the visitor center. The flagpole is in good condition.



Figure 3-44. Kiosk at the visitor center. (Mundus Bishop 2014)



Figure 3-45. Ten interpretive waysides are placed throughout the park unit to interpret the archeological landscape. (Mundus Bishop 2014)

Two *bike racks* are within the park. One is at the administration building of unpainted steel, and the other is in front of the visitor center, painted green.

Trash receptacles are within the picnic area, including one large receptacle, one small receptacle, and a recycle bin. A trash receptacle is at the lower river overlook.

Two types of *fences* are within this park unit. A two-rail split rail fence is along the park's west border, along the highway. It is in good condition. A chainlink fence, approximately 6 feet high, surrounds the maintenance yard. A chainlink gate provides access to the yard. Both are in good condition.

Solar-powered *street lighting* is in the administrative / maintenance area, and at the visitor center. Eleven powder-coated steel bollard lights, on concrete bases, are along the sidewalks at the visitor center and within the entry terrace.

Fire hydrants are at the administrative / maintenance area, and at the visitor center. An electrical overhead power-line occurs at the south property edge.

Analysis

The small scale features that exist today are not from the period of significance.

The Ohio-Erie Canal stones are part of the story of the development of the area. They are non-contributing features to the archeological landscape, but may be historically significant in their own right. The stone entrance walls were added in the late 1920s, and although they may be found to be significant historic resources, they are non-contributing features of the archeological landscape.



Figure 3-46. One of eight picnic tables at the picnic area. (Mundus Bishop 2014)

HINES BLVD

104

North Forty

Enlargement - Illustration 3-2

Ross Correctional Institute

Chillicothe Correctional Institution

Scioto River

A G

G

Enclosure

D

E

B

C

F

OE OE OE OE OE OE OE OE OE OE OE OE

N

W E

S

0 200 400

1" = 400'-0"

Legend

- NPS Boundary
- Water Bodies
- Wetlands
- 100 Year Floodplain
- Embankment
- Highway
- Paved Road
- Unpaved Road
- Paved Trail
- Unpaved Trail
- 1 ft Contours
- Mound - Extant Above-Grade
- Mound - Extant Below-Grade
- Earthen Wall - Extant Above-Grade
- Borrow Pit - Extant Above-Grade
- Borrow Pit - Unverified
- Building Remnant - Extant Above-Grade
- Buildings / Structures
- Wall
- G Gateways
- OE Overhead Lines
- Fence
- Hay Field
- Mown Lawn
- Ornamental Planting
- Turf Pavers
- Woodland
- Tree

Buildings and Structures

- A Visitor Center
- B Resource Management
- C Collections Storage Building
- D Administration
- E Maintenance
- F Maintenance Storage

Sources:
FEMA Floodplains Map #39141C0200D, 39141C0355D, 39141C0335D, 39141C0175D; http://www.fws.gov/wetlands/-Data/Mapper.html; 2014 Google Maps; 1978 Mound City Land Use Plan

TIC# 353 128148

OCTOBER 2015	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: MOUND CITY GROUP - EXISTING CONDITION NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 3-1	REGION: MIDWEST; COUNTY: ROSS; STATE: OHIO; 3-55

North Forty

104

Scioto River

Overlook

Picnic Area

Enclosure

Ross Correctional Institution

Chillicothe Correctional Institution

Legend

- NPS Boundary
- Water Bodies
- Wetlands
- 100 Year Floodplain
- Embankment
- Highway
- Paved Road
- Unpaved Road
- Paved Trail
- Unpaved Trail
- 1 ft Contours
- Mound - Extant Above-Grade
- Mound - Extant Below-Grade
- Earthen Wall - Extant Above-Grade
- Borrow Pit - Extant Above-Grade
- Borrow Pit - Unverified
- Building Remnant - Extant Above-Grade
- Buildings / Structures
- Wall
- G Gateways
- OE Overhead Lines
- Fence
- Hay Field
- Mown Lawn
- Ornamental Planting
- Turf Pavers
- Shrubland
- Woodland
- Tree

Buildings and Structures

- A Visitor Center
- B Resource Management
- C Collections Storage Building
- D Administration
- E Maintenance
- F Maintenance Storage
- H Flammable Storage
- I Shelter

Small Scale Features

- a Stone Entrance Walls
- b Granite Walls and Planter
- c Stone Retaining Walls
- d Canal Lock Stones

N W E S

0 100 200

1" = 200'-0"

Sources: FEMA Floodplains Map #39141C0200D, 39141C0355D, 39141C0335D, 39141C0175D; http://www.fws.gov/wetlands/Data/-Mapper.html; 2014 Google Maps; 1978 Mound City Land Use Plan

TIC# 353 128148

OCTOBER 2015

UNITED STATES DEPARTMENT OF THE INTERIOR

HOPEWELL CULTURE NATIONAL HISTORICAL PARK

ILLUSTRATION 3-2

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT

TITLE OF DRAWING
MOUND CITY GROUP - ENLARGED EXISTING CONDITION

NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK

REGION MIDWEST | COUNTY ROSS | STATE OHIO

Hopeton Earthworks

Introduction

Hopeton Earthworks is Hopewellian earthwork complex consisting of a large conjoined circle and square, smaller circular enclosures, and parallel walls. The 292 acre park unit is within a bend of the Scioto River, situated on a terrace approximately thirty feet above the river.

Hopeton Earthworks is one of two park units within Hopewell Culture NHP with no visitor facilities. It is approximately four miles north of Chillicothe, Ohio, and one mile east of the Mound City Group, across the Scioto River (a driving distance of 5.7 miles from the park visitor center). Hopeton Earthworks is west of Ohio Highway 159. Vehicular access to the park is from Hopetown Road.

The archeological landscape of Hopeton Earthworks is built upon the first terrace of the Scioto River, on its east bank. The earthwork complex is overlooked by a second terrace approximately thirty feet above the first terrace along the eastern edge of the earthwork complex. It occurs on a single parcel of land. Within the park's legislated boundary is a private gravel quarry, Melvin Stone Company.

Land use to the north and west is primarily agricultural, and a multi-family residential property is located to the south of Hopeton Earthworks, on the south side of Hopetown Road.

The Hopeton Earthworks is composed of several archeological features: a large circular enclosure-the Great Circle; a Square Enclosure; several smaller enclosures and mounds; and two parallel earthen walls extending from the intersection of the Great Circle and Square Enclosure to the southwest. Archeological features include extant earthen walls, some of which have above-grade features; others with only below-grade features; mounds with below-grade features; unverified earthen walls and mounds; and unverified borrow pits and ditches. Some below-grade features were identified using high-resolution magnetic surveys.[3.37]

This section presents the existing condition and analysis of Hopeton Earthworks through six landscape characteristics:

- Spatial Organization / Topography / Views
- Archeological Features
- Circulation
- Vegetation
- Buildings and Structures
- Small Scale Features.

Since site documentation was completed in October 2014, a parking lot at Hopetown Road and trail between the parking lot and overlook have been designed through a separate project. Therefore, these features are treated as existing conditions in the treatment alternatives and treatment plan included in this CLR/EA, but are not included in the existing conditions documentation for Hopeton Earthworks.

3.37 Jarrod Burks, *Large Area Magnetic Gradient Survey at the Hopeton Works Unit, Hopewell Culture National Historical Park, Ross County, Ohio*, (Columbus, OH: Ohio Valley Archaeology, Inc., 2013); and Hopewell Culture NHP Archives, *Hopeton Magnetometry*, 2004.



Figure 3-47. The earthwork complex is relatively flat, with a second terrace rising about thirty feet above the earthworks along the east boundary of the property. View across Square Enclosure looking east, with second terrace in the background, October 2014. (Quinn Evans Architects 2014)



Figure 3-48. View of Hopeton Earthworks looking west from the east side of the NPS property, October 2014. The gravel mining operation is visible in the background. (Quinn Evans Architects 2014)

Spatial Organization / Topography / Views

Existing Condition

Hopeton Earthworks is organized in relationship to the Scioto River, within a bend that wraps around the park unit on the north, west, and south. The earthwork complex is located entirely on the first terrace of the river's east bank, the Circleville Outwash terrace. The earthwork complex is located approximately thirty feet above the river bed.

The earthwork complex is relatively flat and open, with a gradual slope up to the east to the second terrace, the Kingston Outwash terrace. The east, south, and west edges of the earthwork complex are defined by steep slopes. The second terrace east of the earthwork complexes creates a feeling of enclosure. The slopes on the south and west extend down toward the floodplain.

Mound City Group is located across the Scioto River, and while the Mound City Group is not visible from Hopeton Earthworks, the two park units are spatially related by the orientation of the archeological features.

Views at Hopeton Earthworks are generally expansive vistas across broad fields. Distant views of hills to the east and west provide a broader reference and feeling of enclosure. Wooded areas to the north, south, and east, of the park unit obscure close range views to agricultural and residential land use beyond the property boundaries. Visible features of the earthwork complex are difficult to see without referencing the archeological features on a plan. The west and south sides of the Square Enclosure are the most apparent features and most visible when viewed from higher ground on the east side of the property. Buildings and structures associated with the gravel quarry are visible from the earthwork complex facing west.

The park unit consists of six distinct spatial areas:

- Earthwork Complex
- Open fields to the north and west of the earthwork complex
- Cryder farmstead
- Gravel quarry
- Floodplain
- Dry Run floodplain at the southeast side

Hopeton Earthworks is spatially organized as a series of overlapping archeological features including the Great Circle, Square Enclosure, Parallel Walls, and several smaller features. Circle A is the northern most feature, located at the northeastern corner of the property. The Great Circle lies to the southwest of Circle A. The south curve of the Great Circle overlaps with the north side of the Square Enclosure. The Parallel Walls extend southwest from the west intersection of the Great Circle and Square Enclosure, aligning with the southern portion of Mound City Group.

The Great Circle has three gateways, two of which lead into the Square Enclosure. The Square Enclosure has multiple gateways on each side. A small circular enclosure is on the north side of the earthen causeway, near its intersection with the two large enclosures.[3.38]

Open fields are north and west of the earthwork complex. These fields are visually separated from the earthwork complex by tree windbreaks.

The former Cryder farmstead is a spatially distinct area, to the west of the earthwork complex. It is maintained as mown lawn and shaded by maple and non-native Siberian elm trees, and includes remnants of a late 18th to 19th century farmhouse foundation.

3.38 Squier and Davis, *Ancient Monuments of the Mississippi Valley, Hopeton Work*.



Figure 3-49. View from Cryder Farmstead of buildings at Melvin Stone Company, LLC Plant 2208 / Shelly Materials Chillicothe Facility, October 2014. (Quinn Evans Architects 2014)



Figure 3-50. Though the stream is intermittent, the banks of Dry Run are deeply cut, October 2014. (Quinn Evans Architects 2014)

Within the NPS legislated boundary is the privately owned property of the gravel quarry.

Located west of the earthwork complex, this property includes structures and buildings associated with the gravel mining operation. A large pond previously used by the gravel company as a borrow pit is located immediately to the west of the earthwork complexes. The pond is of interest to NPS as potential bird habitat. Gravel quarry operations increase noise levels at Hopeton Earthworks. While the gravel quarry is located on private property, this space is not visually distinct from the earthwork complex.

Along the west side of the NPS property is an open field located within the floodplain of the Scioto River. This area has been planted with native grasses and forbs and is on the river floodplain.

A ruderal forest is located in the southeast portion of the park unit, north of Hopetown Road The vegetation and topography in this area create a spatially distinct portion of the property. Dry Run, an intermittent but deeply cut stream, is located to the south of the earthwork complexes in this part of the NPS property. The area also includes a walnut grove along Hopetown Road.

Analysis

Since the period of significance, the spatial organization / topography / views at Hopeton Earthworks have been altered. Above-grade archeological features have been damaged by agricultural practices from the eighteenth through twentieth centuries.

Further damage to the earthwork complexes resulted from the construction of the access road, Pit Road, the utility poles and overhead lines that cross the Parallel Walls and the southern portion of the Square Enclosure.

Even with these alterations the mass and scale of the earthwork complex remains as does its relationship to the river and surrounding landforms. Due to this, the spatial organization / topography / views at Hopeton Earthworks contribute to the archeological landscape.



Figure 3-51. View of Square Enclosure at Hopeton Earthworks from east, looking west. A portion of the Square Enclosure is visible to the left of The access road, highlighted by slight variations in vegetation on the earthworks, October 2014. (Quinn Evans Architects 2014)



Figure 3-52. Visible segment of square earthworks, looking east. The orange cone is a marker on the northwest corner of the Square Enclosure, assisting the viewer to discern the form of the earthworks on the landscape, October 2014. (Quinn Evans Architects 2014)

Archeological Features

Existing Condition

The earthwork complex of Hopeton Earthworks is a large multi-component structure made of sand, gravel, and soil that creates large-scale spaces, and individual archeological features of earthen walls, gateways, mounds, and borrow pits. The primary enclosures include a Large Circle, Large Square, and two smaller circle enclosures, and associated mounds and borrow pits. Outside the enclosures, two parallel linear walls form an earthen causeway. [3.39]

Archeological features are organized into three categories: extant (visible and above-grade), extant (below-grade), and unverified. All archeological features at Hopeton Earthworks are difficult to discern by the untrained eye due to impacts from agricultural practices, gravel mining, and construction of roads, railroads, utilities, and buildings. However, some above-grade features are visible in high-resolution elevation scans, and some below-grade features are visible on magnetic surveys.[3.40]

Square Enclosure is approximately 900 feet long on each side, enclosing approximately 20 acres. Multiple gateways are on each side and at each of the corners. The Square Enclosure is the most visible feature at Hopeton Earthworks. All but two segments of the Square Enclosure are extant above-grade, though all are difficult to discern. The two below-grade segments of the Square Enclosure are evident on the 2004 magnetometer scan of the earthwork complex.[3.41] The most well-preserved earthwork at Hopeton Earthworks is the northwest corner of the Square Enclosure, at a height of approximately four to seven feet above the surrounding terrace.

Great Circle is a Large Circle enclosure that intersects the north side of the Square Enclosure. It is approximately 1050 feet in diameter, enclosing approximately 20 acres. The Great Circle has three gateways, two of which face into the Square Enclosure, and one on the southeast portion of the circle. While the entire Great Circle is extant below-grade, as indicated on the 2004 magnetometer scan, only segments are extant above-grade.

Circle A is a 300 foot diameter circular enclosure located north of the Great Circle. A single gateway in the circle opens to the east. The circle has no extant above ground features, and was not included in the 2004 or 2013 magnetometer surveys. Its location and condition are unverified.

Circle B is a small circular enclosure located to the east of the Square Enclosure. It has a single gateway opening to the west toward the Square Enclosure. Circle B was not visible during the 2014 field investigations, and includes only extant below-ground features identified on the 1938 aerial photograph. The enclosure is not clearly visible on the 2004 magnetometer survey or 2012 LiDAR scan. In 1846, Squier and Davis identified a ditch on the interior of the enclosure; this feature was not visible on the 1938 aerial photograph, 2004 magnetometer survey, or 2012 LiDAR scan. The location and condition of the ditch are unverified.

Circle C is a small circular enclosure located to the east of the Square Enclosure, south of Circle B. It has a single gateway opening onto the Square Enclosure to the west. No features were visible during the 2014 field investigations, and the enclosure is not clearly visible on the 2004 magnetometer survey or 2012 LiDAR scan. The location of Circle C is

3.39 Blank, 1985, Brose, 1976b

3.40 The 2004 magnetometer survey, with locations of the circle and Square Enclosures, are shown in Figure 3-53.

3.41 Lynott 2014, Lynott and Mandel 2009, Weymouth et al. 2009.

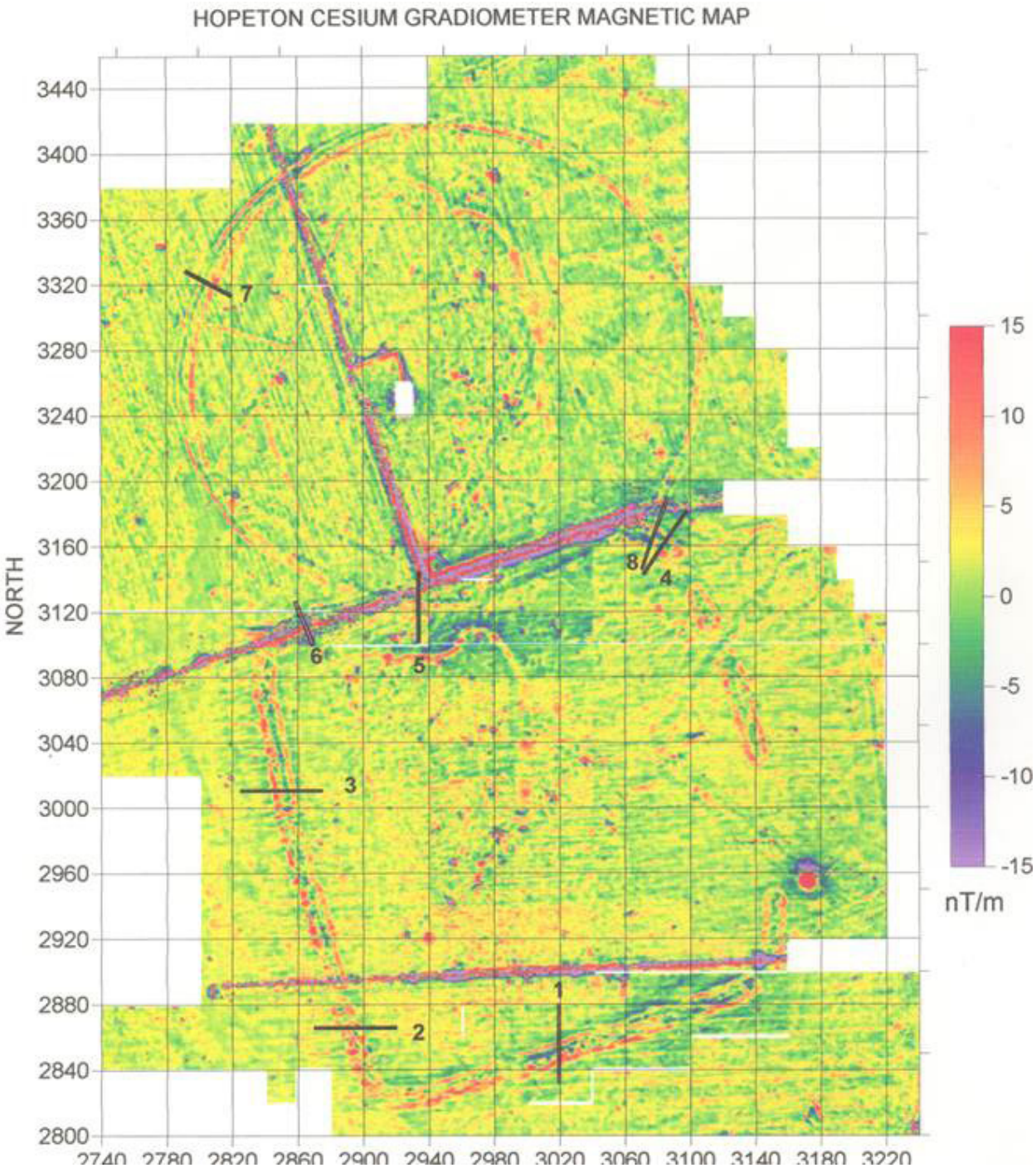


Figure 3-53. 2004 Magnetometer survey of Hopeton Earthworks. (Hopewell Culture NHP Archives 2004).



Figure 3-54. South portion of the Great Circle at Hopeton Earthworks from the second terrace, looking northwest, October 2014. The line indicates the approximate location of the north side of the Square Enclosure. (Quinn Evans Architects 2014)



Figure 3-55. Within the circular enclosure, looking northwest, October 2014. Edge of the Great Circle is barely perceptible along the dashed line. (Quinn Evans Architects 2014)

based on earthen walls visible in the 1938 aerial photograph, and it is likely that extant below-grade features are present. In 1846, Squier and Davis identified a ditch on the interior of the enclosure; this feature was not visible on the 1938 aerial photograph, 2004 magnetometer survey, or 2012 LiDAR scan. The location and condition of the ditch are unverified.

Parallel Walls. Two parallel earthen walls extend run southwest from approximately the intersection between the Large Circle and Square Enclosures. These earthen walls, forming a 2400 foot causeway, extend toward the Mound City Group across the Scioto River, aligning approximately with its southeastern side. A small circular enclosure was identified by Squier and Davis located on the north side of the Parallel Walls, near the intersection of the Great Circle and Square Enclosure. No above-ground features of the Parallel Walls are extant today. However, a portion of the walls are visible in the 1938 historic aerial photograph, and it is likely that extant below-grade features are still present.[3.42] The walls are not visible on the 2004 or 2013 magnetometer surveys.

Borrow Pits. In 1848, Squier and Davis noted the presence of five borrow pits on the east side of the Square Enclosure, on the first terrace occupied by the large enclosures and on the second terrace to the east. While below-grade features of the borrow pits are likely extant, these areas were not included in the area surveyed by magnetometer in 2004 or 2013, and were not visible during the 2014 field survey.[3.43] An historic borrow pit is located southeast of the Square Enclosure.

Mounds. Three mounds are located within the Square Enclosure along its eastern side. The mounds were not visible during the 2014 field investigations, though a slight rise is present on the 2012 LiDAR survey in the location of the center mound, and all three mounds are visible on a 1938 aerial photograph of the earthwork complex.[3.44] Above ground features of the mounds within the Square Enclosure are no longer visible, though it is likely that below-ground features are still present.

Analysis

Hopeton Earthworks is one of the finest examples of a monumental Hopewellian geometric enclosure closely associated with the rich archeological record of domestic habitations and specialized activity associated with the surrounding landscape. The earthwork complex exemplifies the geometrical complexity and precision of Hopewell earthen architecture. The earthwork complex was created by a culture that included small and dispersed societies without kings or chiefs, who experimented with agriculture.[3.45]

Regardless of almost 200 years of cultivation that have altered the earthwork complexes, some topographic relief is apparent, and when vegetation is mown short most portions of the earthwork can be traced upon the ground.[3.46] Also, extant below-grade archeological features are extensive and remain intact.

During the period of significance the archeological features formed a set of geometrically precise earthen walls, including a massive Square Enclosure joined to a Large Circle—the Great Circle. Two smaller circles, Circle B and C, were outside the east wall

3.42 Hopewell Culture NHP Archives, aerial photograph (1938).

3.43 Squier and Davis, *Hopeton Work* (1846); Hopewell Culture NHP Archives, 2004.

3.44 Hopewell Culture NHP Archives, aerial photograph (1938); and Hopewell Culture NHP Archives, *Hopeton Magnetometry,* 2004.

3.45 Bret Ruby, *Authenticity and Integrity of the Hopeton Earthworks, draft UNESCO World Heritage Nomination* (2013), 1.

3.46 Ruby, *Authenticity and Integrity Hopeton Earthworks*, 1.

of the Square Enclosure, in which Circle C overlapped this wall. A third circle, Circle A, was situated beyond the Great Circle to the north. Two mounds were within the Square Enclosure near its east wall. Parallel Walls extended from the northwest corner of the Square Enclosure to the southwest toward the Scioto River.

Earth was excavated from the high ground immediate east of the earthwork complexes and within the Square Enclosure, creating borrow pits.

In 1846, the walls of the Great Circle and Square Enclosure were 50 feet wide at the base and those enclosing the square were two feet tall.[3.47] Cultivation has reduced the archeological features to less than five feet in height in most places. Approximately one-half of the walls of the Great Circle are not evident above-grade, and the other wall sections are barely apparent to an untrained eye. The most visible portions of the earthwork complex are the west and south walls of the Square Enclosure. Three Small Circles, two Parallel Walls, and one of the mounds are no longer visible. One mound near the east wall of the Square Enclosure is barely apparent. Portions of two borrow pits inside the Square Enclosure are extant but difficult to see.

Changes since the period of significance include agricultural cultivation, and construction of buildings, roads, fences, and utility lines. Two buildings and an orchard were built within the Great Circle before 1846. Additional buildings were built as part of the Cryder farm, to the west of the Great Circle and north of the Parallel Walls. The sandstone foundation of the Cryder house remains, as does a small grove of trees. Pit Road and The access road cut through the Parallel Walls, and The access road truncates the Square Enclosure. Roads and a railroad built immediately to the east of the earthwork complex and a commercial gravel quarry on to the west have disturbed land that most likely included archeological resources.

Aerial photographs indicate that surface features were clearly evident in 1938.[3.48] By 1964, only slight traces of the archeological features are apparent.[3.49] A terrain model generated from LiDAR data collected in 2012 reveals clear evidence of topographic features associated with the Great Circle and Square Enclosure, but no traces of the Parallel Walls are apparent.[3.50] The 2004 and 2013 magnetic surveys revealed extant below-grade archeological features associated with the Great Circle and Square Enclosure. No evidence of the Parallel Walls were indicated.[3.51]

Since their original construction, the portions of the above- and below-grade archeological features at Hopeton Earthworks have been modified due to erosion, agricultural practices, road and building construction, and construction of an adjacent gravel quarry.

Although extant above- and below-grade archeological features have been damaged since the period of significance, extensive significant features remain intact, retain integrity, and contribute to the significance of Hopewell Culture NHP.

3.47 Squier and Davis, *Hopeton Works.*

3.48 Hopewell Culture NHP Archives, aerial photograph (1938).

3.49 Hopewell Culture NHP Archives, aerial photograph (1964).

3.50 Hopewell Culture NHP Archives, 2012

3.51 Burks, *Magnetic Gradient Survey at Hopeton*.



Figure 3-56. Entrance to NPS property off of Hopetown Road, October 2014. The entrance to the unit is off of a drive shared with the Melvin Stone Company, LLC Plant 2208 / Shelly Materials Chillicothe Facility / Shelly Materials Chillicothe Facility. (Quinn Evans Architects 2014)



Figure 3-57. Pit Road looking south toward location of parallel earthworks / earthen causeway, October 2014. The Great Circle and Square Enclosure are located to the left. (Quinn Evans Architects 2014)

Circulation

Existing Condition

Existing circulation at Hopeton Earthworks are all vehicular routes. There are no dedicated pedestrian routes. Hopeton Earthworks is not open to the public and access to the park unit is restricted to authorized NPS staff and visitors. Primary access to the earthwork complex is via Ohio State Highway 159 to Hopetown Road.

Hopetown Road is an asphalt paved road that extends from the highway to the west along the southern boundary of the park unit.

Pit Road begins at the intersection with Hopetown Road,where a gated entrance provides access to the gravel surface road that extends to the north. Pit Road crosses over the earthen causeway near the southeast corner of the gravel pit pond.

Access Road is a gravel two-track route that intersects Pit Road at the southeast corner of the gravel pit pond, then extends east across a fallow field. The route crosses over the earthen causeway, and the southern portion of the Square Enclosure. The access road extends east beyond the park unit boundary, crosses an active railroad track just outside the eastern boundary, and intersects River Road and Ohio State Highway 159. This entrance to the earthwork complex is maintained as a secondary access route for the Melvin Stone Company. The company primarily utilizes the entrance at Pit Road.

Vaughan Road, an unpaved route, intersects the access road inside the NPS boundary, and extends north on the east side of the Hopeton Earthworks. The dirt road extends along the bottom of the second terrace on its western side. This road passes through the borrow pits east of the Square Enclosure. Vaughan Road may impact portion of Circle A, though the precise location of this feature is not verified. An easement requires that this road remain open to permit private access to the farm fields north of the NPS boundary.

Other vehicular routes provide access to the gravel mine operations north and west of Pit Road. Most are on private property within the legislated boundary. A short segment of gravel road extends from the gravel mine through the western portion of the NPS property.

Analysis

Modifications to the circulation system at Hopeton Earthworks since the period of significance include installation of roads to access agricultural fields and homesteads, and later, the gravel quarry.

While a water route may have once connected Mound City Group and Hopeton Earthworks, it no longer exists.

Pit Road and the access road pass through the earthwork complex, and construction of these roads may have impacted below-grade features. The circulation routes that exist today are not from the period of significance, and are not contributing features.



Figure 3-58. Gravel road and utility lines cross through the south portion of the Square Enclosure, October 2014. (Quinn Evans Architects 2014)



Figure 3-59. Proximity of active railroad to earthwork complex, looking east from west side of Square Enclosure, October 2014. (Quinn Evans Architects 2014)



Figure 3-60. Railroad crossing on east NPS boundary, October 2014. (Quinn Evans Architects 2014)



Figure 3-61. Vaughan Road, located to the east of the earthwork complex, October 2014. (Quinn Evans Architects 2014)



Figure 3-62. Soybean field in the area of the Square Enclosure includes a mix of forbs, grasses, and soybeans, October 2014. (Quinn Evans Architects 2014)



Figure 3-63. Black walnut grove on Hopetown Road, October 2014. (Quinn Evans Architects 2014)

Vegetation

Existing Condition

The vegetation present at Hopeton Earthworks includes crop fields, hay fields, grassland, woodland, shrubland, and mown areas. Most of the land within the park unit is active or fallow crop fields in various stages of successional growth. Land within the park unit has been utilized throughout the past two centuries for agriculture, typical of the land use of the surrounding area.

The earthwork complex is located within open fields that include active agriculture and fallow fields.

Vegetation in the earthwork complex consists of no-till crops, hay or mown areas, and fallow fields. At the time of the 2014 survey, soybeans were planted in fields occupying approximately the western third of the Large Circle, the entire Square Enclosure, and the eastern half of the earthen causeway, from the Cryder farmstead south to the tree line, and from Pit Road east to the second terrace. Crops in the park unit rotate between no-till soybeans and winter wheat.[3.52] NPS regulations prohibit the use of industry-standard herbicides therefore, there is a high proportion of weeds in the field.

A shift in the species present on the earthwork complexes increases the visibility of the form of the Square Enclosure. In some locations, earthen walls located on the edges of fields, where the soil was not tilled during agricultural use, have been partially protected from destructive activities.

A field occupying the remainder of the Large Circle enclosure and a field located on the second terrace to the east of the Square Enclosure had been cut for hay at the time of the field investigations in October 2014.

Much of the rest of Hopeton Earthworks is a species mix characteristic of fallow hay fields, including fields to the north and west of the Large Circle enclosure. Species present are typically grasses that have been planted or volunteer into old fields, including orchardgrass, Canada goldenrod, meadow fescue, Timothy grass, and black medick. Woody species are limited to successional shrubs and small trees.[3.53] Several tree lines cross between fields, these may have been established as wind breaks or fence rows. Vegetation on the western half of the Parallel Walls is mown.

Woodland occupies the edges of the park unit property at its southeast and northeast boundaries. Ruderal species in these areas are indicative of the presence of disturbance, such as clearing or plowing in the past. The species mix contains generalist and exotic species, including invasive plant species.[3.54] A black walnut grove shades a cleared area of approximately four acres along Hopetown Road west of Dry Run. Along Hopetown Road and Ohio 159, the ruderal woodland transitions to a ruderal shrubland, characterized by a patchy canopy of small trees, and shrubs dominated by early successional species.[3.55]

To the west of the gravel mining operation, the park has established native grasses and forbs on approximately 46 acres.

A small copse of non-native Siberian elms (*Ulmus pumila*) and maples are clustered at the Cryder farmstead. Lawn in this area is mown. Hazard tree conditions in this group include dead wood, cracks, weak branch unions, decay, and poor tree architecture.

3.52 Vick, *Inventory of Mammals*, 3.

3.53 Vick, *Inventory of Mammals*, 26-27.
3.54 Vick, *Inventory of Mammals*, 21-22.
3.55 Vick, *Inventory of Mammals*, 3 and 31-32.



Figure 3-64. Fallow hay field northwest of the earthwork complex, tree line in background, October 2014. (Quinn Evans Architects 2014)



Figure 3-65. Non-native Siberian elms and maples in poor condition at Cryder Farmstead, October 2014. (Quinn Evans Architects 2014)

Analysis

It is unknown what the vegetation was like during the period of significance. It is unknown if the vegetation at Hopeton Earthworks reflects the historic pattern. The 1848 maps by Squier and Davis indicate that much of the land surrounding the earthwork complex was cultivated. An orchard was located within the Great Circle. The Square Enclosure and circles B and C were covered in forest as was the slope east of the earthwork complex.[3.56]

By 1938, agricultural use had expanded throughout the park unit, and wooded areas were significantly diminished. Trees clustered around structures at the Cryder farmstead and within the Great Circle.[3.57]

The vegetation and vegetation patterns at Hopeton Earthworks are non-contributing to the archeological landscape.

3.56 Squier and Davis, *Hopeton Works.*

3.57 Hopewell Culture NHP Archives, aerial photograph (1939).



Figure 3-66. Foundation at Cryder Farmstead, looking southeast toward Square Enclosure, October 2014. (Quinn Evans Architects 2014)



Figure 3-67. Entrance to storm cellar or root cellar at foundation at Cryder Farmstead, October 2014. The entrance is constructed of concrete, and may have been added to the structure sometime after its initial construction. (Quinn Evans Architects 2014)

Buildings and Structures

Existing Condition

Only one structure is present on the NPS property at Hopeton Earthworks.

The *Cryder Farmstead* consists of a mortared stone building foundation, roughly measuring 21 feet by 35 feet, located approximately in the center of the park unit.[3.58] On the north side of the foundation concrete wing walls define the former entrance to a crawlspace or root cellar under the building. A concrete stock trough is located in the copse of trees near the center of the Great Circle.[3.59]

Gravel quarrying began west of the earthwork complex during the Great Depression and was reopened in 1984.[3.60] Construction of *quarry buildings* on the park unit may have impacted below-grade features.

A spoil pile of topsoil removed from the quarry pit by the gravel company was previously stored immediately to the north of the Cryder Farmstead. The spoil pile was approximately 30' tall and 1000' long. Most of the spoil pile was removed ca. 2005, however, approximately two to three feet of fill remain in the area north of the Cryder Farmstead.[3.61]

Analysis

The 1846 maps by Squier and Davis indicate two buildings near of the Cryder farm, west of the Square Enclosure, and north of the Parallel Walls. Two outbuildings were within the Great Circle at the time.[3.62] The remnants of one building foundation remains at the Cryder farmstead. This building may be historically significant, in its own right, but it does not contribute to the archeological landscape.

3.58 Brady-Rawlins and Pederson, 2006.
3.59 Bret Ruby, correspondence to author, 2015.
3.60 Admin History, p. 327.
3.61 Bret Ruby, correspondence to author, 2015.
3.62 Squier and Davis, *Hopeton Works.*



Figure 3-68. Gate at current entrance to NPS property, October 2014. (Quinn Evans Architects 2014)



Figure 3-69. NPS park identifier sign, Hopeton Earthworks, October 2014. (Quinn Evans Architects 2014)

Small Scale Features

Existing Condition

Small scale features present at Hopeton Earthworks include fences, gates, electrical poles, signage, a picnic table, and miscellaneous features.

Fences enclose the park unit on the property's south and west sides. Partial fences are present on the north side, from the western boundary to the intersection with Overly Road, and along the east side from the south property boundary to approximately 800 feet south of the north property boundary. Metal gates control access to the park unit at the south and east entrances. Fence types vary throughout the park unit. On the south side of the property near the entrance, the fence is wire strung over wood and metal posts. Along Hopetown Road, the fence is wood. On the east side of the property, the fence is wood or wire strung on wood posts.

A Hopeton Earthworks park *identification sign* is located to the east of Pit Road, which provides access to the park unit from Hopetown Road. The sign indicates that there are "no public facilities" at the park unit. The sign is in good condition. Additional signage includes regulatory signage at the railroad crossing at the east side of the property.

Orange *traffic cones* are used to mark the corners of the Square Enclosure to enhance visibility of the earthwork. A picnic table is located at the Cryder farmstead beneath the elm and maple trees.

Utility poles and aerial lines run parallel to the railroad on the east side of the property. Another set of utility poles and aerial lines extend along the north side of the east west gravel road, passing through the southern portion of the Square Enclosure and across the earthen causeway, possibly disturbing below-grade resources. At Pit Road, the overhead lines and utility poles turn north, following Pit Road for a short distance and then turning to the west to provide power to the gravel company.

Analysis

Small scale features at Hopeton Earthworks are not from the period of significance, and do not contribute to the archeological landscape. The presence of utility lines within the earthwork complex impacts views of the archeological features, and installation may have disturbed below-grade resources.



Figure 3-70. Traffic cone marks the northwest corner of the Square Enclosure, October 2014. (Quinn Evans Architects 2014)



Figure 3-71. Utility poles cross the south portion of the Square Enclosure, October 2014. (Quinn Evans Architects 2014)

Scioto River
Overly Road
Overly Road
Circle A
G
CSX Railroad
Second Terrace
(Kingston Outwash)
Soybeans
Great Circle
Circle B
Borrow
Pits
River Road
Vaughan Road
A
Parallel Walls
Square
Enclosure
Circle
C
Borrow
Pit
159
Gravel Quarry
Access Road
Historic
Borrow
Pit
First Terrace
(Circleville Outwash)
Triangle
Site
Pit Road
Soybeans
159
Walnut Grove
Hopetown Road
292
Dry Run
Floodplain
To Visitor's
Center
5.7 miles
N
W
E
S
0 300 600
1" = 600'-0"

Legend

- NPS Boundary
- Portion of Earthwork not in NPS Ownership
- Water Bodies
- Wetlands
- Floodplain
- 100 Year Floodplain
- Embankment
- Highways
- Paved Roads
- Gravel Road
- Railroads
- 1 ft Contours
- Mound - Extant Below-Grade
- Earthen Wall - Extant Above-Grade
- Earthen Wall - Extant Below-Grade
- Earthen Wall - Unverified
- Borrow Pit - Unverified
- Ditch - Unverified
- Building Remnant - Extant Above-Grade
- Buildings/Structures
- G Gateways
- OE Overhead Lines
- Fence
- Crop
- Active Hay Field
- Fallow Hay Field
- Shrubland
- Native Grassland
- Woodland

Buildings and Structures

A Cryder Farmstead

Sources:
Burks, Large Area Magnetic Gradient Survey at the Hopeton Works, 2013; GIS HOCU Lidar, 2012; Squier and Davis, Hopeton Work, 1846; State of Ohio Location Based Response System Road Centerlines, 2011; State of Ohio Active Rail Lines; Vegetation Classification for Hopewell Culture National Historical Park, 2004; U.S. Fish and Wildlife Service, National Wetlands Inventory; U.S. Census Inland Waterways, 2013; FEMA Floodplain Map #39141C0200D; HOCU GIS, Aerial Photograph of Hopeton Earthworks, 1938; HOCU CAD Archives, Hopeton Earthworks mowing plan (ccimow.dwg); ESRI World Imagery, 2014; field investigations conducted October, 2014.

TIC# 353 128148

OCTOBER 2015	TITLE OF PROJECT CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING HOPETON EARTHWORKS - EXISTING CONDITON NAME OF PARK HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 3-3	REGION MIDWEST · COUNTY ROSS · STATE OHIO · 3-83

Hopewell Mound Group

Introduction

Hopewell Mound Group is a 315-acre park unit with archeological features, consisting of two monumental conjoined earthwork enclosures, the Great Enclosure, in the general shape of a parallelogram, and the other in the shape of a square, several smaller enclosures, approximately thirty to forty mounds, and associated ditches.

The archeological landscape is situated on the first terrace above the North Fork Paint Creek and the Lattaville Moraine, which rises approximately forty to eighty feet above the first river terrace. It is approximately seven miles northwest of Chillicothe, Ohio, and six miles west of the visitor center. Primary access to the earthwork complex is from Sulphur Lick Road. Near the southern edge of the park unit boundary is a one acre parcel, with a private residence. Two utility easements pass through the earthwork complex. A high voltage power-line extends through the center of the park unit. A second power-line is located along the west edge of the park unit.

Hopewell Mound Group is one of three park units open to visitors. Amenities include a two and one-quarter mile interpretive trail, a parking area, comfort station, and picnic shelter. A portion of the Adena Recreational Trail bicycle path transects Hopewell Mound Group, parallel to the south side of Sulphur Lick Road.

Archeological features include extant earthen walls, mounds, and ditches - some visible and others below-grade; unverified earthen walls and mounds; and borrow pits (extant, below-grade). The 2013 high-resolution magnetic survey for Hopewell Mound Group revealed below-grade archeological features including earthen enclosures, mounds, and other features within the Great Enclosure and Square Enclosure. This information was used in this CLR/EA to assist in locating non-visible features, and evaluating the existing condition of the earthwork complexes.

This section presents the existing condition and analysis of Hopewell Mound Group through six landscape characteristics:

- Spatial Organization / Topography / Views
- Archeological Features
- Circulation
- Vegetation
- Buildings and Structures
- Small Scale Features



Figure 3-72. Typical view from the north section of the Great Enclosure, looking south toward Mound 25. Vegetation blocks the view of the first terrace, October 2014. (Quinn Evans Architects 2014)



Figure 3-73. View from overlook at northeast portion of the earthwork complex, facing south. The view is maintained by clearing of vegetation for the utility easement. Vegetation on either side of the easement is encroaching on the view of the complex. October 2014. (Quinn Evans Architects 2014)

Spatial Organization / Topography / Views

Existing Condition

Hopewell Mound Group is situated within a valley carved by the North Fork Paint Creek, which flows from west to east south of the earthwork complex. The archeological landscape occurs in association with three topographic terraces. The floodplain defines the south side of the earthwork complex, and is within the100 year floodplain of the North Fork Paint Creek. A steep embankment defines the north edge of this terrace. It is associated with the North Fork Paint Creek, and is severely eroded near its intersection with Anderson Run. Immediately north, and approximately twenty to thirty feet higher, is the first terrace, on which the majority of the archeological features associated with the Hopewell Mound Group are situated. This edge is delineated by a steep embankment.

The Lattaville Moraine rises is approximately forty to eighty feet above the first terrace and includes the north wall of the Great Enclosure. In addition to the North Fork Paint Creek, nearby streams, springs and ravines are associated with the physical form and current condition of the earthwork complex. The earthwork is situated between two small streams, to the east and west of the earthwork complex. Anderson Run is an intermittent stream on the east side of the property. A ditch constructed by the Hopewell Culture diverts water to flow outside the west side of the Great Enclosure. Two springs are within the Great Enclosure, inside the walls on the glacial moraine. A third is immediately to the west of the Great Enclosure, and flows into the ditch on the outside of the enclosure.

Distant views of hills to the east and west provide a broad reference and feeling of enclosure for Hopewell Mound Group. Vegetation screens views of the surrounding land use, limiting visual intrusions into the earthwork complex. One exception is a residential property on the south side of Sulphur Lick Road immediately south of Mound 25. The house, barn and outbuildings associated with this property are clearly visible from the earthwork complex. The earthwork complex on the first terrace is spatially distinct from the rest of the park.

The park unit includes five distinct spatial areas:

- Earthwork complex
- Lattaville Moraine
- Parking area and open field east of earthwork complex
- Restored native grasslands and Hayfield
- Open field west of earthwork

The Hopewell Mound Group earthwork complex on the first terrace is spatially defined by two monumental archeological features - Great Enclosure and the Square Enclosure. The earthwork complex is oriented length-wise along an east west axis. The Great Enclosure defines the majority of the space, enclosing 111 acres and a large D-Shaped Enclosure, Great Circle, Circle Enclosure, and multiple mounds and borrow pits. The Square Enclosure is adjacent to the east side of the Great Enclosure, sharing its east wall.

An area of ruderal meadow and woodland/ shrubland, is a visually distinct space on the moraine. This area is separated from the first terrace by a steep embankment. Woodlands enclose the space on all sides, except for the clearing maintained for the power-line, which creates a linear corridor through the space. The woodland on the moraine and embankment slope is spatially distinct from the rest of the park unit. Vegetation obscures views to open fields located to the east and south of the space.



Figure 3-74. The Great Enclosure encloses a vast space on the first terrace, defined by treelines and the glacial moraine to the north. View facing north from the Square Enclosure, October 2014. (Quinn Evans Architects 2014)

An overlook along the interpretive trail on the moraine offers a higher vantage point from which the patterns associated with the earthwork complex are visible. However, the view does not provide an optimal presentation, as vegetation obstructs part of the view, and high voltage power-lines and towers provide an almost insurmountable distraction from the archeological features.

A parking area with comfort station and picnic shelter are on the east side of the property. Ornamental plantings buffer the parking area from an open field to the north. The space is defined by woody fencerow vegetation on the east and west. The parking area is visually distinct from the rest of the park unit. The open field north of the parking area and east of the earthwork complex is defined to the east, north, and west by woody vegetation. To the south, ornamental plantings provide a buffer between the open field and the parking area. Views are enclosed within the field except for a low opening, which looks out over the Square Enclosure to the west. The overlook, north of the parking area and directly east of the gateway on the east side of the Square Enclosure, provides a view across the earthwork complex toward the west. The alignment with the earthwork complex and low vantage make it difficult to discern the forms of interest from this point. The overlook is in a key location near the beginning of the trail, and presents visitors their first glimpse of the expanse of the archeological landscape associated with the earthwork complex.

A field south of the parking area is maintained as a native grassland, which creates a distinct space, though views are open to the earthwork complex on the first terrace to the north and west. A steep embankment separates the native grassland from the floodplain on its south side, and it is defined on the east by a treeline.

West of the earthwork complex is a spatially distinct open field. This space is separated from the earthwork complex on the first terrace by a treeline.

Analysis

Since the period of significance, the spatial organization/topography/views at Hopewell Mound Group have been altered. The overall relationship of the earthwork complex to the North Fork Paint Creek and the river terraces and moraine are retained. Above-grade features have been damaged by agricultural practices and construction of Sulphur Lick Road, the Tri-County Trail, a residence and outbuildings and high-voltage overhead utility lines and towers through the Great Enclosure at Hopewell Mound Group.

Contemporary vegetation and intrusions have altered views and spatial organization. High voltage utility lines and support towers have had a dramatic impact on the visual character of the earthwork complex.

The large structures and diagonal division of the Great Enclosure by the utility lines create a slice through the archeological landscape that detracts from the views and scale of the earthwork complex.



Figure 3-75. The Great Enclosure is most visible along its north side, where the earthworks are located in the forest, October 2014. (Quinn Evans Architects 2014)



Figure 3-76. In the autumn the ditch associated with the Great Enclosure is an almost imperceptible dip in the topography, located on the north side of the enclosure. In the spring the ditch holds water in places, creating vernal pools that serve as habitat for breeding amphibians. (Quinn Evans Architects 2014)

Archeological Features

Existing Condition

The archeological features of Hopewell Mound Group consist of a large multi-component earthwork complex built of sand, gravel and soil that define geometric spaces within the landscape, and smaller features including earthen walls, mounds, gateways, and stream channels. The earthwork complex at Hopewell Mound Group is in fair condition.

The majority of the earthwork complex at Hopewell Mound Group is difficult to discern due to impacts from erosion, flooding, agriculture, and development. Despite reduced size and appearance of surface features, the earthwork complex is likely to retain subsurface archeological features.[3.63]

Hopewell Mound Group has two primary archeological features: the Great Enclosure and Square Enclosure. Small archeological features include smaller enclosures, ditches, mounds, and borrow pits.

The archeological features are organized into three types: extant (visible and above-grade); extant (below-grade); and unverified. A 2013 magnetometer survey for two portions of the Hopewell Mound Group earthwork complex revealed the outlines of some below-grade archeological features. Other features that were mapped in the nineteenth and early twentieth centuries are not visible on the surface or on the 2012 LiDAR survey, but may still be extant. A high-resolution magnetic survey of the remaining portions of the earthwork complex would likely reveal these features.[3.64]

Great Enclosure – a large earthen wall in the shape of a parallelogram, spans the first river terrace and the Lattaville Moraine north of the North Fork Paint Creek. The Great Enclosure is approximately 2800 feet in length from east to west, and 1800 feet long from north to south, enclosing 111 acres. The earthen wall is extant along the north side of the enclosure, following the edge of the moraine. (Fig. 5 enclosure north side 5.jpg) A ditch is along the north side of the enclosure, and is also visible on the 2013 magnetometer scan of the east side of the enclosure.[3.65] The eastern side of the Great Enclosure is visible as a low rise about three feet tall and sixty feet wide, traversing the entire first terrace from north to south.[3.66] The western side of the enclosure is visible above-grade, but obscured from view by the western treeline.

West of the Great Enclosure, a ditch diverts a stream from its natural course to a location outside the enclosure walls. The ditch is extant above-grade. The south wall of the Great Enclosure is unverified due to deterioration. It was reportedly originally built using stone.[3.67] This portion of the enclosure has been significantly impacted by development, agriculture, and erosion by the North Fork Paint Creek. It is noteworthy that the earthen walls of the Great Enclosure traverse the steep slope to the north, as this is not a common practice for Hopewellian earthwork complexes. The same design is repeated at five other earthwork complexes in the Scioto-Paint Creek confluence region.[3.68]

Square Enclosure. To the east of the Great Enclosure is a smaller square-shaped enclosure. Each side of the square is 850

3.63 Jarrod Burks, Large Area Magnetic Gradient Survey at the Hopewell Mound Group Unit, Hopewell Culture National Historical Park, 2013.

3.64 Jarrod Burks, Large Area Magnetic Gradient Survey at the Hopewell Mound Group Unit, Hopewell Culture National Historical Park, 2013.

3.65 Jarrod Burks, Large Area Magnetic Gradient Survey at the Hopewell Mound Group Unit, Hopewell Culture National Historical Park, 2013.

3.66 Both the wall and ditch have been located by the Burks 2013 magnetometer scan.

3.67 Brett Ruby, draft comments.

3.68 Brett Ruby, draft comments.



Figure 3-77. A constructed ditch along the west side of the enclosure, facing south, October 2014. (Quinn Evans Architects 2014)



Figure 3-78. The outline of the Square Enclosure is mown, and surrounding vegetation is not cut. This improves visibility and access to the features, October 2014. (Quinn Evans Architects 2014)

feet in length, and all sides have a centrally located gateway. Four mounds are within the Square Enclosure, at the interior of each of the gateways. The Square Enclosure and associated mounds were not visible on the surface during the October 2014 site visit. The location of the earthen walls, and the eastern and southern mounds within the Square Enclosure are identified on historic photographs. Portions of the north and south wall of the Square Enclosure are visible on the 2013 magnetometer survey.[3.69]

Small Enclosures. The Great Enclosure contains several smaller earthen enclosures. A D-shaped earthen wall encompasses Mound 25 and several unverified smaller mounds. While not visible on the surface, below-grade features of the D-Shaped Enclosure, including a ditch on the exterior of the enclosure's earthen walls, are evident on the 2013 magnetometer scan. A gateway was located on the south side of the D-Shaped enclosure by Squier and Davis in 1848, but is not clearly visible on the magnetometer scan.[3.70]

To the east of the D-shaped enclosure is a circular enclosure, the Great Circle, 370 feet in diameter. A gateway is on the northwest side of the Great Circle. The Great Circle does not have above-grade features. However, both the earthen wall and ditch associated with the Great Circle are visible on the 2013 magnetometer scan.[3.71] Small-scale excavations in 2014 revealed that a row of large wooden posts - 18 inches in diameter and up to 16 feet tall - once ringed the inner edge of the Great Circle ditch: A "Hopewell Woodhenge."[3.72]

A 100-foot diameter Circle Enclosure not present on any surveys within the past 200 years has also been identified on magnetometer scans and aerial photographs, to the northeast of the D-shaped enclosure. The Circle Enclosure retains below-grade features.

Mounds. Approximately 30 mounds are within the Great Enclosure. Three are connected to form the largest known Hopewellian mound, Mound 25. This mound stands eight to eleven feet above the surrounding terrace, and is maintained as mown lawn. [3.73] Mound 25 is vegetated as mown lawn to increase its visibility on the landscape.

Four smaller mounds are extant above-grade within the Great Enclosure: Mounds 2, 3, 23, and 24. Mound 2, north of Mound 25, and Mound 23, east of Mound 25, are maintained as mown lawn. Extant below-grade features of three mounds within the eastern half of the Great Enclosure exist, however, above-grade features are not visible.[3.74] Mound 35, on the moraine to the east of the Great Enclosure, is extant above-grade.[3.75] A borrow pit northeast of Mound 35 is also extant.

Analysis

Hopewell Mound Group serves as the type-site for Hopewell Culture. The archeological features associated with this archeological landscape remain similar to their appearance as documented in the nineteenth and early twentieth Centuries. Extensive excavation of the earthwork complex in the 1890s by Moorehead revealed an abundance of exquisite artifacts that led to the concept of the "Hopewell Culture." The Hopewell Mound Group earthwork complex exemplifies the

3.69 Squier and Davis, *North Fork Works* (1848); and Jarrod Burks, *Large Area Magnetic Gradient Survey at the Hopewell Mound Group Unit, Hopewell Culture National Historical Park* (2013).
3.70 Squier and Davis, *North Fork Works*; and Burks, *Magnetic Survey at Hopewell Mound Group.*
3.71 Burks, *Magnetic Survey at Hopewell Mound Group*.
3.72 Ghose, 2014.
3.73 Squier and Davis, *North Fork Work*.
3.74 Burks, *Magnetic Survey at Hopewell Mound Group*; and Hopewell Culture NHP Archives, *LiDAR scan* (2012).
3.75 Burks, *Magnetic Survey at Hopewell Mound Group*; and Hopewell Culture NHP Archives, *LiDAR scan* (2012).



Figure 3-79. View southeast from Mound 25 toward the Great Circle. The Great Circle, D-Shaped Enclosure, and unverified mounds are not visible, October 2014. (Quinn Evans Architects 2014)



Figure 3-80. East wall of Great Enclosure is mown lawn to increase visibility. Looking north, October 2014. (Quinn Evans Architects 2014)

monumental scale of Hopewell earthen architecture. Objects placed with ceremonial deposits and human burials within the mounds express Hopewell artistry and provide evidence of the wide-ranging inter-regional trade networks utilized by the Hopewell Culture.

Nineteenth and early twentieth century documentation of Hopewell Mound Group provided descriptions and surveys from investigations undertaken in the 1820s, 1840s, 1890s, and 1920s. All generally agree on the large scale features at the earthwork complex, but vary in their accounts of smaller features. This CLR/EA relies upon 1926 Shetrone survey for the analysis related to archeological features.

A recent magnetic survey indicates that extensive below-grade archeological resources are extant, and retain integrity. Walls and associated ditches are clearly evident for the Great Enclosure, D-Shaped Enclosure, Great Circle, Circle Enclosure, and two mounds. Only traces of the Square Enclosure are visible on the magnetometer survey, though the earthen wall was visible on a 1951 aerial photograph. The magnetometer investigation also detected clusters of four pit features associated with small and medium-sized circles and portions of a post circle found within the medium sized circle. This is one of the largest Hopewell post circles known.[3.76]

Unverified mounds were identified within the Great Enclosure and Square Enclosure by nineteenth and early twentieth century archeological surveys. These mounds do not have extant above-grade features, and are not visible on the LiDAR or magnetometer scans. Historic archeological surveys identified eight additional mounds on the moraine, two mounds north of the Square Enclosure, and one mound south of the Square Enclosure. No above or below-grade features have been identified, and locations are unverified.[3.77]

Two habitation sites may be present within the earthwork complex but they have not been verified.[3.78]

Changes have occurred within the earthwork complex, including alterations due to erosion, excavation, cultivation, and construction of utilities, buildings, roads, and railroads on top of portions of the earthwork. The most dramatic of these are impacts from cultivation, road construction, and high voltage utility lines and support towers. Cultivation has resulted in eradication of numerous small scale, above-ground enclosures and mounds, and reduction of large scale features.

In 1926, Shetrone indicated the presence of 28 mounds within the Great Enclosure. Of these only five remain extant, Mounds 2, 3, 23, 24, and 25. Beyond the Great Enclosure only one of the ten mounds noted by Shetrone remains, Mound 35.

The construction of Sulphur Lick Road between 1833 and 1845 truncated the Great Enclosure, D-Shaped Enclosure, and Great Circle, and obliterated five mounds within the D-Shaped Enclosure. A private residence and outbuildings built at this time resulted in the eradication of an additional seven mounds south of the road. Squier and Davis' 1840s survey indicated the archeological landscape had been divided into approximately 18

3.76 Burks, *Magnetic Survey at Hopewell Mound Group*; Hopewell Culture NHP Archives, 1951 aerial photograph of Hopewell Mound Group; Ghose, 2014.

3.77 Shetrone, 1926; and Cowan, 1892

3.78 Shetrone, 1926; Burks, *Magnetic Survey at Hopewell Mound Group*; and Jarrod Burks and Jennifer Pederson, *The Place of Nonmound Debris at Hopewell Mound Group (33Ro27), Ross County, Ohio, in Recreating Hopewell*, edited by D.K. Charles and J.E. Buikstra (Gainesville: University Press of Florida, 2006), 376-401.



Figure 3-81. Mound 25, a long, low mown rise, is approximately eight to eleven feet above the terrace, looking east, October 2014. (Quinn Evans Architects 2014)



Figure 3-82. Selected mounds within the Great Enclosure are mown, making them more visible. October 2014. (Quinn Evans Architects 2014)

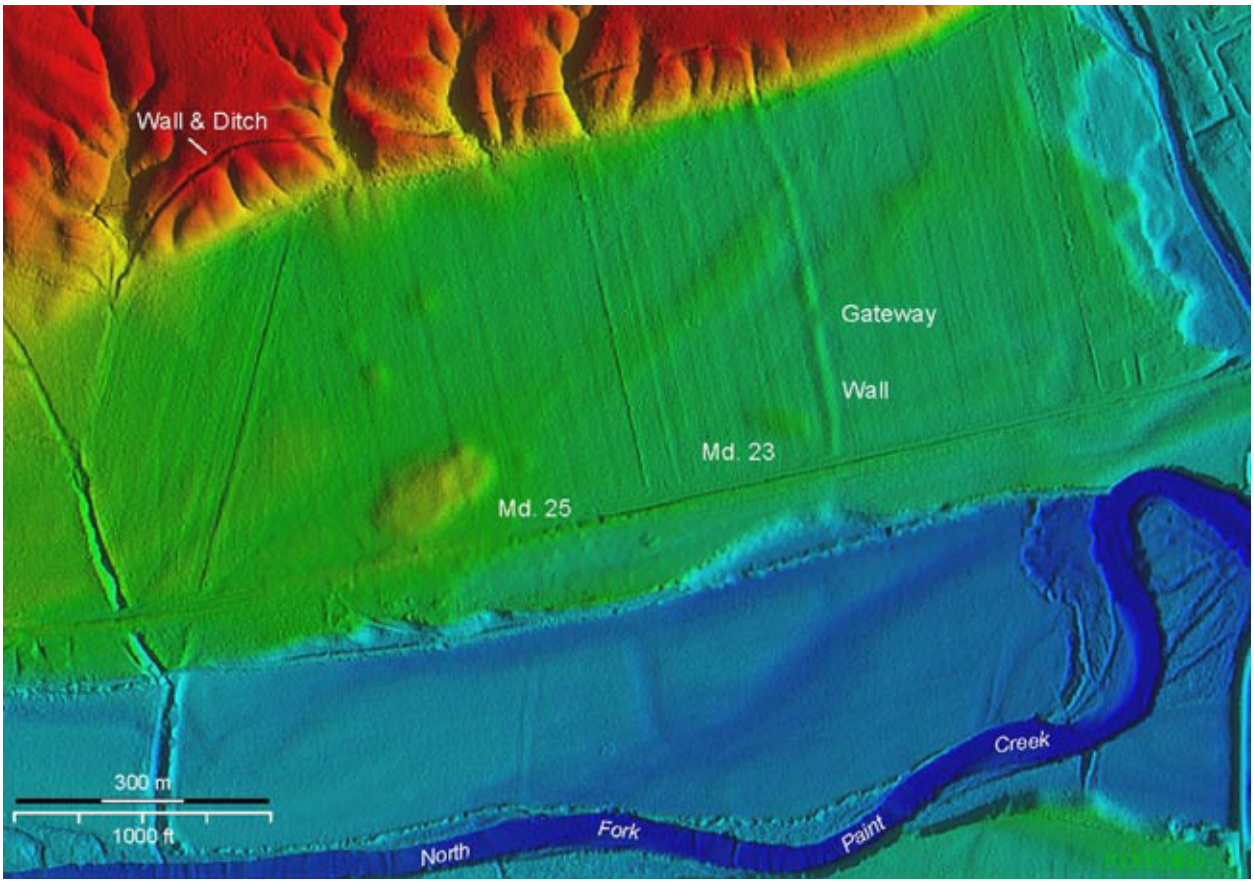


Figure 3-83. The 2008 LiDAR survey of Hopewell Mound Group indicates the topographic forms of the Great Enclosure, Square Enclosure and mounds. (Jarrod Burks and William Romain, "Lidar Analyses of Prehistoric Earthworks in Ross County, Ohio," Ohio Archaeological Council, 2008, accessed July 9, 2015, http://www.ohioarchaeology.org/39-resources/research/articles-and-abstracts-2008/262-lidar-analyses-of-prehistoric-earthworks-in-ross-county-ohio)

parcels, ten north and eight south of the road. It is likely that other archeological resources were impacted as a result of this road and building construction.

Although impacts from erosion, agricultural practices, road construction, and utilities have impacted extant above-ground features at the Hopewell Mound Group, extensive significant features remain intact. Recent investigations confirm extensive extant below-ground features.

The extant above- and below-grade features retain integrity, and contribute to the significance of the Hopewell Culture NHP.



Figure 3-84. Maintenance road, on east side of NPS property looking east toward Maple Grove Road, October 2014. (Quinn Evans Architects 2014)



Figure 3-85. Gravel interpretive trail along the Lattaville Moraine, facing west, October 2014. (Quinn Evans Architects 2014)



Figure 3-86. Accessible sidewalk and low overlook along east side of earthwork complex, facing north, October 2014. (Quinn Evans Architects 2014)

Circulation

Existing Condition

The existing circulation system of the Hopewell Mound Group consists of vehicular, pedestrian, and bicycle routes. Vehicular routes include county roads and internal access routes. The pedestrian system consists of paved sidewalks, gravel and bare dirt trails, and mown lawn trails. The bicycle route is a rails-to-trails pathway through the park.

Vehicular routes include county roads Sulphur Lick Road, Maple Grove Road, and Cydrus Lane. Park roads are a maintenance road, and parking area.

Sulphur Lick Road is the primary vehicular access to the earthwork complex. It is a two-lane asphalt paved highway that extends from east to west, and transects the Great Enclosure. It is in good condition.

Maple Grove Road is a two-lane asphalt paved road, adjacent to the east park boundary. It extends north along the inside of the boundary, providing access to residences and farms north of the park. It is in good condition. To the east of Maple Grove Road is Anderson Run, a creek that joins Paint Creek at the southeast corner of the Hopewell Mound Group park boundary.

Cydrus Lane is an asphalt paved road east of Anderson Run. It provides vehicular access from Maple Road south to its intersection with Sulphur Lick Road via a bridge over Paint Creek. The road is parallel to Maple Grove Road, and is outside of the NPS property. It is in good condition.

A *gravel road*, used as a maintenance access road, connects Maple Grove Road with the interpretive trail in the northeast corner of the park. The road is rarely used, and is in fair condition.

A *parking area* is on the north side of Sulphur Lick Road in the southeast portion of the park unit. The parking area has 48 spaces and four bus spaces. From the parking area, concrete paved sidewalks provide access to restroom facilities, picnic shelter, waysides, and an overlook. The parking pavement and sidewalks are in good condition.

Pedestrian circulation is a two and one-quarter mile *interpretive trail* network. It provides pedestrian access to the earthwork complex, with interpretive and wayfinding signs along the path. Bicycles are not allowed on this interpretive trail.[3.79]

The trail begins as a concrete paved walkway extending north from the parking area on the east side of the earthwork complex. It is in good condition.

Beyond the wayside and overlook, the trail surface is gravel. It climbs the slope from the first terrace, and turns to the west along the top of slope. The trail is in fair condition. An overlook is on the south side of the trail, providing views of the earthwork complex to the south. West of the overlook, the trail surface becomes dirt and is in fair condition.

Wood bridges and stairs occur periodically along the trail to navigate steep topography, and wet areas. Bridges and stairs are new, and are in good condition. This section of the interpretive trail follows the outside of the Great Enclosure down the slope to the first terrace. It turns into the enclosure at the bottom of the slope. The trail is in good condition.

Inside the enclosure, the trail is mown lawn in good condition. Its precise location varies from season to season. At the time of the

3.79 National Park Service, "Hopewell Mound Group," updated January 7, 2014, http://www.nps.gov/Hopewell Culture NHP/historyculture/hopewell-mound-group.htm.



Figure 3-87. Parking area at Hopewell Mound Group, October 2014. (Quinn Evans Architects 2014)



Figure 3-88. Mown lawn path within the Great Enclosure, October 2014. (Quinn Evans Architects 2014)

2014 site visit, the trail extended through the center of the enclosure, allowing pedestrians to walk on Mound 25. At the east end of the enclosure, the mown lawn trail follows the top of the square archeological feature, exiting on the east end of the square, where it reconnects to the concrete paved walkway at the wayside and overlook.

A *bicycle path* is managed as a portion of the Adena Recreational Trail. The asphalt paved path parallels the south side of Sulphur Lick Road and is in good condition. Access from the interpretive trail is at two crosswalks across Sulphur Lick Road, at the east and west ends of the park. Interpretive waysides and benches are near these crosswalks along the bicycle path.



Figure 3-89. Sulphur Lick Road and a bicycle path cross through the south portion of the Great Enclosure, facing west, October 2014. (Quinn Evans Architects 2014)

Analysis

While the circulation system associated with the Hopewell Mound Group during the period of significance is unknown, it is likely that there was some access to the earthwork complex from the North Fork Paint Creek.

The 1848 map by Squier and Davis indicates two gateways in the southern wall of the Great Enclosure facing toward the creek.[3.80] There is no longer an established water route to access the earthwork complex.

Modifications to the circulation system at the earthwork complex include the construction of vehicular and pedestrian routes, including Sulphur Lick Road, Maple Grove Road, interpretive trails, a bicycle path, and a maintenance road. The circulation routes that exist today are not from the period of significance and are not contributing features.



Figure 3-90. Wood staircase and bridge along interpretive trail, on the west side of the unit. In wooded areas, the interpretive trail has a dirt surface, October 2014. (Quinn Evans Architects 2014)

3.80 Squier and Davis, 1848.



Figure 3-91. Fallow hay field vegetation within the Great Enclosure. Goldenrod is a dominant species, October 2014. (Quinn Evans Architects 2014)



Figure 3-92. Native grassland vegetation on the moraine. The area was formerly grazed, and retains woody species including honey locust, October 2014. (Quinn Evans Architects 2014)



Figure 3-93. Vernal wetland on the moraine, October 2014. (Quinn Evans Architects 2014)

Vegetation

Existing Condition

The vegetation of Hopewell Mound Group includes hay fields, woodland, shrubland, wetlands, native grassland, crop, mown lawn, and ornamental plantings.

Vegetation in the area of the earthwork complex on the first terrace is primarily fallow hay field, a mix of orchard grass, Timothy grass, fescue species (*Festuca spp.*), goldenrod (*Solidago spp.*), and associated species such as barnyard grass (*Echinochloa crus-galli*), horseweed (*Conyza canadensis*), and Queen Anne's lace (*Daucus carota*). The field was cultivated throughout the nineteenth and twentieth centuries. The area was cut for hay one to three times per year until NPS took ownership of the park unit, after which the frequency dropped to every two or three years between 2002 and 2011. Currently, the field is cut annually.[3.81] A treeline separates the earthwork complex from the parking area and trail to the east. Fallow hay field vegetation occurs on the east side of this treeline near the parking area.

Vegetation on the moraine is a mix of ruderal and dry-mesic oak woodland, native grassland, and shrubland. In general, native grassland and shrubland occupy the flat expanses, and native grassland is near the overlook. The native grassland, formerly grazed grassland, is a mix of tall fescue (*Festuca elatior*), common goldenrod, common blackberry (*Rubus allegheniensis*), and a few woody species including honey locust (*Gleditsia triacanthos*), white ash, multiflora rose, hawthorn (*Crataegus punctata*), and Russian olive (*Elaeagnus angustifolia*).[3.82] Small vernal wetlands dot the moraine, and a small man made pond is northwest of the Great Enclosure.

Woodlands occupy areas on the moraine to the south and west of the native grassland and shrubland, primarily steeper slopes. A transitional zone, between the native grassland and dry-mesic oak woodland, is occupied by ruderal woodland and shrubland. It is characterized by a patchy canopy of small trees and shrubs dominated by early successional species. The vegetation communities in this location evidence disturbance and heavy human use such as previous clearing and plowing.[3.83]

In the northwest portion of the park unit, ruderal woodlands transition to a high-quality, maturing dry-mesic oak woodland. Limited encroachment of invasive species occurs along edges and in openings, particularly along the west power-line. Species include sugar maple, chinkapin oak, white oak, pawpaw, common hackberry, and white ash. Invasive species including multiflora rose and Japanese honeysuckle are encroaching along the power-line to the west.[3.84]

In the southeast corner, along the North Fork Paint Creek, four acres of native grassland vegetation have been planted by the park in an area formerly dominated by fallow field species. Species include big bluestem, sideoats grama, black-eyed and brown-eyed Susan, bergamot, and goldenrod. Woody species include Pennsylvania blackberry (*Rubus pensilvanicus*), American elm, multiflora rose, and slippery elm (*Ulmus rubra*).[3.85]

Along the bicycle path, and near the parking area, vegetation is characterized by ornamental plantings and mown lawn. South of Sulphur Lick Road and west of the native

3.81 Vick, *Inventory of Mammals*, 3; Diamond, V*egetation Classification and Mapping*, 26-27.
3.82 Vick, *Inventory of Mammals*, 4.
3.83 Vick, *Inventory of Mammals*, 4; and Diamond, V*egetation Classification and Mapping*, 31-32.
3.84 Diamond, V*egetation Classification and Mapping*, 22.
3.85 Diamond, V*egetation Classification and Mapping*, 28-29.



Figure 3-94. Vegetation on the north side of the NPS property transitions from native grassland vegetation to a ruderal shrubland, October 2014. (Quinn Evans Architects 2014)



Figure 3-95. High-quality woodland in the northwest portion of the NPS property. Understory species are limited (note the pawpaw, Asimina triloba, in this image) with few invasive species, October 2014. (Quinn Evans Architects 2014)

grassland planting is an active hay field. Riparian species are present along the North Fork Paint Creek.

Analysis

The vegetation that characterized the Hopewell Mound Group during the period of significance is not known, therefore it is unknown if the current vegetation reflects the historic vegetation patterns.

The 1848 map by Squier and Davis indicated that the moraine was wooded, the first terrace was cultivated, and the floodplain was characterized by herbaceous and shrub species.[3.86]

By 1891, most of the future NPS land was cleared for cultivation, with the exception of the northwest corner of the park unit, which remained wooded.[3.87]

Woody vegetation has increased significantly since 1951, particularly on slopes.

The vegetation and vegetation patterns of Hopewell Mound Group do not contribute to the archeological landscape.



Figure 3-96. Native grassland vegetation planted by NPS south of Sulphur Lick Road, October 2014. (Quinn Evans Architects 2014)

3.86 Squier and Davis, *North Fork Works.*
3.87 1891 Moorehead photographs



Figure 3-97. Comfort Station at Hopewell Mound Group parking area, October 2014 (Quinn Evans Architects 2014)



Figure 3-98. Picnic shelter at Hopewell Mound Group parking area, October 2014. (Quinn Evans Architects 2014)

Buildings and Structures

Existing Condition

Buildings and structures at Hopewell Mound Group include a comfort station and picnic shelter associated with the park, two structures associated with a nineteenth century farmstead, a building ruin on the base of the slope within the Great Enclosure, two structures on private property, and transmission towers for the power-line. Construction of all structures may have disturbed archeological resources at Hopewell Mound Group.

A *comfort station* occurs immediately to the north of the parking area, providing restroom facilities for visitors. The structure was built after 2009 and is in good condition.

A *picnic shelter* is situated east of the parking area. The structure was built after 2009 and is in good condition.

A corn crib is on the south side of Sulphur Lick Road, immediately to the west of the private garage. It was likely built in the late nineteenth or possibly early twentieth century. The corn crib is in poor condition and in need of immediate stabilization.[3.88]

The Hopewell barn is west of the corn crib on the south side of Sulphur Lick Road. The barn is a significant example of the architectural and agricultural history of Ohio. It was built in the late eighteenth or early nineteenth century using nontraditional carpentry methods. (Fig. 28 barn 3.jpg) The barn is in poor condition, in need of immediate stabilization.[3.89]

Remnants of cow shed are within the Great Enclosure, at the base of the slope below the north wall of the enclosure. The cow shed is in poor condition.

A high-voltage power-line extends from northeast to southwest through the Hopewell Mound Group earthwork complex. Four steel lattice transmission towers associated with this power-line are located within the park unit. The power-line cuts directly through the earthwork enclosure, likely impacting mounds and other historic resources. Clearing for the power-line also opened up views of the first terrace from the moraine above.

Analysis

All existing buildings and structures at Hopewell Mound Group were built after the period of significance.

The earliest extant structure is the Hopewell barn, likely built in the late eighteenth or early nineteenth century. The corn crib and cow shed were built later, in the late nineteenth and twentieth centuries. The Hopewell barn is of particular historic interest, and may be historically significant based on year of construction and nontraditional carpentry construction. None of the buildings and structures within the legislated boundary contribute to the archeological landscape.

3.88 Rudy Christian, "Corn Crib Evaluation," September 11, 2014.

3.89 Rudy Christian, "Large Barn Evaluation," September 11, 2014.



Figure 3-99. Corn crib south of Sulphur Lick Road, October 2014. (Quinn Evans Architects 2014)



Figure 3-100. Hopewell barn south of Sulphur Lick Road, October 2014. (Quinn Evans Architects 2014)



Figure 3-101. Proximity of transmission tower to overlook on the north side of the Great Enclosure, October 2014. (Quinn Evans Architects 2014)



Figure 3-102. Views are open along the power-line that cuts through the Hopewell Mound Group Unit from northeast to southwest. The earthwork complex is visible from this vantage point, however, views are also opened up to the gravel quarry south of the park unit, October 2014. (Quinn Evans Architects 2014)



Figure 3-103. NPS park identifier sign at Hopewell Mound Group, located at the intersection of Sulphur Lick Road and Maple Grove Road, October 2014. (Quinn Evans Architects 2014)



Figure 3-104. Small scale features in the Hopewell Mound Group parking area include bicycle racks, trash receptacles and signs. October 2014. (Quinn Evans Architects 2014)



Figure 3-105. This sign, on the north side of the Great Enclosure along the interpretive trail, does not relate to archeological features or views. (Quinn Evans Architects 2014)



Figure 3-106. Wood and composite fence at overlook on interpretive trail, October 2014. (Quinn Evans Architects 2014)

Small Scale Features

Existing Condition

Small scale features present at Hopewell Mound Group include signs, benches, trash receptacles, electric power poles, picnic tables, bike racks, light posts, fences, and seven blue bird boxes. In general, small scale features are along the interpretive trail, bicycle trail, and parking area. Regulatory signs include traffic signage primarily located within the parking area and along Sulphur Lick Road.

Signs at Hopewell Mound Group include a park identification sign, waysides, wayfinding signs, and regulatory signage. The park identification sign is at the northwest corner of the intersection of Sulphur Lick Road and Maple Grove Road. Its position does not clearly indicate which road accesses to the park unit.

Interpretive panels along the interpretive trail are in good condition, but do not all clearly relate to nearby features. Wayfinding signs are small posts moved when the routes of the mown lawn trails are adjusted. Other features associated with the interpretive trail include benches at the overlooks and west side of the enclosure. These benches are composite lumber with metal posts, in good condition. At the western side of the enclosure is a wood bench. A wood and composite fence is also located along the trail at the northern overlook, it is in good condition.

Wayfinding signs and interpretive panels are along the bicycle trail include a wayside with a wood kiosk with interpretive panels, a bench, and a brass plaque from The Archaeological Conservancy, placed October 27, 1980. Two waysides are along the bicycle trail overlooking specific features of the earthwork complex. A wayside and bench are located on the bicycle path at the west end of the park unit.

Small scale features associated with the parking area are regulatory signs, bike racks, trash receptacles, lights, picnic tables, and a bird house. They are in good condition.

A power-line extends along the west boundary, roughly parallel to the Great Enclosure. North of the first terrace, the lines are set into the woodland, not readily visible from the interpretive trail. On the first terrace, the lines are visible to the west of the earthwork complex, extending parallel to the property boundary. As the utility poles and aerial lines cross through the enclosure, and within close proximity to several mounds, it is likely that installation of these utilities disturbed below-grade resources.

A gate is located in the northeast portion of the park unit near the maintenance road accessed from Maple Grove Road. The fence is in poor condition.

Analysis

The small scale features are not from the period of significance, and do not contribute to the archeological landscape.



Figure 3-107. Movable wayfinding signs are located within the Great Enclosure and Square Enclosure to direct visitors along the interpretive trail. (Quinn Evans Architects 2014)



Figure 3-108. Wayside and bench at the bicycle path near the unit parking area. (Quinn Evans Architects 2014)



Figure 3-109. Interpretive waysides and bench at the east overlook. The overlook emphasizes views to the west toward the Square Enclosure. (Quinn Evans Architects 2014)



Figure 3-110. Utility poles and overhead lines along Sulphur Lick Road on the southwest side of the property facing west. (Quinn Evans Architects 2014)

Buildings and Structures

- A Comfort Station
- B Picnic Shelter
- C Large Barn
- D Corn Crib
- E Remnants of Cow Shed

Upper River Terrace
Ruderal Meadow, Woodland Shrubland
Borrow Pit 35
Sulphur Lick
Anderson Run
Maintenance Road
Great Enclosure
Springs
Fallow
Middle River Terrace
Circle Enclosure
Square Enclosure
Maple Grove Road
Cydnus Lane
Spring
Fallow
Great Circle
Restored Prairie
D-Shaped Enclosure
Active Hayfield
Anderson Run
Sulphur Lick Road
Tri-County Trail
Lower River Terrace
North Fork of Paint Creek

N
W E
S
0 300 600
1" = 600'-0"

Legend

- NPS Boundary
- Portion of Earthwork not in NPS Ownership
- Water Bodies
- Wetlands
- Lower River Terrace
- 100 Year Floodplain
- Embankment
- Roads
- Gravel Road
- Railroads
- Paved Trail
- Unpaved Trail
- Mown Trail
- 1 ft Contours
- Mound - Extant Above-Grade
- Mound - Extant Below-Grade
- Mound - Unverified
- Earthen Wall - Extant Above-Grade
- Earthen Wall - Extant Below-Grade
- Earthen Wall - Unverified
- Borrow Pit - Extant Above-Grade
- Habitation Site - Unverified
- Ditch - Extant Above-Grade
- Ditch - Extant Below-Grade
- Ditch - Unverified
- Post Hole (within Great Circle) - Extant Below-Grade
- Post Hole (within Great Circle) - Unverified
- Building Remnant - Extant Above-Grade
- Buildings/Structures
- G Gateways
- OE Overhead Lines
- x-x-x Fence
- Hay Field
- Mown Area
- Shrubland
- Native Grassland
- Woodland

Sources:
Burks, Large Area Magnetic Gradient Survey at the Hopewell Mound Group, 2013; GIS HOCU Lidar, 2012; Squier and Davis, North Fork Works, 1846; State of Ohio Location Based Response System Road Centerlines, 2011; State of Ohio Active Rail Lines; Vegetation Classification for Hopewell Culture National Historical Park, 2004; U.S. FWS, National Wetlands Inventory; U.S. Census Inland Waterways, 2013; FEMA Floodplain Map #39141C0200D; HOCU GIS, Aerial Photograph of Hopewell Mound Group,1951; Shetrone, 1926; Cowan, 1892; Seeman, 1981; ESRI World Imagery, 2014; field investigations conducted October, 2014.

TIC# 353 128148

OCTOBER 2015

UNITED STATES
DEPARTMENT OF THE INTERIOR

HOPEWELL CULTURE NATIONAL
HISTORICAL PARK

ILLUSTRATION 3-4

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
AND ENVIRONMENTAL ASSESSMENT

TITLE OF DRAWING
HOPEWELL MOUND GROUP - EXISTING CONDITON

NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK

REGION MIDWEST | COUNTY ROSS | STATE OHIO

Seip Earthworks

Introduction

Seip Earthworks is a geometric earthwork complex of Hopewellian mounds, earthen walls, and borrow pits, set within a horseshoe bend of Paint Creek. Built at a monumental scale, the earthwork complex includes a large circle, connected to a smaller circle and a Large Square that enclose more than 100 acres. Two mounds are visible within the space. The 236-acre park unit is open to visitors, and is approximately 16 miles west of Chillicothe, Ohio.

This archeological landscape is set along the north terrace of Paint Creek. It consists of several archeological features on NPS-owned land, with a portion of the earthwork complex on privately owned land.[3.90]

Seip Earthworks is comprised of a Large Circle, Large Square, Small Circle, Seip-Pricer Mound, Seip-Conjoined Mound, and borrow pits. Archeological features are primarily extant earthen walls and mounds—some visible and others extant below-grade; unverified earthen walls; and borrow pits (extant, below-grade).[3.91] Significant ceremonial deposits have been discovered below-grade.

This section evaluates the existing condition and analysis of Seip Earthworks by evaluating five landscape characteristics:

- Spatial Organization/Topography/Views
- Archeological Features
- Circulation
- Vegetation
- Buildings and Structures
- Small Scale Features

Spatial Organization / Topography / Views

Existing Condition

Seip Earthworks is built upon the terrace above Paint Creek. The earthwork complex is located at a horseshoe bend in the creek, situated within the wide floodplain.

The topography gradually rises away from the creek, with the highest portions at the north and east. There are steep embankments on both side of the creek. Little Copperas Mountain is the landform to the south. Views from the earthwork complex are up and down the valley floor, to the hills on either side of the valley, and the rocky bluffs across the creek.

The park unit consists of four spatially distinct spaces.

- Earthwork complex and fields
- Visitor area (parking / picnic)
- Blackstone House
- Creek edge / overlook / canoe and kayak stop

The earthwork complex is framed by the bend of the creek. The tripartite formation of the Large Circle, Large Square, and Small Circle create a vast enclosure framed by the earthen walls. The Large Circle is located at the center, the Large Square is to the southeast, and the Small Circle is to the west, connected by narrow gateways.

These are the primary archeological features: massive in scale, and built of earthen walls—some extant (visible and above-grade), and others that are extant (below-grade)—that form the outline of the shape and define the form of each archeological features.

3.90 Privately owned land was not reviewed or evaluated as part of this study.

3.91 A 2012 LiDAR survey for Seip Earthworks has assisted in revealing large, below-grade archeological features. Most of the Large Square and both circles are visible on the LiDAR survey, but none of the little mounds, gateways or borrow pits are visible. However, these features may still be extant below-grade.



Figure 3-111. Seip Earthworks is organized in relationship to Paint Creek and was built upon the terrace above the creek. (Mundus Bishop 2014)



Figure 3-112. Looking south toward the Seip-Pricer Mound with Little Copperas Mountain in the background. (Mundus Bishop 2014)

These earthen walls, and large interior open spaces form three separate but connected enclosures that span many acres. The spaces intersect, connected by narrow gateways.

Additional openings or gateways occur within the earthen walls of the earthwork complex. Within the vast interior open spaces are views to the surrounding hills. Within the Large Circle, two mounds rise above the otherwise level topography of the enclosure. The Seip-Pricer Mound is near the center of the circle, and the Seip-Conjoined Mound is northeast of the Seip-Pricer Mound. The Seip-Pricer Mound, a large elliptical, domed structure, is the most visible feature at Seip Earthworks.

The visitor area includes a parking area and picnic areas, and is a semi-enclosed space. Mature trees and a mown lawn create a park-like appearance and contrast with the openness of the adjacent hay fields. Views from the visitor area are directed towards the Seip-Pricer Mound.

The area around the Blackstone House and outbuildings is spatially distinct, separated from the rest of the park unit by an asphalt drive, fence row and trees. Trees and unmown grasses cluster around the Blackstone House, which stands out against the terrain. The house was built on top of the Large Circle, and views are towards the river.

The creek edge is spatially distinct from the earthwork complex. The wooded creek edge creates an enclosed space, except where a mown lawn clearing occurs at the overlook at Paint Creek. A steep slope descends to the creek. This area is mostly wooded except for the small clearing.

Analysis

The monumental scale and geometric complexity of Hopewellian earthwork construction is best expressed at Seip Earthworks. Since the period of significance, the spatial organization, topography, and views at Seip Earthworks have been altered.

Agricultural practices in the eighteenth through twentieth centuries, the Blackstone House built on top of the Large Circle, c. 1840, and Dill Road built across the Large Square all damaged above-grade archeological features, impacting the spatial organization.

In the twentieth century portions of the Large Circle and Seip-Pricer Mound were reconstructed, which assist in recreating the historic spatial organization.

The spatial organization, topography, and views at Seip Earthworks contribute to the archeological landscape.

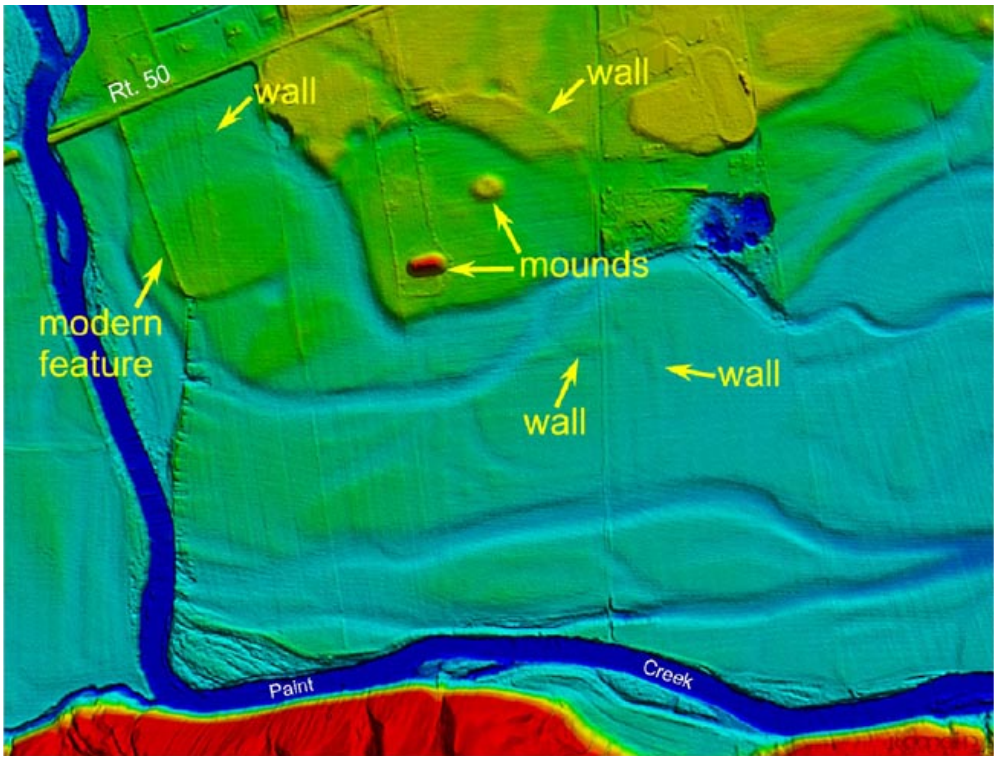


Figure 3-113. The 2012 LiDAR depicts the topographic expression of portions of the earthen walls, the Seip-Pricer Mound, and the Seip-Conjoined Mound. (Romain and Burks 2008)



Figure 3-114. Only a small portion of the Large Circle is visible because it was reconstructed in 1927. The remainder of the Large Circle is evident on the LiDAR survey but difficult to discern from ground level. (Mundus Bishop 2014)

Archeological Features

Existing Condition

The archeological features of Seip Earthworks include large multicomponent structures made of sand, gravel, and soil. The earthwork complex includes walls, gateways, mounds, and borrow pits, both above and below-grade. Some features are not easily observable on the surface, but are clearly visible in the 2012 LiDAR survey.

Seip Earthworks has five main archeological features: Large Circle with associated borrow pits; Large Square; Small Circle; the Seip-Pricer Mound; and the Seip-Conjoined Mound. Smaller archeological features include small mounds, borrow pits, building remnants, and other below-grade features.

The archeological features are organized into three types: extant (visible) above-grade; extant below-grade; and unverified. Some features mapped in the mid 1800s are not visible on the surface or on the LiDAR survey but may still be extant.[3.92]

Some archeological features are difficult to discern to the untrained eye, while others are visible. Some have been reconstructed or partially reconstructed. All archeological features have been modified by land use practices, specifically agricultural crop production, and construction of contemporary elements over and near them. The condition of below-grade archeological features is unknown.[3.93]

Large Circle is the largest feature at Seip Earthworks, composed of an earthen wall that forms the outline of the circle. Only a small portion of the Large Circle is visible, but the extant below-grade circle is evident on the LiDAR survey. A small segment of the north wall of the Large Circle was rebuilt after excavation in the 1920s and is the most visible portion. Most of the circle is a mown hay field.

Portions of the circle have been flattened in height by on-going agricultural practices, and are no longer visible. Historic maps from 1848 note four gateways along the perimeter of the wall, but these are neither visible on the surface or on the LiDAR survey. The Old Seip House / Blackstone House and outbuildings were built on top of the earthen wall circa 1840.

The extant above-grade features of the Large Circle are in poor condition, due to agricultural practices that have negatively impacted the condition of the earthwork.

Seip-Pricer Mound is the largest mound within the earthwork complex, and the most visible feature. Seip-Pricer Mound is located at the approximate center of the Large Circle. It consists of a large elliptical, domed structure of sand, gravel, and soil, with a flat area on top of the mound. It is the third largest burial mound the Hopewell are known to have built and it measures 240 feet by 160 feet, and 30 feet high. The Seip-Pricer Mound is maintained with mown lawn. The Seip-Pricer Mound was reconstructed after extensive excavation in the past. Below-grade features are likely extant. The reconstructed mound is in good condition. The condition of the below-grade archeological features is unknown.

3.92 A high-resolution magnetic survey would likely reveal these features.

3.93 Contemporary elements build over portions of Seip Earthworks include roads, fences, Blackstone House, and outbuildings.



Figure 3-115. Seip-Pricer Mound is the largest mound within Seip Earthworks and the most visible feature. (Mundus Bishop 2014)



Figure 3-116. The Seip-Conjoined Mound, maintained as mown lawn, is four feet tall. (Mundus Bishop 2014)



Figure 3-117. Dill Road is a north south route that connects ends at the edge of Paint Creek. The dirt road is eight feet wide and crosses the Large Square earthwork, shown as a dashed line. (Mundus Bishop 2014)

The *Large Square* is to the south of the Large Circle, set in a mown hay field. Dill Road transects the earthwork from north to south. The Large Square is of a series of unconnected earthen walls that form a perfect square of 27 acres. The square is broken by eight gateways or openings in the walls, at corners and mid-points of the four sides. Portions of the earth wall are evident where it intersects Dill Road. Generally, the Large Square is not visible on the surface.

According to investigation in 1848, the Large Square originally had four small mounds in its the enclosure, corresponding to each gateway. These four small mounds were not documented by the LiDAR survey.

The above-grade features of the Large Square are in fair to poor condition. Agricultural practices and the construction of Dill Road across the earthwork have negatively impacted the condition of the above-grade resources. The condition of extant below-grade features is unknown.

The *Small Circle* is conjoined with the Large Circle on the Large Circle's west side, connected by a narrow gateway. The Small Circle is built of earthen walls, below-grade, that form a continuous, perfect circle. The Small Circle is a large mown hay field. The portion of the Small Circle's earthen wall, above-grade is not visible. The extant below-grade walls were identified in the LiDAR data, showing its intact topographic outline below-grade. The condition of these below-grade features are unknown. Above-grade features are in poor condition as the features are no longer visible on the surface due to extensive previous agricultural practices that have flattened these features.

The *Seip-Conjoined Mound* is the second largest mound within this earthwork complex. It is located within the enclosure of the Large Circle, northeast of the Seip-Pricer Mound. This mound is actually three mounds of similar size that were connected with an overlaying mound. The Seip-Conjoined Mound is a mown lawn that appears as one singular mound and no longer reads as three. The mound measures four feet above adjacent grade, and is approximately 250 feet in diameter at the base. The Seip-Conjoined Mound is indicated on the LiDAR survey.

The above-grade features of the Seip-Conjoined Mound are in fair condition. Past agricultural practices have negatively impacted the earthwork. The condition of the below-grade archeological features is unknown.

According to the 1848 map by Squier and Davis, the Large Circle is surrounded by 15 *borrow pits*, outside of the enclosure on the north edge of the earthen walls. None of the borrow pits are visible, and are not indicated on the LiDAR survey. The condition of the borrow pits is unknown.

Other archeological features include remains of four *structures* in the enclosure of the Large Circle, to the north of the Seip-Pricer Mound. The foundations are subtle, but have been outlined with timbers for interpretation. Evidence has recently revealed additional structures in this area, including a possible post circle.[3.94]

A high-resolution magnetic survey would reveal extant below-grade features including the extents of the earthen walls, borrow pits, mounds, gateways, and might reveal building footprints, post-holes, floors, or burial pits.

3.94 Speilmann and Burks, 2011.

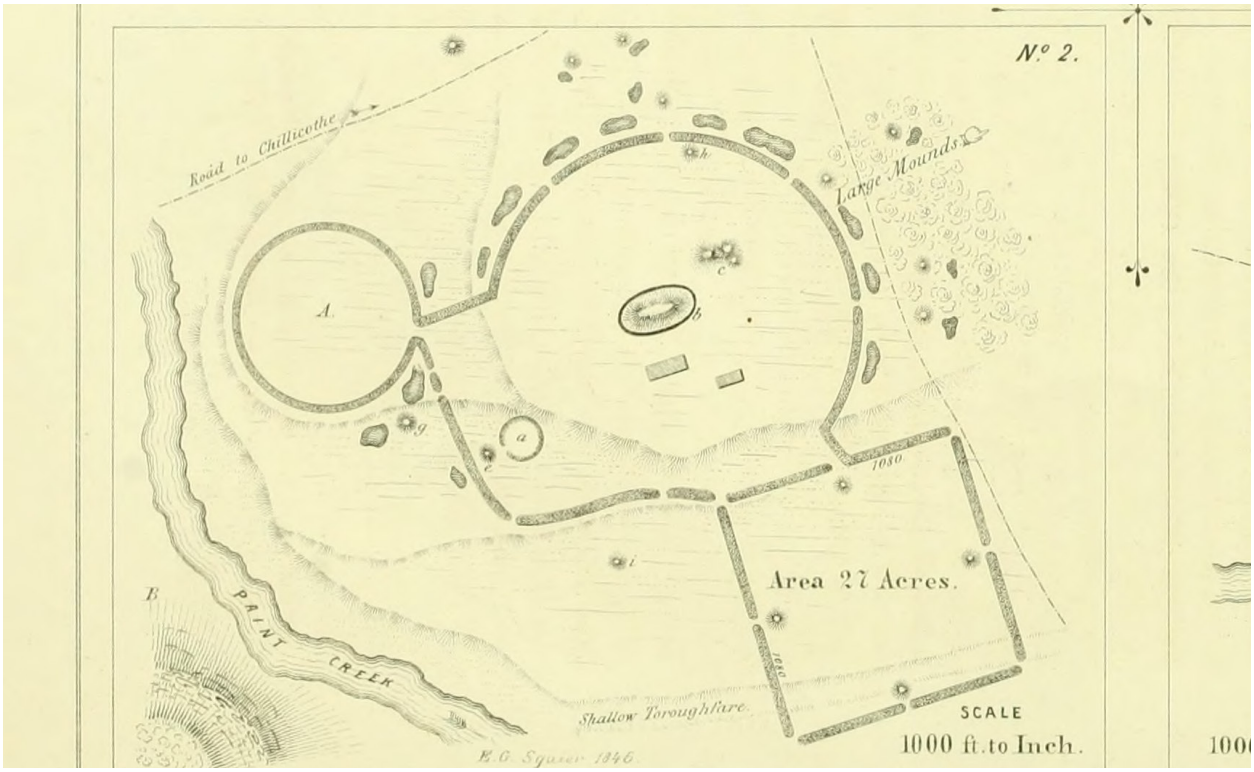


Figure 3-118. The 1848 Squire and Davis plan depicts a large tripartite earthwork with a Large Circle conjoined with a square and smaller circle. (Hopewell Culture NHP Archives)

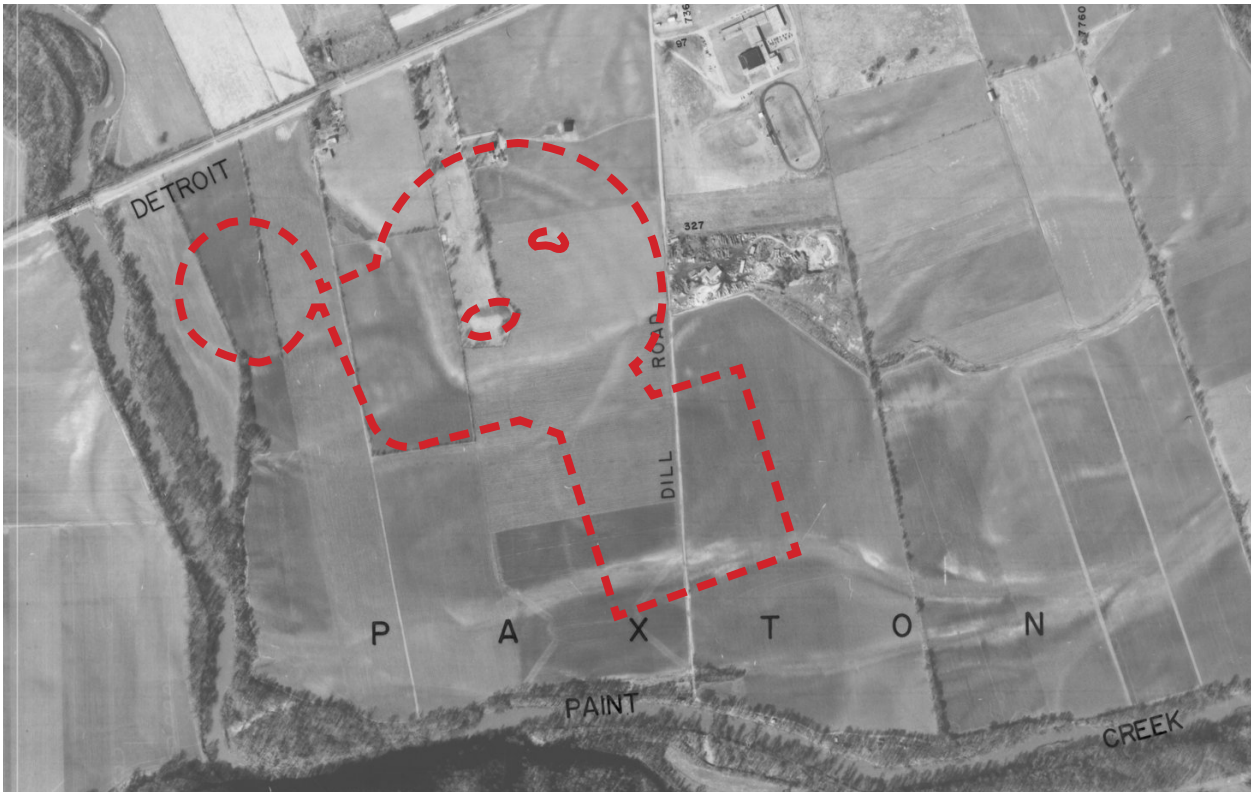


Figure 3-119. The 1976 aerial with a red dashed line depicts the Seip-Pricer Mound and Seip-Conjoined Mound, and portions of the tripartite earthwork. (Hopewell Culture NHP Archives)

Analysis

The archeological features of Seip Earthworks remain similar to their original construction. During the period of significance the Hopewell built a large tripartite earthwork with a Large Circle conjoined with a Square and Smaller Circle. Two large mounds were built within the Large Circle for ceremonies and burials.

Since the period of significance, the archeological features at Seip Earthworks have been altered due to erosion, excavation, and agricultural practices.

The construction of Blackstone House, c. 1840, on top of the Large Circle, and Dill Road across the Large Square in the 1800s negatively impact the archeological features. In addition, extensive excavation of the Seip-Pricer Mound removed all but a small portion on the extreme eastern end. After this work the mound was reconstructed. A portion of the Large Circle was reconstructed in the 1920s by the Ohio Historical Society.

Based on the magnetic survey completed 2009 to 2012, extant below-grade archeological features of the enclosure and mounds are intact, the reconstructed mounds are located in the correct positions.

The condition of extant below-grade archeological features is unknown, but it is likely that these features retain integrity. Above-grade archeological features have been damaged, but the Seip-Pricer Mound, Seip-Conjoined Mound, and portions of the Large Circle retain integrity. The archeological features of Seip Earthworks are contributing features to the archeological landscape.



Figure 3-120. The parking area is asphalt paved with unmarked parking available at the perimeter of the drive. (Mundus Bishop 2014)



Figure 3-121. Dill Road crosses the Large Earthwork. (Mundus Bishop 2014)



Figure 3-122. A five foot wide asphalt paved trail connects the parking area to two interpretive panels. (Mundus Bishop 2014)



Figure 3-123. Informal mown routes connect the parking area with earthworks. (Mundus Bishop 2014)

Circulation

Existing Condition

The circulation system of Seip Earthworks is composed of vehicular and pedestrian routes. The vehicular system includes access roads and internal routes that connect to the creek and to the Blackstone House. The pedestrian system includes paved sidewalks, informal mown lawn paths, and dirt / gravel trails.

Vehicular access to Seip Earthworks is via U.S. Highway 50, a two-lane highway oriented east to west that connects the towns of Chillicothe and Bainbridge, Ohio. This route passes the north edge of Seip Earthworks.

Dill Road is a north south route that connects to Highway 50 at the north and ends at the edge of Paint Creek. The dirt road is eight feet wide and crosses the Large Square earthwork.

The *parking area* is asphalt paved, with unmarked parking at the perimeter of the drive. The parking area forms a loop drive, approximately 24 feet wide, connecting on either end to Highway 50. The parking area has pot holes and is in fair to good condition.

An *asphalt-paved drive* from Highway 50 leads to the south, ending at the north edge of the earthwork complex. This drive is in good to fair condition.

A remnant *gravel drive* trace is in front of the Blackstone House. This route connects with the asphalt drive on the west. The drive is approximately 20 feet wide, and is in poor condition.

A *service / access road* is west of the parking area, extending roughly north south. It extends from Highway 50 on the north to the creek and overlook at the south. It is in fair condition.

A network of *paths* provides access to the picnic area, earthwork complex, and natural areas including the creek edge.

A five foot wide *asphalt-paved trail* connects the parking area to two interpretive panels and a drinking fountain, and is in fair condition. A five foot wide asphalt-paved trail connects the visitor parking area to the picnic shelter. This trail is in fair condition, with pavement heaving in places.

A mown trail leads to a *canoe and kayak stop* on Paint Creek, near the overlook.

Informal routes link the parking area to the earthwork complex. These routes are maintained as mown lawn.

Analysis

Modifications to the circulation system at Seip Earthworks since the period of significance include Dill Road, added by the mid-1800s, a parking area and pedestrian paths in the 1920s, and loop drive added around the Seip-Pricer Mound in the 1960s, which was has since been removed.

Over time, travel by water decreased and the road network increased. The canoe launch at Seip Earthworks provides the only access point for water-based travel, which is reflective of the historic pattern of movement.

The circulation routes that exist today are not from the period of significance and are non-contributing features.



Figure 3-124. The mown lawn includes the Seip-Pricer Mound and portions of the Large Circle. In these locations, the visitor areas and the earthworks are maintained the same, as regularly mown lawn. (Mundus Bishop 2014)



Figure 3-125. Most earthworks are covered with fallow fields that are periodically mown. This vegetation may obscure the visibility of features. (Mundus Bishop 2014)

Vegetation

Existing Condition

The vegetation of Seip Earthworks includes mown lawn, riparian forest, and hay fields. Most of the land is cleared, with mown hay fields on the earthwork complex, mown lawn at the picnic area and around the Blackstone House. The riparian forest occurs along the bank of Paint Creek.

The vegetation at the picnic area includes mown lawn with trees, including white ash, maple and oaks species, and red buckeye. Vegetation at the Blackstone House includes mown lawn and trees placed in the lawn area.

The mown lawn area includes the Seip-Pricer Mound and portions of the Large Circle. In these locations, the visitor areas and the earthwork complex are maintained the same, as regularly mown lawn.

The hay fields are a mixture of pasture grasses. A tree line of hackberries outline the edges of the central parcel (once owned by the Ohio Historical Society) that extends from the picnic area to the Seip-Pricer Mound.

A woodland group occurs in a narrow strip along the park unit's west edge. This group includes plant communities that show evidence of heavy human use (clearing, plowing) in the past. Woody species have volunteered into these areas. Tree species include honeylocust (*Gleditsia triacanthos*), black cherry, white ash, autumn olive.

Prairie species occurs on the majority of the earthwork complex, and is periodically mown. This vegetation may obscure the visibility of features.

A riparian area occurs along the bank of Paint Creek. The riparian edge at Seip Earthworks is composed of very large American sycamores, green maple (*Acer spp*.), and green ash (*Fraxinus pennsylvanica*). Other plants in on the riparian floor includes garlic mustard, common blue violet, smooth sweet cicely, and tall fescue.[3.95]

Analysis

It is unknown what the vegetation was during the period of significance. It is unknown if the vegetation at Seip Earthworks reflects the historic pattern.

The 1848 maps by Squier and Davis indicate that Seip Earthworks was cleared of trees. Extant vegetation includes trees planted at the Blackstone House and around the picnic area.

The vegetation and vegetation patterns of Seip Earthworks are non-contributing to the archeological landscape.

3.95 Vick, *Inventory of Mammals*, 3.



Figure 3-126. The Blackstone House is on top of a portion of the Large Circle, and is in fair condition. (Mundus Bishop 2014)



Figure 3-127. Two outbuildings south of the Blackstone House, both are in fair to poor condition. (Mundus Bishop 2014)

Buildings and Structures

Existing Condition

The buildings and structures at Seip Earthworks are for visitor uses and those remaining from previous uses.

The *Blackstone House* is a two-story brick house with a stone foundation. It is north of the earthwork complex, oriented toward the highway with the front facade on the north. The building is on top of a portion of the Large Circle and is in fair condition.

Two *outbuildings* are south of the Blackstone House. They are green painted brick with openings for doors on the north facade but have no doors and small openings for windows. The buildings are approximately 16 feet by ten feet and have corrugated metal roofs with gutters and drains. These buildings are in fair to poor condition.

A wood frame *picnic shelter* is near the parking area. The structure has turned log posts and beams, wood shingles and a concrete floor. Portions of the roof are buckling. A painted wooden bench is located on the outer edge. A three foot gravel edge is on the southeast and south sides. An asphalt edge on the east side is less than four foot wide. The concrete floor is cracked, and two posts area losing wood at the base. The structure is in good to fair condition, but the concrete floor is in poor condition.

A temporary *portable restroom* is in the turn around at end of the entry drive. An unstained wood deck is located at the overlook at Paint Creek. The deck has a railing and vertical slats. The deck is t-shaped, and is at an elevation of 30 to 40 inches off grade.

A white, wood framed *fish camp building* is on a ridge above Paint Creek. It has a concrete floor and asphalt shingle roof. The building has three rooms with a lean-to. The doors are missing, and the building is in poor condition.

A gray cedar wood framed *privy* with a wood roof is part of the fish camp. The shed has no shingles, and no door, but has an interior bench. This building is in poor condition.

A *building remnant* is near the fish camp. The building has shifted off to the side, and has nearly fallen over. The chimney is in place, but it is damaged. This building is in poor condition and hazardous.

Analysis

Since the period of significance, any Hopewellian buildings and structures have disappeared. Buildings were added to the landscape during settlement by European Americans, including the Blackstone House, c. 1840, and the fish camp building, dates unknown. The Blackstone House is listed in the NRHP, and is historically significant in its own right, but does not contribute to the significance of the archeological landscape. The fish camp buildings and picnic shelter might be of historic interest, but do not contribute to the archeological landscape.



Figure 3-128. The wood framed picnic shelter has turned log posts and beams, wood shingles and a concrete floor. (Mundus Bishop 2014)



Figure 3-129. A white, wood frame fish camp building has three rooms with a lean-to. The building is in poor condition. (Mundus Bishop 2014)





Figure 3-130. A gray cedar wood frame privy with a wood roof is part of the fish camp. The shed has no shingles, no door, but an interior bench. (Mundus Bishop 2014)



Figure 3-131. A building remnant near the fish camp is in poor condition and may be hazardous. (Mundus Bishop 2014)



Figure 3-132. The identification sign is south of the parking area. Two interpretive panels are near the shelter. (Mundus Bishop 2014)



Figure 3-133. There are five picnic tables at the picnic area. Three are wood, and two are of Trex. (Mundus Bishop 2014)

Small Scale Features

Existing Condition

The small scale features within Seip Earthworks include signs and interpretive panels, outdoor furniture and visitor amenities, fences, and utilities.

Signs at Seip Earthworks include a park identification sign, waysides, wayfinding signs, and regulatory signage. The identification sign is south of the parking area and picnic shelter. Five interpretive panels are in the park unit, all set on powder-coated steel posts. Two are near the parking area, one is near Seip-Pricer Mound, and two are at the Paint Creek overlook. A commemorative brass plaque on a concrete base is at the base of an Ohio Buckeye near the parking area. Signs are in good condition.

Five *picnic tables* are at the picnic area. Two are wood, and two are of Trex. The picnic area also has an accessible drinking fountain, and trash and recycle receptacles.

An unstained *wood deck* is at the overlook at Paint Creek. The deck has a railing with vertical slats. The deck is t-shaped, and is set approximately 30 inches to 40 inches above adjacent grade. The wood deck has one wood picnic table, and two benches made of steel with wood slats. Near the deck is a canoe / kayak launch on Paint Creek.

Fences of are of two types. A split-rail fence with a gate is on the west edge of the Blackstone House. It is a three-rail fence of unpainted cedar. A galvanized steel gate is located at the north end of the fence. A welded wire fence is along portions of the property boundary. Thirty-five painted wood bollards are at the edge of the parking area. They are set in a regular pattern, one is damaged.



Figure 3-134. Overhead powerline at Dill Road. (Mundus Bishop 2014)

Three *overhead power-lines* are at Seip Earthworks. One is along Paint Creek. Another with wood posts is from Blackstone House to the west, and a power pole is at Dill Road.

Trash, debris, and an informal dump site are at the Fish Camp.

A silver painted *propane tank* and a stand pipe connection are adjacent to the Blackstone House.

Analysis

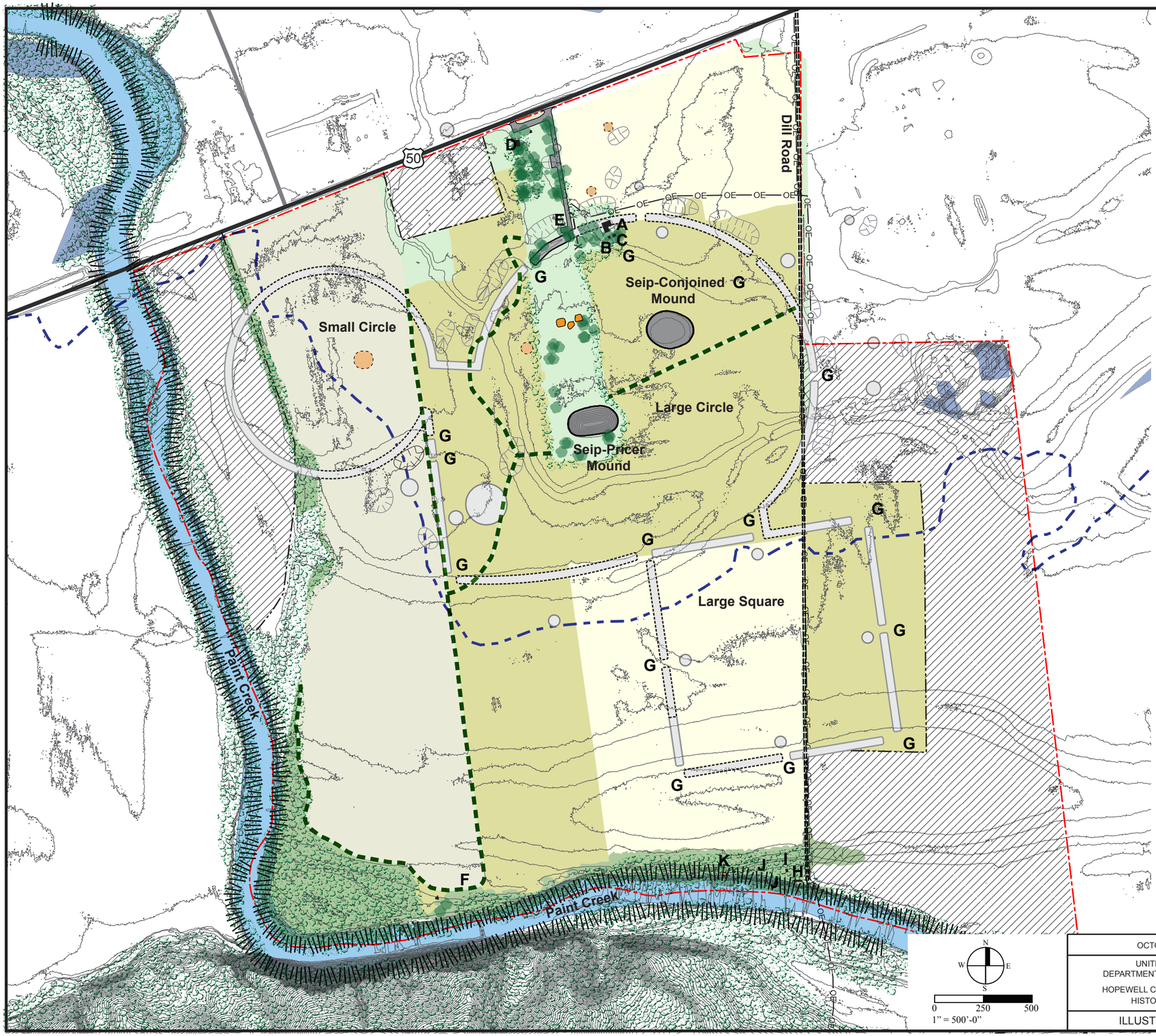
The small scale features are not from the period of significance and do not contribute to the archeological landscape.



Figure 3-135. The deck at Paint Creek is t-shaped, set approximately 30 to 40 inches above adjacent grade. (Mundus Bishop 2014)



Figure 3-136. A split-rail fence with a gate is on the west edge of the Blackstone House. (Mundus Bishop 2014)



Legend

- NPS Boundary
- Portion of Earthwork not in NPS Ownership
- Water Bodies
- Wetlands
- 100 Year Floodplain
- Embankment
- Highway
- Paved Road
- Unpaved Road
- Paved Trail
- Mown Trail
- 1 ft Contours
- Mound - Extant Above-Grade
- Mound - Unverified
- Earthen Wall - Extant Above-Grade
- Earthen Wall - Extant Below-Grade
- Earthen Wall - Unverified
- Borrow Pit - Extant Below-Grade
- Borrow Pit - Unverified
- Building Remnant - Extant Above-Grade
- Remnant - Extant Below-Grade
- Buildings/Structures
- G Gateways
- OE Overhead Lines
- Fence
- Crop
- Hay Field
- Mown Lawn
- Native Grasses
- Shrubland
- Woodland
- Tree

Buildings and Structures

- A Blackstone House
- B Outbuilding
- C Outbuilding
- D Picnic Shelter
- E Porta Potty
- F Wood Deck
- H Fish Camp Building
- I Shed Privy
- J Privy
- K Building Remnant

Sources:
Magnetic Survey 2015, GIS HOCU 2012 LiDAR; 1848, High Bank Works, Davis and Squire; Seip Marshall NAD83; https://msc.fema.gov/portal/search?Address Query=chillicothe; http://www.fws.gov/wetlands/Data/Mapper.html; 2014 Google Maps

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OCTOBER 2015	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: SEIP EARTHWORKS - EXISTING CONDITION
ILLUSTRATION 3-5	NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK REGION: MIDWEST · COUNTY: ROSS · STATE: OHIO

High Bank Works

Introduction

High Bank Works is a monumental Hopewellian earthwork complex consisting of a conjoined circle and octagon, parallel walls, and interlocking circles, set on a terrace 60 feet above the confluence of the Scioto River and Paint Creek. The 197-acre park unit is one of two park units with no visitor facilities.

High Bank Works is located approximately five miles south of Chillicothe, Ohio, and nine miles from the park visitor center. It is on the west side of U.S. Highway 35 and the Baltimore and Ohio / Chesapeake and Ohio railroads, accessed by old US Route 35 / County Road 900.

This archeological landscape is built upon the upper terrace of the east bank of the Scioto River. It occurs on two discontiguous NPS owned parcels, and the privately owned land between them. (The private land was not reviewed or evaluated as part of this study).

High Bank Works is comprised of several geometric archeological features: the Great Circle and Octagon, Parallel Walls, and the South Earthworks (Turpen Tract Works), with specific astronomical alignments.

Archeological features are primarily extant earthen walls—some visible and others below-grade; unverified earthen walls; and borrow pits (previously identified and extant, below-grade).[3.96]

This section evaluates the existing condition and analysis of High Bank Works through five landscape characteristics:

- Spatial Organization / Topography / Views;
- Archeological Features;
- Circulation;
- Vegetation;
- Small Scale Features

Spatial Organization / Topography / Views

Existing Condition

High Bank Works is organized in relationship to the confluence of the Scioto River with Paint Creek. It is entirely built upon the river's east terrace, more than 60 feet above the lower river terraces, and out of the 100 year floodplain of the two streams. A steep slope separates this upper terrace from the lower terrace.

This spatial arrangement gives the earthwork complex its name—High Bank Works—set above the river on a high bank. Views are to the Appalachian foothills in the distance, with individual earthwork elements oriented towards prominent peaks. Other views from the earthwork complex are to the river valley.

This earthwork complex is oriented length-wise along the river's edge. At the north end of the earthwork complex, on NPS owned land, are the archeological features of the Great Circle and Octagon. Near the south end, also on NPS owned land, is the South Earthworks comprised of a series of smaller circles. Between these archeological features are the Parallel Walls, on privately owned land, that connect the two spaces.

3.96 The 2013 high-resolution magnetic survey for High Bank Works revealed below-grade archeological features of the Great Circle and Octagon, and the South Earthwork. This information was used during the 2014 CLR field investigations to assist in locating non-visible features and evaluating the existing condition of the earthwork complex.



Figure 3-137. Views are to the Appalachian foothills in the distance, with individual earthwork elements oriented towards prominent peaks. (Mundus Bishop 2014)



Figure 3-138. The earthen walls of the Great Circle enclose 20 acres, at right, and the Octagon encloses 18 acres, at left. An access road runs through the Great Circle. (Mundus Bishop 2014)

The Great Circle and Octagon are the primary archeological features: massive in scale, and built of earthen walls—some extant (visible and above-grade), and others that are extant (below-grade)—that form the outline of the shape and define the form of each earthwork. These earthen walls and large interior open spaces form two separate but connected enclosures that span several acres. The earthen walls of the Great Circle enclose 20 acres and the Octagon encloses 18 acres.

The two spaces intersect, connected by a narrow gateway. Additional openings or gateways occur within the earthen walls of both archeological features. The Great Circle has two gateways, one at the south edge and another at the east. Eight gateways are associated with the Octagon, located at the vertices.

The Parallel Walls, on private property, connect the two NPS owned parcels. Oriented roughly north south, these features are approximately 1/4 mile long and linear. The Parallel Walls extend from the south corner of the Octagon to the north edge of the South Earthworks, and create a narrow corridor between the two larger, open areas at the north and south.

The South Earthworks are in an open field, on the high bank above the river. The archeological features are not visible on the surface, however below-grade features include three interlocking circles of different sizes. The largest circle is in the shape of a large 'C' due to the adjacent riverbank, and encloses an area of approximately 12 acres. Smaller circles are to the east and the south, each with open interior spaces that have gateways within the earthen walls.

Analysis

The geometrical complexity, precision and astronomical alignment of Hopewell earthen architecture is best expressed at High Bank Works. The alignment of the earthwork complex is thought to be based on celestial events, with the orientation of the sun and moon as organizing principles. Research in 1984 discovered that the earthen walls and gateways within the Great Circle and the Octagon align with solar sunrise and sunset points at the winter and summer solstices. They also align with the moon rise and moon set, based on the 18.6 year lunar cycle. Other gateways align and frame celestial events.[3.97]

Since the period of significance, the spatial organization, topography, and views at High Bank Works have been altered. Agricultural practices in the eighteenth through twentieth centuries have damaged above-grade archeological features, making the spatial organization less visible. Roads, railroads, buildings, and utility lines have further damaged the spatial organization and views. The private gravel road across the Great Circle and Octagon and railroad across the Parallel Walls disrupt the historic organization.

Although the archeological landscape has eroded, significant archeological features and their distinctive spatial arrangement remain. The spatial organization, topography, and views at High Bank Works are contributing features to the archeological landscape.

3.97 Ray Hively and Robert Horn, "Hopewellian Geometry and Astronomy at High Bank," Archaeoastronomy Supplement to *Journal for the History of Astronomy* (1984).



Figure 3-139. The Great Circle earthen wall, shown as a dashed line, is difficult to discern to the untrained eye. (Mundus Bishop 2014)



Figure 3-140. The gateway neck between the Octagon and Great Circle. Shown as a dashed line, is most visible at the gravel road. (Mundus Bishop 2014)

Archeological Features

Existing Condition

The archeological features of High Bank Works consist of the earthwork complex—large multi-component structures made of sand, gravel, and soil—that create space, and the individual features of each earthwork—earthen walls, gateways, and borrow pits.

High Bank Works has four archeological features: the Great Circle with associated borrow pits and a smaller circle; the Octagon; Parallel Walls with smaller circles; and the South Earthwork, a series of smaller interlocking circles and borrow pits.

The archeological features are organized into three types: extant (visible and above-grade); extant (below-grade); and unverified. In 2012 a LiDAR survey of High Bank Works clearly showed considerable integrity of above-grade features. In 2013, High Bank Works was magnetically mapped which revealed below-grade archeological features. Some below-grade features are visible on the magnetic survey but have no topographic expression on the surface.

All archeological features are difficult to discern to the untrained eye, and have been modified by land use practices, specifically agricultural crop production, and construction of contemporary elements over and near them. Below-grade archeological features appear to be in good condition.[3.98]

The *Great Circle* is the northernmost earthwork, and consists of a monumental circle, a Small Circle, and borrow pits. The monumental circle is an extant earthen wall (above-grade) set within a large mown hay field, with most of the wall visible. With a diameter of 1,050 feet and circumference of 3,298 feet, it is nearly a perfect circle.[3.99]

The earthen wall of the circle varies in height from one to three feet tall, in relationship to adjacent grade. A portion occurs on private property. This portion was not reviewed or evaluated for this CLR/EA, and the extent of a visible form is unknown. Another portion occurs on NPS owned land within an area of tall grass prairie that obscures the earthen wall. The highest point of the monumental circle is on its north side, directly across from the neck. The wall is broken in two places—for two gateways, one at the neck, and the other facing east toward the Small Circle.

The *Small Circle* is an extant earthen wall (below-grade) with a diameter of 250 feet, not visible on the surface. A borrow pit is located between the Great Circle and the Small Circle. It is visible, and is approximately 100 feet in diameter, and two feet in depth.

The below-grade features of the Great Circle are extant. The above-grade features are in fair condition due to a portion of the gravel road that cuts through the south edge of the Great Circle, impacting the condition of the earthwork. The gravel road has eliminated the monumental circle wall at its south edge. Contemporary buildings, structures and features within the private property have been built on top of a portion of the monumental circle.[3.100]

3.98 Contemporary elements built over portions of High Bank Works include a gravel road, fences, Baltimore and Ohio / Chesapeake and Ohio railroad, mown agricultural fields, and revegetation.

3.99 Thomas (1889); The circle has been magnetically mapped — a 2013 high-resolution magnetic survey was completed for High Bank Works that revealed below-grade archeological features of the Great Circle, Octagon, and South Earthwork.

3.100 The magnetic survey reveals the extent of the extant below-grade Great Circle and the damage incurred by the gravel road.



Figure 3-141. Due to the height and density of the native grassland vegetation, most portions of the Octagon are not visible. (Mundus Bishop 2014)



Figure 3-142. The South Earthworks are not visible on the surface, but below-grade features were depicted in the magnetic survey. (Mundus Bishop 2014)

The *Octagon* is conjoined with the Great Circle on the Octagon's north side, at a gateway neck. The Octagon is built of a series of unconnected extant earthen walls (above-grade) that form an octagon, broken by eight gateways or openings in the walls, located at the vertices. The Octagon is primarily set in tall native grasslands vegetation, with a small portion set within the same large mown hay field as the Great Circle. The portion of the Octagon's extant earthen wall (above-grade) in the mown hay field is visible. The remainder of the Octagon's walls are not visible, due to the height and density of the prairie vegetation. According to 1848 investigations by Squier and Davis, the Octagon originally had eight small mounds within the enclosure, corresponding to each gateway. These eight small mounds were not observed, and were not documented by the recent magnetic survey. A portion of the Neck, and one gateway—on the north vertex of the Octagon—are extant and visible. The others are not, due to the tall vegetation. The gateways are extant below-grade, as they were identified in the magnetic survey as were the extant earthen walls of the Octagon. These archeological features may be visible if the prairie is mown or the vegetation modified.

The above and below-grade features of the Octagon are in good condition; however a portion of the gravel road extends through the north corner of the Octagon. It has eliminated the portion of earthen walls where the road crosses the Octagon, impacting the condition of the earthwork.[3.101]

The center earthwork is formed of earthen *Parallel Walls*. These features are located on private property between the two NPS owned parcels. The earthwork is approximately one-third of a mile in length. It consists of two parallel unverified earthen walls, oriented southwest, two circles on its north end, and another on the south end. Due to the earthwork's location on private property, it was not reviewed or evaluated during this study, and was not part of the recent magnetic survey. An abandoned railroad line of the Baltimore and Ohio Railroad occurs across a portion of the earthwork, visible in aerial photographs, and likely impacts the individual archeological features of this earthwork. The condition of the above and below-grade features of the Parallel Walls is unknown.

The *South Earthworks,* located on the 'Turpen Tract,' is the southernmost portion of the earthwork complex. The setting is a mown field on the high bank of the Scioto River and Paint Creek confluence.

A series of individual archeological features appear to form small interlocking circles. Some are extant earthen walls (below-grade) and others are borrow pits (below-grade). These features are not visible. However, these archeological features are documented in the recent magnetic survey that indicates the features are extant below-grade.

Other below-grade archeological features include postholes near the center of the Great Circle and the Octagon. Other features and artifacts likely exist throughout the earthwork complex, but are too small to appear on the magnetic survey. These might include building footprints and structure floors, cooking or processing pits, and artifacts associated with Hopewell activities.

3.101 The magnetic survey reveals the extent of the extant below-grade Octagon, including the gateways and the damage incurred by the gravel road. It does not show any indication of the mounds.

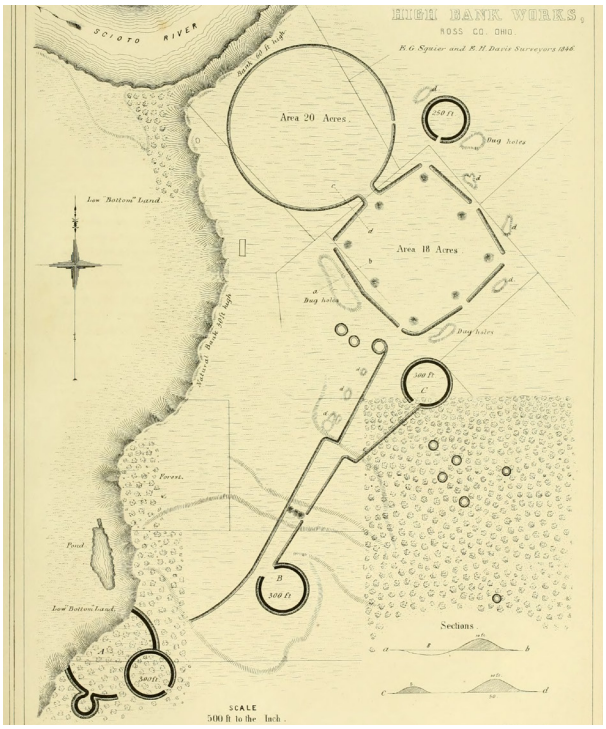


Figure 3-143. The 1848 Squier and Davis map indicates archeological features that are no longer visible. (Hopewell Culture NHP Archives)



Figure 3-144. 2013 Magnetic survey revealed the extent of extant below-grade archeological features. (Hopewell Culture NHP Archives)

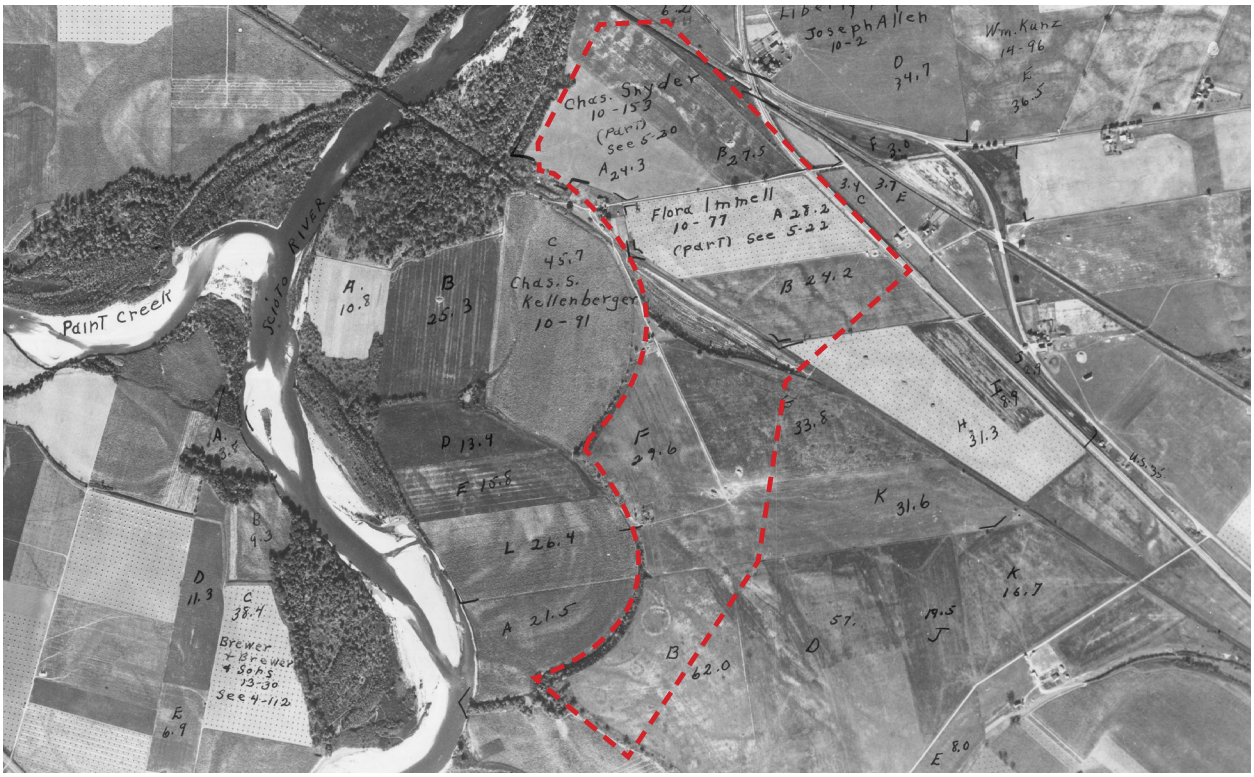


Figure 3-145. In 1938, the Great Circle, Octagon, and South Earthworks were visible. Over time, these features became deteriorated from agricultural practices. Today, only the Great Circle and portions of the Octagon remain visible. (Hopewell Culture NHP Archives)

Analysis

The above-grade archeological features of High Bank Works have been altered since the period of significance. Extant below-grade archeological features remain similar to their original construction, and reflect the construction of these features during period of significance.

During the period of significance, archeological features at High Bank Works formed a geometrically precise earthwork complex, aligned to astronomical events of the sun and moon. The monumental architecture was designed to encompass vast sacred / ceremonial spaces.

Changes since the period of significance include cultivation, construction of railroad lines and roads adjacent to and on top of the archeological features, and buildings built adjacent to or on top of the features.

The Squier and Davis map of 1848 indicates archeological features that are no longer visible, including the Parallel Walls, mounds within the Octagon, borrow pits outside the Octagon, the Small Circle, and the South Earthwork. At that time, the walls of the Octagon stood almost two feet high, and the earthen wall of the Great Circle was more than three feet high. The Chesapeake and Ohio Railroad was built east of the earthwork complex before 1875. The nearby farmstead and gravel road were built prior to 1891.

The last 200 years of agricultural use have damaged extant above-grade archeological features, resulting in the earthwork complex being flattened and widened by plowing.

Based on the magnetic survey of 2013, the extant below-grade archeological features of the Great Circle and Octagon are intact and have retained integrity. A portion of the extant below-grade features were damaged by the construction of the gravel road. Although not confirmed by the magnetic survey, it is likely that the railroad grade across the Parallel Walls damaged extant below-grade archeological features.

The above-grade archeological features at High Bank Works have been modified since the period of significance.

Extant below-grade archeological resources remain and retain integrity. Extant above and below-grade features retain integrity, and contribute to the significance of the Hopewell Culture NHP.



Figure 3-146. A gravel road provides egress / ingress for the private property. (Mundus Bishop 2014)



Figure 3-147. The gravel road bisects the Octagon and a portion of the Great Circle. (Mundus Bishop 2014)



Figure 3-148. The gravel / dirt road provides access to the South Earthworks. (Mundus Bishop 2014)



Figure 3-149. Railroad tracks are located just east of the complex on the northeast side. (Mundus Bishop 2014)

Circulation

Existing Condition

The circulation system of High Bank Works is primarily vehicular-based, with only one pedestrian route in the south NPS parcel.

Vehicular access to the earthwork complex is via U.S. Highway 35 to County Road 900, an asphalt paved road that extends along the east boundary of the park unit, and ends in a small informal gravel parking area. From this route, a narrow gravel road crosses railroad tracks and extends into the earthwork complex for its entire width, ending within the adjacent private property. The gravel road bisects the Octagon and a portion of the Great Circle. The road provides egress / ingress for the private property.

A *dirt road* extends south from the private property, to and across portions of the Parallel Wall earthwork, accessing a barn, and ending in a turn-around in the center of the earthwork.

Access to the South Earthworks is via a *private gravel / dirt road* that connects to Old U.S. Route 35. The vehicular route ends on the lower terrace of the Scioto River and Paint Creek. From this point a steep dirt path extends to the earthwork complex for pedestrian access.

Railroad tracks for the Baltimore and Ohio / Chesapeake and Ohio railroad, are just east of the earthwork complex on the northeast side. An abandoned railroad grade extends through the middle of the earthwork complex.

Analysis

The circulation routes that exist today are not from the period of significance.

Modifications to the circulation system at High Bank Works since the period of significance include the gravel road across the Octagon and Great Circle in the nineteenth century, and railroads built after the 1850s. The gravel road traverses the earthwork complex and damages the archeological features; railroads distract from the archeological landscape.

The circulation routes that exist today are not from the period of significance and are non-contributing features.

Vegetation

Existing Condition

The vegetation of High Bank Works includes hay fields, native grasslands, and some manicured vegetation at private residential land. A native, hardwood forest thrives along the east bank of the Scioto River, and provides important habitat as a riparian edge.

On the north parcel of NPS land, most of the land is cleared. A mown hay field occurs on most of the Great Circle and portions of the Octagon. Both sides of the gravel road are maintained as mown lawn. Immediately to the south is a restored native grassland. The native grassland covers much of the Octagon. It was installed in 2012 with a combination of native warm season grasses and forbs. The vegetation is still becoming established but appears to be in a healthy condition.

The portion of the earthwork in private ownership, at the Parallel Walls, is under cultivation. Around the private dwellings is manicured vegetation.

Cropland is maintained at the South Earthworks. This is composed of alfalfa / orchard grass.

The canopy in the riparian area, as mapped in 2004, is composed of American sycamore, cottonwood, and silver maple. Hackberry and boxelder dominate the sub-canopy, with some Ohio buckeye and silver maple.



Figure 3-150. Mown lawn is on either side of the gravel drive; native grasslands is on the left. (Mundus Bishop 2014)



Figure 3-151. On the north parcel of NPS land, most of the land is cleared hay fields. (Mundus Bishop 2014)

The herbaceous layer is mostly tall fescue, Canadian woodnettle (*Laportea canadensis*), jewelweed (*Impatiens capensis*), and garlic mustard.

Exotic vegetation control actions have been recently undertaken along the riparian edge.

Analysis

It is unknown what the character or composition of the vegetation was during the period of significance. The Squier and Davis maps of 1848 indicate that portions of High Bank Works were cleared of trees, and other portions were forested. It is unknown if the vegetation at High Bank Works reflects the pre-historic pattern. The vegetation and vegetation patterns of High Bank Works are non-contributing to the archeological landscape.



Figure 3-152. Mown hay field in the south tract. (Mundus Bishop 2014)



Figure 3-153. Vegetation at the south tract includes mown hayfields edged with hardwood forest. (Mundus Bishop 2014)

Small Scale Features

Existing Condition

Small scale features include fences, electric poles, and miscellaneous features.

Utility poles and aerial lines run the length of the gravel entrance road, providing power to the private residence. The poles extend from the county road, across the railroad tracks, and along the north side of the gravel road. At the midpoint, the lines cross to the south side of the gravel road and extend to the private residence. The utility poles and aerial lines bisect the Great Circle and the Octagon, possibly disturbing below-grade resources.

A *barbed wire fence* parallels a portion of the gravel entrance road. It continues adjacent to the railroad tracks and along property lines. The fence has wooden posts with barbed wire.

The gravel / dirt road that provides access to the South Earthwork is gated. The *gate* is metal and is located at the southwest corner of South Earthwork for vehicular access.

Signs include a brown park sign and regulatory signage. The park sign is located on the east side railroad tracks at the end of the county road at the small parking area. It indicates that the area is "closed to the public." The sign is in fair condition, as the name of the park is not accurate. Additional signage includes regulatory signage at railroad crossing.

Analysis

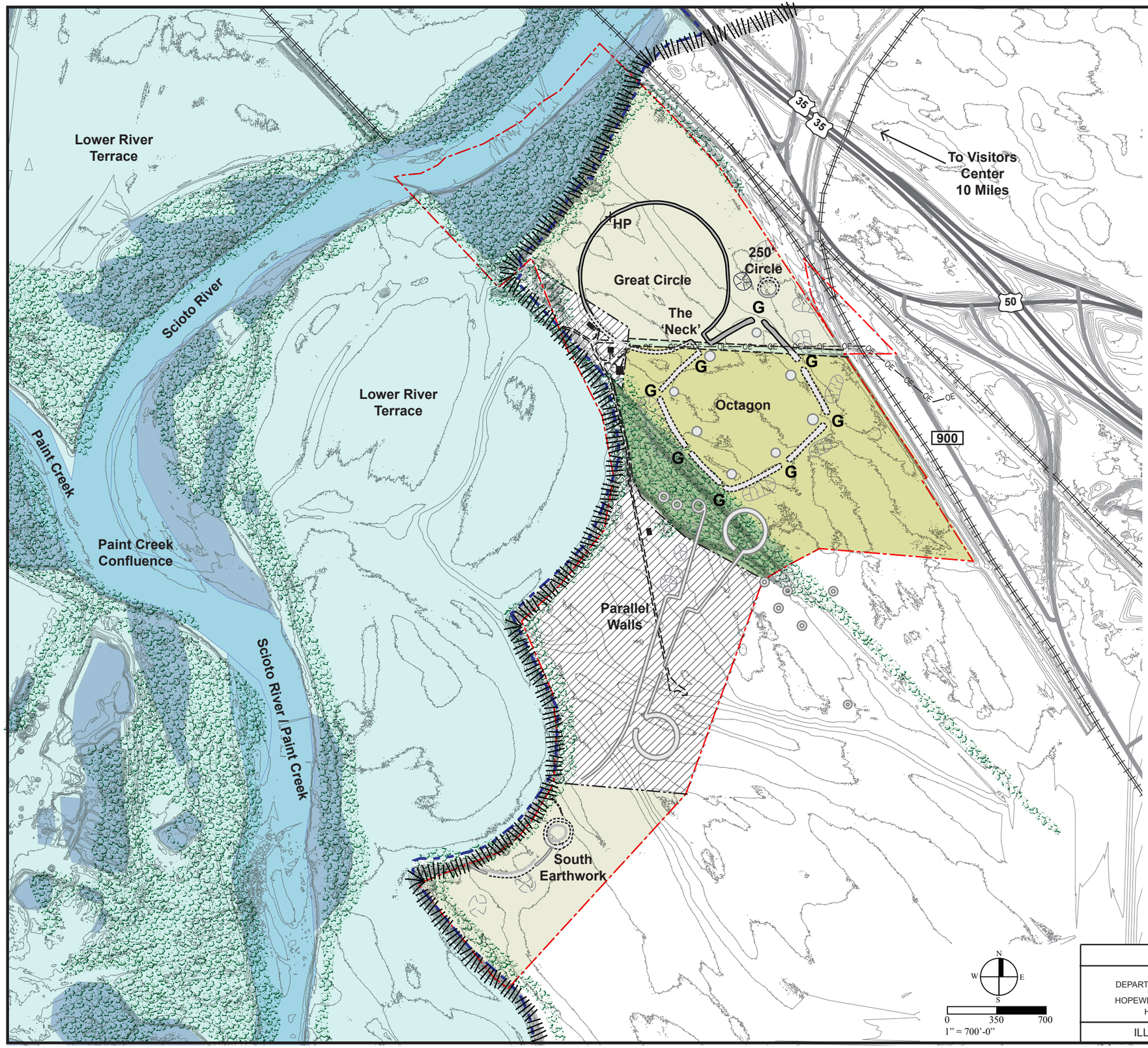
The small scale features that exist today are not from the period of significance and are non-contributing features to the archeological landscape.



Figure 3-154. A barbed wire fence parallels a portion of the gravel entrance road. It continues adjacent to the railroad tracks and along property lines. (Mundus Bishop 2014)



Figure 3-155. Access to the South Earthwork is via a metal gate at the southeast corner of the park unit. (Mundus Bishop 2014)



Legend

- NPS Boundary
- Portion of earthwork not in NPS Ownership
- Water Bodies
- Wetlands
- Lower River Terrace
- 100 Year Floodplain
- Embankment
- Highway
- Paved Road
- Unpaved Road
- Railroads
- 1 ft Contours
- Mound - Unverified
- Earthen Wall - Extant Above-Grade
- Earthen Wall - Extant Below-Grade
- Earthen Wall - Unverified
- Ditch - Extant Below-Grade
- Borrow Pit - Extant Above-Grade
- Borrow Pit - Extant Below-Grade
- Borrow Pit - Unverified
- Buildings/Structures
- OE Gateways
- G Overhead Lines
- Hay Field
- Mown Area
- Native Grasses
- Shrubland
- Woodland
- HP High Point

Sources:
Burks 2013 High Bank Works Magnetic Survey; Burks 2013 Turpen Tract-High Bank Works Magnetic Survey; GIS HOCU 2012 LiDAR; 1848, High Bank Works, Davis and Squire; http://www.fws.gov/wetlands/Data/Mapper.html; https://m-sc.fema.gov/portal; 2014 Google Maps

TIC# 353 128148

OCTOBER 2015

UNITED STATES
DEPARTMENT OF THE INTERIOR

HOPEWELL CULTURE NATIONAL HISTORICAL PARK

ILLUSTRATION 3-6

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
AND ENVIRONMENTAL ASSESSMENT

TITLE OF DRAWING
HIGH BANK WORKS - EXISTING CONDITION

NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK

REGION: MIDWEST | COUNTY: ROSS | STATE: OHIO

Affected Environment

Cultural Resources

Cultural Landscapes and Archeological Sites

Detailed information on cultural landscapes and archaeological sites in the Hopewell Culture National Historical Park is provided in Chapter 2 and previous sections of Chapter 3.

Vegetation

The five park units are situated near river floodplains, on the north edge of the Allegheny Plateau, just south of the till plains.[3.102] The majority of the park units have been clear-cut in the past and cultivated with agricultural activities. The use of agriculture on the properties has had the greatest impact on native plant communities and the park has been trying to establish sections of the properties to native grassland. Control of invasive species through hand-pulling has been conducted on the properties in recent years for species including Canada thistle, garlic mustard, bush honeysuckle (*Lonicera sp.*), multiflora rose, and autumn olive.

A vegetation survey was completed in 2014 for the park, which identified seven vegetation types.[3.103] Most of the park units were mapped as ruderal grasslands and former croplands. Non-native meadows occur on all park units, and make up more than 70% of the non-developed area of the park.[3.104] These non-native meadows were classified as Orchargrass-Timothy grass-Fescue species-Goldenrod species Herbaceous Vegetation. Dominant vegetation within this community includes orchardgrass, Canada goldenrod, meadow fescue, Timothy grass, and black medick. These species are all typical of moist old fields in the eastern United States. The most "semi-natural" and significant communities identified were (1) an upland limestone forest at Hopewell Mound Group, (2) floodplain forests at the Seip Earthworks, High Bank Works, and Mound City Group, and (3) a small prairie restoration on the Hopewell Mound Group.

The Appalachian Sugar Maple-Chinkapin Oak Limestone Forest occurs on a small area of upland, low, rolling hills on the northwest corner of the Hopewell Mound Group. Sugar maple is the dominant overstory tree, followed by chinkapin oak and white oak. Pawpaw, common hackberry, and white ash are common small trees in the understory. Several weedy species, including multiflora rose, Japanese honeysuckle, and honeylocust are also represented in the shrub layer. Common herbaceous components include white snakeroot (*Ageratina altissima*), Canadian honewort (*Cryptotaenia canadensis*), nodding fescue (*Festuca subverticillata*), stickywilly (*Galium aparine*), spring avens (*Geum vernum*), clustered black snakeroot (*Sanicula odorata*), and bristly greenbrier (*Smilax tamnoides*).

The Silver Maple-Green Ash-Sycamore-Hackberry Floodplain occurs in small linear patches on floodplains along streams at the Seip Earthworks, High Bank Works, and Mound City Group. Representative patches of this type are generally forests with an open understory and typical floodplain microtopography. Dominant species include common hackberry, American sycamore, silver maple, and boxelder. Boxelder and common hackberry are also important in the shrub layer, along with Ohio buckeye and Amur honeysuckle (*Lonicera maackii*). Vines are common, including eastern poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), and frost grape (*Vitis vulpina*). Common herbaceous species include white snakeroot, garlic mustard,

3.102 NPS, *Geological Resources.*
3.103 Diamond, *Vegetation Classification and Mapping*.
3.104 Diamond, *Vegetation Classification and Mapping*.

Virginia wildrye (*Elymus virginicus*), Canadian woodnettle, and clustered black snakeroot.

The Hopewell Mound Group also contains a small patch of the Restored Tallgrass prairie community. Big bluestem and Canada goldenrod are the prevailing, and often overwhelming, dominant species within this community. Other important species include sideoats grama, black-eyed and brown-eyed Susan, wild bergamot, and stiff goldenrod. Shrubs and small trees include Pennsylvania blackberry, American elm (*Ulmus americana*), multiflora rose, and slippery elm.

Other communities identified within the park include the Eastern North American Wet Meadow Group, the Ruderal Low Woodland/ Shrubland, and the Ruderal Woodland. The Eastern North American Wet Meadow Group community was identified at Hopewell Mound Group and consists of five small, oval or nearly circular depressional wetlands. Vegetation varies due to water depth, with ovate spikerush (*Eleocharis ovata*) the most dominant species. Sedges (*Carex stipata*, *Carex spp*.) and smartweeds (*Polygonum spp*.) are important in all five wetlands.
The Ruderal Low Woodland/Shrubland occurs on a variety of soil types and land positions within the park. This type is characterized by a patchy canopy of small trees and shrubs with weedy species dominating. Honeylocust is the most important tree species, followed by black cherry, and white ash. Autumn olive is present with fairly high cover, while hawthorns (*Crataegus spp*.) were dominant in patches. Vines, including Japanese honeysuckle, Virginia creeper, eastern poison ivy, and frost grape are common important species. Important herbaceous species include white snakeroot, western panicgrass (*Dichanthelium acuminatum*), fragrant bedstraw (*Galium triflorum*), oxeye daisy (*Leucanthemum vulgare*), Canada goldenrod, meadow fescue, and Kentucky bluegrass (*Poa pratensis*).

The Ruderal Woodland community also occurs in a variety of soils and land positions in all park units except Seip Earthworks. The general aspect of these communities represents rather open, low, young woodlands, but the canopy is closed in some places. Dominant trees include common hackberry, black walnut, sugar maple, and black locust. The shrub layer varies across mapped patches, and important species include sugar maple, common hackberry, Amur honeysuckle, multiflora rose, and slippery elm. Common forbs include white snake root, garlic mustard, hairy wildrye (*Elymus villosus*), and Virginia wildrye.

At least four species listed as threatened or endangered by the state of Ohio have been documented in the park - eastern white cedar (*Thuja occidentalis*), ovate spikerush, reflexed sedge (*Carex retroflexa*), and October lady's tresses (*Spiranthes ovalis*).[3.105]

Wildlife

A variety of wildlife inventories at the park were conducted in 2004 and 2005, including mammals, fish, birds, bats, and amphibian and reptile surveys. The studies found a variety of wildlife occurring throughout the five park units. The mammal inventory documented 28 mammals within the park, representing 76 percent of the mammals documented within Ross County, Ohio.[3.106] Species abundant and common to the park include Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), eastern cottontail (*Sylvilagus floridanus*), fox squirrel (*Sciurus niger*), woodchuck (*Marmota monax*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), white-tailed deer (*Odocoileus virginianus*), and several types of mice and voles. Raccoons are adaptable to a wide range of habitats, including shallowly inundated

3.105S.A. Middlemis-Brown and C.C. Young, *Heartland Invasive Plant Management Plan and Environmental Assessment* (Philadelphia, PA: 2012).
3.106Vick, *Inventory of Mammals*.

areas to uplands, while opossum, skunk, and coyote are mostly associated with upland areas, which are abundant within the park. The eastern harvest mouse (*Reithrodontomys humulis*) is documented in the park and is an Ohio state threatened species. Three additional rodent species documented in the park are Ohio state species of concern: deer mouse (*Peromyscus maniculatus*), prairie vole (*Microtus ochrogaster*), and woodland vole (*Microtus pinetorum*).

Eight bat species were documented in the park during bat inventories, with the tri-colored bat (*Perimyotis subflavus*), big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), and northern long-eared bat (*Myotis septentrionalis*) the most common species found.[3.107] The northern long-eared bat is a federally threatened species and Ohio state species of concern. Six other bat species documented in the park are Ohio state species of concern: tri-colored bat, eastern red bat, hoary bat (*Lasiurus cinereus*), silver -haired bat (*Lasionycteris noctivagans*), little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*).

The reptile and amphibian study documented twelve amphibian species (*five salamanders and seven anurans*) and eleven reptilian species (*five turtles and six snakes*) within the park.[3.108] Common species include American toad (*Bufo americanus*), gray treefrog (*Hyla chrysoscelis/versicolor*), bullfrog (*Rana catesbeiana*), black rat snake (*Elaphe obsoleta*), common garter snake (*Thamnophis sirtalis*), and the eastern box turtle (*Terrapene carolina*).

The park's bird surveys have recorded 172 species of birds within the park.[3.109] The most common species recorded were American crow (*Corvus brachyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), eastern meadowlark (*Sturnella magna*), northern cardinal (*Cardinalis cardinalis*), and European starling (*Sturnus vulgaris*). Bald eagles have been observed within the park; however no known active bald eagle nests occur within the park. Five Ohio state endangered species were recorded in the park including the lark sparrow (*Chondestes grammacus*), northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetus*), golden-winged warbler (*Vermivora chrysoptera*), American bittern (*Botaurus lentiginosus*), and yellow-bellied sapsucker (*Sphyrapicus varius*). Four Ohio state threatened species documented include the dark-eyed junco (*Junco hyemalis*), hermit thrush (*Catharus guttatus*), upland sandpiper (*Bartramia longicauda*), and least flycatcher (*Empidonax minimus*). The northern long-eared bat is a federally threatened species.

Surveys within and abutting the park units have documented 91 fish species. Dry Run, an intermittent stream at Hopeton Earthworks contained 14 different species with the blacknose dace (*Rhinichthys atratulus*) and northern creek chub (*Semotilus atromaculatus*) the most abundant species observed. The Scioto River, Paint Creek, and North Fork Paint Creek are adjacent to park units and high fish species diversity, with 54 to 62 different species documented along the drainages. Six species of management concern were observed in these adjacent drainages including the Ohio state endangered goldeye (*Hiodon alosoides*), Ohio state threatened bluebreast darter (*Etheostoma camurum*) and Tippecanoe darter (*E. tippecanoe*), and Ohio state species of concern river redhorse

3.107Lynn Robbins, *Inventory of Distribution, Composition, and Relative Abundance of Bats at Hopewell Culture National Historical Park, Ohio* (Springfield, Missouri: Southwest Missouri State University, 2005).

3.108Christina Wieg, *A Herpetofaunal Inventory of Hopewell Culture National Historical Park, Ross County, Ohio* (Republic, Missouri: Heartland Network Inventory and Monitoring Program, 2004).

3.109Myra Vick, *Inventory of Distribution, Composition, and Relative Abundance of Birds at Hopewell Culture National Historical Park* (Republic, Missouri: Heartland Network Inventory and Monitoring Program, 2004).

(*Moxostoma carinatum*), Eastern sand darter (*Etheostoma pellucidum*), and least darter (*Etheostoma microperca*).

Visitor Use

Currently, visitors have access to Mound City Group, Hopewell Mound Group, and Seip Earthworks. Public visitation is not yet allowed at Hopeton Earthworks and High Bank Works. A visitor center is located at Mound City Group, which is open seven days a week, excluding holidays. The grounds at the park units are open from dawn to dusk, with interpretive trails located at Mound City Group which are handicap accessible. Hopewell Mound Group has a 2.5 mile trail that is partially paved, gravel and mown lawn, a covered picnic shelter, and accessible restrooms. Seip Earthworks has no paved trails but does have a portable restroom and covered picnic area. Between 2009 and 2013, visitation was fairly steady and ranged from 32,206 to 39,462.[3.110] Visitation occurs primarily between March and October. The GMP estimated that 80% of the use of the park is from local and regional visitors, with 20% of the visitors from outside Ohio.[3.111]

Park Operations

Currently, all park operations, including maintenance facilities and equipment, are located at Mound City Group. Three permanent staff perform maintenance duties in the park units. The park currently has a chief ranger and six park rangers, visual information specialist, administrative assistant, chief of resource management, curator, and biologist. The park actively manages archeological resources at Mound City Group, Hopewell Mound Group, and Seip Earthworks. Activities include trail maintenance, mowing, general maintenance, ranger patrols and curation of artifacts. Park staff make periodic visits to the High Bank Works and Hopeton Earthworks to monitor resource conditions and potential threats, and also works closely with the owners of privately owned parcels within the jurisdictional boundary.

Visual Resources

Mound City Group is a 120-acre area consisting of the visitor facilities, a mowed grassland area containing the mounds, and surrounding hardwood forest, agricultural land, and riparian vegetation along the adjacent Scioto River. The majority of the earthwork complex is fairly flat, with the wooded areas on the north, east, and south visually enclosing the earthwork complex.

Hopewell Mound Group is 300 acres and consists mainly of fields containing the mounds on the southern section of the property and a low bluff with woodlands/ forest on the northern section of the property. The earthwork complex slopes gently upward from south to north and rises abruptly into forested hills along the northern boundary.

Seip Earthworks is 336 acres, with US 50 bordering the property to the north and Paint Creek bordering it to the south. The majority of the property is fallow fields with forests enclosing the property on the west and south.

Hopeton Earthworks is located on a terrace east of the Scioto River. The earthwork complex is fairly flat and open, with some elevation gain eastward from the river. Dry Run, an intermittent stream, occurs in the southeast corner of the property. A hardwood forest and black walnut orchard occur near the stream. A private residence and gravel mining operation occur adjacent to the earthwork complex. Due to previous cultivation in the area, some of the

3.110NPS,"Park Statistics" *Hopewell Cultural National Historical Park Website.* Available online at http://www.nps.gov/hocu/parkmgmt/statistics.htm, Accessed January 21, 2015.

3.111NPS, 1997.

archeological features are now less than 5 feet in height and are difficult to see.

High Bank Works also occurs on a terrace above the Scioto River. Three different railroad tracks traverse through the earthwork complex, and agricultural land and three private residences occupy the 197-acre earthwork complex. U.S. 35 occurs to the east of the property and hardwood forests occur along the northern and western boundaries of the property.

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Chapter 4 - Treatment Alternatives

Introduction

This chapter presents treatment alternatives for the repair, protection and stewardship of the archeological landscape of the Hopewell Culture NHP. These treatment alternatives were developed during the Alternatives Work Session in May 2015, and refined through a series of conference call work sessions with the park and Midwest Regional Office (MWRO) staff.

This chapter describes the alternatives considered for the study area and each park unit, beginning with the no action alternative, followed by two action alternatives. The agency preferred alternative is Action Alternative 2, presented again in Chapter 6 - Treatment Plan, with detailed treatment recommendations.

All action alternatives address the protection of resources, improvements to visitor experience and access, and provisions for future research. Treatment approaches are proposed for each park unit, based on its individual qualities and visitor needs. Treatment alternatives for each park unit vary in the extent of rehabilitation and modifications proposed.

A summary of the alternatives, organized by park unit is presented as a matrix ("TABLE 4-1. Alternatives Matrix").

No Action Alternative would provide a basis for comparison with the action alternatives, including the preferred alternative. Under the no action alternative, the present level of use, management, interpretation, maintenance and operations would continue.

Action Alternative 1 - Preserving Earthwork Complexes would focus on preserving the earthwork complexes, better delineate archeological features and spaces to make them more visible, and provide a visitor experience in sync with earthwork preservation. Vegetation management would be the primary technique in marking or depicting the archeological features, and the relationships between them. Extant below- and above-grade archeological features would be preserved and maintained.

Action Alternative 2 - Conserving and Revealing Earthwork Complexes would focus on preserving extant below- and above-grade archeological features, clearly delineate archeological features and spaces, balance removal of non-contributing features with earthwork preservation, and provide visitor experiences and management tailored to the individual character of each park unit. At Mound City Group, Hopewell Mound Group, and Seip Earthworks, this alternative would assertively delineate non-extant archeological features (mounds, earthen walls, etc.) through markings. At Hopeton Earthworks and High Bank Works, this alternative preserves the earthwork complexes, and focuses on the delineation of spaces and patterns through vegetation management to depict the archeological features, and the relationships between them.

TABLE 4-1. Alternatives Matrix

		Mound City Group				Hopeton Earthworks			
	Treatment Approach*	Walls	Mounds	Interior space	Exterior space	Walls	Circles	Interior space	Exterior space
No Action Alternative									
Preservation of extant features	**P**			**X**	**Some**				
Preservation of reconstructed features	**P**	**X**	**X**						
Continue cultivation	**P**					**X**	**X**	**X**	**X**
Timothy/orchardgrass	**P**								
Mown lawn	**P**	**X**	**X**	**X**					
Native grasslands	**P**								
Woodland	**P**				**X**				
Action Alternative 1 - Preserving Earthwork Complexes									
Preservation of extant features	**P**	**X**	**X**	**X**	**Some**	**X**	**X**	**X**	**Some**
Preservation of reconstructed features	**P**	**X**	**X**						
Low vegetation / mown lawn	**P**	**X**	**X**	**X**				**X**	
Native grasslands	**P**					**X**	**X**		
Continue cultivation	**P**								
Woodlands	**P**								
Action Alternative 2 - Conserving and Revealing Earthwork Complexes									
Preservation of extant features	**R**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Preservation of reconstructed features	**R**	**X**	**X**						
New rehabilitations or markings	**R**								
Repair (tree thinning, veg removal, etc.)	**R**	**X**		**X**					
Low vegetation / mown grasses	**R**	**X**		**X**		**X**	**X**	**X**	
Native grasslands	**R**		**X**		**X**				**X**
Native grasses and forbs	**R**				**X**				
Woodlands	**R**				**X**				
Removal of non-contributing features	**R**					**X**	**X**	**X**	**X**

* **P** is preservation; **R** is rehabilitation.

Hopewell Mound Group				**Seip Earthworks**				**High Bank Works**			
Walls	Mounds	Interior space	Exterior space	Walls	Mounds	Interior space	Exterior space	Walls	Circles	Interior space	Exterior space
North				**X**	**X**			**X**			
				X	**X**						
				X		**X**	**X**	**X**	**X**	**X**	
X	**X**	**X**	**X**								
		10 acres									
								X	**X**	**X**	**X**
X	**X**			**X**	**X**			**X**	**X**		
				X	**X**						
X	**X**	**X**		**X**	**X**			**X**	**X**		
X	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Some		**X**				**X**					
X				**X**		**X**				**X**	
X		**X**		**X**		**X**		**X**	**X**	**X**	
	X				**X**						**X**
			X				**X**			**X**	**X**
X				**X**				**X**	**X**	**X**	**X**

Treatment Approaches

Four distinct approaches to the treatment of archeological landscapes were considered.[4-1]

Preservation is an appropriate treatment approach for an archeological landscape with a continuity of use and few modifications. This approach is suited for a property where its distinctive materials, features, and spaces are intact, and for which extensive modifications or additions are not required. The preservation treatment approach allows archeological features to be preserved, restored, or repaired.

Rehabilitation is an appropriate treatment approach for an archeological landscape with a long period of significance, that has undergone few modifications, and has integrity in one or more characteristics: location, setting, materials, workmanship, feeling, and association. Rehabilitation is appropriate for a property where new additions are contemplated. The rehabilitation treatment approach allows for features to be preserved, rehabilitated, reconstructed, or restored.

Reconstruction is an appropriate treatment approach for an archeological landscape with a vast amount of documentation that would allow, by means of new construction, the form, features, and detailing of a non-surviving archeological landscape to be replicated to its appearance at a specific period of time and in its historic location. Due to the limited information on the archeological features' form and construction methodology during the period of significance, reconstruction of the archeological landscape or specific archeological features is not recommended at this time.

Restoration is an appropriate treatment for an archeological landscape with documentation to accurately depict the form, features, and character of earthwork complexes as it appeared during a particular period of time by removing features from other periods in history and renovating missing features from the restoration period. Due to the limited information on the archeological features' form and construction methodology during the period of significance, restoration of the archeological landscape or specific archeological features is not recommended at this time.

The recommended treatment approach depends on a variety of factors, including the condition, proposed use, and historical significance of the property. The first alternative, Action Alternative 1 - Preserving Earthwork Complexes, recommends a preservation treatment approach for all earthwork complexes within the Hopewell Culture NHP. Action Alternative 2 - Conserving and Revealing Earthwork Complexes recommends a rehabilitation treatment approach for Mound City Group, Hopewell Mound Group, and Seip Earthworks; and a preservation approach for Hopeton Earthworks and High Bank Works. The marking / rehabilitation illustrated and described for Alternative 2 shows the maximum extent of change considered appropriate. Implementation recommendations included in Chapter 6 provide guidance for application of these in a gradual approach that may or may not result in application of the full extent of the recommendations.

4-1 Robert R. Page, Cathy A. Gilbert, and Susan A. Dolan. *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques.* [Washington, DC: U.S. Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Park Historic Structures and Cultural Landscapes Program, 1998].

Common to All Action Alternatives

Several treatment recommendations are common to all action alternatives for all earthwork complexes within the Hopewell Culture NHP. These are summarized in this section and are not repeated in the action alternatives section.

Land Use

The park would purchase areas within the authorized park unit boundary, plus additional adjacent or related properties necessary for the protection of earthwork complexes. Alternative methods of protection, such as easement, local planning, and trust, would be explored to protect earthwork complexes outside the Hopewell Culture NHP jurisdictional boundary.[4-2]

Archeological Features

All extant below-grade features would be preserved.

- Additional research would be conducted to understand Hopewellian habitation sites in relationship to the earthwork complexes, and modes of circulation (waterways and overland routes) between earthwork complexes. Additional research would be undertaken to reveal the daily lifestyle of the Hopewell Culture including regional settlement patterns, rituals, use of earthwork complexes, trade routes, subsistence, etc.

- Additional research, investigations, and surveys would be conducted to confirm material reconstructions and to better understand the construction of the Hopewellian archeological features.[4-3]

- Additional magnetic surveys and archeological investigations would be undertaken to locate undocumented archeological resources.

- Excavation of any type within Hopewell Culture NHP would occur only with consultation with the park archeologist, the Midwest Archeological Center (MWAC), and others where appropriate (federally recognized tribes, SHPO, etc). Below-grade features include the foundations of archeological features (mounds, earthen walls, structures, etc.), and a layer of archeological scatter.

- Radiocarbon dating, pollen and phytolith analysis, soil micromorphological analysis, etc. would be undertaken to reveal historic vegetation patterns.

- Stream banks of the Scioto River, Paint Creek, and the North Fork Paint Creek would be monitored and areas of erosion that threaten archeological resources would be stabilized.

Circulation

New pedestrian connections would link the earthwork complexes and better interpret overland and waterway routes that may have been used by the Hopewell people.

- The park would work with Ross County Park District in their efforts to establish a greenway trail system to link the earthwork complexes by adding a trail on the north and main forks of Paint Creek and the Scioto River. The park would add trail connections, bicycle racks, and directional signs within park land.[4-4]

4-2 *GMP,* p 41

4-3 Sarah Sherwood and Tristram Kidder, The DaVincis of Dirt: Geoarchaeological perspectives on Native American mound building in the Mississippian River Basin. *Journal of Anthropological Archaeology 30* (2011) 69-87

4-4 *GMP*, p 24

- The park would work with Ross County Park District in their efforts to establish bike paths along roads and abandoned railways to link the earthwork complexes, and to link community, county, state, and federal park, and recreation areas to better serve local residents and visitors.[4-5]
    - Mound City Group and Hopewell Mound Group would be connected with a bike path along state road 104 to the Tri-County Triangle Trail, or a route through the Veterans Affairs Medical Center and Pleasant Valley Wildlife Area to the Tri-County Triangle Trail.[4-6]
    - The relationship of Mound City Group to Hopeton Earthworks would be depicted by adding a new bridge across the Scioto River. With assistance from adjacent land owners, a new trail would connect the two park units.
- The park would coordinate with Ross County Park District, City of Chillicothe, and Ohio Department of Natural Resources to locate, design, and construct canoe launches and access trails at each earthwork complex.[4-7]
- The park would coordinate with Chillicothe Transit Company to establish a bus route system with scheduled bus service to each earthwork complex.[4-8]

<u>Vegetation</u>
Vegetation types and management techniques would be used the protect the archeological landscape.

- Portions of the archeological landscape currently cultivated would be converted to low maintenance vegetation. Agricultural cultivation has degraded archeological features over time, leaving many features indiscernible.
- Burning would be allowed as a vegetation management tool after sufficient research is completed to demonstrate that archeological resources or archeological research including geophysical surveys would not be negatively impacted.
- Any machinery used for landscape management would be tested and evaluated to ensure that maintenance practices protect archeological features.
- Vegetation within the earthwork complexes and on archeological features would be low and periodically mown. Tall grasses and herbaceous vegetation create habitat for destructive burrowing animals such as groundhogs, and make it difficult to monitor archeological landscapes for the presence of animals. Large-scale geophysical survey instruments also perform better in areas with low vegetation.

4-5 *GMP,* p 24
4-6 *GMP,* p 26
4-7 *GMP,* p 26
4-8 *GMP,* p 26

Mound City Group

Mound City Group encompasses 25-plus mounds, borrow pits, and an earthen wall, set above the Scioto River. This earthwork complex is the primary visitor and administrative / maintenance area for Hopewell Culture NHP. Mound City Group is significant for its numerous ceremonial and burial mounds, and as the only fully reconstructed Hopewellian earthwork complex.

Two treatment approaches were considered for Mound City Group, preservation and rehabilitation. Both approaches preserve the reconstructed archeological features, introduce management techniques to better delineate the spaces and forms of the earthwork complexes, and improve visitor experience.

Action Alternative 1 follows a preservation approach using vegetation management to delineate archeological features.

Rehabilitation is the treatment approach for Alternative 2. This approach uses vegetation management as a basis for depicting archeological features and spaces to convey the scale and massing of the earthwork complex. Markings would be allowed as an additional method, using rock cobble, soil, or distinct vegetation types to depict specific archeological features.

Both treatment approaches would preserve the reconstructed mounds, earthen wall, and borrow pits. Alternative 2 would repair the extra-mural mounds and preserve the northeast borrow pit.

Mound City Group
No Action Alternative

The no action alternative provides a basis for comparison with the action alternatives. Under the no action alternative, the present level of use, management, interpretation, maintenance and operations would continue. The no action alternative would include actions identified in the GMP. The no action alternative for the Mound City Group would include the following actions.

- The North Forty would be managed as a limited access zone. The area north of the earthwork complex and along the Scioto River would be managed as a natural resource zone. The area within the earthwork complex would be managed as a pedestrian zone. The area south of the earthwork complex would be managed as a combination of development and education zones. The existing visitor center, administration/maintenance area, and shelter would remain.[4-9]

- The nature trail around the perimeter of the earthwork would remain to enable visitors to explore and experience the resources, views, and stories at the earthwork complex. An overlook at the

4-9 The GMP identifies six management zones used at the park units. Limited Access Zones are primarily for research and eduction, limiting visitation and preserving archeological resources. Natural Resource Zones restore and maintain biological diversity, while allowing for trails and interpretive overlooks/waysides. Pedestrian zones are archeological areas open to the public to walk among and interpret the earthwork complexes, with rangers present. Development Zones provide facilities for visitor use, education, orientation, and management functions. Educational Subzone (Development Zone) allows outdoor classrooms and specialized educational activities to assist in resource interpretation. Special Use Subzone (Development Zone) accommodates American Indian activities and events.

Scioto River and other wayside exhibits and other interpretive media would address interpretive themes.

- Access for visitors would be via motorized vehicles, bicycle, and foot via State Highway 104.

- The earthwork complexes would continue to be managed as mown lawn with a woodland edge. The North Forty would continue to be managed as a hay field.

Mound City Group
Common to All Action Alternatives

Several treatment recommendations are common to the action alternatives for Mound City Group.

Spatial Organization/Topography/Views
The spatial arrangement of the earthwork complex would be emphasized to depict the mass and scale of the earthwork complex and improve visitor's understanding.

- Hazardous trees and woody vegetation that impact the earthwork complex or the visitor's understanding of the spatial qualities of the earthwork complex and individual spaces would be removed. This include the vegetation impacting the northeast corner of the enclosure wall and Mound #1.

- The relationship of the earthwork complex to the river would be improved by thinning vegetation and opening up views between the earthwork complex and the river.

Land Use
The park would purchase areas within the authorized park unit boundary, plus additional adjacent or related properties necessary for the protection of earthwork complexes.[4-10]

- Parcels to link Mound City Group with Hopeton Earthworks.

Archeological Features
All extant below- and above- grade archeological features, and spaces with known or potential archeological scatter, would be preserved.

- Individual archeological features including mounds, earthen walls and borrow pits would be stabilized and repaired as needed, following standard best practices.

Circulation
The pedestrian circulation system would be improved by adding routes that assist in defining the spatial qualities of the earthwork complex.

- A universally accessible trail would be established around the outer perimeter of the earthen wall.

- The relationship of Mound City Group to Hopeton Earthworks would be depicted by adding a new bridge across the Scioto River, and a new trail to Hopeton Earthworks.

Vegetation
Vegetation that contributes to the character of the archeological landscape would be preserved. Vegetation would be managed to define the spatial organization of the earthwork complex, frame views, and screen adjacent development.

- Vegetation between the river and the earthwork complex would be thinned

4-10 *GMP,* p 41

and removed to open views. Woodland vegetation surrounding the earthwork complex and along the river bank would remain.

- Vegetative buffers to screen adjacent negative views and impacts would be added, specifically along the west and south property lines. Buildings and structures visible from the earthwork complex would be screened by vegetation.

Buildings and Structures
Mound City Group would continue to serve as the primary visitor and administrative / maintenance facility. Existing buildings and structures that assist in the visitor experience would be retained.

- Potentially historic features that assist in the visitor experience, i.e., CCC and WPA steps and walls, canal lock stones, entrance walls, and stone grill, would be retained and repaired. The historical significance of these features would be assessed.

Mound City Group
Action Alternative 1: Preserving Earthwork Complexes

The preservation treatment approach for Action Alternative 1 would repair and maintain extant archeological features; use vegetation types and management to delineate archeological features and spaces; and retain non-contributing features that do not impact the visitor's ability to interpret the archeological features.

Spatial Organization/Topography/Views
The forms and patterns of the archeological landscape would be revealed. The spatial qualities of the earthwork complex and the relationship to the earthwork complex and surrounding landscape would be depicted.

The sense of scale and patterns left by the Hopewell would be revealed using simple, non-intrusive techniques that manage vegetation, circulation, and views.

- The three-dimensional form of the entire earthwork complex of earthen walls, mounds, and borrow pits would be strengthened by utilizing two distinct vegetation management techniques to reveal the forms and spaces of the earthwork complex.

Archeological Features
All extant below- and above-grade archeological features would be preserved, as would spaces with known or potential archeological scatter.

- Archeological features would be maintained as low, mown vegetation. Vegetation would be the primary method used to delineate archeological features. Vegetation outside the earthwork complex would be managed as woodland.

Circulation
The existing vehicular circulation system would remain. The pedestrian circulation system would be improved by adding routes that assist in defining the spatial qualities of the earthwork complex.

Vegetation
Vegetation would be the primary method used to delineate archeological features.

- The reconstructed mounds (1-14, 16-23, X1 and X2) would be depicted with a low mown vegetation.

- The reconstructed earthen wall would be depicted with a low mown vegetation.

- The reconstructed borrow pits (7) would be depicted with low mown vegetation.

- The spaces within the earthen walls would be depicted with a low mown vegetation.

- The non-extant mounds (24 and 25) would be depicted with a taller mown vegetation.

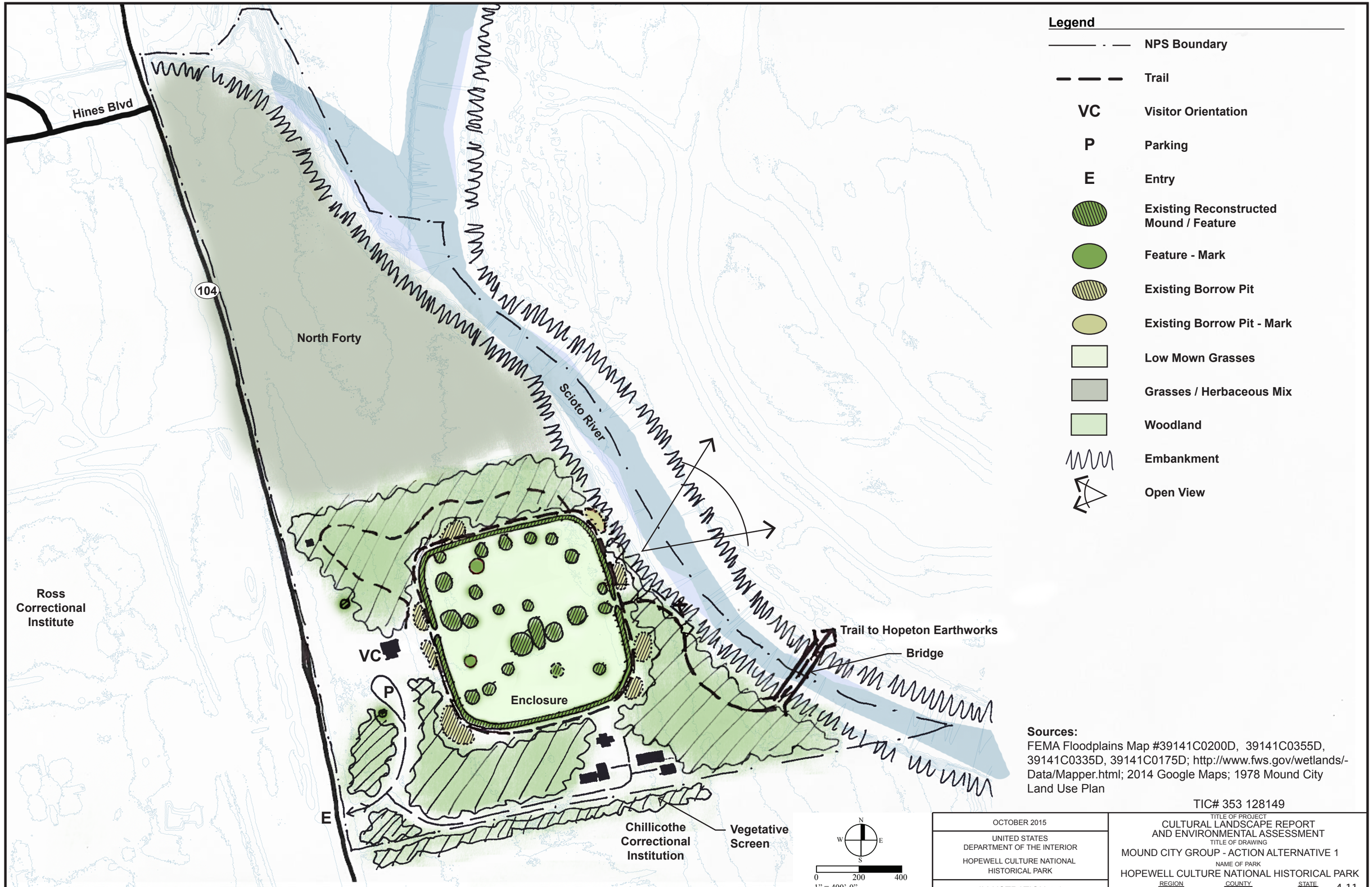
- The northeast borrow pit would be depicted with a taller mown vegetation.

Buildings and Structures

Mound City Group would continue to serve as the primary visitor, administrative and maintenance facility. The existing buildings and structures would remain for these uses. New additions would be located in areas outside the earthwork complex, and in areas that do not impact archeological scatter.

- Non-contributing features that provide visitor amenities and assist in interpretation, e.g. Mission 66-era visitor center and the wood frame shelter at the Ohio Erie canal lock stones, would be repaired.

- Curatorial and educational spaces would be expanded in areas noted for administrative or maintenance uses.



Sources:
FEMA Floodplains Map #39141C0200D, 39141C0355D, 39141C0335D, 39141C0175D; http://www.fws.gov/wetlands/-Data/Mapper.html; 2014 Google Maps; 1978 Mound City Land Use Plan

TIC# 353 128149

OCTOBER 2015	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: MOUND CITY GROUP - ACTION ALTERNATIVE 1 NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 4-1	REGION: MIDWEST · COUNTY: ROSS · STATE: OHIO · 4-11

Mound City Group
Action Alternative 2 : Conserving and Revealing Earthwork Complexes
The rehabilitation treatment approach for Action Alternative 2 would rehabilitate or mark non-extant archeological features; repair and maintain extant archeological features and spaces; remove all non-contributing features; and relocate all visitor orientation off-site or to a location away from the earthwork complex.

Spatial Organization/Topography/Views
The forms and patterns of the archeological landscape would be revealed to depict the extent and form of the earthwork complex. All archeological features would be spatially depicted, revealing the three-dimensional form of the earthwork complex and surroundings through markings and vegetation.

- The mass, scale, and form of the earthwork complex would be depicted by rehabilitating or marking non-extant above-grade archeological features, e.g. earthen walls, mounds, borrow pits, and the spaces of the earthwork.

- Where discernible topographical relief occurs, only vegetation or non-permanent or earthen markings would be used to delineate archeological features.

- Non-contributing features would be removed from the earthwork complex and immediate surroundings. These include the visitor center, park administration and maintenance facility, parking, roads, and utilities. These features and facilities would be relocated to an off-site location or located on-site further from the earthwork complex.

Archeological Features
All extant below- and above-grade archeological features would be preserved, stabilized, and repaired as needed following best practices. Non-extant archeological features would be rehabilitated to depict their mass, form, and character, allowing them to be seen above-grade.

- The three-dimensional form of the earthwork complex would be spatially depicted by utilizing vegetation types or vegetation management techniques, non-permanent markings, or by rehabilitating archeological features using soil or other construction methods to depict their original size, scale, and form.

- Vegetation, non-permanent markings or earthen markings would be used for archeological features where discernible topographical relief occurs.

- Markings and/or rehabilitations would be based on the most recent magnetic surveys and / or archeological investigations. They would consist of a non-permanent material that differs from those of the original archeological features or reconstructions, to clarify the rehabilitation as contemporary. Potential markings and/or rehabilitations include the following.

    - Mounds X1 and X2 would be archeologically located.

    - Non-extant mound 24 and 25 would be marked and/or rehabilitated.

    - Northeast borrow pit would be preserved.

- Further archeological investigations, including magnetometry would be undertaken to identify currently unknown resources.

Circulation
Mound City Group would continue to serve as a primary visitor orientation facility. As a primary visitor orientation facility, some parking and vehicular circulation would be located off-site or in a less intrusive location on-site.

Portions of the existing pedestrian circulation system that define the spatial qualities of the earthwork complex would be retained. New routes would be added to assist in defining the spatial qualities of the earthwork complex. Access to the earthwork complex via the river would be improved to reflect this circulation route that existed at the time of the Hopewell.

- A new canoe / kayak access from the Scioto River into the earthwork complex would be added.

Vegetation
Archeological features would be maintained as low, mown vegetation. Vegetation outside the earthwork complex would be managed as tall or woody vegetation.

    - The reconstructed mounds (1-14, 16-23, X1 and X2) would be planted with a low mown vegetation.
    - The reconstructed earthen wall would be planted with a low mown vegetation.
    - The reconstructed borrow pits (7) would be planted with low mown vegetation.
    - The spaces within the earthen walls would be planted with a low mown vegetation.
    - The non-extant mounds (24 and 25) would be planted with a taller mown vegetation, or marked or rehabilitated.
    - The northeast borrow pit would be maintained with a shorter mown vegetation to assist with visibility.
    - Maintain the North Forty as a mix of native herbaceous species, mown 1 to 2 times per year.

Buildings and Structures
As a primary visitor orientation facility, a visitor center would be located in a nearby off-site location or in an area less intrusive to the earthwork complex. Administrative and maintenance facilities would be relocated to an off-site location or to a less intrusive location on-site.

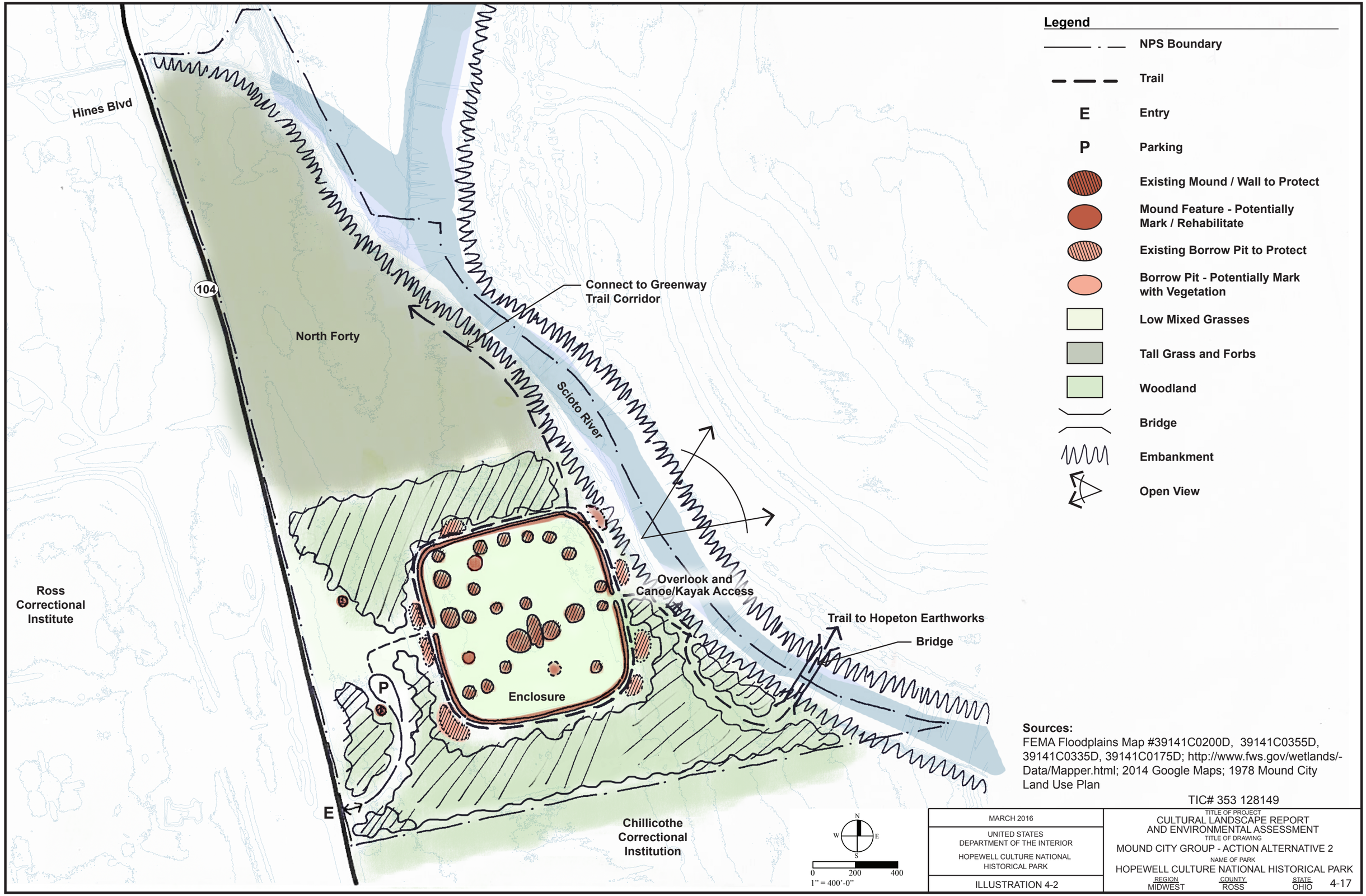
- All non-contributing features would be removed from the earthwork complex.
    - Further investigations into the significance and integrity of the visitor center, parking area, sidewalk and associated features as a Mission 66 would be undertaken.
    - Resource management, administrative, and maintenance buildings would be relocated to a nearby off-site location.
    - The wood framed shelter at the canal lock stones would be removed.
- A new location for visitor orientation facilities in a nearby off-site location or in a less intrusive location on-site would be identified.
- Visitor amenities for orientation, visitor comfort, and circulation would continue to be provided.

Small Scale Features

Small scale features that are found to be non-contributing and do not serve an active role in interpretation of the earthwork complex would be removed.

- Some features that may be significant in their own right, but that are non-contributing to the archeological landscape and do not detract from archeological landscape, would be evaluated and retained.
    - WPA/CCC walls at the entrance would be retained and repaired.
    - WPA/CCC walls along the river walk would be retained and repaired.
    - WPA/CCC stone grill would be retained and repaired.
- Some features that may be significant in their own right, but that are non-contributing features to the archeological landscape and detract from the archeological landscape, including the would be evaluated and removed or relocated.

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Sources:
FEMA Floodplains Map #39141C0200D, 39141C0355D, 39141C0335D, 39141C0175D; http://www.fws.gov/wetlands/-Data/Mapper.html; 2014 Google Maps; 1978 Mound City Land Use Plan

TIC# 353 128149

MARCH 2016	TITLE OF PROJECT CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING MOUND CITY GROUP - ACTION ALTERNATIVE 2 NAME OF PARK HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 4-2	REGION MIDWEST · COUNTY ROSS · STATE OHIO · 4-17

Hopeton Earthworks

Hopeton Earthworks is significant as one of the finest and best preserved examples of a monumental Hopewellian geometric enclosure. Hopeton Earthworks consists of a large conjoined circle and square, smaller circular enclosures, and parallel walls. The 292 acre park unit is situated within a bend of the Scioto River.

A treatment approach of preservation was considered for Hopeton Earthworks. Both action alternatives preserve the archeological features, introduce management techniques to better delineate the spaces and forms of the earthwork complex, and improve the visitor experience. Action Alternative 1 follows a preservation approach and focuses on maintaining existing features and spaces.

Action Alternative 2 preserves the archeological features and places an emphasis on changing vegetation management to depict spaces and non-extant above-grade archeological features and adding visitor access opportunities.

Hopeton Earthworks
No Action Alternative

The no action alternative provides a basis for comparison with the action alternatives. Under the no action alternative, the present level of use, management, interpretation, maintenance and operations would continue. The no action alternative would include actions identified in the GMP. The no action alternative for would include the following actions.

- The majority of the park unit would be designated a limited access zone and would not be open to the general public.[4-11]
- The primary use would be research and education. Limited development would allow visitors to learn about the park unit and view the earthwork complex from a distance.
- Small development zones would be located north of the parallel walls and east of Pit Road the former location of the Cryder farmstead and along Hopetown Road.
- A natural resource zone would buffer views between the earthwork complex and development to the south.
- Vehicular access, a small parking area, and a primitive picnic area would be provided in the southeast corner of the park unit.
- A trail would provide a link from the parking area to an overlook/wayside located southeast of the Square Enclosure.
- Vegetation would continue to be managed as a combination of crops, active and fallow hay fields, shrubland, native grassland, and woodland borders.

4-11 The GMP identifies six management zones used at the park units. Limited Access Zones are primarily for research and eduction, limiting visitation and preserving archeological resources. Natural Resource Zones restore and maintain biological diversity, while allowing for trails and interpretive overlooks/waysides. Pedestrian zones are archeological areas open to the public to walk among and interpret the earthwork complexes, with rangers present. Development Zones provide facilities for visitor use, education, orientation, and management functions. Educational Subzone (Development Zone) allows outdoor classrooms and specialized educational activities to assist in resource interpretation. Special Use Subzone (Development Zone) accommodates American Indian activities and events.

- A long-term goal would be to install a pedestrian bridge across the Scioto River to provide a more direct linkage between the Hopeton Earthworks and the Mound City Group.

Hopeton Earthworks
Common to All Action Alternatives
Spatial Organization/Topography/Views
The spatial arrangement of the earthwork complex would be emphasized to depict the mass and scale of the earthwork, and improve the visitor understanding.

- Hazardous trees and woody vegetation that impact the earthwork complex or diminish the visitor's understanding of the earthwork's spatial qualities would be removed. In particular the vegetation impacting Circle A would be removed.

- The visual and physical relationship of Hopeton Earthworks to Mound City Group would be improved by adding a trail and, where possible, orchestrating views between the two sites.

Land Use
Hopeton Earthworks would continue to serve as a site for archeological research and opportunities for visitor access and interpretation would be added.

The park would purchase areas within the authorized park unit boundary, plus additional adjacent or related properties necessary for the protection of earthwork complexes.[4-12]

Archeological Features
All extant below- and above-grade archeological features, and spaces with known or potential archeological scatter, would be preserved.

- Individual archeological features including mounds, earthen walls and borrow pits would be stabilized and repaired as needed, following standard best practices.

- Interpretive information explaining the relationship between the earthwork complex and the non-contributing features that impact views to and from the earthwork complex—specifically the quarry—would be provided to help describe with narrative and illustrations the spatial extents of the earthwork complex.

Circulation
Vehicular and pedestrian circulation would be improved by adding parking and trails.

- Vehicular circulation would be improved by adding a parking area.

- Pedestrian circulation would be improved by adding paths and overlooks to assist in defining the spatial qualities of the earthwork complex (locations differ in the alternatives).

- The relationship of Mound City Group to Hopeton Earthworks would be emphasized by providing a new bridge across the Scioto River, and a new trail to Mound City Group.

Vegetation
Vegetation that contributes to the character of the archeological landscape would be preserved. Vegetation would be managed to define the spatial organization of the earthwork complex, frame views, and screen adjacent development.

- Low, mown vegetation would be maintained in the spaces of the earthwork complex to more clearly depict the mass and scale of the earthwork.

4-12 *GMP,* p 41

- Archeological features (mounds, earthen walls, borrow pits) would be maintained either as low mown vegetation or as tall/ unmown to further differentiate their locations in the surrounding landscape.

- Hazardous trees and encroaching woody vegetation would be removed from archeological features unless they are helping to stabilize those features.

- Vegetation (fence row) between the Great Circle and Circle A would be removed.

- Vegetation that stabilizes steep slopes or screens views would be retained including vegetation along the stream banks of Dry Run; vegetation that screens views from the earthwork complex to the gravel quarry; and vegetation that screens views to the north and east from the earthwork complex.

Buildings and Structures
Building and structures that do not contribute to the significance of the archeological landscape and impact the archeological features would be removed.

- The quarry access road that extends over the Square Enclosure would be removed.

- Utility lines and poles adjacent to the quarry access road that extends over the Square Enclosure would be removed.

Hopeton Earthworks
Action Alternative 1: Preserving Earthwork Complexes
This alternative would preserve the earthwork complex by preserving extant below- and above-grade archeological features, increase the legibility and visibility of the earthwork complex by delineating the archeological features, and improve the visitor experience by adding a parking area, trails, and overlook.

Spatial Organization/Topography/Views
The three-dimensional form of the earthwork complex of earthen walls and mounds would be spatially depicted by utilizing three distinct vegetation types — low grasses, higher grasses / herbaceous, and woodland — to reveal the form and spaces of the earthwork complex.

Archeological Features
Vegetation would be the primary method used to delineate archeological features. Vegetation outside the earthwork complex would be managed as tall grasses or a mix of grasses and forbs vegetation. Vegetation inside the earthwork complex would be managed as low, mown vegetation. Archeological features would be maintained as low, mown vegetation.

Circulation
Vehicular and pedestrian circulation systems would be improved by adding visitor parking areas, and pedestrian routes that assist in defining the spatial qualities of the earthwork complex.

- The new parking area would be provided on Hopetown Road and a pedestrian bridge or ramp would be installed over Dry Run north of the new parking area.

- A trail would be established from the new parking area to an overlook east of Circles B and C, into and tracing the circumference of the Great Circle and the inside of the Square Enclosure, exiting at the southwest corner and continuing through the Circleville Terrace to return to the parking area.

Vegetation
Vegetation that contributes to the character of the archeological landscape would be preserved. Vegetation would be managed to define the spatial organization of the

earthwork complex, frame views, and screen adjacent development.

- Low, mown vegetation would be maintained in the spaces of the earthwork complex to more clearly depict the mass and scale of the earthwork.

- Archeological features (mounds, earthen walls, borrow pits) would be maintained either as low mown vegetation or as tall/ unmown to further differentiate their locations in the surrounding landscape.

- Hazardous trees and encroaching woody vegetation would be removed from archeological features unless they are helping to stabilize those features.

- Vegetation (fence row) between the Great Circle and Circle A would be removed.

- Vegetation that stabilizes steep slopes or screens views would be retained including vegetation along the stream banks of Dry Run; vegetation that screens views from the earthwork complex to the gravel quarry; and vegetation that screens views to the north and east from the earthwork complex.

Buildings and Structures

Building and structures that do not contribute to the significance of the archeological landscape and impact the archeological features would be removed.

- The quarry access road that extends over the Square Enclosure would be removed.

- Utility lines and poles adjacent to the quarry access road that extends over the Square Enclosure would be removed.

Scioto River

Circle A

CSX Railroad

Overly Road

Overly Road

Great Circle

Circle B

Borrow Pits

River Road

Vaughan Road

Circle C

Borrow Pit

159

A

Parallel Walls

Square Enclosure

Gravel Quarry

Borrow Pit

Triangle Site

Pit Road

Historic Borrow Pit

R

159

Trail to Mound City Group

P

Hopetown Road

292

Dry Run

To Visitor's Center 5.7 miles

N
W E
S

0 300 600

Legend

- NPS Boundary
- Road
- Trail
- P — Parking
- Existing Mound / Feature
- Mound / Feature - Potentially Mark / Rehabilitate
- Existing Borrow Pit
- Borrow Pit - Potentially Mark / Rehabilitate
- Low Mown Grasses
- Grasses / Herbaceous Mix
- Woodland
- Embankment
- Limits of low mown grasses
- A — Cryder Farmstead
- O — Overlook
- R — Barrier free pedestrian ramp or bridge over Dry Run

TIC# 353 128149

JULY 2015	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: HOPETON EARTHWORKS - ACTION ALTERNATIVE 1 NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 4-3	REGION: MIDWEST; COUNTY: ROSS; STATE: OHIO; 4-23

Hopeton Earthworks
Action Alternative 2: Conserving and Revealing Earthwork Complexes

Action Alternative 2 would preserve the earthwork complex and all extant below- and above-grade archeological features. It would increase the legibility and visibility of the earthwork complex by better delineating the archeological features, and would improve the visitor experience by managing circulation, vegetation, and views. In addition, this alternative would remove non-contributing features.

Spatial Organization/Topography/Views

The forms and patterns of the archeological landscape would be revealed to depict the extent and form of the earthwork complex and all archeological features using assertive techniques.

- The three-dimensional form of the earthwork complex and surroundings would be spatially depicted through markings and vegetation.
- The mass, scale, and form of the earthwork complex would be delineated by marking non-extant above-grade archeological features, i.e., earthen walls, mounds, and borrow pits, and the spaces of the earthwork.
- The park would work with property owners to acquire property or easements for the land within the bend of the Scioto River surrounding the Hopeton Earthworks to enable holistic management of natural, cultural, and archeological resources at the park unit and provide expanded opportunities for visitor use.

Land Use

The park would work with property owners and local authorities to establish public ownership or easements for land between the earthwork complex and the Scioto River.

- In the long-term, the quarry operation would be discontinued and the landscape would be rehabilitated to native grasses and forbs and managed as a conservation area and buffer for the earthwork complex.
- In the long-term, agricultural use would be discontinued in locations where there is potential for archeological resources. The landscape would be rehabilitated to native grasses and forbs and managed as a conservation area and buffer for the earthwork complex.

Archeological Features

Non-extant archeological features would be rehabilitated to depict their mass, form and character, as documented by Squire and Davis in 1846, or based upon most recent archeological investigations.

- The three-dimensional form of the earthwork complex that have extant above-grade features would be spatially depicted by utilizing vegetation types or vegetation management techniques or non-permanent markings.
- Where no discernible topographical relief occurs, vegetation would be used to delineate features.
- Markings would utilize recent magnetic surveys to archeologically locate features.

Circulation

Visitor experience and understanding would be further improved by the following.

- Providing an access road and parking area on the north side of Dry Run—in the location of the former farm road.

- Providing trails that allow for understanding of the earthworks.

- Adding an interpretive wayside at the intersection of the Great Circle, Square Enclosure, and Parallel Walls.

- Improving the relationship of the earthwork complex to the river by creating an interconnected water route between all park units with new canoe / kayak access.

Vegetation
In addition to common actions, additional treatments under Alternative 2 include the following.

- Vegetative buffers would be added to screen negative views and impacts, specifically north of Circle A.

- Vegetation that impacts archeological features or visitor experience, would be removed including the following.

    - Fencerow vegetation west of the Great Circle.

    - Selected fencerow vegetation east of the Great Circle.

Buildings and Structures
Buildings and structures that do not contribute to the significance of the archeological landscape and impact the integrity of the earthwork complex would be removed. The following would be implemented.

- The park would work with property owners to develop a long-term plan to eventually remove the buildings and structures that are impacting the earthwork complex including: the quarry operation buildings, structures, roads and utilities.

- Pit Road, Overly Road, quarry service routes and Vaughn Road would be removed.

Scioto River

Circle A

CSX Railroad

Great Circle

Borrow Pits

River Road

W

Parallel Walls

Circle B

O

Square Enclosure

Circle C

Borrow Pit

159

Borrow Pit

Historic Borrow Pit

Triangle Site

Trail to Mound City Group

P

Hopetown Road

292

Dry Run

To Visitor's Center 5.7 miles

N
W E
S

0 300 600

1" = 600'-0"

Legend

- NPS Boundary
- Road
- Trail
- P — Parking
- Existing Feature to Protect and Mark with Vegetation
- Earthen Wall / Feature to Protect and Mark with Vegetation
- Historic Borrow Pit to Protect and Mark with Vegetation
- Borrow Pit to Protect and Mark with Vegetation
- Low Mixed Vegetation
- Tall Grasses and Forbs
- Woodland
- Embankment
- Limits of low mown grasses
- O — Overlook
- W — Wayside

TIC# 353 128149

MARCH 2016	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: HOPETON EARTHWORKS - ACTION ALTERNATIVE 2 NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 4-4	REGION: MIDWEST · COUNTY: ROSS · STATE: OHIO · 4-27

Hopewell Mound Group

Hopewell Mound Group is one of the most important earthwork complexes that represent Hopewell culture. This earthwork is the "type-site" for the Hopewell culture. Excavations that took place at this location established the precedent for classification of Hopewell – the name that has come to signify a diverse range of pre-Columbian eastern woodland American Indians who shared a common mound-building culture.

Hopewell Mound Group is a 127 acre earthwork complex, consisting of two monumental conjoined earthwork enclosures, the Great Enclosure, in the general shape of a parallelogram, and the other in the shape of a square, several smaller enclosures, approximately 30 to 40 mounds, and associated ditches.

Two treatment approaches were considered for Hopewell Mound Group, preservation and rehabilitation. Both preserve the archeological features, introduce management techniques to better delineate the spaces and forms of the earthwork complex, and improve the visitor experience. Action Alternative 1 follows a preservation approach using vegetation management to delineate archeological features and spaces.

Rehabilitation is the treatment approach for Action Alternative 2. At Hopewell Mound Group, rehabilitation places an emphasis on vegetation management to depict spaces and non-extant above-grade archeological features while allowing for marking or rehabilitation of non-extant archeological features and removal of elements that impact archeological features.

Hopewell Mound Group
No Action Alternative

The no action alternative provides a basis for comparison with the action alternatives. Under the no action alternative, the present level of use, management, interpretation, maintenance, and operations would continue. As identified in the GMP, the no action alternative for the Hopewell Mound Group would include the following actions.

- The majority of the park unit would be a designated pedestrian zone. The north and west portions of the park unit beyond the earthwork complex would be managed as a natural resource zone. A development zone would be provided at the southeast corner of the property for a parking area and minimal visitor facilities including a comfort station, picnic shelter and interpretive wayside. [4-13]

- Trails of varying degrees of difficulty would enable visitors to explore and experience the resources, views, and stories at the park unit. Wayside exhibits and other interpretive media would address interpretive themes. Overlooks along trails would offer views of the earthwork complex.

4-13 The GMP identifies six management zones used at the park units. Limited Access Zones are primarily for research and eduction, limiting visitation and preserving archeological resources. Natural Resource Zones restore and maintain biological diversity, while allowing for trails and interpretive overlooks/waysides. Pedestrian zones are archeological areas open to the public to walk among and interpret the earthwork complexes, with rangers present. Development Zones provide facilities for visitor use, education, orientation, and management functions. Educational Subzone (Development Zone) allows outdoor classrooms and specialized educational activities to assist in resource interpretation. Special Use Subzone (Development Zone) accommodates American Indian activities and events.

- Access for visitors would be via motorized vehicles, bicycle, and foot via Sulphur Lick Road and the adjacent rails to trails route located at the south side of the park unit.

- A method of outlining the earthwork complex on the ground with a non-permanent material to make them more visible would be used.

- The park and county would work cooperatively to study alternatives for road and traffic management that would avoid future negative impacts on the archeological resources and local residents.

Hopewell Mound Group
Common to All Action Alternatives
Spatial Organization/Topography/Views
The spatial arrangement of the earthwork complex would be emphasized to depict the mass and scale of the earthwork, and improve the visitor's understanding.

- Hazardous trees and woody vegetation that impact the earthwork complex or diminish the visitor's understanding of the earthwork's spatial qualities would be removed. In particular vegetation along the eastern portion of the north wall of the Great Enclosure and vegetation along the alignment of the south portion of the west wall of the Great Enclosure would be removed.

Archeological Features
All extant below- and above-grade archeological features, as well as spaces with known or potential archeological scatter would be preserved.

- Individual archeological features including mounds, earthen walls and borrow pits would be stabilized and repaired as needed, following standard best practices.

- Interpretive information explaining the earthwork complex would be provided to clarify the spatial extents of the earthwork complex.

Vegetation
Vegetation that contributes to the character of the archeological landscape would be preserved. Vegetation would be managed to define the spatial organization of the earthwork complex, frame views, and screen adjacent development.

- Low, mown vegetation would be maintained in the spaces of the earthwork complex to more clearly depict the mass and scale of the earthwork.

- Archeological features (mounds, earthen walls, borrow pits) would be maintained either as low mown vegetation or as tall/unmown to further differentiate their locations in the surrounding landscape.

- Hazardous trees and encroaching woody vegetation would be removed from archeological features unless they assist in stabilizing those features.

- Vegetation that stabilizes steep slopes or protects earthwork complex from impacts would be retained including vegetation along the west portion of the north wall of the Great Enclosure and vegetation along the south wall of the Great Enclosure.

- Vegetative buffers would be added to screen negative views and impacts, specifically at the southwest portion of the property on the west side of the west wall of the Great Enclosure.

Hopewell Mound Group
Action Alternative 1: Preserving Earthwork Complexes

This alternative would preserve the earthwork complex by preserving extant below- and above-grade archeological features, increase the legibility and visibility of the earthwork complex by delineating the archeological features, and improve the visitor experience by managing circulation, vegetation, and views.

Spatial Organization/Topography/Views

The three-dimensional form of the earthwork complex of earthen walls and mounds would be spatially depicted by utilizing three distinct vegetation types to reveal the form and spaces of the earthwork complex.

Archeological Features

Vegetation would be the primary method used to delineate archeological features. Vegetation outside the earthwork complex would be managed as tall or woody vegetation. Vegetation inside the earthwork complex would be managed as low mown vegetation. Vegetation on archeological features would be maintained as low, mown vegetation.

- Interpretive information explaining the relationship between the earthwork complex and the non-contributing features that impact the earthwork complex would be provided to help clarify the spatial extents of the earthwork complex—specifically addressing Sulphur Lick Road, the transmission towers and overhead lines, and the residential property on the south side of Sulphur Lick Road.

Circulation

The existing vehicular and bicycle circulation system would remain.

The pedestrian circulation would be improved by adding routes to assist in defining the spatial qualities of the earthwork complex, and to provide access to the North Fork Paint Creek.

- A trail from the visitor parking area to the North Fork Paint Creek would be established.
- The existing overlook at the northeast corner of the Great Enclosure would be retained.
- The existing overlook on the east side of the Square Enclosure would be repaired to improve orientation to the earthwork complex.
- A path parallel to the north wall of the Great Enclosure would be added.
- The path at the Square Enclosure would be relocated to trace the inside of the earthwork walls.
- A path would be established through the inside of the Great Enclosure passing near the most visible features.

Vegetation

Vegetation that contributes to the character of the archeological landscape would be preserved. Vegetation would be managed to define the spatial organization of the earthwork complex, frame views, and screen adjacent development.

- Low, mown vegetation would be maintained in the spaces of the earthwork complex to more clearly depict the mass and scale of the earthwork.
- Archeological features (mounds, earthen walls, borrow pits) would be maintained either as low mown vegetation or as tall/

unmown to further differentiate their locations in the surrounding landscape.

- Hazardous trees and encroaching woody vegetation would be removed from archeological features unless they assist in stabilizing those features.

- Vegetation that stabilizes steep slopes or protects earthwork complex from impacts would be retained including vegetation along the west portion of the north wall of the Great Enclosure and vegetation along the south wall of the Great Enclosure.

- Vegetative buffers would be added to screen negative views and impacts, specifically at the southwest portion of the property on the west side of the west wall of the Great Enclosure.

Buildings and Structures

Non-contributing features that assist in the interpretation of the earthwork complex would be retained – specifically the Hopewell barn which could be interpreted as an element present during the time the earthwork was initially investigated.

Legend

- NPS Boundary
- Road
- Trail
- V — Visitor Orientation
- P — Parking
- Existing Mound / Feature
- Feature - Potentially Mark / Rehabilitate
- Existing Borrow Pit / Ditch
- Borrow Pit / Ditch - Potentially Mark / Rehabilitate
- Low Mown Grasses
- Grasses / Herbaceous Mix
- Woodland
- Embankment
- Limits of low mown grasses
- A — Hopewell Barn
- O — Overlook
- OE OE OE — Overhead power lines

Great Enclosure
Sulphur Lick
Anderson Run
Borrow Pit
35
2
24
3
Circle Enclosure
Square Enclosure
23
Great Circle
D-Shaped Enclosure
25
Tri-County Trail
Sulphur Lick Road
Maple Grove Road
Cyrus Lane
North Fork of Paint Creek
N
W
E
S
0
300
600

TIC# 353 128149

JULY 2015	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: HOPEWELL MOUND GROUP - ACTION ALTERNATIVE 1 NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 4-5	REGION: MIDWEST; COUNTY: ROSS; STATE: OHIO; 4-33

Hopewell Mound Group
Alternative 2: Conserving and Revealing Earthwork Complexes

Action Alternative 2 would preserve the earthwork complex and all extant below- and above-grade archeological features. This alternative would increase the legibility and visibility of the earthwork complex by better delineating the archeological features. The visitor experience would be improved by adding circulation route, removing select vegetation, and opening views. In addition, this alternative would remove non-contributing features.

Spatial Organization/Topography/Views

The forms and patterns of the archeological landscape would be revealed to depict the extent and form of the earthwork complex. All archeological features would be depicted using assertive techniques.

- The three-dimensional form of the earthwork complex and surroundings would be spatially depicted through markings and vegetation.

- The mass, scale and form of the earthwork complex would be delineated by rehabilitating or marking non-extant above-grade archeological features, i.e., earthen walls, mounds, and borrow pits, and the spaces of the earthwork.

Land Use

Hopewell Mound Group would continue to serve as a visitor destination with interpretive areas.

- The park would work with property owners and local authorities to remove impacting land uses from the earthwork complex and rehabilitate the landscape as part of the interpretive experience.

- The park would work the Ohio Department of Transportation (ODOT) and local community to develop a long-term plan for the removal of portions of Sulphur Lick Road and trail that impacts the earthwork complex.

Archeological Features

Archeological features would be preserved. Archeological features that lack above-ground visible aspects would be marked to depict their mass, form and character, as documented by Shetrone between 1922 and1925, and using the most recent archeological investigations.

- The three-dimensional form of the earthwork complex that have extant above-grade features would be spatially depicted by utilizing vegetation types or vegetation management techniques, or non-permanent markings.

- Where no discernible topographical relief occurs, vegetation would be used to delineate features.

- Markings would utilize the most recent archeological investigations and magnetic surveys to archeologically locate features.

- Magnetometry would be undertaken at the outlying areas to determine if additional resources are present.

Circulation
Vehicular and bicycle circulation would be altered by the removal of Sulphur Lick Road and the rails to trails route from locations where they are impacting the earthwork complex. The existing parking area would remain, and be accessed only from the east. The existing pedestrian circulation system would be improved by adding routes to assist in defining the spatial qualities of the earthwork complex. Access to the earthwork complex via the river would be improved to reflect this circulation route that existed at the time of the Hopewell.

- The park would work with The Ohio Department of Transportation (ODOT) and local community to remove portions of Sulphur Lick Road and the trail that impacts the earthwork complex. This would occur only when local access needs have been addressed.

- Trails would be established parallel to the enclosure walls including inside the four Square Enclosure walls; outside the north wall and north portion of the east wall of the Square Enclosure; inside the south wall and south portions of the east and west walls of the Great Enclosure; outside the north wall, north portion of the east wall, and west wall of the Great Enclosure.

- The existing overlook and viewshed at the northeast corner of the Great Enclosure would be retained and the wayside updated.

- A new overlook would be added to provide an overview of the earthwork complex in a location near the north wall of the Great Enclosure to the west of the existing overlook .

- The existing overlook on the east side of the Square Enclosure would be updated to provide improved orientation to the earthwork complex.

- The relationship of the earthwork complex to the river would be improved by creating pedestrian and bike links to the North Fork Paint Creek.

- The rails to trails path would be relocated south of the south wall of the Great Enclosure.

- A path would be extended from the southwest corner of the Great Enclosure to the North Fork Paint Creek.

- A new canoe / kayak access would be added in a location determined appropriate by park staff.

Vegetation
In locations where non-contributing features are removed, add vegetation consistent with the surrounding area.

Buildings and Structures
Buildings and structures that do not contribute to the significance of the archeological landscape and impact the integrity of the earthwork complex would be removed.

- The park would work with property owners to develop a long-term plan to eventually remove privately-owned buildings that impact the earthwork complex.

- The park would work with utility companies to develop a long-term plan to eventually mitigate the effects of the high-voltage transmission towers and overhead lines that are impacting the earthwork complex. Possible choices for mitigation could include:

- Transmission towers and lines would be relocated to a new location beyond the viewshed of the earthwork complex (off NPS property).

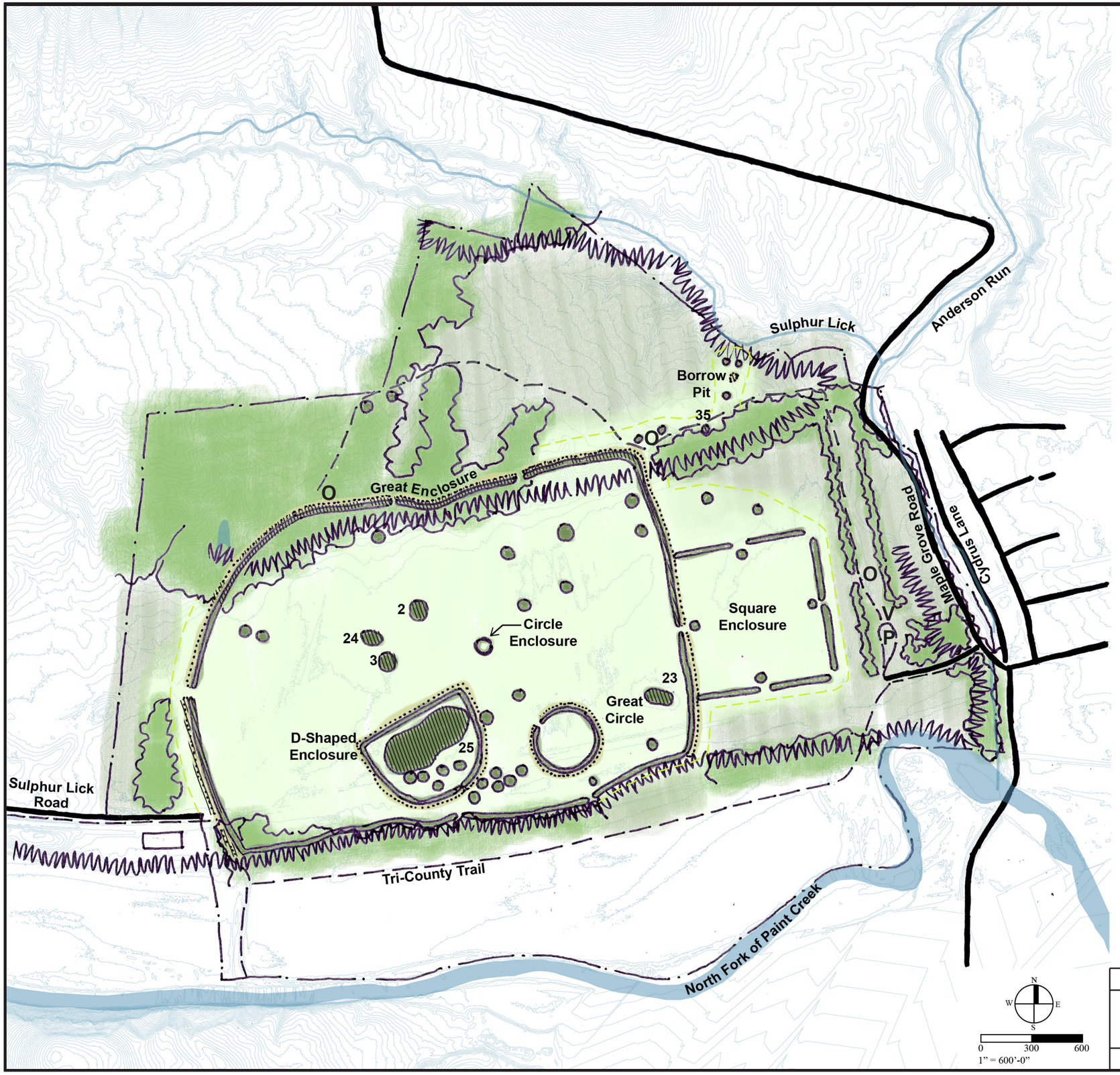
- Transmission towers and high voltage lines would be relocated within NPS property to a location where they do not impact the earthwork complex.

- Transmission towers would be replaced with substations outside the earthwork complex and high voltage lines would be relocated underground.

- Existing lattice towers would be replaced with less intrusive towers.

- The existing overlook would be moved to minimize the visual impact of the towers by orienting views to the north/south rather than east/west.

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Legend

- NPS Boundary
- Road
- Trail
- V — Visitor Orientation
- P — Parking
- Existing Feature to Protect and Mark with Vegetation
- Earthen Wall / Feature to Protect and Mark with Vegetation
- Historic Borrow Pit / Ditch to Protect and Mark with Vegetation
- Borrow Pit / Ditch to Protect and Mark with Vegetation
- Low Mixed Vegetation
- Tall Grasses and Forbs
- Woodland
- Embankment
- Limits of low mown grasses
- O — Overlook

TIC# 353 128149

MARCH 2016	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: HOPEWELL MOUND GROUP - ACTION ALTERNATIVE 2 NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 4-6	REGION: MIDWEST · COUNTY: ROSS · STATE: OHIO · 4-39

Seip Earthworks

Seip Earthworks is significant for possessing the only existing example of the rare class of extremely large Hopewell burial mounds, known as a tripartite earthwork.

Only the reconstructed Seip-Pricer Mound and original Seip-Conjoined mound remain visible today. Seip Earthworks is composed of large archeological features, including earthen walls, mounds, and borrow pits, adjacent to Paint Creek. Several non-contributing features are adjacent to, or on top of the archaeological features including buildings, a picnic area, and roads.

Two treatment approaches were considered for Seip Earthworks, preservation and rehabilitation. Both approaches protect the archeological features, introduce management techniques to better delineate the spaces and forms of the earthwork complexes, and improve visitor experience.

Action Alternative 1 follows a preservation approach using vegetation management to delineate archeological features.

Rehabilitation is the treatment approach for Alternative 2. This approach uses vegetation management as a basis for depicting archeological features and spaces to convey the grand scale and massing of the earthwork complex. As an additional method, markings would be allowed as part of this approach, using new materials to depict specific archeological features.

Both treatment approaches would preserve the Seip-Pricer Mound and the original Seip-Conjoined Mound. Alternative 2 would repair the portion of reconstructed earthen wall to be archeologically accurate.

Seip Earthworks
No Action Alternative
The no action alternative provides a basis for comparison with the action alternatives. Under the no action alternative, the present level of use, management, interpretation, maintenance and operations would continue. The no action alternative would include the following actions.

- The majority of the park unit would be a designated pedestrian zone. The west and south portions, along Paint Creek, would be managed as a natural resource zone. A development zone would be provided at the north side of the property, adjacent to US 50 for parking area improvements.[4-14]

- Mown trails would enable visitors to explore and experience the resources, views, and stories at Seip Earthworks. Wayside exhibits and other interpretive media would address interpretive themes.

- Access for visitors would be via motorized vehicles, bicycle, and foot, from US 50.

- The earthwork complex would continue to be managed with a variety of vegetation management strategies. The area previously owned by the state, that includes Seip-Pricer Mound, would

4-14 The GMP identifies six management zones used at the park units. Limited Access Zones are primarily for research and eduction, limiting visitation and preserving archeological resources. Natural Resource Zones restore and maintain biological diversity, while allowing for trails and interpretive overlooks/waysides. Pedestrian zones are archeological areas open to the public to walk among and interpret the earthwork complexes, with rangers present. Development Zones provide facilities for visitor use, education, orientation, and management functions. Educational Subzone (Development Zone) allows outdoor classrooms and specialized educational activities to assist in resource interpretation. Special Use Subzone (Development Zone) accommodates American Indian activities and events.

continue to be managed as mown lawn. The large circle would be managed as grasses and forbs and mown monthly. The remainder of the park unit would be planted as timothy and orchard grass and mown every other year.

Seip Earthworks
Common to All Action Alternatives

Spatial Organization/Topography/Views
The spatial arrangement of the earthwork complex would be emphasized to depict the mass and scale of the earthwork complex and to improve visitor's understanding.

- Hazardous trees and woody vegetation that impact the archeological features or diminish the visitor's understanding of the spatial qualities of the earthwork complex and individual spaces would be removed.
    - Fence row vegetation around the perimeter of the previously state-owned property would be removed. Trees on the west half of the Small Circle.
- The relationship of the earthwork complex to Paint Creek would be improved by thinning vegetation to open views between the earthwork complex and the river.

Land Use
The park would purchase areas within the authorized park unit boundary, plus additional adjacent or related properties necessary for the protection of earthwork complexes.[4-15] Three in-holdings would be purchased.

- The parcel containing the westernmost portion of the Small Circle.
- The parcel on US 50, currently a private residence.
- The eastern parcel of the park unit with several non-extant mounds, borrow pits, and potential archeological scatter.

Archeological Features
All extant below- and above- grade archeological features, and spaces with known or potential archeological scatter would be preserved.

Individual archeological features including mounds, earthen walls and borrow pits would be stabilized and repaired as needed, following standard best practices.

Vegetation
Vegetation that contributes to the character of the archeological landscape would be preserved. Vegetation would be managed to define the spatial organization of the earthwork complex, frame views, and screen adjacent development.

- A mix of grasses with some herbaceous species would be maintained as a consistent groundcover (mown one to two times per year) in areas surrounding earthwork complex and in areas of archeological scatter.
- Riparian vegetation would be maintained along the river bank.
- The relationship of the earthwork complex to the North Fork Paint Creek would be clarified by thinning vegetation and opening select views.
- Vegetative buffers would be added to screen negative views and impacts, specifically to the east to screen the Paint Valley High School and north to screen the existing road.

4-15 *GMP,* p 41

- Hazardous trees and woody vegetation that impact contributing archeological features or diminish the earthwork's spatial qualities would be selectively removed. Specifically, the fence row vegetation around the perimeter of the previously state-owned property, and the trees at the west half of the Small Circle would be removed.

Buildings and Structures
Seip Earthworks would serve as a visitor orientation facility.

- The historical significance of the Blackstone House and outbuildings would be assessed. It's potential for adaptive reuse as a structure for park use would be assessed.

- The historical significance of the fish camp buildings and site would be assessed.

Seip Earthworks
Action Alternative 1: Preserving Earthwork Complexes
This action alternative would build upon the actions noted in the GMP. The preservation treatment approach for Action Alternative 1 repairs and maintains extant archeological features; uses vegetation types and management to delineate archeological features and spaces; and retains non-contributing features that do not impact the visitor's ability to interpret the archeological features.

Spatial Organization/Topography/Views
The forms and patterns of the archeological landscape would be revealed. The spatial qualities of the earthwork complex and the relationship of the earthwork complex to the surrounding landscape would be depicted. The sense of scale, patterns, and organization at Seip Earthworks would be revealed through management of vegetation and views. The two-dimensional form of the earthwork complex of earthen walls, mounds, and borrow pits by utilizing two or three distinct vegetation types to reveal the form and spaces of the earthwork complex.

Archeological Features
All extant below- and above-grade archeological features would be preserved, as would spaces with known or potential archeological scatter.

- Vegetation would be the primary method used to delineate archeological features.

- Vegetation outside the earthwork complex would be managed as tall vegetation.

- Vegetation inside the spaces of the earthwork complex would be managed as low, mown vegetation.

- Archeological features would be maintained as either low, mown vegetation or taller, mown vegetation.

Circulation
The existing circulation system would be modified to create one primary vehicular access point from the highway, and new pedestrian routes would be added to connect archeological features.

Visitor orientation would be provided in the rehabilitated Blackstone House with a new parking area, drop-off, and trail access. An additional orientation point may be offered off-site (Bainbridge or another location).

- The existing parking area would be removed, and one vehicular access point to US 50 would be provided.

- Dill Road would be removed.

- Pedestrian circulation routes would be added to reveal the spatial qualities of the earthwork complex.
    - A trail along the interior of the Large Circle would be added.
    - A trail to the Small Circle and Large Square would be added.
    - A trail connection to the Paint Creek overlook / canoe access would be added.
    - A trail connection from the parking area to the rehabilitated Blackstone House would be added.

Vegetation
Archeological features would be maintained as low, mown vegetation. Vegetation outside the earthwork complex would be managed as tall native grassland vegetation.

- Low/mown vegetation would be maintained in spaces of earthwork complex including the entire interior of the Small Circle, Large Circle, Large Square, and in the areas of the borrow pits.
- Archeological features (mounds, earthen walls, borrow pits) would be maintained either as low mown vegetation or as tall/ unmown to further differentiate their locations in the surrounding landscape. The reconstructed Seip-Pricer Mound would be planted with a low mown vegetation.
    - The reconstructed earthen wall would be planted with a low mown vegetation.
    - The extant Seip-Conjoined Mound would be planted with a taller mown vegetation.
    - The non-extant mounds, earthen walls, and borrow pits would be planted with a taller mown vegetation.

Buildings and Structures
Existing buildings and structures consist of the Blackstone House, fish camp buildings, and the picnic shelter and outbuildings. This alternative would allow non-contributing buildings to remain if they assist in interpretation and improve the visitor experience.

- The Blackstone House and outbuildings would be further researched, and if deemed appropriate, would be rehabilitated for use as a visitor orientation facility.
- A view to the earthwork complex would be provided at the rehabilitated Blackstone House.
- Non-contributing features that do not assist in the interpretation of the earthwork complex, specifically the fish camp buildings (if deemed non-historic) would be removed.
- The picnic shelter would be repaired for park use.

Small Scale Features
Existing small scale features consist of signs, outdoor furniture, fences, and utilities. This alternative would allow non-contributing small scale features to remain if they assist in interpretation and improve the visitor experience.

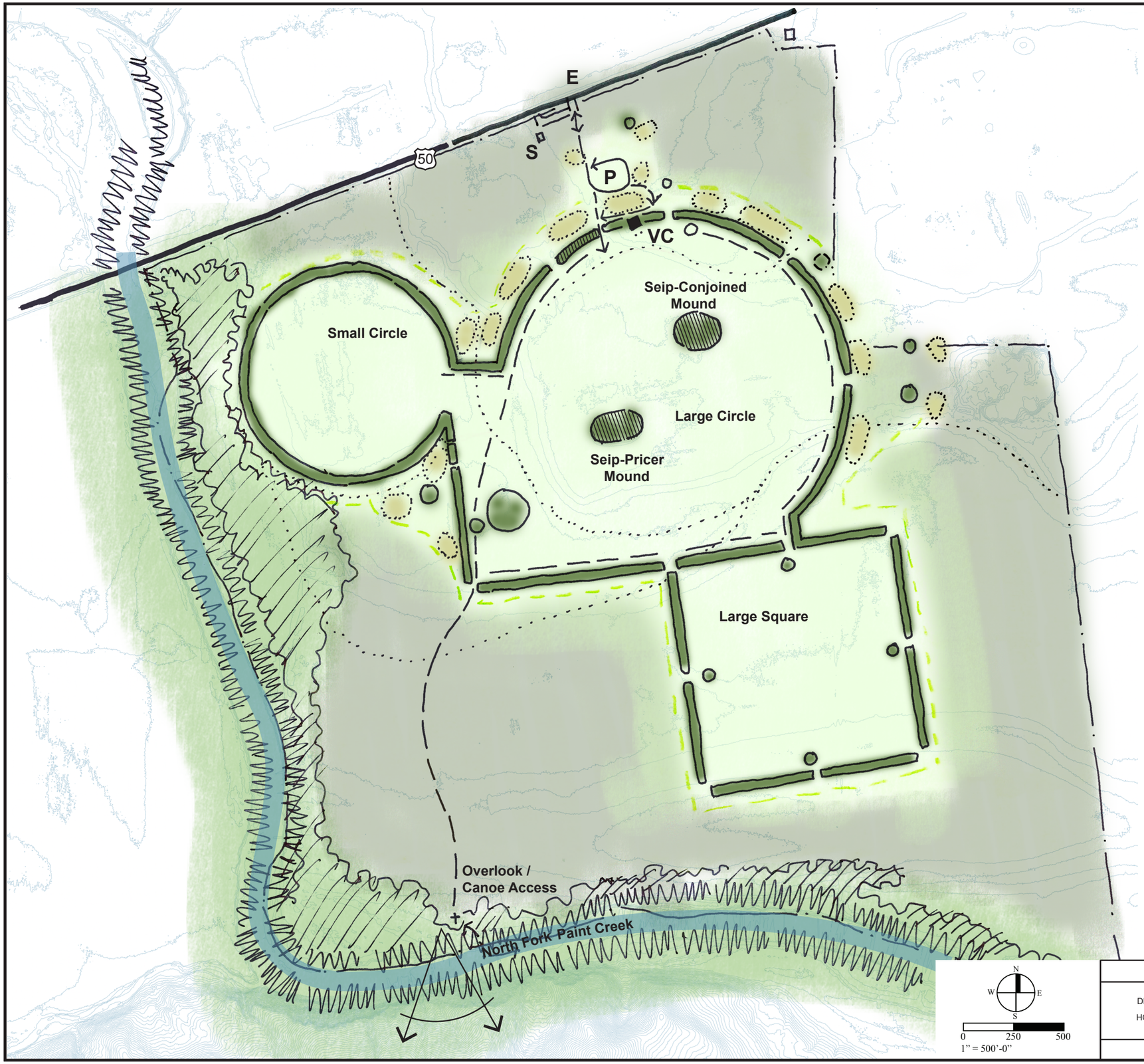
- Park signage, including identification, wayfinding, regulatory, and waysides, would be replaced with low-profile and unobtrusive signs consistent with Park signage family.

- Outdoor furniture would be replaced to have consistent furnishings at all park units. Picnic tables, trash and recycling receptacles, and the accessible drinking fountain would be replaced.

- The wood deck at the Paint Creek overlook would be retained and repaired.

- The Blackstone House features, including fences, power lines, propane tank, and parking area bollards would be removed in conjunction with the Blackstone House rehabilitation.

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Legend

- Proposed NPS Boundary
- Trail
- VC — Visitor Orientation
- P — Parking
- E — Entry
- S — Shelter
- Existing Mound / Feature
- Feature - Mark
- Borrow Pit - Mark
- Low Mown Grasses
- Grasses / Herbaceous Mix
- Woodland
- Limits of Low Mown Grasses
- Embankment
- Open View

Sources:
Magnetic Survey 2015, GIS HOCU 2012 LiDAR; 1848, High Bank Works, Davis and Squire; Seip Marshall NAD83; https://msc.fema.gov/portal/search?Address Query=chillicothe; http://www.fws.gov/wetlands/Data/Mapper.html; 2014 Google Maps

TIC# 353 128149

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OCTOBER 2015

UNITED STATES
DEPARTMENT OF THE INTERIOR

HOPEWELL CULTURE NATIONAL
HISTORICAL PARK

ILLUSTRATION 4-7

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
AND ENVIRONMENTAL ASSESSMENT

TITLE OF DRAWING
SEIP EARTHWORKS - ACTION ALTERNATIVE 1

NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK

REGION MIDWEST | COUNTY ROSS | STATE OHIO

4-47

Seip Earthworks
Action Alternative 2: Conserving and Revealing Earthwork Complexes
The rehabilitation treatment approach for Action Alternative 2 rehabilitates or marks non-extant archeological features and spaces; removes all non-contributing features; and relocates all visitor orientation facilities off-site or to a location away from the earthwork complex.

Spatial Organization/Topography/Views
The forms and patterns of the archeological landscape would be revealed to depict the extent and form of the earthwork complex. All archeological features would be spatially depicted, revealing the three-dimensional form of the earthwork complex and surroundings through markings and vegetation.

- Non-contributing features would be removed from the immediate surroundings of the earthwork complex. These include the Blackstone House, outbuildings, roads, and utilities.

- The earthwork complex would be delineated by allowing markings or rehabilitations of earthen walls, mounds, and borrow pits when no discernible topographical relief occurs.

- Vegetation would also be used to spatially depict the earthwork complex.

Archeological Features
All extant below- and above-grade archeological features would be preserved, stabilized and repaired as needed, following best practices. Non-extant archeological features would be vegetated or rehabilitated to depict their mass, form, and character, allowing them to be seen above-grade.

- The three-dimensional form of the earthwork complex would be spatially depicted by utilizing vegetation types or management techniques, or by utilizing markings or rehabilitating features with soil or other construction methods to reflect their original size, mass, and scale.

- Where discernible topographical relief occurs, only vegetation or non-permanent markings would be used to delineate features.

- Markings and/or rehabilitations will utilize recent magnetic surveys to archeologically locate features and will have a non-permanent material, different from original earthwork complex, to clarify the archeological feature as contemporary.

Circulation
The existing circulation system would be modified to move visitor orientation facilities off-site, and to provide additional connections within the earthwork complex and to the other park units.

- The existing parking area, vehicular access, and roads would be removed.

- The parking area and visitor orientation facility would be moved off-site to adjacent property.

- Trails would be added to follow the perimeter of the earthwork complex.

Vegetation
Archeological features would be maintained as low mown vegetation or as a taller mown vegetation. Vegetation outside the earthwork complex would be managed as tall native grassland vegetation.

- Low/mown vegetation would be maintained in spaces of earthwork complex including the entire interior of the Small Circle, Large Circle, Large Square, and in the areas of the borrow pits.

- Use a mix of native herbaceous species maintained consistently (mow 1-2 times per year) in areas surrounding earthwork complex.

- Archeological features (mounds, earthen walls, borrow pits) would be maintained either as low mown vegetation or as tall/ unmown to further differentiate their locations in the surrounding landscape.

    - The reconstructed Seip-Pricer Mound would be planted with a low mown vegetation.

    - The earthen wall would be planted with a taller mown vegetation, or marked with a non-permanent material.

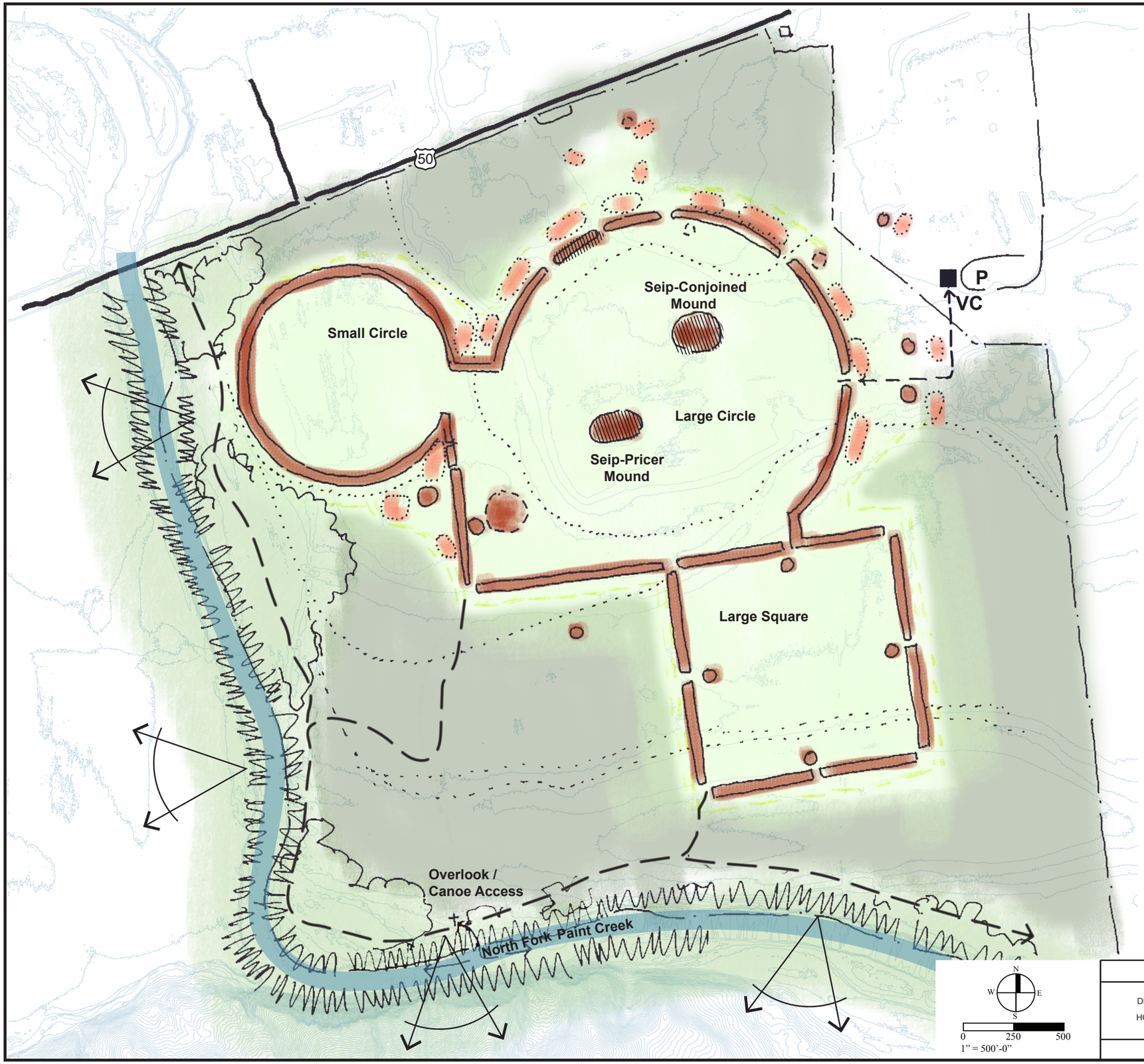
    - The extant Seip-Conjoined Mound would be planted with a taller mown vegetation, or marked with a non-permanent material.

    - The non-extant mounds, earthen walls, and borrow pits would be planted with a taller mown vegetation, or marked with a non-permanent material.

Buildings and Structures
Existing buildings and structures would be removed. New facilities for visitor orientation would be relocated onto the adjacent property, away from the earthwork complex.

- New buildings and features for visitor orientation would be added to assist in the interpretation of the earthwork complex on the Paint Valley High School property.

- All non-contributing buildings that impact contributing archeological features, including the Blackstone House, outbuildings, and the picnic shelter would be removed.



Legend

- Proposed NPS Boundary
- Trail
- VC — Visitor Orientation
- P — Parking
- Existing Mound / Feature
- Mound Feature - Potentially Mark / Rehabilitate
- Borrow Pit - Potentially Mark / Rehabilitate
- Low Mown Grasses
- Tall Grass and Forbs
- Woodland
- Limits of Low Mown Grasses
- Embankment
- Open View

Sources:
Magnetic Survey 2015, GIS HOCU 2012 LiDAR; 1848, High Bank Works, Davis and Squire; Seip Marshall NAD83; https://msc.fema.gov/portal/search?Address Query=chillicothe; http://www.fws.gov/wetlands/Data/Mapper.html; 2014 Google Maps

TIC# 353 128149

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1" = 500'-0"

MARCH 2016

UNITED STATES DEPARTMENT OF THE INTERIOR

HOPEWELL CULTURE NATIONAL HISTORICAL PARK

ILLUSTRATION 4-8

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT

TITLE OF DRAWING
SEIP EARTHWORKS - ACTION ALTERNATIVE 2

NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK

REGION MIDWEST | COUNTY ROSS | STATE OHIO

High Bank Works

High Bank Works is significant for being among the largest and most intricate earthwork complexes in Hopewell Culture NHP. It is remarkable for its monumental scale, geometric complexity, precision, and complicated astronomical alignments.

High Bank Works is composed of earthen walls that span several acres, set on a high bank above the Scioto River. The park unit is divided by private property and roads, making the scale of the earthwork complex is difficult to discern.

A treatment approach of preservation was considered for High Bank Works. Both action alternatives preserve the archeological features, introduce management techniques to better delineate the spaces and forms of the earthwork complexes, and improve the visitor experience. Action Alternative 1 follows a preservation approach and focuses on maintaining existing features.

Action Alternative 2 preserves the archeological features and utilizes vegetation management to depict spaces and non-extant above-grade archeological features, and limits visitor access.

High Bank Works
No Action Alternative

The no action alternative provides a basis for comparison with the action alternatives. Under the no action alternative, the present level of use, management, interpretation, maintenance and operations would continue. The no action alternative would include the following actions.

- The majority of the park unit would be designated a limited access zone and would not be open to the general public.[4-16]
- The primary use of the park unit would be research and education.
- Visitor experiences would be limited to guided tours, specifically when visitors could watch archeological fieldwork in progress.
- Temporary facilities for research, such as portable toilets and sun/rain shelters, would be allowed.

High Bank Works
Common to All Action Alternatives

Several treatment recommendations are common to both action alternatives for High Bank Works.

Spatial Organization/Topography/Views

The spatial arrangement of the earthwork complex would be emphasized to depict the mass and scale of the earthwork complex and to improve visitor's understanding.

- Hazardous trees and woody vegetation that impact the earthwork complex or diminish the visitor's understanding of

4-16 The GMP identifies six management zones used at the park units. Limited Access Zones are primarily for research and eduction, limiting visitation and preserving archeological resources. Natural Resource Zones restore and maintain biological diversity, while allowing for trails and interpretive overlooks/waysides. Pedestrian zones are archeological areas open to the public to walk among and interpret the earthwork complexes, with rangers present. Development Zones provide facilities for visitor use, education, orientation, and management functions. Educational Subzone (Development Zone) allows outdoor classrooms and specialized educational activities to assist in resource interpretation. Special Use Subzone (Development Zone) accommodates American Indian activities and events.

the spatial qualities of the earthwork complex and individual spaces would be removed. Specifically, the area southwest of the Octagon and on the parallel walls.

- The relationship of the earthwork complex to the Scioto River, Paint Creek Confluence, and Scioto River / Paint Creek would be improved by thinning vegetation to open views between the earthwork complex and the river.

Land Use
The park would purchase areas within the authorized park unit boundary, plus additional adjacent or related properties necessary for the protection of earthwork complexes.[4-17] Two in-holding would be purchased.

- The parcel containing the westernmost portion of the Great Circle, currently a private residence.

- The parcel containing most of the parallel walls, currently a private residence.

Archeological Features
All extant below- and above- grade archeological features, and spaces with known or potential archeological scatter would be preserved.

Individual archeological features including mounds, earthen walls and borrow pits would be stabilized and repaired as needed, following standard best practices.

4-17 *GMP,* p 41

High Bank Works
Action Alternative 1: Preserving Earthwork Complexes
Alternative 1 would preserve all extant below- and above-grade archeological features, reveal the mass and scale of the earthwork complex, and improve the visitor experience through greater interpretation of the earthwork complex and cosmology.

Spatial Organization/Topography/Views
The forms and patterns of the archeological landscape would be revealed by thinning vegetation and removing non-contributing features that disrupt the spatial arrangement.

The sense of scale, patterns, and orientation of the earthwork complex would be revealed through management of vegetation and views.

- The two-dimensional form of the earthwork complex of earthen walls, mounds, and borrow pits would be clarified by utilizing two or three distinct vegetation types / management techniques to reveal the form and spaces of the earthwork complex.

Archeological Features
This alternative would preserve all extant below- and above-grade archeological features, and spaces with known or potential archeological scatter.

Vegetation would be the primary method used to delineate archeological features and spaces.

- Vegetation outside the earthwork complex would be managed as grasses and herbaceous vegetation (mown seasonally).

- Vegetation inside the earthwork complex would be managed as low, mown vegetation.

- Vegetation on archeological features would be maintained as grasses and herbaceous vegetation (mown seasonally).

Circulation
The existing circulation system would remain in the existing location. Improvements would be made to facilitate archeological research and for limited pedestrian access.

- Non-contributing features that assist in facilitating circulation would remain and be improved (parking area).

- Non-contributing features that impact archeological features (gravel and service roads). would remain until acquisition of privately owned inholdings.

Vegetation
Vegetation that contributes to the character of the archeological landscape would be preserved. Vegetation would be managed to define the spatial organization of the earthwork complex, frame views, and screen adjacent development.

- Low mown vegetation would be maintained within spaces of earthwork complex including the interior of the Great Circle, Octagon, Parallel Walls, and South Earthwork. Cultivation would be discontinued, and areas of tall native grasslands (Octagon) would be replaced with low mown vegetation.

- Archeological features (mounds, earthen walls, borrow pits) would be maintained either as low mown vegetation or as tall/unmown vegetation to further differentiate between features and spaces.

- A medium diversity mix of grasses and herbaceous species would be maintained (mown one or two times per year) in areas surrounding the earthwork complex and in areas of archeological scatter.

- Riparian vegetation along the embankments would be maintained.

- Vegetation on the Lower River Terrace would be maintained.

- Clarify the relationship of the earthwork complex to the Scioto River and Paint Creek by thinning vegetation, opening up select views.

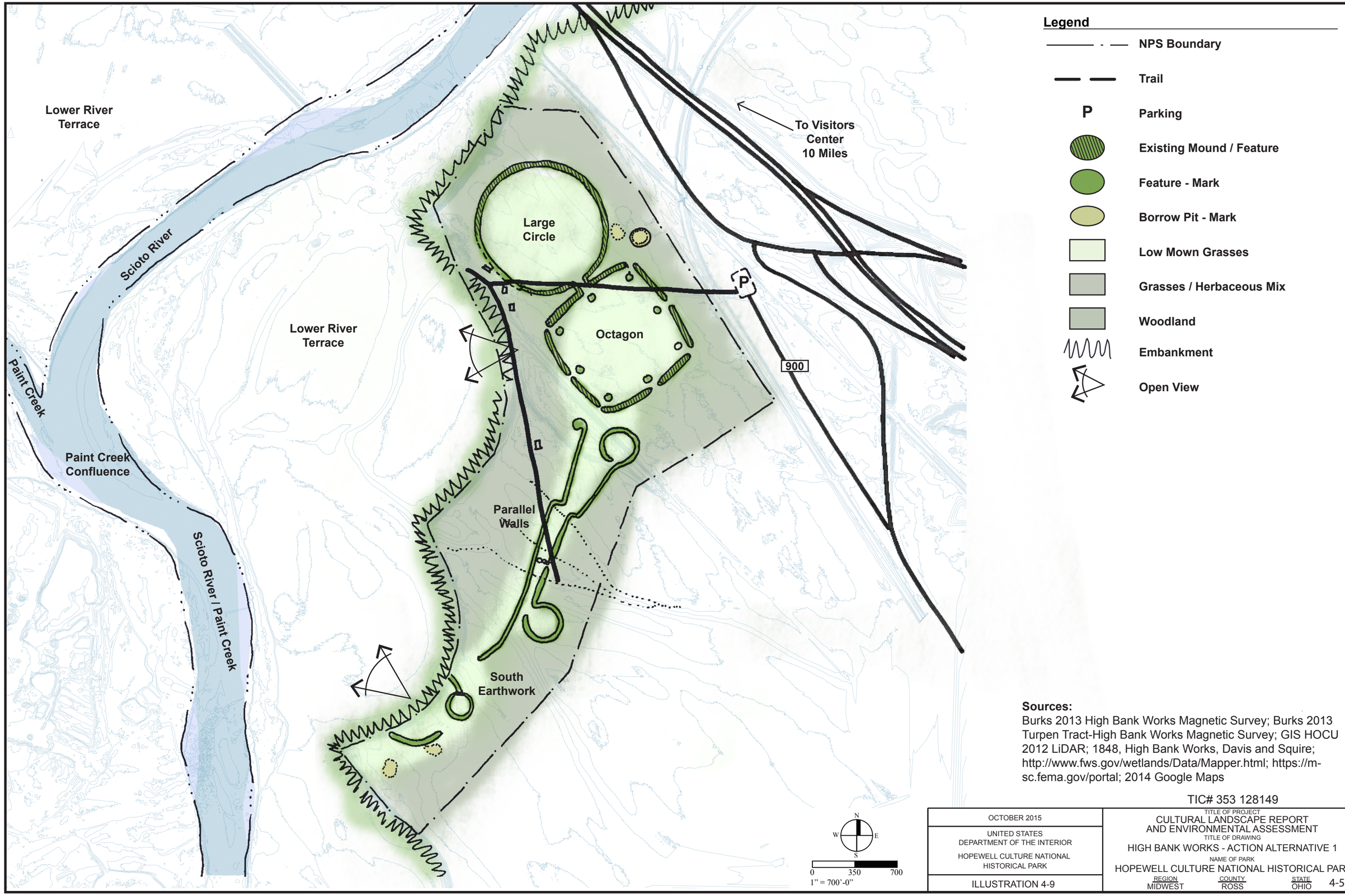
- Hazardous trees and woody vegetation that impact contributing archeological features or diminish the spatial qualities of the earthwork complex, specifically the area southwest of the Octagon and on the parallel walls would be removed.

Buildings and Structures
Existing buildings and structures would remain until acquisition of privately owned inholdings.

Small Scale Features
Features that do not serve as interpretation or visitation, or support existing buildings or structures, would be removed.

- Non-contributing features that impact archeological features to remain, including overhead utility lines and poles, and fences would remain.

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Sources:
Burks 2013 High Bank Works Magnetic Survey; Burks 2013 Turpen Tract-High Bank Works Magnetic Survey; GIS HOCU 2012 LiDAR; 1848, High Bank Works, Davis and Squire; http://www.fws.gov/wetlands/Data/Mapper.html; https://m-sc.fema.gov/portal; 2014 Google Maps

TIC# 353 128149

OCTOBER 2015	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: HIGH BANK WORKS - ACTION ALTERNATIVE 1
ILLUSTRATION 4-9	NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK REGION: MIDWEST COUNTY: ROSS STATE: OHIO 4-57

High Bank Works
Action Alternative 2: Conserving and Revealing Earthwork Complexes
Alternative 2 would preserve the earthwork complex and all extant below- and above-grade archeological features. It would improve access and allow visitors to the park unit, and would allow marking of the archeological features.

Spatial Organization/Topography/Views
The forms and patterns of the archeological landscape would be revealed to depict the extent and form of the earthwork complex. All archeological features would be spatially depicted, revealing the three-dimensional form of the earthwork complex and surroundings, utilizing vegetation.

- The mass, scale, and form of the earthwork complex would be depicted using vegetation types and management (earthen walls, mounds, borrow pits, and the spaces of the earthwork). This would assist in facilitating archeological research throughout the earthwork complex.

- Non-contributing features would be removed from the earthwork complex, and the immediate surroundings. These include the existing buildings and structures on private property, and associated roads and utilities. Removals would only occur once property acquisition was complete.

Archeological Features
All extant below- and above-grade archeological features would be preserved, stabilized and repaired as needed, following best practices.

- The three-dimensional form of the earthwork complex would be spatially depicted, by utilizing vegetation types / management techniques.

- Prior to adding vegetation markings, further archeological investigations, including magnetic surveys, would be undertaken to archeologically locate features.

Circulation
The existing circulation system would be modified with new pedestrian routes, and access to the south earthwork.

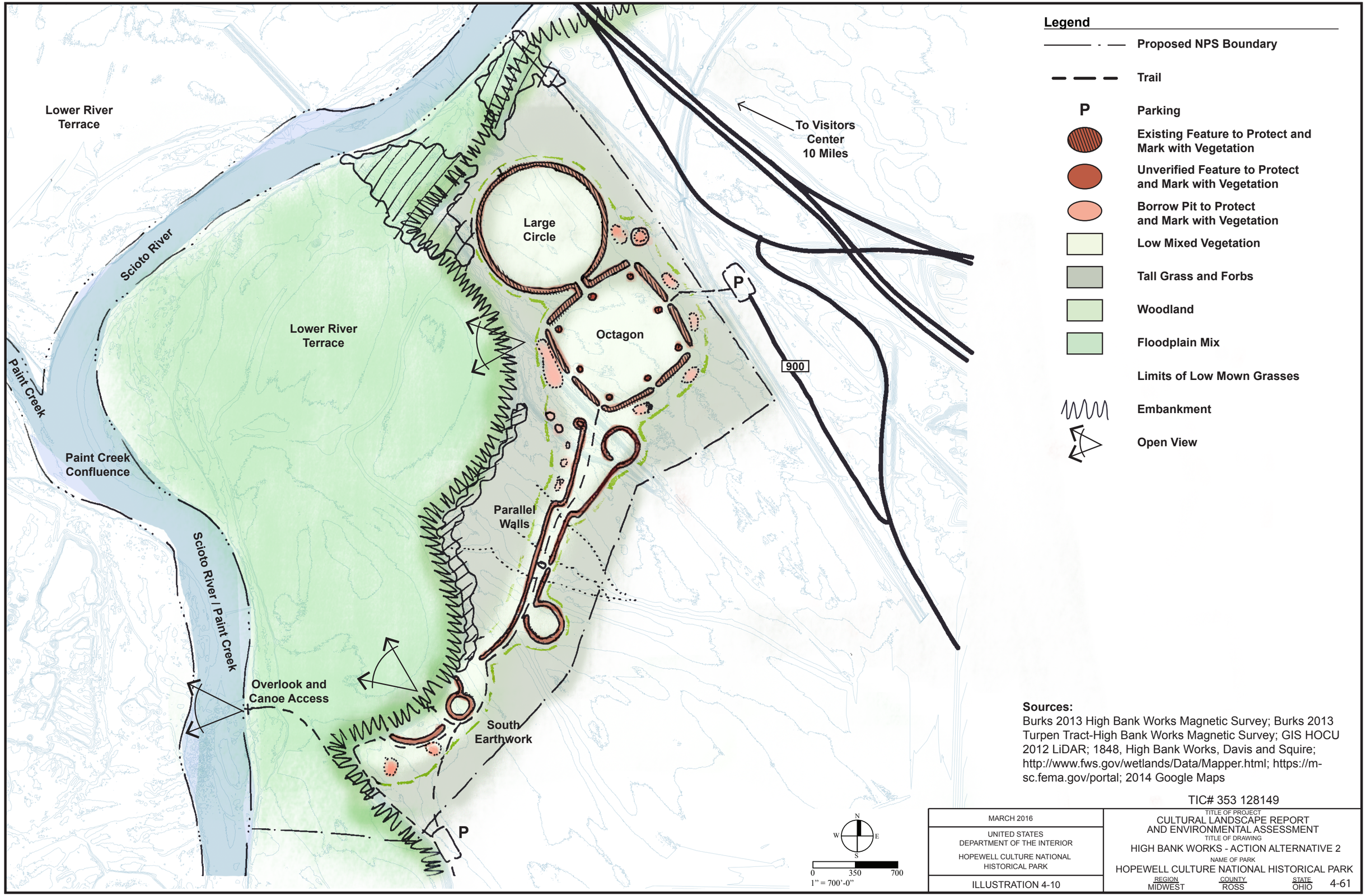
- Vehicular access would be modified by improving the north parking area. A second vehicular route to the south earthwork would be added.

- The gravel road across the Octagon and Large Circle would be removed.

- Pedestrian circulation routes would be added that reveal the spatial qualities of the earthworks.

- A new canoe / kayak access and river overlook would be added at the South Earthwork.

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Sources:
Burks 2013 High Bank Works Magnetic Survey; Burks 2013 Turpen Tract-High Bank Works Magnetic Survey; GIS HOCU 2012 LiDAR; 1848, High Bank Works, Davis and Squire; http://www.fws.gov/wetlands/Data/Mapper.html; https://m-sc.fema.gov/portal; 2014 Google Maps

TIC# 353 128149

MARCH 2016	TITLE OF PROJECT CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING HIGH BANK WORKS - ACTION ALTERNATIVE 2 NAME OF PARK HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 4-10	REGION MIDWEST · COUNTY ROSS · STATE OHIO · 4-61

Alternatives Comparison

Mitigation and Best Management Practices

The National Park Service places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural, cultural, and archeological resources and the quality of the visitor experience, the following Best Management Practice (BMP) protective measures would be implemented as part of all of the action alternatives (TABLE 4-2). The National Park Service would implement an appropriate level of monitoring throughout the construction and maintenance process to help ensure that protective measures are being properly implemented and are achieving their intended results. These mitigation measures are applicable for contractors and park staff.

Environmentally Preferable Alternative

The environmentally preferable alternative is the alternative required by 40 CFR 1505.2(b), to be identified in a record of decision, that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historic, cultural, and natural resources. The "Environmentally Preferable Alternative" is identified upon consideration and weighing by the responsible official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources (43 CFR 46.30). Although an environmentally preferable alternative is identified, it may not be the NPS preferred alternative. The preferred alternative is the alternative the National Park Service believes would best fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors.

Alternative 2 is the environmentally preferable alternative for several reasons. Compared with the other action alternative, Alternative 2 would result in greater long-term beneficial effects to archeological resources by removing noncontributing features from the archeological landscape, improving vegetation management for preservation of the earthworks, and rehabilitating the earthworks. In addition, Alternative 2 would result in restoration of native vegetation communities through vegetation management and removal of noncontributing features. Overall, Alternative 2 would provide the best balance between the preservation of historic and archeological resources and the protection of the natural resources within the park.

TABLE 4-2. Mitigation Measures and Best Management Practices

General Measures
• The park would ensure proposed projects remain within the construction limits, parameters are established in the compliance documents, and mitigation measures are properly implemented. • Construction zones would be signed at approach points. No construction activities would be permitted outside the construction limits. • All protection measures would be clearly stated in the project specifications/special project requirements, and workers would be instructed to avoid conducting activities beyond the project area limits as defined by construction plans or marked limits. • Garbage, trash, and other solid waste associated with project operations would be disposed of weekly, or sooner if warranted, outside the park. • All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project area work limits upon project completion. • Contractors would be required to properly maintain equipment used on the project (e.g., mufflers) to minimize noise from equipment use. • A hazardous spill plan would be in place, stating what actions would be taken in the case of a spill, notification measures, and preventive measures to be implemented, such as the placement of refueling facilities, storage, and handling of hazardous materials. • All equipment used on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from mechanical fluids. All equipment would be checked daily. • BMPs for drainage and sediment control, per a Stormwater Erosion and Sediment Control Plan, would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas, when needed. Use of BMPs in the project area for drainage area protection would include all or some of the following actions, depending on specific requirements: º Keeping disturbed areas as small as practicable to minimize exposed soil and the potential for erosion º Locating waste and excess excavated materials outside of drainages to avoid sedimentation º Installing silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion-control measures around the perimeter of stockpiled fill material) prior to construction º Conducting regular inspections during the construction period to ensure erosion-control measures were properly installed and are functioning effectively º Storing, using, and disposing of chemicals, fuels, and other toxic materials in a proper manner

Soils

- Erosion and sediment control would be required (see the "General Measures" section above).
- If applicable, topsoil or native soil would be removed from areas of construction and stored for later reclamation use. The topsoil would be redistributed as close to the original location as possible and supplemented with scarification, mulching, seeding, and/or planting with native genotypes.

Wetlands

- Impacts on wetlands would be avoided and minimized to the extent practicable. No wetland fill would occur without authorization from the Corps and appropriate permitting under the Clean Water Act.
- Appropriate permits (404 permit and 401 certification) would be acquired should there be any impacts on wetlands.

Water Quality

- Sediment traps, erosion checks, and/or filters would be constructed above or below all culvert drains (if such drains are required) and in all other ditches before the water (runoff) leaves the project area limits.
- At all cut and fill areas, erosion and sediment control would be implemented to minimize impacts on water quality.
- Surface restoration and revegetation of disturbed soils would be implemented to minimize long-term soil erosion.
- Water needed for construction and dust control would come from sources outside the park.

Vegetation

- Orange construction fencing would be used around large and/or historic trees and special status plant species and their habitat within construction limits to minimize the potential for inadvertent impacts from heavy equipment during construction. Large and/or historic trees and special status plant species would be avoided to the extent possible during construction.

- Ground surface treatment would include grading to natural contours, conserving and replacing topsoil, and, where necessary, hand seeding or planting. In some locations, topsoil placement and mulching with litter and duff would be the primary treatment. If insufficient litter and duff is salvaged from the project area, additional litter and duff may be gathered from adjacent areas on a small scale where approved by the National Park Service.

- Remedial actions would include installing erosion-control structures, reseeding, conserving and replacing topsoil and/or replanting the area, and controlling nonnative plant species.

- Introduction of nonnative/noxious plant species would be minimized by implementing several BMPs, including:
  - Minimizing soil disturbance
  - Ensuring project personnel make daily checks of clothing, boots, laces, and gear to ensure no invasive plant propagates and no off-site soil is transported to the worksite
  - Pressure washing and/or steam cleaning all equipment to ensure all equipment and machinery are cleaned and weed free before entering the park; equipment used on the project would be inspected by park staff prior to entering the park to ensure compliance with cleanliness requirements; and inadequately cleaned equipment would be rejected
  - Covering all haul trucks bringing fill materials from outside the park to prevent seed transport and dust deposition along the road corridor
  - Limiting vehicle parking turnouts to existing roads, parking areas, or access routes
  - Limiting project staging to existing roads, parking turnouts, and other designated areas; no machinery or equipment should access areas outside the project area limits
  - Obtaining all fill, rock, and other earth materials from the project area, if possible
  - Restricting hay bales from being used during revegetation or for temporary erosion control
  - Initiating revegetation of disturbed areas immediately following construction activities

- To maximize vegetation restoration efforts after completion of construction activities, the following measures would be applied:
  - Salvaging available topsoil or the top several inches of native soil from project areas for reuse during restoration of disturbed areas
  - Incorporating a native litter and duff layer in forested areas for replacement over salvaged topsoil
  - Ensuring the National Park Service surveys for, and treats, invasive plants prior to and for three years after construction

Wildlife

- To reduce noise disturbance and limit impacts on breeding avian and mammalian species, all tree removal would be conducted from October 1 to March 1, where feasible. If trees need to be removed outside of this time frame, they would be identified for removal and evaluated for nesting or roosting use.
- Project personnel are prohibited from feeding or approaching wildlife.
- Project personnel would report to park personnel any wildlife collisions within 24 hours of an incident.
- The clearing limits (project area limits) outside of the existing road prism would be clearly marked or flagged prior to construction. All construction activities, including staging areas, would be located within previously disturbed areas, is possible.
- The following measures would be taken to limit noise and disturbance from vehicles and equipment used on the project:
  - Ensure all motor vehicles and equipment have mufflers conforming to original manufacturer specifications that are in good working order and are in constant operation to prevent excessive or unusual noise, fumes, or smoke
  - Limit the use of air horns within the park to emergencies only

Air Quality

- Dust control would occur on active work areas where dirt or fine particles are exposed, as needed, using water sources outside the park.
- Workers would not leave vehicles idling.
- Debris resulting from construction would be hauled from the park to an appropriate disposal location.

Cultural

- All activities would comply with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Federal Register 44716, revised).
- Archeological resources in the vicinity of the project area would be identified and delineated for avoidance prior to project work.
- Project areas affected by ground disturbing activities under the action alternatives will be evaluated for significant subsurface archaeological deposits prior to work, including remote sensing/geophysical methods and/ or exploratory shovel testing.
- Tree and vegetation removal would be conducted in a manner that would not affect above and below-grade archaeological deposits. Root removal would not occur and tree felling would not occur on top of above-grade archeological features.
- Removal of non-contributing eligible resources will result in an adverse effect. To resolve potential effects, Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) should be conducted on any eligible historic structures.
- Should any archeological resources be uncovered during construction of new facilities and removal of non-contributing features, as appropriate, work would be halted in the area and a NPS archeologist, SHPO, and appropriate American Indian tribes would be contacted for further consultation. Plans for treatment of unanticipated discoveries would be prepared as needed.
- NPS cultural resources staff would be available during construction to advise or take appropriate actions should any archeological resources be uncovered during construction. In the unlikely event that human remains are discovered during proposed project activities, provisions outlined in the American Indian Graves Protection and Repatriation Act (NAGPRA) (1990) would be followed.
- The National Park Service would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors and subcontractors also would be instructed on procedures to follow in case previously unknown archeological resources are uncovered during construction.
- Equipment and material staging areas would avoid known archeological resources.
- An archeologist who meets the guidelines and standards identified by the secretary of the interior would be on-site during any ground-disturbance activities that occur from implementation of the preferred alternative. As a result, work may be temporarily stopped in the immediate area until the discovery is resolved.

Cultural

- Action alternatives are not expected to uncover, disturb, or remove American Indian human remains, funerary objects, sacred objects, or objects of cultural patrimony. In the event any of these items are unintentionally exposed by some aspect of this project, procedures identified in "Guidance for National Park Service Compliance with the American Indian Graves Protection and Repatriation Act, NPS Cultural Resource Management Guideline, Appendix R" would be followed. If this occurs, the project archeologist would stop work until NAGPRA guidelines and associated regulations [43 CFR 10.6] are satisfied.

- All action alternatives would result in an adverse impact on the earthwork complexes and below-grade extant features. To resolve potential adverse impacts, survey and data recovery measures should be taken to identify and salvage significant archeological deposits. Further research should be conducted on the impacts of delineation and rehabilitation techniques on below-grade archeological features.

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TABLE 4-3. Impact Summary

Impact Topic	No Action Alternative	Action Alternative 1	Action Alternative 2
Cultural Resources – Cultural Landscapes and Archeological Sites	Under the no action alternative, there would be minimal impacts on archeological resources at all five park units. The present level of use, management, maintenance, and operations would continue, including continued use of the existing visitor center, administrative/maintenance area, and shelter at the Mound City Group; and maintenance of the earthworks as mown lawn with woodland perimeter. Failure to remove hazardous trees and woody vegetation may affect the integrity of buried archeological deposits through bioturbation from the root systems. Haying would continue in the northern portion of the Mound City Group which may also affect the integrity of buried archeological deposits. The no action alternative would have a local long-term minor adverse impact on archeological resources.	Under action alternative 1 at all five park units, preservation measures of above- and below-ground archeological features would be implemented. Removal of trees and other woody vegetation would occur to diminish impacts on the earthworks from bioturbation from the root systems. Tree removal could have direct impacts on buried archeological features. New circulation including trails, bridges, overlooks, and parking areas would be constructed. Vegetation would be removed and shallow subsurface disturbance would occur during construction of circulation features, which could affect subsurface cultural deposits. The removal of noncontributing features, trails, utility lines, or buildings would improve the setting and feeling of the archeological landscape. Action alternative 1 includes specific activities at three park units. At the Mound City Group, areas currently not owned by the park but within and adjacent to the authorized park unit boundary would be purchased; further evaluation would occur at three noncontributing, but potentially significant, features; noncontributing features to the archeological landscape would be preserved; and expansion of curatorial and educational spaces are proposed. Preservation of the Mission 66 Visitor Center, CCC/WPA features, and the remains of Camp Sherman would result in a long-term beneficial impact on historic resources within the park unit by expanding knowledge of the use of the park unit outside of its period of significance but could result in long-term minor adverse impacts to the earthwork complexes and archeological landscape. The continued and expanded use of noncontributing features would have no effect on archeological resources. Purchasing areas within or adjacent to the park unit boundary would result in a long term beneficial impact to cultural resources. Action alternative 1 at the Hopewell Mound Group includes the conversion of a historic barn for a new park use. Preservation of the barn would have a beneficial impact, but modern upgrades may result in an adverse impact on archeological resources. Action alternative 1 also considers the evaluation of two noncontributing features at Seip Earthworks, the Blackstone House, and the Fish Camp buildings. Evaluation of the buildings, if found to be significant, would have a beneficial impact through long-term preservation and by expanding knowledge of the use of the park unit outside of its period of significance, but could have a long-term minor adverse impact on the earthwork complexes and archeological landscape.	Activities under action alternative 2 that would differ from action alternative 1 includes enhancing the archeological features through vegetation management, nonpermanent markings, and rehabilitating earthen walls or mounds; creation of an interconnected water route between the park units; construction of additional trails, roads, parking areas, and interpretive waysides; and removal of additional noncontributing features that adversely affect the setting and feeling of the archeological landscape. Action alternative 2 would have the same direct and indirect adverse and beneficial impacts on archeological resources as action alternative 1, with the exception that there would be the potential for additional local adverse impacts from the removal of additional vegetation for marking the earthworks, removal of all noncontributing resources that impact the contributing archaeological resources regardless of eligibility; rehabilitation of the earthworks, construction of additional visitor facilities, and creation of an interconnected water route between the park units. These actions have the potential to alter above- and below-ground features at the park units and would have a local short-term minor adverse impact on archeological resources. Action alternative 2 would also include the removal of noncontributing features including buildings, roads, and parking areas. Removing potentially eligible but noncontributing historic resources that impact the contributing resources would have an adverse effect to the noncontributing resources but a beneficial effect to the contributing resources by improving the setting and feeling of the archeological landscape. Retaining significant features that are noncontributing but do not detract from the archeological landscape would have a beneficial effect to these resources. Removing buildings and structures that are not significant nor contributing to the archeological landscape would have a long term beneficial effect by improving the setting and feeling. The restoration of these areas to native vegetation communities would have a local short-term minor adverse impact on below-ground archeological deposits and a long-term beneficial effect on archeological resources from improving the setting and feeling of the archeological landscape. Rehabilitating original earthworks could be a potential adverse effect as the addition of fill to the mounds could impact buried cultural features through compaction. Rehabilitating the earthwork complex at Mound City Group would result in a long-term negligible impact; all but one of the existing features has been previously reconstructed and restoration would not result in new impacts. The treatment approach of preservation instead of rehabilitation at Hopeton Earthworks and High Bank Works will have a long term beneficial impact. Any facilities constructed for the interconnected water route may have the potential to impact below-grade archeological features. Overall, action alternative 2 would have a long-term beneficial effect and a local short-term minor adverse impact on archeological resources.

Impact Topic	No Action Alternative	Action Alternative 1	Action Alternative 2
Vegetation	The no action alternative would have minimal impacts on vegetation at the park units. The present level of use, management, maintenance, and operations would continue, including removal of nonnative species and restoration of native species, resulting in a beneficial effect on vegetation. Mowing operations would also continue, resulting in a minor adverse impact on vegetation from the reduction in native species and mature growth. Overall, the no action alternative would have a long-term beneficial and long-term minor adverse impact on vegetation.	Under action alternative 1, the vegetation at the park units would be altered to allow for improved interpretation of the archeological landscape. Removal of trees and other woody vegetation would occur in certain locations to enhance the visitor's understanding, provide trails to the river, and open the views. Other vegetation would be removed for the establishment of trails and parking areas at the park units. These actions would alter the vegetation communities at the park units and reduce overall vegetative cover in localized areas. Removal of invasive species would improve vegetation communities at the park units. Removal of noncontributing features such as roads, trails, or utility lines would allow for an increase in vegetation communities after the areas are revegetated. Overall, action alternative 1 would have local long-term minor adverse impacts on vegetation from construction of trails and parking areas. Restoration actions that increase vegetation cover at the park units would have long-term beneficial effects on vegetation.	Action alternative 2 would have the same direct and indirect adverse and beneficial impacts on vegetation as action alternative 1, except there would be slight additional adverse impacts from constructing additional trails and creating an interconnected water route between the park units. These actions would have a local short-term and long-term minor adverse impact on vegetation. Action alternative 2 would also include removal of noncontributing features including buildings, roads, and parking areas. The restoration of these areas with native vegetation communities would have a long-term beneficial effect on vegetation. Overall, action alternative 2 would have a long-term beneficial effect and a local long-term minor adverse impact on vegetation.
Wildlife	The present level of use, management, maintenance, and operations would continue. Parking areas and minimal visitor facilities would be developed at the Hopewell Mound Group and Hopeton Earthworks, which may decrease overall habitat for wildlife, although wildlife would likely find food sources and nesting cover from nearby habitat in the park. Overall, the no action alternative would have a long-term negligible impact on wildlife because of the surrounding habitat present and minimal disturbance	Under action alternative 1, the vegetation at the park units would be altered to allow for improved interpretation of the archeological features. Removal of trees and other woody vegetation would occur in certain locations to enhance the visitor's understanding, provide trails to the river, and open the views. Other vegetation would be removed for the establishment of trails or parking areas at the park units. These actions would reduce the overall wildlife habitat in the project area. Thinning or removing vegetation would directly reduce the food source for birds and mammals in the park and reduce nesting and roosting cover for birds. Since these actions would occur in only certain locations, the birds and mammals would likely find food sources and nesting cover from nearby trees in the park. Removal of noncontributing features such as roads, trails, and utility lines and restoration with native vegetation would increase the amount of wildlife habitat and reduce hazards to wildlife. Overall, action alternative 1 would have a long-term beneficial effect and a local long-term direct minor adverse impact on wildlife and wildlife habitat.	Action alternative 2 would have similar direct and indirect impacts on wildlife as action alternative 1, but potentially could include removal of additional vegetation for marking the earthwork complexes, constructing additional trails, and creating an interconnected water route between the park units and may result in a net increase in visitor use, which could increase disturbance to wildlife. Action alternative 2 would also include removal of other noncontributing features including buildings, roads, and parking areas, which would increase the amount of wildlife habitat in the park. Overall, action alternative 2 would have a long-term beneficial effect and a local long-term minor adverse impact on wildlife and wildlife habitat.
Visitor Use and Experience	There would be no change in the fundamental nature and quality of the visitor use and experience within the park under the no action alternative. Access to the park units would remain the same, with Hopeton Earthworks and High Bank Works remaining closed to the public. Visitors would continue to use the existing trails at the park units. Noncontributing features would remain in the archeological landscape, potentially compromising the interpretive goals of the park units, but in ways visitors would not likely notice. For these reasons, the no action alternative would have a local long-term negligible adverse impact on visitor use and experience.	Visitor use and experience would improve from action alternative 1 by allowing limited access to the Hopeton Earthworks and High Bank Works, creating more trails and parking areas at the park units, improving the interpretation of the archeological landscape, and removing noncontributing features. Visitor use and experience may be temporarily impacted by implementation of these measures and temporary trail closures. The impacts on visitor use and experience during construction would be local, short-term, minor, and adverse. Action alternative 1 would result in long-term beneficial effects on visitor use and experience because of increased access to the park units, more accurate representation of the archeological landscape, improved interpretation, and increase in trails, overlooks, and parking areas.	The activities and impacts of action alternative 2 would be similar to those of action alternative 1, except there would be additional beneficial effects from marking the earthwork complexes for improved interpretation, constructing additional trails, and creating an interconnected water route open to kayaking and canoing between the park units. There would be local short-term minor adverse impacts on visitor use and experience during implementation of these activities and long-term beneficial effects.

Impact Topic	No Action Alternative	Action Alternative 1	Action Alternative 2
Park Operations	There would be no change in the fundamental nature of park operations within the park under the no action alternative. Vegetation management would remain the same as well as the amount of trails, parking areas, and other recreation facilities that would continue to require maintenance. The Hopeton Earthworks and High Bank Works would remain closed to the public. For these reasons, the no action alternative would have no impact on park operations.	Increasing the interpretation of the archeological landscapes in the park units through vegetation management, increased trails through the park units, and removal of noncontributing features would increase the park staff's ability to relay interpretive information about the park units to visitors. Additional trails would increase maintenance activities required by park staff. Removal of noncontributing features would have a short-term adverse impact on park operations by displacing facilities. Implementation of these activities would have a short-term minor adverse impact on park operations for managing and overseeing the installation of trails and other features and removal of other features. For these reasons, action alternative 1 would have parkwide long-term and short-term minor adverse impacts and parkwide long-term beneficial effects on park operations.	Action Alternative 2 would include relocation of the administration, visitor center, and other facilities off-site or to a new location within the park. This would result in short-term moderate adverse effects to park operations and long-term beneficial effects to park operations.
Visual Resources	Minimal changes in the visual character of the park or individual park units are anticipated under the no action alternative. Various zones would be established within each park unit to direct management within those zones. The visual aspects of each park unit would remain the same under the no action alternative. The no action alternative would have a local long-term minor adverse impact on visual quality by reducing the visual interpretation of the archeological landscapes over time.	The visual quality of the park units from action alternative 1 would be improved by allowing limited access to the Hopeton Earthworks and High Bank Works and creating more trails at the park units, which would increase visitor access to visual features at each park unit. Improving the visual interpretation of the earthwork complexes through vegetation management and removing non-contributing features would also have beneficial effects on visual resources at each park unit. Because of these reasons, action alternative 1 would result in local long-term beneficial effects on visual resources.	The activities and impacts of action alternative 2 would be similar to those of action alternative 1, except there would be additional beneficial effects on visual resources and access to visual features from marking the earthwork complexes for improved interpretation, constructing additional trails, and creating an interconnected water route between the park units. These actions would improve the visual quality of the park units by enhancing the ability to interpret the archeological landscapes and surrounding area. Because of these reasons, action alternative 2 would result in local long-term beneficial effects on visual resources.

Chapter 5. Environmental Consequences

Introduction

This "Environmental Consequences" chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this CLR/EA. This chapter also includes methods used to analyze direct, indirect, and cumulative impacts. Impacts are evaluated based on context, duration, intensity, and whether they are direct, indirect, or cumulative. A summary of the environmental consequences for each alternative is provided in "Chapter 4: Alternatives." The resource topics presented in this chapter and the organization of the topics correspond to the resource discussions contained in "Chapter 3: Existing Conditions and Analysis/Affected Environment."

This CLR/EA assesses whether significant impacts would occur as a result of the proposed action or reasonable alternatives, resulting in an environmental impact statement, or whether a finding of no significant impact is the appropriate decision document.

General Methods

This section describes the environmental impacts, including direct, indirect, and cumulative impacts, and their significance for each alternative. Because the actions proposed under each alternative are similar for each park unit, the impacts analysis has been grouped under no action, action alternative 1, and action alternative 2 and are not broken out individually for each park unit. For actions that apply to only one park unit, those actions are described individually under the appropriate alternative. The analysis is based on the assumption that the mitigation measures identified in the "Mitigation and Best Management Practices" section of this CLR/EA would be implemented for the action alternatives. Overall, the NPS based the impact analyses and conclusions on the review of existing literature and park studies, information provided by experts within the park and other NPS personnel, other agencies, professional judgment and park staff insights, and public input.

In accordance with CEQ regulations, direct, indirect, and cumulative impacts are described (40 CFR 1502.16), and the impacts are assessed in terms of context and intensity (40 CFR 1508.27). Where appropriate, mitigating measures for adverse impacts are also described and incorporated into the evaluation of impacts. The specific methods used to assess impacts for each resource may vary; therefore, these methodologies are described under each impact topic.

The following terms are used in the discussion of environmental consequences to assess the impact intensity threshold and the nature of impacts associated with each alternative.

Type: Impacts can be beneficial or adverse. A beneficial impact is an impact that

would result in a positive change in the condition or appearance of the resource. An adverse impact is an impact that causes an unfavorable result to the resource when compared with existing conditions.

Context: The context is the significance of an action must be analyzed in several contexts such as society as a whole (e.g., human or national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the impacts in the locale rather than in the world as a whole. Both short- and long-term impacts are relevant.

Duration: The duration of an impact is analyzed independently for each resource because impact duration is dependent on the resource being analyzed. Depending on the resource, impacts may last for the implementation period, a single year or growing season, or longer. Impact duration is described as short-term or long-term for each resource. For the purposes of this analysis, short-term and long-term impacts are defined for each resource.

Direct and Indirect Impacts: Impacts can be direct, indirect, or cumulative. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by the action and occur later or farther away, but are still reasonably foreseeable. Direct and indirect impacts are considered in this analysis. Cumulative impacts are discussed in the next section.

Intensity. Intensity refers to the severity of the impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

- Impacts that may be both beneficial and adverse. A significant impact may exist even if the federal agency believes that on balance the impact will be beneficial.
- The degree to which the proposed action affects public health or safety.
- Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
- The degree to which the impacts on the quality of the human environment are likely to be highly controversial.
- The degree to which the possible impacts on the human environment are highly uncertain or involve unique or unknown risks.
- The degree to which the action may establish a precedent for future actions with significant impacts or represents a decision in principle about a future consideration.
- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small parts.
- The degree to which the action may adversely affect districts, sites, highways,

structures, or objects listed in, or eligible for listing in, the National Register, or that may cause loss or destruction of significant scientific, cultural, or historical resources.

- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

- Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

For each impact topic analyzed, an assessment of the potential significance of the impacts according to context and intensity is provided in the "Conclusion" section that follows the discussion of the impacts under each alternative. Resource-specific context is presented in the "Methodology" section under each resource and applies across all alternatives. The intensity of the impacts is presented using the relevant factors from the list above. Intensity factors that do not apply to a given resource and/or alternative are not discussed.

Cumulative Impacts

Cumulative impacts (or effects) are defined as "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. The CEQ regulations that implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects.

Methods for Assessing Cumulative Impacts
Cumulative impacts were determined by combining the impacts of each action alternative and the no action alternative with other past, present, and reasonably foreseeable future actions. Past actions include activities that influenced and affected the current conditions of the environment near the project area. Ongoing or reasonably foreseeable future projects near the park or the surrounding region might contribute to cumulative impacts. The geographic scope of the analysis includes actions in the project area as well as other actions in the park or surrounding lands, including Ross County and adjoining states, where overlapping resource impacts are possible. The temporal scope includes actions within a range of approximately 10 years.

Once identified, past, present, and reasonably foreseeable future actions were then assessed in conjunction with the impacts of the alternatives to determine if they would have any added adverse or beneficial impacts on a particular resource, park operations, or visitor use. The impacts of past, present, and reasonably foreseeable future actions vary for each resource. Cumulative impacts

are considered for each alternative and are presented in the environmental consequences discussion for each impact topic

Past, Present, and Reasonably Foreseeable Future Actions

The following past, present, and reasonably foreseeable future actions are relevant to the analysis of the impacts on resources and values that would result from the alternatives and are based on actions described in the park's GMP (NPS 1997) and from internal scoping. Past, present, and reasonably foreseeable management of the earthwork complexes and buildings by the NPS includes constructing a visitor trail, overlook, and parking area at Hopeton Earthworks. Mowing vegetation at the earthwork complexes would continue. The existing overlook at the Hopewell Mound Group is planned to be moved in the future. Archeological research would continue at the park. Other reasonable foreseeable future actions include a power line project at Mound City that would replace the existing poles with new poles along the western boundary. In addition, a substation located 1/4 mile south of Mound City is planned to be rebuilt to be five times larger.

Cultural Resources

Methodology

Potential effects on cultural resources were evaluated based on the presence and condition of existing above- and below-grade features within the park units as described in "Chapter 3: Affected Environment." Determination of impacts was based on the expected disturbance to cultural resources, professional judgment, and experience with previous projects.

No Action Alternative

Direct and Indirect Impacts of the Alternative

Under the no action alternative, there would be minimal impacts on cultural resources at all five park units. The present level of use, management, maintenance, and operations would continue, including continued use of the existing visitor center, administrative/ maintenance complex, and shelter at the Mound City Group; and maintenance of the archeological features as mown lawn with woodland perimeter. Failure to remove hazardous trees and woody vegetation may affect the integrity of buried archeological deposits through bioturbation from the root systems. Haying would continue in the northern portion of the Mound City Group which may also affect the integrity of buried archeological deposits. The no action alternative would have a local long-term minor adverse impact on cultural resources.

Cumulative Impacts

Past and ongoing NPS vegetation management, such as mowing, has maintained, but not improved, the archeological landscape within the park units. As currently managed, the vegetation does not enhance the visitor's understanding of the archeological features. Future vegetation management that does not consider bioturbation would continue to adversely affect the archeological landscape. Minimal

development of parking areas and visitor facilities at the Hopewell Mound Group and Hopeton Earthworks could impact existing and unknown cultural resources in those areas. When combined with past, present, and reasonably foreseeable future actions, the no action alternative would have the potential for local long-term minor adverse cumulative effects on cultural resources.

Conclusions

The no action alternative would result in local minor adverse impacts on cultural resources if measures to identify and ensure the preservation of historic properties continue. To mitigate adverse impacts on cultural resources, survey, evaluative testing, or additional geophysical work may be required. This work would likely be conducted as part of a memorandum of agreement (MOA) or programmatic agreement (PA) between the NPS, Ohio State Historic Preservation Office (SHPO), and any interested American Indian tribes.

Action Alternative 1

Direct and Indirect Impacts of the Alternative

Under action alternative 1 at all five park units, preservation measures of above- and below-grade archeological features would be implemented. Removal of trees and other woody vegetation would occur to diminish impacts on the archeological features from bioturbation from the root systems. Tree removal could have direct impacts on buried archeological features. New circulation including trails, bridges, overlooks, and parking areas would be constructed. Vegetation would be removed and shallow subsurface disturbance would occur during construction of circulation features, which could affect subsurface cultural deposits. The removal of non-contributing features, trails, utility lines, or buildings would improve the setting and feeling of the archeological landscape.

Action alternative 1 includes specific activities at three park units. At the Mound City Group, areas currently not owned by the park but within and adjacent to the authorized park unit boundary would be purchased; further evaluation would occur at three non-contributing, but potentially significant, features; non-contributing features to the archeological landscape would be preserved; and expansion of curatorial and educational spaces are proposed. Preservation of the Mission 66 Visitor Center, CCC/WPA features, and the remains of Camp Sherman would result in a long-term beneficial impact on historic resources within the park unit by expanding knowledge of the use of the site outside of its period of significance but could result in long-term minor adverse impacts to the archeological landscape. The continued and expanded use of non-contributing features would have no effect on cultural resources. Purchasing areas within or adjacent to the park unit boundary would result in a long term beneficial impact to cultural resources.

Action alternative 1 at the Hopewell Mound Group includes the conversion of a historic barn for a new park use. Preservation of the barn would have a beneficial impact, but modern upgrades may result in an adverse impact on cultural resources.

Action alternative 1 also considers the evaluation of two non-contributing features at Seip Earthworks, the Blackstone House, and the Fish Camp buildings. Evaluation of the buildings, if found to be significant, would have a beneficial impact through long-term preservation and by expanding knowledge of the use of the site outside of its period

of significance, but could have a long-term minor adverse impact on the archeological landscape.

Cumulative Impacts
Past and ongoing NPS management has maintained, but not improved, the archeological landscape within the park. Reasonably foreseeable future actions include continuing vegetation management such as mowing, removing hazardous trees and woody vegetation, establishing new trails and visitor facilities, and removing non-contributing and nonsignificant features. Ground disturbances under action alternative 1 could adversely affect the integrity of known and unknown historic properties. The removal of non-contributing roads, utility lines and poles, and fencerow vegetation would improve the setting and feeling of the archeological landscape. When combined with past, present, and reasonably foreseeable future actions, action alternative 1 would have the potential for both long-term beneficial and local short-term adverse cumulative effects on historic properties.

Conclusions
Action alternative 1 would have local short-term and long-term minor adverse effects on cultural resources from removal of vegetation, construction of trails and parking areas, and preservation of historic structures that are not within the parks period of significance. Beneficial effects would occur from the removal of non-contributing features and the restoration of the setting and feeling of the archeological landscape during the period of significance. Cumulative effects would be local, short-term and long-term, and adverse and long-term and beneficial. To mitigate adverse impacts on cultural resources, survey, evaluative testing, or additional geophysical work may be required. This work would likely be conducted as part of a MOA or PA between the NPS, SHPO, and any interested American Indian tribes.

Action Alternative 2
Direct and Indirect Impacts of the Alternative
Activities under action alternative 2 that would differ from action alternative 1 includes enhancing the archeological features through vegetation management, non-permanent markings, and rehabilitating earthen walls or mounds; creation of an interconnected water route between the park units; construction of additional trails, roads, parking areas, and interpretive waysides; and removal of additional non-contributing features that adversely effect the setting and feeling of the archeological landscape. Action alternative 2 would have the same direct and indirect adverse and beneficial impacts on cultural resources as action alternative 1, with the exception that there would be the potential for additional local adverse impacts from the removal of additional vegetation for marking the archeological features, removal of all non-contributing resources that impact the contributing archeological resources regardless of eligibility; rehabilitation of the archeological features, construction of additional visitor facilities, and creation of an interconnected water route between the park units. These actions have the potential to alter above- and below-grade features at the park units and would have a local short-term minor adverse impact on cultural resources. Action alternative 2 would also include the removal of non-contributing features including buildings, roads, and parking areas. Removing potentially eligible but non-contributing historic resources that impact the contributing resources would have an adverse effect to the non-contributing resources but a beneficial effect to the contributing resources by improving the setting and feeling of the archeological landscape. Because the Blackstone House at Seip Earthworks has been determined to be a historic property, the removal of the building would be considered an adverse effect. Retaining significant features that

are noncontributing but do not detract from the archaeological landscape would have a beneficial effect to these resources. Removing buildings and structures that are not significant nor contributing to the archaeological landscape would have a long term beneficial effect by improving the setting and feeling. The restoration of these areas to native vegetation communities would have a local short-term minor adverse impact on below-grade archeological deposits and a long-term beneficial effect on cultural resources from improving the setting and feeling of the archeological landscape. Rehabilitating original archeological features could be a potential adverse effect as the addition of fill to the mounds could impact buried cultural features through compaction. Rehabilitating archeological features at Mound City Group would result in a long-term negligible impact; all but one of the existing features has been previously reconstructed and restoration would not result in new impacts. The treatment approach of preservation instead of rehabilitation at Hopeton Earthworks and High Bank Works will have a long term beneficial impact. Any facilities constructed for the interconnected water route may have the potential to impact below-grade cultural features. Overall, action alternative 2 would have a long-term beneficial effect and a local short-term and long-term minor to moderate impact on cultural resources.

Cumulative Impacts

Reasonably foreseeable future actions include continuing vegetation management techniques such as thinning, mowing, removing hazardous trees and woody vegetation, establishing new trails and visitor facilities, and removing existing non-contributing nonsignificant features. Action alternative 2 would have the same cumulative impacts as those for action alternative 1, which would be local, minor, and adverse as well as long-term and beneficial.

Conclusions

Action alternative 2 would have local short- and long-term adverse impacts on cultural resources from removal of vegetation, rehabilitation and delineation of archeological features, removal of a historic building, and construction of trails and parking areas. Beneficial effects would occur from the removal of non-contributing features and restoration to native vegetation communities. The impacts on cultural resources from action alternative 2 would be minor to moderate because the proposed activities, specifically the rehabilitation of some of the archeological features, and removal of a historic resource would alter the cultural features within the park. Effects on the archeological landscape would be beneficial from the continued enhancement of the archeological landscape. To mitigate adverse impacts on cultural resources, survey, evaluative testing, or additional geophysical work may be required. This work would likely be conducted as part of a MOA or PA between the NPS, SHPO, and interested American Indian tribes.

Vegetation

Methodology
Potential impacts on vegetation were evaluated based on existing vegetation and natural or human-based processes sustaining them within the park as described in "Chapter 3: Affected Environment." Predictions about impacts were based on the expected disturbance to vegetation communities, professional judgment, and experience with previous projects. Short-term impacts are those where the vegetation would recover in less than one year and long-term impacts are those that would take more than one year for the vegetation to recover. Resource-specific context for assessing the impacts of the alternatives on vegetation includes:

- The contribution of vegetation to the visitor experience within the park and the visitor's understanding of the archeological features.

- Potential for establishing proposed vegetation types considering existing and future geographic, climatic, and other conditions.

- The potential short-term and long-term impacts on the overall health of the ecosystems of the park and surrounding lands.

No Action Alternative
Direct and Indirect Impacts of the Alternative
The no action alternative would have minimal impacts on vegetation at the park units. The present level of use, management, maintenance, and operations would continue, including removal of nonnative species and restoration of native species, resulting in a beneficial effect on vegetation. Mowing operations would also continue, resulting in a minor adverse impact on vegetation from the reduction in native species and mature growth. Haying some areas will be necessary in the near future as the only practical means to protect archaeological resources and visitor experiences from encroachment by woody plants and exotic invasive weeds. Overall, the no action alternative would have a long-term beneficial and long-term minor adverse impact on vegetation.

Cumulative Impacts
Past and ongoing management practices, such as mowing and haying vegetation, has resulted in minor adverse impacts on vegetation because mowing and haying reduces native vegetation cover and prevents vegetation from maturing. The proposed parking area, overlook, and trails at Hopeton Earthworks would reduce the vegetation communities in those areas. The combined effects of past, present, and reasonably foreseeable future projects would result in local long-term minor adverse impacts on vegetation. The overall cumulative impacts on vegetation from the no action alternative, combined with past, present, and reasonably foreseeable future actions, would be local, long-term, minor, and adverse from mowing operations and development at Hopeton Earthworks and long-term and beneficial from restoration of native species.

Conclusions
The no action alternative would have local long-term beneficial and local long-term minor adverse impacts on vegetation. Cumulative impacts would be local, long-term, minor, and adverse. The impacts on vegetation from the no action alternative would not be significant because the impacts would not appreciably alter the vegetation communities within the park.

Action Alternative 1

Direct and Indirect Impacts of the Alternative

Under action alternative 1, the vegetation at the earthwork complexes would be altered to allow for improved interpretation of the earthwork complexes. Removal of trees and other woody vegetation would occur in certain locations to enhance the visitor's understanding, provide trails to the river, and open the views. Other vegetation would be removed for the establishment of trails and parking areas at the earthwork complexes. These actions would alter the vegetation communities at the earthwork complexes and reduce overall vegetative cover in localized areas. Removal of invasive species would improve vegetation communities at the park units. Removal of non-contributing features such as roads, trails, or utility lines would allow for an increase in vegetation communities after the areas are revegetated. Construction activities would be confined to the smallest area necessary to complete the work and all areas of disturbed vegetation would be re-seeded following construction. Infestation and spread of invasive exotic plants is possible. Weeds frequently invade disturbed ground where they are easily established and outcompete native species if left unchecked. Implementing weed-control BMPs would minimize the potential for weed establishment and long-term impacts. Overall, action alternative 1 would have local long-term minor adverse impacts on vegetation from construction of trails and parking areas. Restoration actions that increase vegetation cover at the park units would have long-term beneficial effects on vegetation.

Cumulative Impacts

Past and ongoing management practices such as mowing and haying vegetation has altered the vegetation communities and reduced the native vegetation. The proposed parking area, overlook, and trails at Hopeton Earthworks would also reduce vegetation at the park unit. The combined effects of past, present, and reasonably foreseeable future actions would result in local long-term minor adverse impacts on vegetation. The overall cumulative impacts on vegetation from action alternative 1, combined with past, present, and reasonably foreseeable future actions, would be local, long-term, minor, and adverse.

Conclusions

Action alternative 1 would have local long-term minor adverse impacts on vegetation from removal of vegetation and reduction of vegetation from construction of trails and parking areas. Beneficial effects on vegetation from removal of non-contributing features and restoration to native communities would be long-term. Cumulative impacts would be local, long-term, minor, and adverse. The impacts on vegetation from action alternative 1 would not be significant because the impacts would not appreciably alter the vegetation communities within the park.

Action Alternative 2

Direct and Indirect Impacts of the Alternative

Action alternative 2 would have the same direct and indirect adverse and beneficial impacts on vegetation as action alternative 1, except there would be slight additional adverse impacts from constructing additional trails and creating an interconnected water route between the park units. These actions would have a local short-term and long-term minor adverse impact on vegetation. Action alternative 2 would also include removal of non-contributing features including buildings, roads, and parking areas. The restoration of these areas with native vegetation communities would have a long-term beneficial effect on vegetation. Overall, action alternative 2 would have a long-term

beneficial effect and a local long-term minor adverse impact on vegetation.

Cumulative Impacts
Action alternative 2 would have the same cumulative impacts as those for action alternative 1, which would be local, minor, and adverse as well as beneficial.

Conclusions
Action alternative 2 would have local long-term minor adverse impacts on vegetation from removal of vegetation and construction of trails and parking areas. Beneficial effects from removal of non-contributing features and restoration to native communities would be long-term. Cumulative impacts would be local, long-term, minor, and adverse and long-term and beneficial. The impacts on vegetation from action alternative 2 would not be significant because the impacts would not appreciably alter the vegetation communities within the park.

Wildlife

Methodology
Potential impacts on wildlife are evaluated based on native species, their habitats, and the natural processes sustaining them within the park, as described in "Chapter 3: Affected Environment." The NPS Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted to mean that native animal life should be protected and perpetuated as part of the park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise, they are protected from harvest, harassment, or harm by human activities. According to NPS Management Policies 2006, restoration of native species is a high priority (section 4.1). Management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity, and the ecological integrity of plants and animals. Short-term impacts on wildlife would last less than one year, while long-term impacts would last more than one year.

The resource-specific context for assessing impacts of the alternatives on wildlife includes:

- The contribution of wildlife to visitor experience within the park.

- The impacts of changes in vegetation or other alterations to the park units on wildlife, their habitats, and the natural processes sustaining them.

No Action Alternative
Direct and Indirect Impacts of the Alternative
The present level of use, management, maintenance, and operations would continue. Parking areas and minimal visitor facilities would be developed at Hopewell Mound

Group and Hopeton Earthworks, which may decrease overall habitat for wildlife, although wildlife would likely find food sources and nesting cover from nearby habitat in the park. Overall, the no action alternative would have a long-term negligible impact on wildlife because of the surrounding habitat present and minimal disturbance.

Cumulative Impacts

Previous and future haying operations will continue to have minor adverse impacts to wildlife by reducing the cover and dietary availability of insects and seeds required by grassland bird species. Haying during the peak of herpetofauna activity also increases the rates of mortality. Prescribed burning as a management tool can have a minor adverse impact on wildlife by reducing wildlife habitat, possible mortality of wildlife, and adversely affecting insect populations. The intensity of this adverse effect is reduced by allowing significant adjacent patches of native grassland to remain undisturbed. Although other past, present, and reasonably foreseeable future actions may have local long-term minor adverse impacts on wildlife, the no action alternative would have negligible impacts on wildlife and, therefore, would have a negligible contribution to the cumulative impacts of other actions.

Conclusions

The no action alternative would have negligible impacts on wildlife and negligible cumulative impacts.

Action Alternative 1

Direct and Indirect Impacts of the Alternative

Under action alternative 1, the vegetation at the earthwork complexes would be altered to allow for improved interpretation of the archeological features. Removal of trees and other woody vegetation would occur in certain locations to enhance the visitor's understanding, provide trails to the river, and open the views. Other vegetation would be removed for the establishment of trails or parking areas at the earthwork complexes. These actions would reduce the overall wildlife habitat in the project area. Thinning or removing vegetation would directly reduce the food source for birds and mammals in the park and reduce nesting and roosting cover for birds. Since these actions would occur in only certain locations, the birds and mammals would likely find food sources and nesting cover from nearby trees in the park. Removal of non-contributing features such as roads, trails, and utility lines and restoration with native vegetation would increase the amount of wildlife habitat and reduce hazards to wildlife. Overall, action alternative 1 would have a long-term beneficial effect and a local long-term direct minor adverse impact on wildlife and wildlife habitat.

Cumulative Impacts

Past, present, and ongoing management practices, such as mowing, haying, and prescribed burning, has reduced wildlife habitat at the park units. The proposed parking area, overlook, and trails would also reduce wildlife habitat at the park units and may result in a net increase in visitor use, which could increase disturbance to wildlife. The combined effects of past, present, and reasonably foreseeable future actions would result in local long-term minor adverse impacts on wildlife. The overall cumulative impacts on wildlife from action alternative 1, combined with past, present, and reasonably foreseeable future actions, would be local, long-term, minor, and adverse with some beneficial effects from removal of non-contributing features.

Conclusions
Action alternative 1 would have local long-term minor adverse impacts on wildlife from removal of vegetation and construction of trails and parking areas and beneficial effects from removal of non-contributing features to the project area. Cumulative impacts would be local, long-term, minor, and adverse. The impacts on wildlife from action alternative 1 would not be significant because the impacts would not appreciably alter the wildlife habitat or reduce overall wildlife within the park.

Action Alternative 2
Direct and Indirect Impacts of the Alternative
Action alternative 2 would have similar direct and indirect impacts on wildlife as action alternative 1, but potentially could include removal of additional vegetation for marking the archeological features, constructing additional trails, and creating an interconnected water route between the park units and may result in a net increase in visitor use, which could increase disturbance to wildlife. Action alternative 2 would also include removal of other non-contributing features including buildings, roads, and parking areas, which would increase the amount of wildlife habitat in the park. Overall, action alternative 2 would have a long-term beneficial effect and a local long-term minor adverse impact on wildlife and wildlife habitat.

Cumulative Impacts
The past, present, and reasonably foreseeable future actions and their impacts would be the same as those for the no action alternative and action alternative 1. Past, present, and reasonably foreseeable future actions would result in local long-term minor adverse impacts on wildlife. The overall cumulative impacts on wildlife from action alternative 2, combined with past, present, and reasonably foreseeable future actions, would be local, long-term, minor, and adverse and long-term beneficial.

Conclusions
Action alternative 2 would have local long-term minor adverse impacts on wildlife from construction of trails and parking areas and beneficial effects from removal of non-contributing features in the project area. Cumulative impacts would be local, long-term, minor, and adverse. The impacts on wildlife from action alternative 2 would not be significant because the impacts would not appreciably alter the wildlife habitat or reduce overall wildlife within the park.

Visitor Use and Experience

Methodology

Potential impacts on visitor use and experience were assessed based on changes to the existing opportunities and quality for visitors to enjoy park resources, values, and amenities. Past interpretive and administrative planning documents provide background on changes to visitor experience over time. For this analysis, visitor use and experience includes visitor understanding, satisfaction, and safety, as well as availability of visitor options. Short-term impacts on visitor use and experience would last only during project construction activities, while long-term impacts would extend beyond construction activities. Resource-specific context for assessing impacts of the alternatives on visitor use and experience includes:

- Expectations of visitors to have access to the park units.
- The contribution of the trails in the park units and parking availability in the park to the visitor experience.
- The ability of visitors to enjoy a safe experience in the park.
- The impacts of construction activities on the visitor experience.

No Action Alternative

Direct and Indirect Impacts of the Alternative

There would be no change in the fundamental nature and quality of the visitor use and experience within the park under the no action alternative. Access to the park units would remain the same, with Hopeton Earthworks and High Bank Works remaining closed to the public. Visitors would continue to use the existing trails at the park units. Non-contributing features would remain in the archeological landscape, potentially compromising the interpretive goals of the park units, but in ways visitors would not likely notice. For these reasons, the no action alternative would have a local long-term negligible adverse impact on visitor use and experience.

Cumulative Impacts

Past actions such as the construction of roads, recreation and visitor facilities, and other structures and routine maintenance activities have had long-term beneficial effects on visitor use and experience. Reasonably foreseeable future actions such as the construction of an overlook, trails, and parking area at Hopeton Earthworks would have beneficial effects on visitor use and experience. The expansion of the substation near Mound City would have a minor to moderate adverse impact on visitor use and experience between Mound City Group and Hopewell Mound Group. Those effects, combined with the local short-term negligible adverse impacts of the no action alternative, would result in local minor adverse cumulative impacts and beneficial cumulative effects.

Conclusion

The no action alternative would have local long-term negligible adverse impacts on visitor use and experience because of non-contributing features in the archeological landscape and limited access to the park units. Cumulative impacts of the no action alternative would be local, minor, and adverse and beneficial. The impacts on visitor use from the no action alternative would not be significant because the impacts would not appreciably alter these resources from the existing conditions in the park.

Action Alternative 1

Direct and Indirect Impacts of the Alternative

Visitor use and experience would improve from action alternative 1 by allowing limited access to Hopeton Earthworks and High Bank Works, creating more trails and parking areas at the park units, improving the interpretation of the earthwork complexes, and removing non-contributing features. Visitor use and experience may be temporarily impacted by implementation of these measures and temporary trail closures. The impacts on visitor use and experience during construction would be local, short-term, minor, and adverse. Action alternative 1 would result in long-term beneficial effects on visitor use and experience because of increased access to the park units, more accurate representation of the archeological landscape, improved interpretation, and increase in trails, overlooks, and parking areas.

Cumulative Impacts

The past, present, and reasonably foreseeable future actions and their impacts would be the same as those for the no action alternative. Past, present, and reasonably foreseeable future actions would have local long-term beneficial effects and parkwide short-term minor adverse cumulative impacts on visitor use and experience. Those impacts, combined with the local long-term beneficial effects of action alternative 1, would result in parkwide short-term minor adverse cumulative impacts and long-term beneficial cumulative effects.

Conclusion

Action alternative 1 would have local short-term minor adverse impacts on visitor use and experience during implementation and long-term beneficial effects because access to the park units would increase, non-contributing features in the archeological landscape would be removed, interpretation would be improved, and additional trails, overlooks, and parking areas would be created. When combined with past, present, and reasonably foreseeable future actions, action alternative 1 would have local and park-wide short-term minor adverse cumulative impacts and long-term beneficial cumulative effects. The impacts on visitor use and experience from action alternative 1 would not be significant because the impacts would be short-term and minor and would result in overall long-term beneficial effects on visitor use and experience.

Action Alternative 2

Direct and Indirect Impacts of the Alternative

The activities and impacts of action alternative 2 would be similar to those of action alternative 1, except there would be additional beneficial effects from marking the archeological features for improved interpretation, constructing additional trails, and creating an interconnected water route open to kayaking and canoing between the park units. There would be local short-term minor adverse impacts on visitor use and experience during implementation of these activities and long-term beneficial effects.

Cumulative Impacts

The past, present, and reasonably foreseeable future actions and their impacts would be the same as those for the no action alternative and action alternative 1. Past, present, and reasonably foreseeable future actions would have parkwide short-term minor adverse cumulative impacts on visitor use and experience and long-term beneficial effects. Those impacts, combined with the impacts of action alternative 2, would result in parkwide minor adverse cumulative impacts and beneficial cumulative effects over the long-term.

Conclusion
Action alternative 2 would have local short-term minor adverse impacts on visitor use and experience during implementation and long-term beneficial effects because access would increase to the park units, non-contributing features in the archeological landscape would be removed, interpretation would be improved, and there would be a large increase in trails and connections between the park units. Action alternative 2 would have local short-term minor adverse cumulative impacts and beneficial cumulative effects. The impacts on visitor use and experience from action alternative 2 would not be significant because the impacts would be short-term and minor and would result in overall beneficial effects on visitor use and experience.

Park Operations

Methodology
Impact analyses are based on the current description of park operations presented in "Chapter 3: Affected Environment." Park operations include the infrastructure, staff, and maintenance activities used in the operation of the park to adequately protect and preserve vital resources and provide for an effective and safe employee and visitor experience. This includes interpretation and education, protection, planning and resource management, business services, and facility management. Short-term impacts on park operations would last only during implementation activities, while long-term impacts would extend beyond implementation activities. Resource-specific context for assessing impacts of the alternatives on park operations includes:

- Parks must operate within the constraints of the park unit-specific budget and number of staff positions that have been allocated by Congress and the NPS Director's Office.

- Park staff are not only responsible for activities within the park, but must also provide for an effective and safe experience and protect resources within the entire park.

- Proposed treatments of the park units must not affect the ability of park staff to complete maintenance activities and ensure a safe environment.

No Action Alternative
Direct and Indirect Impacts of the Alternative
There would be no change in the fundamental nature of park operations within the park under the no action alternative. Vegetation management would remain the same as well as the amount of trails, parking areas, and

other recreation facilities that would continue to require maintenance. Hopeton Earthworks and High Bank Works would remain closed to the public. For these reasons, the no action alternative would have no impact on park operations.

Cumulative Impacts
Although other past, present, and reasonably foreseeable future actions may have local long-term minor adverse impacts on park operations, the no action alternative would have no impact on park operations and, therefore, would not contribute to the cumulative impacts of other actions.

Conclusion
The no action alternative would have no impacts on park operations and no cumulative impacts.

Action Alternative 1
Direct and Indirect Impacts of the Alternative
Increasing the interpretation of the earthwork complexes in the park units through vegetation management, increased trails through the park units, and removal of non-contributing features would increase the park staff's ability to relay interpretive information about the park units to visitors. Additional trails would increase maintenance activities required by park staff. Removal of non-contributing features would have a short-term adverse impact on park operations by displacing facilities. Implementation of these activities would have a short-term minor adverse impact on park operations for managing and overseeing the installation of trails and other features and removal of other features. For these reasons, action alternative 1 would have parkwide long-term and short-term minor adverse impacts and parkwide long-term beneficial effects on park operations.

Cumulative Impacts
Past actions such as the construction of recreation and visitor facilities and other structures have had long-term minor adverse impacts on park operations by increasing the amount of maintenance required. Reasonably foreseeable future actions such as construction of an overlook, trails, and parking area at Hopeton Earthworks would have long-term beneficial and long-term minor adverse impacts on park operations by increasing the park staff's ability to relay interpretive information to visitors and increasing maintenance requirements.

Those impacts, combined with the beneficial and minor adverse impacts of action alternative 1, would result in parkwide long-term minor adverse and beneficial cumulative effects.

Conclusion
Action alternative 1 would have long-term beneficial impacts on park operations because the park staff's ability to relay the interpretation of the earthwork complexes would increase and the use of native vegetation for interpretation would decrease the amount of mowing required. Action alternative 1 would also have parkwide long-term and short-term minor adverse impacts on park operations by increasing the amount of areas requiring maintenance through increased trails within the park units. Action alternative 1 would have parkwide long-term and short-term minor cumulative adverse impacts and beneficial cumulative effects. The parkwide long-term and short-term minor adverse impacts would not be significant because the impacts would not require hiring additional staff and would not affect the park's ability to provide an effective and safe experience or to protect natural resources.

Action Alternative 2

The direct and indirect impacts of action alternative 2 would be the same as those for action alternative 1, except that constructing additional trails, a water route, and parking areas would increase the amount and cost of maintenance over that for action alternative 1. For these reasons, action alternative 2 would have parkwide long-term beneficial effects and parkwide long-term minor adverse impacts on park operations.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions and their impacts on park operations would be the same as those for action alternative 1. Past, present, and reasonably foreseeable future actions would have parkwide long-term beneficial effects and parkwide long-term minor adverse cumulative impacts on park operations. Those impacts, combined with the parkwide long-term beneficial effects and parkwide long-term minor adverse impacts on park operations of action alternative 2, would result in parkwide long-term minor adverse cumulative impacts and parkwide long-term beneficial cumulative effects.

Conclusion

The impacts of action alternative 2 on park operations would be long-term and beneficial because of increased interpretation the park staff can relay to visitors, but would also be parkwide, long-term, minor, and adverse because of increased maintenance needs and costs. Action alternative 2 would have parkwide minor cumulative adverse impacts and parkwide beneficial cumulative effects. The parkwide long-term and short-term minor adverse impacts would not be significant because the impacts would not require hiring additional staff and would not affect the park's ability to provide an effective and safe experience or to protect natural resources.

Visual Resources

Methodology
Potential impacts on visual resources were evaluated based on changes to the visual landscape from the visitor's perspective. Visual resources include the views from the visitor center, trails, and overlooks at each park unit, and the overall views of the mounds and surrounding area. The geographic project area for evaluating impacts on scenic resources includes those portions of the park from which visitors observe the mounds, archeological landscape, and scenic features. The archeological landscape within the park is discussed in more detail in the "Cultural Resources" section. Short-term impacts on visual resources would last less than three years, while long-term impacts would last more than three years. The resource-specific context for assessing impacts of the alternatives on visual resources includes:

- The contribution of visual resources to the visitor experience within the park.
- The contribution of visual resources to understanding the earthwork complexes within each park unit.
- The impacts of treatments within each park unit on visual resources.

No Action Alternative
Direct and Indirect Impacts of the Alternative
Minimal changes in the visual character of the park or individual park units are anticipated under the no action alternative. Various zones would be established within each park unit to direct management within those zones. The visual aspects of each park unit would remain the same under the no action alternative. The no action alternative would have a local long-term minor adverse impact on visual quality by reducing the visual interpretation of the earthwork complexes over time.

Cumulative Impacts
The addition of trails, overlooks, and a parking area at Hopeton Earthworks would improve the visual quality of the park unit by providing more views of the earthwork complex. Continued maintenance of the park units through mowing vegetation would provide views of the mounds but may confuse visitors as to which portions of the mowed areas are used for interpreting the locations of the earthwork complexes. The replacement of the power line poles along the western boundary of the Mound City Group would have a minor adverse impact on the viewshed. Cumulative impacts on visual resources would be long-term minor and beneficial.

Conclusions
The no action alternative would not change the existing visual quality of the park and in the long-term would diminish the visual interpretation of the earthwork complexes because existing management causes confusion as to the locations of the earthwork complexes. Cumulative impacts on visual resources would be long-term and beneficial. Overall, the no action alternative would have a local long-term beneficial and local long-term minor adverse impact on visual resources. The impacts on visual resources from the no action alternative would not likely be significant because the impacts would not appreciably alter the visual resources from the existing conditions within the park.

Action Alternative 1
Direct and Indirect Impacts of the Alternative
The visual quality of the park units from action alternative 1 would be improved by allowing limited access to Hopeton Earthworks and High Bank Works and creating more trails at the park units, which would increase visitor access to visual features at each park unit. Improving the

visual interpretation of the earthwork complexes through vegetation management and removing non-contributing features would also have beneficial effects on visual resources at each park unit. Because of these reasons, action alternative 1 would result in local long-term beneficial effects on visual resources.

Cumulative Impacts
The past, present, and reasonably foreseeable future actions and their impacts would be the same as those for the no action alternative. Past, present, and reasonably foreseeable future actions would have local long-term beneficial effects on visual resources. Those impacts, combined with the local long-term beneficial effects of action alternative 1, would result in local long-term minor and beneficial cumulative effects.

Conclusion
Action alternative 1 would have long-term beneficial effects on visual resources because access to the park units would increase, non-contributing features in the archeological landscape would be removed, interpretation would be improved, and additional trails and overlooks would be created. When combined with past, present, and reasonably foreseeable future actions, action alternative 1 would have local long-term beneficial cumulative effects.

Action Alternative 2
Direct and Indirect Impacts of the Alternative
The activities and impacts of action alternative 2 would be similar to those of action alternative 1, except there would be additional beneficial effects on visual resources and access to visual features from marking the archeological features for improved interpretation, constructing additional trails, and creating an interconnected water route between the park units. These actions would improve the visual quality of the park units by enhancing the ability to interpret the earthwork complexes and surrounding area. Because of these reasons, action alternative 2 would result in local long-term beneficial effects on visual resources.

Cumulative Impacts
The past, present, and reasonably foreseeable future actions and their impacts would be the same as those for the no action alternative and action alternative 1. Past, present, and reasonably foreseeable future actions would have local long-term beneficial cumulative effects on visual resources through increased trails, overlooks, and vegetation management. Those effects, combined with the impacts of action alternative 2, would result in local long-term minor and beneficial cumulative effects.

Conclusion
Action alternative 2 would have local long-term beneficial effects because access to the visual features of the park units would increase, non-contributing features in the archeological landscape would be removed, interpretation would be improved, and additional trails and overlooks would be created. When combined with past, present, and reasonably foreseeable future actions, action alternative 2 would have local long-term beneficial cumulative effects.

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Chapter 6 - Treatment Plan

Introduction

This chapter presents the treatment plan for the preservation, repair, and stewardship of the archeological landscape of Hopewell Culture National Historical Park. An evaluation of alternatives by NPS staff was conducted during a work session in May 2015 and the preferred alternative was refined through a series of work sessions. Alternative 2 was identified as the preferred alternative and represents the NPS preferred management action.

This chapter presents a detailed description and implementation of the preferred alternative (Alternative 2). The narrative and graphics presented in this chapter reflect the desired future condition of the archeological landscape.

The treatment plan emphasizes the Hopewell Culture, revealing the grand scale and monumentality of the Hopewellian constructions, and interpretation of their unique lifestyle. The archeological landscape will be rehabilitated to depict the story of earthwork creation and lifeways of the Hopewell people within their geological and ecosystem context. The treatment plan protects the archeological resources, provides a rich visitor experience, and fosters continued archeological research and investigations. This treatment plan is compatible with the GMP and Long-Range Interpretive Plan.

Treatment Approach

This plan recommends a rehabilitation approach for three of the earthwork complexes: Mound City Group, Hopewell Mound Group, and Seip Earthworks, and a preservation approach for Hopeton Earthworks and High Bank Works. This approach provides for the long-term management of the archeological landscape and focuses on preserving and protecting contributing features while providing a holistic visitor experience.

Rehabilitation and preservation are the appropriate treatment approaches for the Hopewell Culture NHP. The park has a long period of significance, has undergone few modifications, and has integrity in location, setting, materials, workmanship, feeling, and associations. A rehabilitation approach allows new additions which range from visitor orientation to trails, to marking or rehabilitation of select archeological features. Actions allowed under rehabilitation include stabilization, preservation, and repair. The visitor experience suffers from the fact that most of the mounds and earthworks are very difficult to see today because of plowing and other surface impacts. Rehabilitation permits a variety of treatments that can serve to make the primary resources more visible and enhance visitor experience.

Although rehabilitation is the overall treatment approach, the application of the treatment is individualized based on the specific characteristics of the earthwork complex. At all park units, extant below- and above-grade archeological features will be preserved.

At Mound City Group, previously reconstructed mounds will be preserved and previously unreconstructed mounds and borrow pits have the opportunity to be

marked and rehabilitated. The treatment of Mound City Group maintains this park unit as the main visitor orientation area, however non-contributing features such as the visitor center, and administrative and maintenance buildings will be removed from the immediate setting. This will focus visitor attention and respect towards the earthwork complex. Circulation routes will echo the spatial organization of the earthwork complex, and views to adjacent properties will be screened, focusing the experience inward.

Preservation at Hopeton Earthworks focuses on the protection of extant resources and allows the park unit to be a focus for archeological research. The desired outcome for the landscape is for the entire earthwork complex and adjacent setting to be protected and preserved. This includes acquisition of adjacent properties that are negatively impacting archeological resources and distract from the setting, and reinterpreting the area as a Hopewell ceremonial site. The park unit will become accessible to visitors, with a new parking area and trails that allow for understanding of the earthworks.

At Hopewell Mound Group, rehabilitation emphasizes revealing the spatial qualities of the Great Enclosure. Existing large scale intrusions, including utilities, structures, and other non-contributing features that do not reflect the Hopewellian earthwork complex will be removed and/or relocated. Archeological features will be potentially marked to increase visibility and new visitor trails will further emphasize the monumental earthwork complex.

Rehabilitation at Seip Earthworks includes preservation of previously reconstructed archeological features, and allowing for marking of features that are not currently visible. The full extent of the earthwork complex will be preserved, which includes property acquisition, and removal of the current visitor parking area, and non-contributing features that have been constructed on top of, or close to archeological features. A new visitor parking area will be located on an adjacent property, with pedestrian routes allowing for exploration of the earthwork complex.

Preservation is the treatment approach at High Bank Works, and focuses on protection of the entire earthwork complex. This will require acquisition of private inholdings, particularly at the Parallel Walls. High Bank Works will be a focus for archeological research, while also allowing visitor access. Pedestrian routes will connect across the earthwork complex, and interpretation will focus on the construction of the archeological features and their astronomical alignments.

Study Area

The treatment recommendations for the study area guide the preservation and rehabilitation of the archeological landscape of Hopewell Culture NHP. These recommendations offer guidance for the park holistically with measures for preserving extant features and qualities, and methods for rehabilitating contributing features associated with the study area as a whole.

Treatment recommendations for the study area are presented for six landscape characteristics: Natural Systems and Features, Spatial Organization/Topography/Views, Land Use, Archeological Features, Circulation, and Vegetation.

Natural Systems and Features
Treatment recommendations for natural systems and features include preserving and protecting the native ecology of rivers, streams, plants, and wildlife.

1. Preserve extant native vegetation and wildlife habitat.

2. Protect riparian corridors of the Scioto River, Paint Creek, and North Fork Paint Creek. Maintain and repair riparian vegetation, and mitigate damage from erosion, pollution, and invasive species.

3. Work with adjacent land owners and local and regional partners to protect areas of important natural vegetation and views of the Appalachian Plateau foothills.

4. Integrate and interpret the Scioto River valley and natural systems as part of the visitor experience.

Spatial Organization/Topography/Views
Treatment recommendations for the study area for the spatial organization focus on reestablishing the connection between the earthwork complexes to the river and hills largely by establishing views between these features.

The other focus is for the individual earthwork complexes to be perceived as their original discrete spaces, separate from visitor or administrative and maintenance areas. The form, alignment and relationships between archeological features of each earthwork complex will be reestablished.

1. Reestablish spatial connections between the earthwork complexes and their adjacent waterways by reestablishing views and by adding trails.

2. Preserve natural topography created by river morphology to the greatest extent possible. Work with local agencies and partners on river management.

3. Locate new facilities to not interfere with the spatial organization of the earthwork complexes.

4. Reestablish wooded areas along banks of waterways and at the edges of the earthwork complexes. Wooded edges will serve as a screen for adjacent development. Buffer zones are needed to protect the setting, and are important for establishing and maintaining World Heritage Site status.

5. Spatially depict each earthwork complex to express the original mass, form, and scale of the original spaces. Rehabilitate the spatial orientation between each earthwork complex and the surrounding

natural landscape to reflect the original relationships between earthwork complexes to rivers and hills. Work with adjacent land owners to protect views and provide visual buffers of adjacent development.

Land Use

Treatment recommendations for land use include protection of property where earthwork complexes are known to occur, and protection of adjacent areas that enrich the cultural landscape setting. Partnerships and land trusts will be established in order to preserve archeological resources and to protect the earthwork setting by establishing buffer zones around the park units. When necessary, the park may explore the acquisition of land outside of legislated boundaries by willing sellers only, following congressional action. Adjacent properties to preserve through partnerships or acquisition include:

- Hopeton Earthworks. The boundary will be expanded to the north and west, to the Scioto River. The NPS will work with adjacent land owners to protect archeological resources and provide visual protection for the earthwork setting. Additional land or easements will be necessary to connect to Mound City Group with a bridge across the Scioto River.

- Hopewell Mound Group. The boundary on the south at will be extended to North Fork Paint Creek. The NPS will work with adjacent land owners to protect these lands or purchase the land from willing sellers in order to protect significant archeological resources and to provide visual protection from future residential development.

- Seip Earthworks. Agreements with adjacent land owners will be explored to protect the whole of the earthwork complex and provide a buffer between the cultural landscape and adjacent development. Landscape buffers are desirable at Paint Creek on the west and south sides, and to the east past Dill Road to the east of Paint Valley High School. From the creek, a northern buffer is needed that will follow U.S. Highway 50 to the edge of the Paint Valley High School property. A cooperative agreement or easement will be needed to provide visitor parking and access to the park unit from the high school property.

- At High Bank Works, agreements with adjacent land owners will be explored in order to protect the entirety of the earthwork. The goal is to join the two discontiguous properties, in order to include the entire earthwork complex and to provide access to the Scioto River. Potential agreements or property acquisition will include land to the west of the Large Circle to the edge of the upper river embankment; the Parallel Walls; and west to the edge of the Scioto River. An easement will be necessary to provide access across the railroad tracks, and to provide access to private land on the lower river terrace.

Archeological Features

The treatment plan provides for the preservation, maintenance, and repair of all archeological features. General recommendations for the treatment of archeological features are presented in this section. The individual earthwork complex descriptions provide more detailed recommendations.

A summary of acceptable treatments is provided as a matrix “TABLE 6-1. Features

Treatment Matrix". The matrix indicates the preferred and optional treatment for each archeological feature, by earthwork complex. "ILLUSTRATION 6-1 Implementation Choices" graphically depicts each treatment choice.

1. Investigations and Research. Further research will continue to be a focus for the study area, which has the potential to reveal a vast amount of information about the Hopewell.

    a. Additional archeological work is needed to elucidate the nature of the occupation of the area and reveal information on the life of early peoples and the creation of the earthwork complexes.

        - Conduct further archeological research to better understand the Hopewell Culture.

        - More research is needed to reveal the daily lifestyle of the Hopewell Culture including regional settlement patterns, rituals, use of earthwork complexes, trade routes, and subsistence, etc. Little is known of early American Indian habitation sites in relationship to the earthwork complexes, and modes of circulation (waterways and overland routes) between earthwork complexes.

    b. Undertake measures to identify and preserve areas of potential archeological significance. Archeological investigation will be an on-going process, and the scope of archeological work will be expanded.

    c. Additional archeological research, investigations, and magnetic surveys are needed to locate undocumented archeological resources, especially for portions of earthwork complexes that remain on private property.

    d. Additional archeological studies are needed to confirm the accuracy of reconstructions.

        - Additional research, investigations, and surveys are needed to confirm material reconstructions and to better understand the construction methodology of the Hopewellian earthwork complexes. Reconstructions of mounds and earthen walls may not have been built with materials that match the original materials in the original compositions.

    e. Radiocarbon dating, pollen and phytolith analysis, soil micromorphological analysis, etc. may reveal historic vegetation patterns.

    f. Undertake archeological investigations for any proposed improvements that could impact above- or below-grade archeological resources in advance of any work. Integrate archeological investigations with any and all construction activities.

        - Include archeological monitoring when undertaking improvements (including trail construction) to identify potential archeological resources.

        - Excavation of any type within Hopewell Culture NHP will occur only with consultation with the park archeologist and the Midwest Archeological Center.

2. Best Practices - Preservation of Features. The vision for the archeological features

TABLE 6-1. Features Treatment Matrix

	Choice A	Choice B	Choice C	Choice D
Mound City Group				
Previously Reconstructed Mounds (Mounds 1 through 23)	**P**	O	N/A	N/A
Mounds X1 & X2; 24 & 25	O	O	**P**	N/A
Enclosure (interior space)	**P**	O	N/A	N/A
Enclosure Walls	**P**	O	N/A	N/A
Borrow pits	**P**	O	N/A	N/A
Large Mounds (1, 2, 3, 4, 5, 7, 8, 18)	O	O	N/A	**P**
Hopeton Earthworks				
Great Circle	O	**P**	N/A	N/A
Square Enclosure	O	**P**	N/A	N/A
Parallel Walls	O	**P**	N/A	N/A
Circle A	O	**P**	N/A	N/A
Circle B	O	**P**	N/A	N/A
Circle C	O	**P**	N/A	N/A
Mounds (3)	O	**P**	N/A	N/A
Borrow pits	O	**P**	N/A	N/A
Enclosure Interiors	O	**P**	N/A	N/A
Hopewell Mound Group				
Great Enclosure	O	O	**P**	N/A
Square Enclosure	O	O	**P**	N/A
D-shaped Enclosure	O	O	**P**	N/A
Great Circle	O	O	**P**	N/A
Mounds (5 verified)	O	O	**P**	N/A
Mounds (33 unverified)	O	**P**	O	N/A
Ditches	O	**P**	O	N/A
Enclosure Interiors	O	**P**	N/A	N/A

P = Preferred
O = Optional

	Choice A	Choice B	Choice C	Choice D
Seip Earthworks				
Large Circle	O	O	**P**	N/A
Seip-Pricer Mound	O	O	N/A	**P**
Seip Conjoined Mound*	O	O	N/A	**P**
Small Circle	O	O	**P**	N/A
Large Square	O	O	**P**	N/A
Borrow pits	O	**P**	O	N/A
Enclosure Interiors	O	**P**	N/A	N/A
High Bank Works				
Great Circle	**P**	O	N/A	N/A
Octagon	**P**	O	N/A	N/A
Parallel Walls	**P**	O	N/A	N/A
South Earthwork	**P**	O	N/A	N/A
Borrow pits	**P**	O	N/A	N/A
Enclosure Interiors	**P**	O	N/A	N/A

P = Preferred
O = Optional
*Optional: consider rehabilitating the feature if adequate documentation exists and if it assists in protecting resources and improving visitor experience.

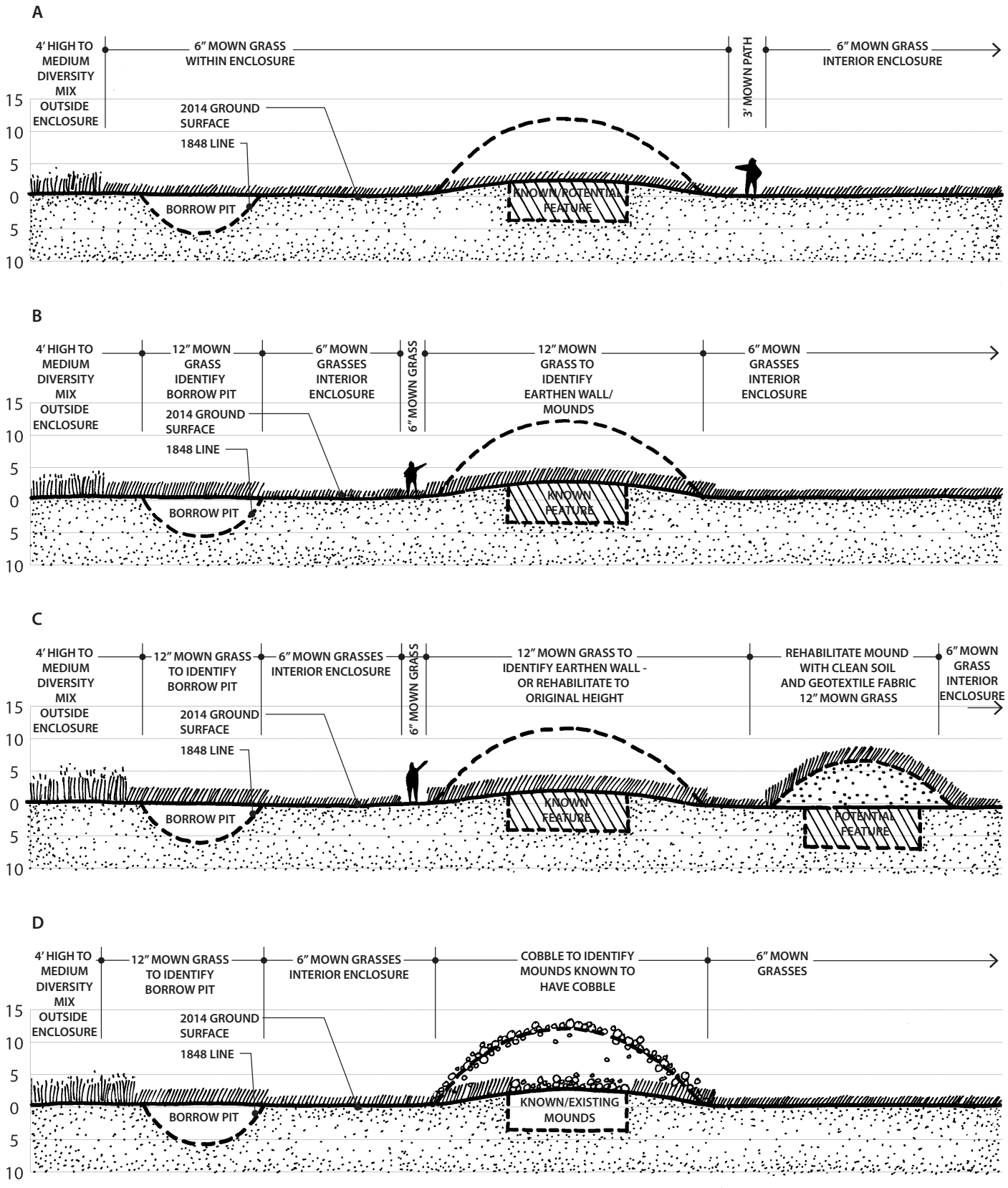


ILLUSTRATION 6-1 Implementation Choices

is preservation of all extant archeological features. Using best practices, the earthwork complexes will be cleared of any woody vegetation and repaired as necessary. Generally, visitor access will not be allowed on the earthwork complexes.

a. Preserve all extant below- and above-grade archeological features. Stabilize and repair archeological features as needed.

   - Repair scars with clean, artifact and weed-free fill dirt.

   - Use a barrier fabric to separate potential archeological artifacts and fill.

b. Remove undergrowth and trees on archeological features, taking measures to preserve the below- and above-grade features.

   - Cut trees and undergrowth. Do not forcibly remove roots as this might damage below-grade archeological features.

   - Maintain earthwork complexes free of trees and shrubs.

c. Protect archeological features from erosion. Control stormwater runoff and reduce sediment within borrow pits.

d. Protect archeological features from animal burrowing, repairing damage as necessary.

e. Remove non-contributing features from the earthwork complexes.

f. Monitor stream banks of the Scioto River, Paint Creek, and the North Fork Paint Creek for erosion that threatens archeological resources, and stabilize as necessary.

3. Rehabilitation of Archeological Spaces. Rehabilitate archeological spaces to reveal their mass, form and scale.

   a. Discontinue cultivation in the archeological landscape.

   b. Use a low growing grass mix (<6 to 12 inches in height) across the entire archeological space to create a consistent cover. Maintain this grass mix by mowing several times per season. The aesthetic should be an open space of mown grasses at differing heights, that assists in the visibility of the earthworks.

      - Use a taller grass / herbaceous mix at the edges of the earthwork complexes to distinguish these from the surrounding landscape.

   c. Preserve areas of archeological scatter.

      - Discontinue cultivation in areas of known or potential archeological scatter.

      - Use a grass / herbaceous mix as a consistent groundcover in these areas, mown a few times per year.

      - If archeological investigations are imminent, either mow the grass / herbaceous mix more frequently to maintain a lower cover, or plant the area with a low grass mixture and mow more frequently.

4. Rehabilitation of Archeological Features.
   In some locations, rehabilitation of archeological features is recommended. This may include creating three-dimensional depictions using new soil or a cobble cover, or the use of vegetation.

   a. Rehabilitation of archeological features may only be considered at such time as adequate documentation is available to ensure authenticity. This may include magnetic surveys or other non-invasive methods to accurately locate features, and/or archeological excavations to verify dimensions, materials, etc.

   b. Potential markings or rehabilitation techniques must be further researched to fully understand potential impacts on below-grade archeological features.

   c. The marking / rehabilitation illustrated and described herein shows the maximum extent of change considered appropriate. The implementation of these recommendations may be applied in a gradual approach that may or may not result in application of the full extent of the recommendations.

   d. With adequate documentation, rehabilitate archeological features using these techniques (ILLUSTRATION 6-1).

Vegetation
Use vegetation to depict, mass, scale, and form of features.

- Choice A: Use a grass mix for the archeological features and archeological spaces maintained at a low height (< 6 inches). At the edge of the space (typically an earthen wall) begin plantings of taller grasses and herbaceous species to delineate the mass and scale of the earthwork complex.

- Choice B: Use a low growing grass mix (6 -12 inches height), allowing the grass to grow taller on mounds, earthen walls, and borrow pits than in surrounding archeological areas.

Earthen Markings
Rehabilitate archeological features that are not visible above-grade by creating a new earthen feature.

- Use clean, artifact and weed free fill dirt, separated by a barrier fabric to distinguish new material from old.

- Base the form, height and mass of the rehabilitation on current scholarship.

- Plant new archeological features with a grass species to match adjacent features.

Cobble Markings/ Cobble Cover
Rehabilitate select mounds with a stone cobble cover, as existed during the period of significance.

- Cover visible mounds with a new cobble layer (< 12-inches), to indicate the edges and three-dimensional form of the mound.

Circulation
Treatment recommendations for the study area circulation emphasize improved connections and wayfinding between the park units, and encouraging alternative transportation.

1. Vehicular Circulation. The vehicular circulation system within the study area will remain similar to the existing system. Modifications will include relocation of visitor and administration and maintenance facilities, requiring vehicular circulation to be relocated as well.

2. Pedestrian Circulation. Pedestrian connections are needed to link the earthwork complexes and to interpret overland and waterway routes that may have been used by the Hopewell people.

    a. An interconnected water route will be created to connect the park units, and an enhanced trail network will provide better pedestrian and bicycle access (overland routes).[6-1]

    b. Re-connect the earthwork complexes to the rivers and streams by creating an interconnected water route between all park units. This will include making river courses accessible by canoe and kayak access at select locations.

    c. Work with Ross County Park District and partners in their efforts to establish a greenway trail system that links the earthwork complexes. This could tie into the Tri-County Trail System. NPS will add trail connections, bicycle racks, and directional signs.

6-1 NPS, Hopewell NHP General Management Plan, 24.



Figure 6-1. Example of a Cobble Marking, at Fort Ancient Archeological Park, Ohio.

    d. Work with Ross County Park District in their efforts to establish bike paths along roads and along abandoned railways.[6-2]

    e. Work with partners to connect Mound City Group and Hopewell Mound Group with a bike path along state road 104 to the Tri-County Triangle Trail, or a route through the Veterans Affairs medical Center and Pleasant Valley Wildlife Area to the Tri-County Triangle Trail.[6-3]

    f. Coordinate with Ross County Park District, City of Chillicothe, and Ohio Department of Natural Resources to locate, design, and construct canoe launches and access trails at each earthwork complex.[6-4]

    g. Work with the Chillicothe Transit Company to establish a scheduled bus route system to each earthwork complex.[6-5]

6-2 NPS, Hopewell NHP General Management Plan, 26.
6-3 NPS, Hopewell NHP General Management Plan, 26.
6-4 NPS, Hopewell NHP General Management Plan, 26.
6-5 NPS, Hopewell NHP General Management Plan, 26.

h. Within each earthwork complex, the pedestrian circulation system will be improved by adding routes that allow for understanding of the earthworks.

Vegetation

Treatment recommendations for the study area are to manage vegetation to preserve the earthwork complexes, to distinguish visitor, administration, and maintenance facilities from the earthwork complexes, and to retain and manage native vegetation along waterways and in areas outside archeologically sensitive areas.

1. Vegetation types and management techniques will be used to preserve the archeological landscape, assist in framing views, and to screen adjacent land uses.

    a. Discontinue agricultural cultivation within archeological landscapes. This practice has degraded archeological features over time, leaving many features indiscernible.

    b. Remove dead and dying trees within the enclosures. Plant new trees for visitor shade only after archaeological research is completed to demonstrate these will not adversely impact archaeological resources. New plantings should be minimal so they do not interfere with the spatial organization of the earthwork complex.

    c. Test and evaluate machinery used for landscape management to ensure maintenance practices will not impact archeological features.

    d. Burning would be allowed as a vegetation management tool after sufficient research is completed to demonstrate that archeological resources or archeological research including geophysical surveys would not be negatively impacted.

    e. Vegetation within the earthwork complexes will be low (3" to 12") and periodically mown. Tall grasses (greater than 12") create habitat for destructive burrowing animals such as groundhogs, and make it difficult to monitor archeological landscapes for the presence of destructive burrowing animals.

        - In areas inside the earthwork complex where frequent mowing will take place, there is little point in seeding plant species with wildlife benefit. Here the best choice should center on sustainability, drought tolerance (especially considering the expectation of summers getting hotter and drier) and durability to foot traffic and mowing equipment. Consider a low-maintenance turf mix that is naturally short and slow-growing and requires less-frequent mowing, such as a mix that contains several cultivars of fescue.[6-6]

    f. Avoid tall grasses and shrubs within the earthworks, which limit access for archeological research, especially the new generation of large-scale geophysical survey instruments, which require low, mown vegetation for data collection.

    g. Remove heavy brush and woody vegetation from archeological features, as this may be damaging resources.

6-6 Personal communication, Dafna Reiner, Hopewell Culture NHP Biologist; 5/23/2015.

h. Some large trees may be retained or planted for visitor shade within the earthwork area after sufficient archaeological research is completed to demonstrate these will not adversely impact archaeological resources.

i. Remove vegetation for safety reasons, such as hazardous trees, and to eradicate invasive exotic species, in a manner that protects archeological resources.

j. Add vegetation to assist in distinguishing archeological features from non-features. Use vegetation to reveal mounds, walls, and borrow pits.

k. Maintain a distinct vegetation type on archeological features that is different from that used in visitor and administrative areas.

2. Maintain a mix of native herbaceous species, mown 1 to 2 times per year, in areas outside and adjacent to the earthwork complex.

    - Refer to six seed mixes that are researched, documented, and proven.[6-7] Choose management techniques that will favor native biodiversity.

    - Choose management techniques that will favor native biodiversity."

3. Manage the woodland vegetation surrounding the earthwork complex. Maintain a healthy tree cover, free of invasive, exotic species.

4. Manage the vegetation associated with the waterways to preserve the native riparian vegetation along the river terraces.

Small Scale Features

Small scale features will play a minor role and will not distract from the archeological landscape.

1. Further investigation is needed to evaluate into the significance of some small scale features.

    a. Those that are found to be non-contributing and do not serve an active role in interpretation of the earthwork complex will be removed.

2. Any new small scale features will be minimal and unobtrusive.

    a. Design and situate new small scale features such as signs and interpretive panels, to be low-profile and unobtrusive.

3. Improve interpretation of the earthwork complex and cosmology.

4. Use alternative media to provide visitors with access to large amounts of research and documentation of archeological features—keyed to specific locations— to enhance visitors' understanding of the authenticity of the earthwork complexes.

    a. Explore ways to enhance interpretation, including electronic (possibly interactive) representations of what the earthwork complexes may have looked like.

6-7 Personal communication, Dafna Reiner, Hopewell Culture NHP Biologist; 5/23/2015. See, Stubbendiek, James and Cheryl D. Dunn. *Hopewell Culture National Historical Park: Review of the Literature on the Influence of Roots on Archeological Features and Vegetation Restoration Recommendations*. (Lincoln: University of Nebraska, 2011).

Best Management Practices

The following is a list of best management practices and methodologies for the care of the cultural landscape. The best management practices are derived from current practices for earthworks preservation from the U.S. and abroad, and provide a context for decision making.

General

1. Monitoring archeological sites for damage and condition is essential site management. Maintain a periodic assessment of specific management issues and the general state and conditions of the archeological site.

    a. Monitoring methods include visual assessment; qualitative scoring (good, fair, poor condition); fixed position photography (annual, bi-annual)

    b. Inspect mounds periodically for signs of erosion, illegal tampering, or other damage.

2. Protect earthworks from erosion by preventing erosion scars. As soon as erosion develops, any scars need to be dressed with soil and re-seeded.

3. Ensure positive drainage away from archeological resources. The land drainage system should prevent surface waterlogging and the silting up of features. Standing water can damage features below-grade.

4. Any new utilities should be located away from the archeological sites. Irrigation lines should not be installed within any archaeological site.

5. Signs, barriers, fences, etc. should be movable (i.e., should not extend into the ground which would disturb below-grade features). Place fences way from archeological sites. Fence posts, signs, utility poles, etc should not be placed in or on archeological features.

6. Exterminate wildlife burrowing into, or adjacent to, know archaeological features; block up burrow entrances.

7. For erosion control, revet with sandbags, boarding or geotextile fabric while re-establishing groundcover.[6-8]

Repair and Reconstruction

1. The Wisconsin Department of Natural Resources recommends the following for mound site repairs and restoration.[6-9] Before proceeding, restoration requires extensive consultation. A general recommended procedure includes the following steps:

    a. Record the nature and extent of damage and current mound condition;

    b. Remove leaf litter from the damaged area;

    c. Lay geotextile fabric on the ground surface in the area of damage;

    d. Use hand tools to place new artifact-free soil from an off-site location on the fabric to replace missing soil. Compact new soil by hand to match the contour of the existing mound or wall;

6-8 Hadrian's Wall World Heritage Site, UK

6-9 Wisconsin Department of Natural Resources, "Burials, Earthworks, and Mounds Preservation Policy and Plan;" Wisconsin Department of Natural Resources, "Woody Invasive Vegetation Removal and Site Restoration," Aztalan State Park, August 7, 2013; and Effigy Mounds National Monument Cultural Landscape Report.

e. Soil should be obtained from an area well away from the mounds or other archeological site;

f. Do not apply chalk or lime to the ground surface to outline mounds or mound damage. Do not place contemporary objects within new soil.

2. Repair of earthworks due to animal damage, per UK recommendations.[6-10]

a. Block animal burrows with turf, earth, sand, or gravel;

b. Remove animal burrows by raking or harrowing, then reestablish vegetative cover.

3. After removal of a tree from an archeological feature, flush cut or mechanically grind the remaining portion of the trunk and stump to grade. As needed, regrade the area with soil that matches the parent soil as closely as possible in texture and composition. Use a manual tamper to gently compact the soil in the hole. Apply desired seed mix, a tackifier, fiber-mulch and, if needed a natural organic fertilizer, to enhance post germination growth. Use a fertilizer with a low salt index to minimize adverse effects on archeological resources. In areas subject to erosion, lay an erosion control blanket, made of natural materials so that it will decompose, over the disturbed site. Tack the material in place to prevent it from being shifted.[6-11]

4. If there has been damage due to falling limbs, or other occurrences that have created holes or depressions in the earthwork, cover the impact depression on the earthwork with a 2" layer of sand. The sand will serve as a tracer layer, similar to that used adjacent to underground utilities, to inform future excavations that there was ground disturbance at that depth. Fill the remaining portion of the depression with soil that matches the parent soil as closely as possible in texture and composition (texture, % sand/silt/clay, % organic matter, fertility, etc.). Use a manual tamper to gently compact the soil into the depression.[6-12]

Circulation

1. Vehicles should not be driven onto mounds or burial sites. Walking on mounds should be avoided, and trails, roads, and paths should clearly visible and situated to avoid mound or burial sites.

2. Create a single permanent route, rather than many routes.[6-13] Conversely, utilize movable interpretation panels that allow routes to alter in order to reduce wear and erosion.[6-14]

3. Do not drive vehicles across archeological sites in wet weather.

4. Minimize walking on all earthworks, as a preservation issue as well as respect for the builders and the Hopewell people.[6-15]

6-10 Hadrian's Wall World Heritage Site, UK

6-11 NPS, How to Preserve Earthworks, Case Studies for Emergency Stabilization: http://www.nps.gov/tps/how-to-preserve/currents/earthworks/case_studies.htm

6-12 NPS, How to Preserve Earthworks, Case Studies for Emergency Stabilization: http://www.nps.gov/tps/how-to-preserve/currents/earthworks/case_studies.htm

6-13 Farming the Historic Landscape, Caring for Archaeological Sites in Grassland, English Heritage, UK: 2004

6-14 Hadrian's Wall World Heritage Site, UK

6-15 Ohio Historical Society recommendations, Newark Earthworks State Memorial

5. At Wisconsin State Parks (numerous effigy and burial mounds including Aztalan State Park), trails are located a minimum of 5' from the base of the mound or mound group. A trail does not need to be built to provide access to every mound in a group. Wood chips, shredded bark, or mowing are used for trail maintenance.

Vegetation

Establishing vegetation / Seed mixes. Choose management techniques that will favor native biodiversity. Newly acquired agricultural fields should be planted in tall native grassland vegetation, favoring high biodiversity mixes where appropriate in light of considerations including long-term maintenance and weed pressure. Mounds and earthworks at other archeological sites in the U.S. are typically planted with a combination of natural and planted grasses, which are mown periodically or burned.[6-16]

1. There are three maintenance regimes that can be followed. Mowing is by far the most popular, with prescribed burning being an option where native grasses are dominant and the surrounding community allows it, or grazing, which has been successfully used in Europe but has not been a technique adopted in the United States.[6-17]

    a. The most popular management strategy for interpreted earthworks is a grass or herbaceous cover that is free of woody species. Well-protected earthworks found with this cover exhibit a healthy, continuous carpet of grasses and herbaceous plants. Bare spots, gouges from careless maintenance practices, animal burrows, and invasive exotic vegetation, which potentially threaten earthworks, should be avoided.[6-18]

2. Establishing grassland. It is desirable to select a cover seed mix in which natives dominate. Refer to six seed mixes that are researched, documented, and proven.[6-19]

    a. When re-seeding grassland, use minimal cultivation techniques, such as hydroseeding, slit seeding, direct drilling, sodding, and hand-seeding.[6-20]

    b. In areas inside the earthwork complex where frequent mowing will take place, there is little point in seeding plant species with wildlife benefit. Here the best choice should center on sustainability, drought tolerance (especially considering the expectation of summers getting hotter and drier) and durability to foot traffic and mowing equipment. Consider a low-maintenance turf mix that is naturally short and slow-growing and requires less-frequent mowing, such as a mix that contains several cultivars of fescue.[6-21]

    c. Consult a native plant specialist to determine an appropriate seed mix

6-16 Wisconsin State Parks; Poverty Point, Louisiana; Etowah, Georgia; Cahokia, Illinois

6-17 NPS, Sustainable Military Earthworks Management: www.nps.gov/tps/how-to- preserve/currents/earthworks/imp_manage.htm

6-18 Shaun Eyring and Lucy Lawliss editors, Sustainable Military Earthworks Management; NPS Currents, 1998; http://www.nps.gov/tps/how-to-preserve/currents/earthworks/assess.htm

6-19 Personal communication, Dafna Reiner, Hopewell Culture NHP Biologist; 5/23/2015. See, Stubbendiek, James and Cheryl D. Dunn. *Hopewell Culture National Historical Park: Review of the Literature on the Influence of Roots on Archeological Features and Vegetation Restoration Recommendations*. (Lincoln: University of Nebraska, 2011).

6-20 Farming the Historic Landscape, Caring for Archaeological Sites in Grassland, English Heritage, UK: 2004

6-21 Personal communication, Dafna Reiner, Hopewell Culture NHP Biologist; 5/23/2015.

for the area and the unique cultural requirements of the selected mix, including soil pH, sowing season, appropriate application technique, and germination period. Use a higher diversity mix where appropriate. Allow for seed mixes to vary, as scholarship evolves.

3. Weeds.

    a. The desired character of the landscape is as close to a restored grassland as possible. The park should remove invasive, exotic species as identified by the US Department of Agriculture and the Ohio Department of Agriculture.[6-22] Some exotic species are acceptable, maintained at less than 25 % of cover.

    b. Establishing a weed-free seedbed at the initial planting is critical to long-term weed control. More general use of herbicides may be justified at planting and in the first few years to reduce herbicide use over the long term.

    c. Control weeds by topping or targeted use of selected herbicides. Apply herbicides selectively with spot treatments, spraying specific small problem areas, or applying herbicide to individual plants with a wick applicator.

4. Mowing.

    a. Mowing dates have a pronounced effect on the growth of different grasses and affect bird nesting habitat. Mow both cool-season and warm-season grasses in late winter or early spring. Mowing at this time lays down organic mulch in the form of grass clippings, which helps in erosion control. Do not mow sites after early to mid-July that are covered predominantly by native warm-season grasses or where native grasses are being encouraged. This permits full development of the leaves and flowering stalks followed by seed maturation, which typically occurs in October.

    b. In general, when native grasses are the desired dominant species on earthworks, allow the grass to grow at least ten to twelve inches between mowing and set the minimum mower height at six inches.[6-23]

    c. When earthworks are mown, care should be taken to avoid damage by raising the blade of the mower. Avoid mowing while soil is wet, and use a hand mower or low impact tires if possible.[6-24]

    d. Test and evaluate machinery used for landscape management to ensure maintenance practices will not impact archeological features.

    e. Vegetation outside of the earthworks should be mown once to three times per year after November 1st, determined by the degree of weeds and woody vegetation. Mow only one third to one half every year

6-22 United States Department of Agriculture, "Federal Noxious Weeds," (USDA: Natural Resources Conservation Service, 2012); and United States Department of Agriculture, "Ohio State-listed Noxious Weeds," (USDA: Natural Resources Conservation Service, 2003).

6-23 Shaun Eyring and Lucy Lawliss editors, Sustainable Military Earthworks Management; NPS Currents, 1998; http://www.nps.gov/tps/how-to-preserve/currents/earthworks/assess.htm

6-24 Management Recommendations for Burial Sites, Iowa Office of the State Archaeologist

thereafter, depending on invasion level of woody species. Define areas to be mowed each cycle based on the spatial organization/topography/ views of the cultural landscape, with a view toward preserving archeological features and enhancing visitor experience.

f. Burning would be allowed as a vegetation management tool after sufficient research is completed to demonstrate that archeological resources or archeological research including geophysical surveys would not be negatively impacted.

a. Ideal prescribed burning occurs in March before most bird nesting activity and before peak activity of herpetofauna, however, some mortality is possible. Early Spring burning can also adversely affect insect populations by destroying over-wintering eggs, larvae and pupae of insects. This intensity of this adverse effect is reduced by allowing significant adjacent patches of native grassland to remain unburned.

5. Removal of vegetation. Remove vegetation for safety reasons, such as hazardous trees, and to eradicate invasive exotic species, in a manner that protects archeological resources. Remove heavy brush and woody vegetation from archeological features, as this may be damaging resources. Avoid tall grasses and shrubs within the earthworks, which limit access for archeological research, especially the new generation of large-scale geophysical survey instruments, which require low, mown vegetation for data collection.

a. Removal of woody vegetation and extensive clearance should be phased.

b. Removal of vegetation should include cutting stumps close to ground level and treating with herbicide to prevent re-growth. Cut material should be disposed of well away from the archeological site.

c. Remove brush from the mounds annually and haul away from the mound area by hand.

d. Where vegetation is to be thinned for creating or maintaining views, minimize cutting to create narrow views through the forest, capturing a glimpse of the view through trunks of the largest trees.

e. Trees threaten resources due to damage by roots, and wind thrown trees can uproot archeological features.

- Many earthwork sites have removed trees from mounds, within the walls of earthen enclosures, as well as the area immediately adjacent (within 15 feet) of mounds and earthwork walls. (examples include Newark Earthworks, Ohio; Poverty Point World Heritage Site, Louisiana; Angel Mounds State Historic Site, Indiana; Toltec Mounds, Arkansas)

- Recommend only removing trees if they pose an imminent threat to the earthworks or if there is an over-riding need to remove the tree for an interpretation, preservation, or access reason.[6-25]

6-25 Ohio Historical Society recommendations, Newark Earthworks State Memorial

- Trees and brush should be removed from within 8' of a mound or earthen wall. Tree cutting is to be done when the ground is frozen to reduce damage to archeological features. Remove trees from mound by cutting by hand down to 6" below ground level and filling the resulting cavity with clean soil, followed by reseeding. This method requires periodic soil filling as the tree decomposes. Alternately, trees may be cut to the ground level and left to decompose naturally.[6-26]

Restrict the need for irrigation to small areas or rare occasions such as extreme droughts or plant establishment periods.[6-27]

6-26 Management Recommendations for Burial Sites, Iowa Office of the State Archaeologist

6-27 NPS, Georgia Trust for Historic Preservation. Guide to Sustainable Earthworks Management, 90% Draft, 1998

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Legend

- Greenway Trail Corridors*
- Bike Paths, Bike Routes, and Railbeds Converted to Trails
- Waterway Access Points*
- Pedestrian Bridge
- *As proposed in 1996 Ross County Park District Master Plan

Pleasant Valley Wildlife Area
Hopeton Earthworks
Great Seal State Park
Bald Hill
Bunker Hill
Mount Ives
Rocky Knob
Mount Logan
Ross Lake Wilderness Area
North Fork Paint Creek
Hopewell Mound Group
Mound City Group
Scioto River
Adena State Memorial
North Fork Village
Chillicothe
Paint Creek
High Bank Works
Beath Ridge
Bourneville
Spruce Hill
Farrell Hill
Knockemstiff
California Hollows
Seip Earthworks
Sulfur Lick Flat
Morgantown
Little Copperas Mountain
Deadman Crossing
Coon Hollow
Moss Hollow
Snake Hollow
Scioto Trail State Park

104 114 159 23 50 772 167 172

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OCTOBER 2015

UNITED STATES
DEPARTMENT OF THE INTERIOR

HOPEWELL CULTURE NATIONAL
HISTORICAL PARK

ILLUSTRATION 6-2

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
AND ENVIRONMENTAL ASSESSMENT
TITLE OF DRAWING
STUDY AREA - PREFERRED ALTERNATIVE
NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK

REGION MIDWEST | COUNTY ROSS | STATE OHIO | 6-21

Mound City Group

The treatment plan for Mound City Group emphasizes the interpretation of Hopewell ceremonialism. The archeological landscape will be rehabilitated to focus visitor experience on the creation and use of the mounds. This will be accomplished through preservation of the reconstructed mounds and earthen walls, delineation of previously unreconstructed mounds, improvements in circulation routes, removal of damaging vegetation, and separation between the visitor orientation area and the ceremonial landscape. In accordance with the GMP, Mound City Group will be the mostly highly developed, and will function as a central point for park orientation and interpretation.[6-28]

Rehabilitation is the treatment approach for Mound City Group. This approach allows for repair, alterations, and additions while preserving those features which convey its historic and cultural significance.

Treatment goals for Mound City Group include the following:

- Preserve extant above-grade archeological features.
- Spatially depict the three-dimensional earthwork complex.
- Relocate visitor facilities (building, roads, parking, etc.) away from the earthwork complex.
- Reveal the relationship to the Scioto River and Hopeton Earthworks.
- Remove non-contributing features that impact the archeological landscape.
- Provide an authentic visitor experience.

6-28 *GMP*, 30.

The treatment plan for Mound City Group illustrates the desired landscape condition (ILLUSTRATION 6-3).

Spatial Organization/Topography/Views
The vision for the spatial organization at Mound City Group is for the forms and patterns of the archeological landscape to be visible and viewed without contemporary intrusions.

1. The spatial organization will be strengthened by removal of non-contributing features; removal of vegetation that obscures the earthwork complex and archeological features; marking / rehabilitation of non-extant above-grade mounds and borrow pits; and rerouting pedestrian circulation routes to define the spatial qualities of the earthwork complex.

    a. Complete the spatial depiction of the three-dimensional form of the earthwork complex and surroundings by marking nonvisible archeological features.

    b. Remove hazardous trees and woody vegetation that impact or may impact intact archeological resources.

    c. Remove non-contributing features from the immediate surroundings of the earthwork complex, including the visitor center, park administration, maintenance, parking, roads, utilities, etc. Relocate these facilities either off-site or to less intrusive areas on-site, away from the earthwork complex.

    d. Maintain a consistent vegetation type on the archeological features to distinguish them from visitor and

administrative areas, and adjacent woodlands.

e. Maintain the enclosed space of the earthwork complex by preserving the woodland vegetation surrounding the enclosure wall. The wooded edges will also serve as a screen for adjacent development.

f. Add trees and vegetation between the earthwork complex and the adjacent properties to the west and south to screen the earthwork complex from these uses. Buffer zones are needed to protect the setting, and are important for establishing and maintaining World Heritage Site status. Work with adjacent land owners to provide visual buffers of adjacent development.

g. Create and maintain a view between the overlook and the river, by thinning vegetation along a small portion of the riverbank.

h. Thin vegetation to create a narrow view at the southeast side of the earthwork complex so the Mount Logan Range and the moonrise and solstice sunrise alignments can be observed.

Archeological Features
The treatment plan recommends preservation and rehabilitation of the extant and reconstructed archeological features at Mound City Group.

1. Investigations and Research. Continue investigations and archeological research, including the following research needs.

   a. Identify currently unknown resources at the outlying areas using magnetometry or other non-invasive archeological techniques.

   b. Evaluate features that may be significant in their own right, but that are non-contributing features to the archeological landscape, including Camp Sherman remnants.

2. Best Practices - Preservation of Features. Preserve all extant below- and above-grade archeological features. Stabilize and repair features as necessary, following best practices.

   a. Preserve all extant below- and above-grade archeological features.

   b. Preserve and maintain existing reconstructed mounds and the earthen walls as contributing features.

   c. Stabilize and repair archeological features as needed, following best practices.

   d. Do not allow visitor access on top of the mounds, borrow pits, or earthen walls.

3. Rehabilitation of Archeological Spaces. Rehabilitate archeological spaces to reveal their mass, form and scale. Delineate the earthwork complex by markings or rehabilitating archeological features when no discernible topographical relief occurs in LiDAR imagery or through visual observations.

   a. Depict the archeological space of the earthwork complex through the following techniques. Use a consistent palette of materials.

      - Use one consistent vegetation type and vegetation management

technique to depict the space of the enclosure and earthwork complex. The aesthetic should be an open space of mown grasses at differing heights that assists in the visibility of the earthworks.

- º Use a different vegetation management technique for archeological features such as mounds and walls to differentiate between the three-dimensional archeological features and adjacent spaces.

- º Use a taller grass / herbaceous mix at the edges of the archeological spaces and in areas of archeological scatter, to distinguish these from the surrounding landscape.

- º Differentiate between the earthwork complex and visitor and administrative / maintenance areas by maintaining distinct vegetation types in the two areas. This can be accomplished by planting a mix of grass species that differs in color and texture, or by maintaining grasses at a different height.

4. Rehabilitation of Archeological Features. Rehabilitation of non-extant archeological features is recommended. This may include creating three-dimensional depictions using new soil, a cap of stone cobble, or the use of vegetation.

   a. Rehabilitate non-extant archeological features to depict their mass, form and character, as documented by Squire and Davis in 1846, Brown in 2012 and the 2010 magnetic survey, or based upon most recent archeological investigations.

      - º Specific treatment for each archeological feature is provided in ILLUSTRATION 6-3. Cross section examples provided in ILLUSTRATION 6-1 represent examples of applicable rehabilitation techniques.

   b. Use earthen markings to rehabilitate outlines and dimensions of non-extant mounds.

      - º Specific features to be rehabilitated include the following.

        — Extra-mural mounds X1 and X2;
        — Mounds #24 and #25.

      - º Use a material that differs from the material of the previously reconstructed mounds, to distinguish new material from old.

      - º Where discernible topographical relief occurs, only vegetation or non-permanent markings will be used to delineate features.

   c. Use vegetation to delineate outlines and dimensions of borrow pits.

      - º Protect intact the reconstructed borrow pits and the northeast borrow pit (not reconstructed). Preserve the northeast borrow pit as is, and provide special visitor interpretation to appreciate an intact, authentic, unreconstructed borrow pit.

      - º Reconstruction of the northeast borrow pit would require careful and extensive archeological excavation that should only be excavated after extraordinary justification.

   d. Use a cobble cover to rehabilitate the outlines and dimensions of large, previously-reconstructed mounds.

- Specific features to be rehabilitated with cobble cover include the following.

  — Mounds #1, 2, 3, 4, 5, 7, 8, 18

e. Consider marking other archeological features that were part of the ceremonial landscape. This may include charnel houses or other structures that would have accompanied the mounds. These could be marked with simple techniques as listed previously, or temporary installations that could be set up seasonally or for special events.

Circulation
Mound City Group will continue to serve as a primary visitor orientation facility, however the existing circulation system will be modified to add routes that foster understanding of the archeological features and connections to natural features.

1. Vehicular Circulation. The vehicular circulation system will be modified to reroute vehicular parking and access routes to less intrusive locations.

   a. Remove existing entrance drives, visitor and administrative parking areas and vehicular access routes.

   b. Relocate vehicular routes and parking area outside the earthwork complex and screen from view.

2. Pedestrian Circulation. The existing pedestrian circulation system will remain and be improved by adding routes that assist in defining the spatial qualities of the earthwork complex.

   a. Maintain the existing nature trail, and establish as a universally accessible route.

   b. Add a pedestrian trail from the new visitor center and parking area to the earthwork complex.

   c. Establish a trail to follow the edge of the river terrace, north to south, connecting to the existing nature trail.

   d. Establish a loop trail through the North Forty.

   e. Maintain informal access within the enclosure and through the mounds (i.e., no formal trails).

   f. Maintain existing river walk trail with steps, walls, and overlook at the river edge.

   g. Provide access to the river bank, and create a new kayak / canoe access point along the Scioto River.

   h. Create pedestrian routes between Mound City Group and other park units.

      - Build a pedestrian bridge over the Scioto River and a trail connection to Hopeton Earthworks.

Vegetation
Treatment of vegetation at Mound City Group will focus on preservation of the archeological features. Vegetation will be managed to assist in defining the spatial organization of the earthwork complex, and to frame views and screen adjacent development. Archeological features will be maintained as low, mown vegetation. Vegetation outside the earthwork complex will be managed as tall or woody vegetation.

1. Vegetation management techniques will be used to preserve the archeological features.

    a. Remove trees and woody vegetation that impact archeological features or diminish the earthwork's spatial qualities.

        - Maintain the woody vegetation on the northeast corner of the enclosure wall and Mound #1.

        - Maintain exiting trees within the enclosure. Consider adding trees to the enclosure for shade, provided the new trees will not negatively impact archeological features.

    b. Reintroduce grasses where trees and woody vegetation have been removed.[6-29]

2. Utilize distinct vegetation management techniques to reveal the form and spaces of the earthwork complex.

    a. Use a low growing grass mix (<6 to 12 inches in height) in spaces of the earthwork including the enclosure, mounds, and borrow pits. Archeological features may be managed as tall and less frequently mown (<12 inches in height) to further differentiate.

        - Plant the reconstructed mounds with a low mown vegetation (<6 to 12 inches in height).

        - Plant the reconstructed earthen wall with a low mown vegetation (<6 in height).

        - Plant the reconstructed borrow pits (7) with low mown vegetation (<6 in height).

        - Plant the spaces within the earthen walls with a low mown vegetation (3 to <6 in height).

        - Plant the non-extant mounds (24, 25 X1, X2) with a taller mown vegetation (<12 inches) prior to rehabilitation.

        - Plant the northeast borrow pit with a shorter mown vegetation to assist with visibility.

3. Maintain the North Forty as a mix of native herbaceous species, mown 1 to 2 times per year. Allow for mowing to accommodate planned archeological research.

4. Maintain riparian vegetation along the river edge, and existing woodland vegetation around the earthwork complex.

    - Remove exotic, invasive species as possible in the woodlands, using an integrated pest management plan.

5. Establish wooded edges at key locations and at the property boundaries to screen adjacent development.

    a. Add a screen of trees between the visitor center and the earthwork complex, prior to removal of visitor center.

    b. Add a screen of trees and shrubs at the southern property boundary, to create a buffer between the archeological landscape and adjacent use to the south. Work with adjacent land owners to establish and maintain the screen.

6-29 Stubbendiek, *Review of the Literature on the Influence of Roots*.

c. Work with Ross Correctional Institute to provide a screen of trees and shrubs as a visual buffer on the west side of SR 104.

Buildings and Structures
Mound City Group will continue as a primary visitor orientation facility, however all buildings and structures will be relocated as far from the earthwork complex as possible, in order to protect the setting of the archeological landscape.

1. Evaluate buildings and structures that may be significant in their own right, but that are non-contributing features to the archeological landscape. This includes the Mission 66 Visitor Center and the administration building.

2. Relocate the visitor center, administrative and maintenance facilities off-site or in a location that is less intrusive to the earthwork complex, to be determined.

    a. Remove existing picnic area, including picnic shelter, tables, and corresponding small scale features. Remove the wood framed shelter at the canal lock stones.

    b. Locate any new buildings or structures off-site or a less intrusive location on-site. [6-30]

Small Scale Features
The small scale features at Mound City Group will play a minor role and will not detract from the archeological landscape. Any new small scale features will be minimal and unobtrusive.

1. Further investigation is needed into the significance of some small scale features. Evaluate features that may be significant in their own right, but that are non-contributing features to the archeological landscape, including the CCC/WPA walls and steps.

    a. Remove small scale features that are found to be non-contributing and do not serve an active role in interpretation of the earthwork complex.

2. Maintain small scale features that serve an active role in visitor interpretation or experience of the earthwork complex.

    a. Maintain the WPA/CCC walls at the entrance, and repair as needed.

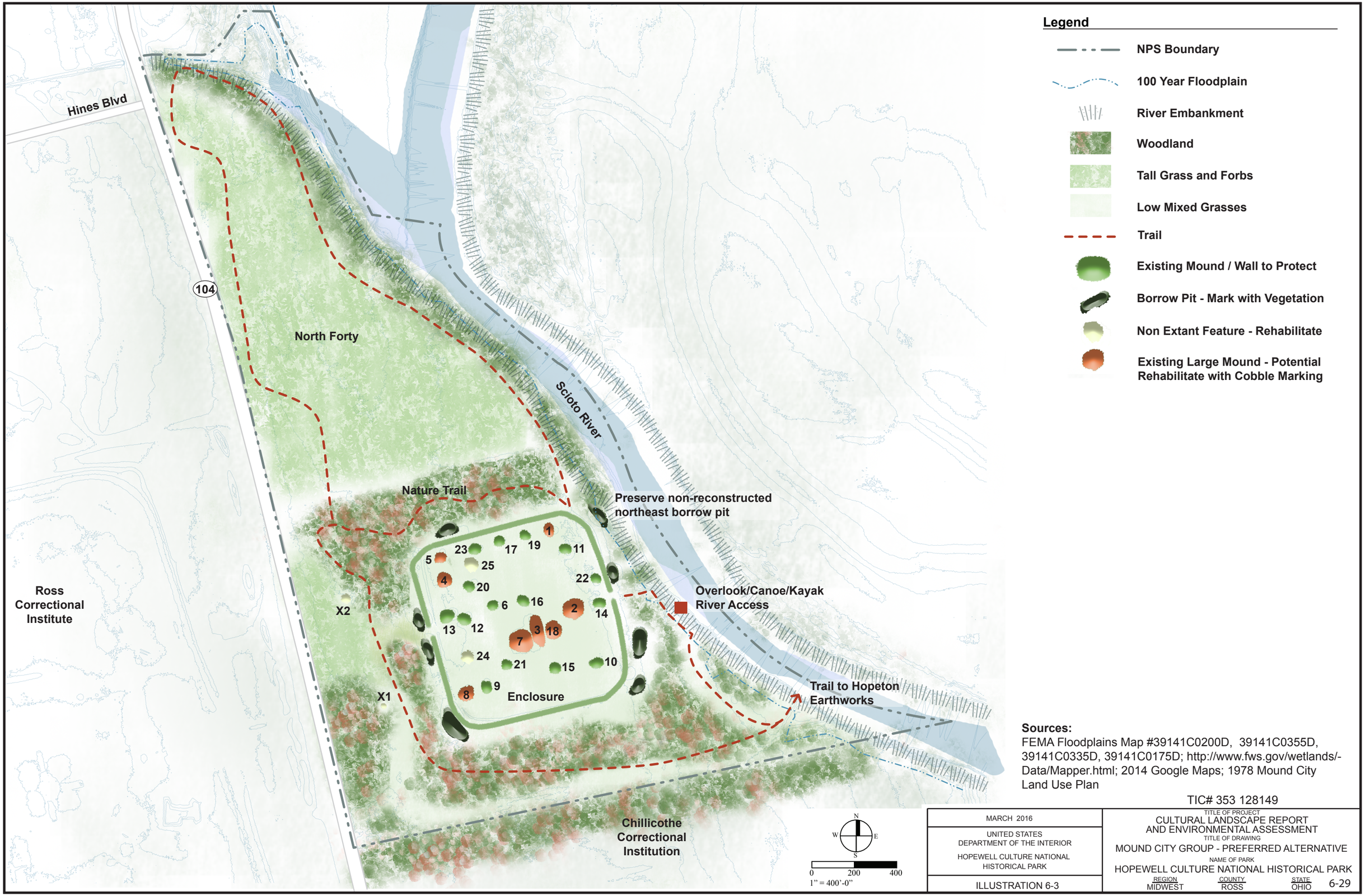
    b. Maintain the WPA/CCC walls along the river trail, and repair as needed.

    c. Maintain and repair the WPA/CCC stone grill.

    d. Preserve the canal lock stones remaining from the Ohio Erie Canal. While these are not contributing features, these stones are part of the overall history of the area and will be preserved in-situ.

3. Design and situate new small scale features such as signs and interpretive panels, to be low-profile and unobtrusive within sight of the earthwork complex.

6-30 Per the *GMP*, "Facilities will be designed, located, and managed to minimize impacts on resources and to maximize the quality of the visitor experience. ... Only the development necessary to properly guide visitors and protect resources will be allowed... and will be out of site of the earthworks" (*GMP*, 18-19).



Sources:
FEMA Floodplains Map #39141C0200D, 39141C0355D, 39141C0335D, 39141C0175D; http://www.fws.gov/wetlands/-Data/Mapper.html; 2014 Google Maps; 1978 Mound City Land Use Plan

TIC# 353 128149

MARCH 2016

UNITED STATES
DEPARTMENT OF THE INTERIOR

HOPEWELL CULTURE NATIONAL HISTORICAL PARK

ILLUSTRATION 6-3

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
AND ENVIRONMENTAL ASSESSMENT

TITLE OF DRAWING
MOUND CITY GROUP - PREFERRED ALTERNATIVE

NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK

REGION MIDWEST | COUNTY ROSS | STATE OHIO

Hopeton Earthworks

The treatment plan for Hopeton Earthworks emphasizes research and education. The majority of the site will not be open to the general public. Limited development will allow visitors to learn about the Hopewell culture from a distance and to view the earthworks.[6-31] The archeological landscape will be protected and marked to focus visitor experience on the creation and use of the earthwork complex. This will be accomplished through preservation of extant below- and above-grade archeological features. Because Hopeton Earthworks is located within the 100-year flood zone, this includes protection of the riparian corridor vegetation and avoiding treatments that would have potential to increase flooding risks. In addition, the legibility and visibility of the earthwork complex will be increased by better delineation of the archeological features. Visitor experience will be improved by management of circulation, vegetation, and views. In addition, non-contributing features will be removed.

Preservation is the treatment approach for Hopeton Earthworks. This approach protects and preserves those features which convey its historic and cultural significance.

Treatment goals for Hopeton Earthworks include the following:

- Preserve extant above-grade archeological features.
- Spatially depict the three-dimensional earthwork complex.
- Provide opportunities for visitors to access and view the earthwork complex.
- Reveal the relationship to the river and Mound City Group.
- Remove non-contributing features that impact visitor's ability to discern the archeological landscape.
- Provide an authentic visitor experience.

The treatment plan for Hopeton Earthworks (ILLUSTRATION 6-4) illustrates the desired landscape condition.

Spatial Organization/Topography/Views
The vision for the spatial organization is for the forms and patterns of the archeological landscape to be revealed. The spatial qualities of the earthwork complex will be depicted to improve visitor's understanding.

1. The spatial organization will be repaired through removal of non-contributing features; removal of vegetation that obscures the earthwork complex and archeological features; protection and marking of non-extant above-grade archeological features; and establishing pedestrian circulation routes to provide views of the earthwork complex.

    a. Spatially depict the three-dimensional form of the earthwork complex and surroundings using vegetation or by marking nonvisible archeological features.

    b. Remove hazardous trees and woody vegetation that impact the earthwork complex or diminish the visitor's understanding of the earthwork's spatial qualities. In particular, remove vegetation impacting Circle A and fencerow vegetation north and west of the Great Circle.

6-31 *GMP*, 34

c. Delineate the mass, scale and form of the earthwork complex by using vegetation to mark non-extant above-grade archeological features, i.e., earthen walls, mounds, and borrow pits, and the spaces of the earthwork.

d. Work with property owners to establish protection (through acquisition, easements or other agreements) for the land within the bend of the Scioto River surrounding the Hopeton Earthworks to manage for conservation and visual consistency with the earthwork complex.

e. Create a view between the earthwork complex and the river, and between the Mound City Group and Hopeton Earthworks, by thinning vegetation along a portion of the riverbank.

f. Provide interpretive information about the earthwork complex and cosmology.

g. Consider using alternative media to provide visitors with access to large amounts of research and documentation of features at the park unit—keyed to specific locations – to enhance visitors understanding of the authenticity of the earthwork complex.

Archeological Features

The treatment plan provides for protection and marking of archeological features. All extant below- and above- grade archeological features, as well as spaces with known or potential archeological scatter will be preserved, stabilized and repaired as needed, following best practices. The archeological features will be marked with vegetation and interpreted to provide a compelling visitor experience. Non-extant archeological features will be marked with vegetation to depict their mass, form, and character, as documented by Squire and Davis in 1846, or based upon most recent archeological investigations. Refer to the cross section examples provided under Study Area for a graphic representation of applicable techniques (ILLUSTRATION 6-1).

1. Investigations and Research. Continue investigations and archeological research, including the following research needs.

    a. Identify currently unknown resources at the outlying areas using magnetometry or other non-invasive archeological techniques.

    b. Investigate techniques for marking of archeological features to fully understand potential impacts on below-grade archeological features.

2. Best Practices - Preservation of Features. Preserve all extant below- and above-grade archeological features. Stabilize and repair features as necessary, following best practices.

    a. Preserve all extant below- and above-grade archeological features.

    b. Stabilize and repair archeological features as needed, following best practices.

    c. Do not allow visitor access on top of the mounds or earthen walls or in borrow pits.

    d. Monitor the streambank and stabilize areas of erosion that threaten archeological resources.

3. Repair of Archeological Spaces. Repair archeological spaces to reveal their mass,

form, and scale. Delineate the earthwork complex by marking archeological features when no discernible topographical relief occurs in LiDAR imagery or through visual observations.

a. Depict the archeological space of the earthwork complex through the following techniques. Use a consistent palette of materials.

- Use one consistent vegetation type and vegetation management technique to depict the space of the enclosure and earthwork complex.

- Use a different vegetation management technique for archeological features such as mounds and earthen walls to differentiate between the three-dimensional archeological features and adjacent spaces.

- Use a taller grass / herbaceous mix at the edges of the archeological spaces and in areas of archeological scatter, to distinguish these from the surrounding landscape.

4. Marking of Archeological Features. Marking of non-extant archeological features using vegetation is recommended.

- Cross section examples provided in ILLUSTRATION 6-1 represent examples of applicable rehabilitation techniques.

b. Use vegetation to depict outlines and dimensions of verified non-extant archeological and other above-grade features.

- Verified features to be delineated include the following.

  - Portions of the Great Circle walls
  - Portions of the Square Enclosure walls
  - Portions of the Parallel Walls
  - Circle B
  - Circle C
  - Three mounds within the Square Enclosure
  - Borrow pits

- Specific features to be delineated when verified include the following.

  - Circle A
  - Unverified portions of the Parallel Walls.

Circulation

The vision for the circulation system at Hopeton Earthworks is to establish visitor access and interpretive routes to provide visitors with an understanding of the physical earthwork complex. An entrance road, parking area, and pedestrian routes will be added. Pedestrian trails, an overlook and wayside will be established to provide access.

Access to the earthwork complex via the river will be improved to reflect this circulation route that existed at the time of the Hopewell. A new trail and bridge will be added, establishing a link to Mound City Group.

1. Vehicular Circulation. The existing vehicular circulation system at Hopeton Earthworks will be modified to provide access for visitors and to remove routes that impact the archeological landscape.

   a. Remove vehicular circulation routes that do not contribute to the significance of the archeological landscape and impact the integrity

of the known extant archeological features.

- Remove the quarry access road that runs over the Square Enclosure.

- Remove Pit Road, Overly Road, quarry service routes, and Vaughn Road.

b. Provide a parking area on the north side of Hopetown Road.

2. Pedestrian Circulation. Add pedestrian trails, an overlook, and an interpretive wayside.

   a. Establish trails that allow for understanding of the earthworks.

   b. Near the parking lot, construct an embankment and install a drainage pipe to allow drainage to/from Dry Run.

   c. Provide an overlook east of Circles B and C to present a visual overview of the earthwork complex.

   d. Create pedestrian routes between Hopeton Earthworks and Mound City Group.

      - Provide a trail along Hopetown Road to Mound City Group.

      - Build a pedestrian bridge across the Scioto River to connect to Mound City Group.

   e. Provide access to the river bank at Mound City Group by creating a new kayak / canoe access.

   f. Create an interconnected water route between all park units with new canoe / kayak access.

Vegetation

Treatment of vegetation at Hopeton Earthworks will focus on creating greater visibility and preservation of the archeological features. Vegetation will be managed to assist in defining the spatial organization of the earthwork complex, framing views and screening undesirable views.

The earthwork complex will be maintained free of woody vegetation surrounded by grassland. This appearance will be achieved by removing trees and fencerow vegetation and reintroducing grasses. Woodland will be retained along the eastern and southern property lines.

1. Vegetation types and management techniques will be used to preserve the archeological features.

   a. Remove trees and woody vegetation that impact archeological features or diminish the spatial qualities of the earthwork complex. However, if vegetation is helping to stabilize archeological features, do not remove it.

      - Remove woody vegetation on Circle A.

      - Remove fencerow vegetation between the Great Circle and Circle A.

      - Add vegetation north of Circle A to screen adjacent land use.

      - Remove fencerow vegetation north and west of the Great Circle.

      - Allow for shade trees, provided they do not negatively impact archeological resources.

b. Reintroduce grasses where trees and woody vegetation have been removed.

2. Utilize distinct vegetation types to reveal the form and spaces of the earthwork complex:

   a. Use a low growing grass mix (<6 to 12 inches in height) in spaces of the earthwork complex including the enclosure, mounds and borrow pits. Archeological features may be managed as tall and less frequently mown to further differentiate.

   b. Use tall grasses and forbs in areas surrounding the earthwork complex.

3. Maintain vegetation that stabilizes steep slopes or protects archeological features from impacts.

   a. Vegetation along the streambanks of Dry Run.

   b. Vegetation that screens views to the south and east of the earthwork complex.

4. Add vegetation on the north of Circle A, to screen views from the complex to adjacent land use.

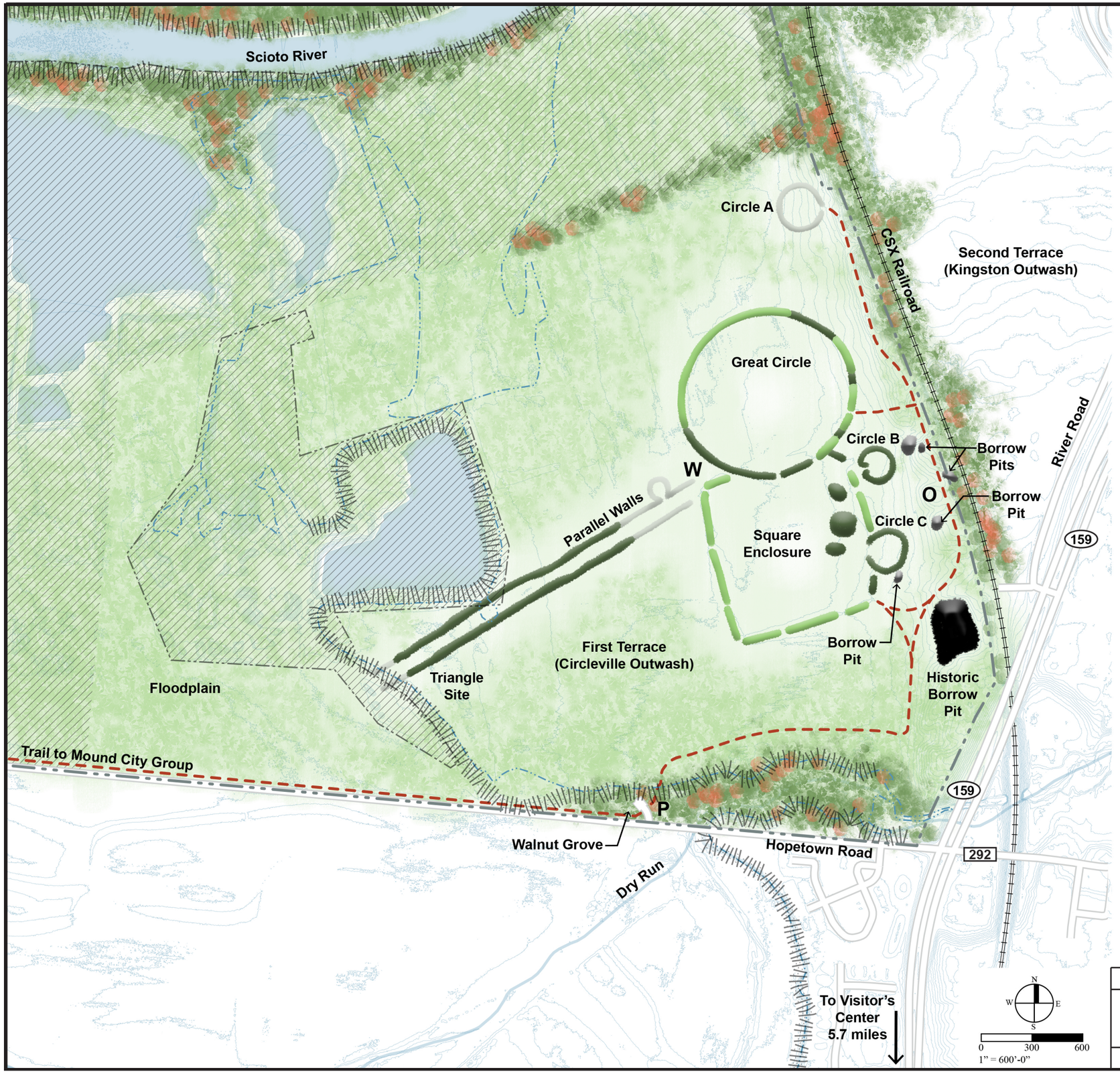
Buildings and Structures

Long-term treatment recommendations are to remove all buildings and structures from the earthwork complex and surrounding area, in order to protect the setting of the archeological landscape.

1. Remove buildings and structures that do not contribute to the significance of the archeological landscape and impact the integrity of the known extant earthwork complex including the utility lines and poles adjacent to the quarry access road that crosses over the Square Enclosure.

2. NPS will work with property owners to develop a long-term plan to eventually remove the buildings and structures that are impacting the earthwork complex including: the quarry operation buildings, structures, roads, and utilities.

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Legend

- Legislated Boundary
- Protect Adjacent Lands
- 100 Year Floodplain
- Creek Embankment
- Woodland
- Tall Grass and Forbs
- Low Mixed Vegetation
- Trail
- P — Parking
- Existing Feature to Protect and Mark with Vegetation
- Earthen Wall / Feature to Protect and Mark with Vegetation
- Unverified Feature to Protect and Mark with Vegetation
- Historic Borrow Pit to Protect and Mark with Vegetation
- Borrow Pit to Protect and Mark with Vegetation
- O — Overlook
- W — Wayside

Note:
Since site documentation was completed in October 2014, the parking lot at Hopetown Road and trail between the parking lot and overlook have been designed through a separate project. Therefore, these features are treated as existing conditions in the preferred alternative for the CLR/EA.

*Locations for mown trails may vary.

TIC# 353 128149

MARCH 2016	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: HOPETON EARTHWORKS - TREATMENT PLAN NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 6-4	REGION: MIDWEST; COUNTY: ROSS; STATE: OHIO; 6-37

Hopewell Mound Group

In accordance with the GMP, visitor use and interpretation will be emphasized at the Hopewell Mound Group. Legislated boundaries will be expanded to ensure maximum protection of archaeological resources and the landscape context of the earthworks, including the viewshed.[6-32] The treatment plan for Hopewell Mound Group emphasizes the interpretation of Hopewell Culture. The archeological landscape will be rehabilitated to focus visitor experience on the creation and use of the earthwork complex. This will be accomplished through preservation of extant below- and above-grade archeological features. Also, the legibility and visibility of the earthwork complex will be improved by delineating the archeological features and the visitor experience will be enhanced by managing circulation, vegetation, and views.

Rehabilitation is the treatment approach for the Hopewell Mound Group. Rehabilitation allows for compatible use through repair, alterations, and additions while preserving those features that convey historic and cultural significance.

Treatment goals for Hopewell Mound Group include the following:

- Preserve extant above-grade archeological features.
- Spatially depict the three-dimensional earthwork complex.
- Reveal the relationship to the river and other earthwork complexes.
- Remove non-contributing features that impact visitor's ability to discern the archeological landscape.
- Provide an authentic visitor experience.

The treatment plan for Hopewell Mound Group (ILLUSTRATION 6-5) illustrates the desired landscape condition.

Spatial Organization/Topography/Views
The vision for the spatial organization is for forms and patterns of the archeological landscape to be revealed. The full spatial qualities of the earthwork complex and the relationship to the surrounding landscape will be depicted.

1. Spatial organization will be rehabilitated through removal of non-contributing features, removal of vegetation that obscures the earthwork complex and archeological features, marking of non-extant above-grade archeological features, and establishment of pedestrian circulation routes that allow for understanding of the earthworks.

    a. Spatially depict the three-dimensional form of the earthwork complex and surroundings using vegetation or by marking nonvisible archeological features.

    b. Remove hazardous trees and woody vegetation that impact the earthwork complex and diminish the visitor's understanding of the spatial qualities of the earthwork complex.

        - Selectively remove woody vegetation along the eastern portion of the north wall of the Great Enclosure to improve views of the earthwork.

    c. NPS will work with the local community and landowners to develop a long-term plan for removal

6-32 *GMP*, 32

of non-contributing features that impact spatial organization of the earthwork complex, including Sulphur Lick Road and buildings located on archeological features.

d. Delineate the mass, scale, and form of the earthwork complex by marking non-extant above-grade archeological features, i.e., earthen walls, mounds, and borrow pits, and the spaces of the earthwork.

e. Provide interpretive information about the earthwork complex and cosmology.

f. Consider using alternative media to provide visitors with access to large amounts of research and documentation of features at the park unit—keyed to specific locations – to enhance visitors understanding of the authenticity of the earthwork complex.

Archeological Features

The treatment plan provides for protection and rehabilitation of archeological features. All extant below- and above- grade archeological features, as well as spaces with known or potential archeological scatter will be preserved, stabilized and repaired as needed, following best practices. The archeological features will be marked and interpreted to provide a compelling visitor experience. Non-extant archeological features will be marked to depict their mass, form and character, as documented by Shetrone in 1922 to 1925, or based upon most recent archeological investigations. Refer to the cross section examples provided under Study Area for a graphic representation of applicable rehabilitation techniques (ILLUSTRATION 6-1).

1. Investigations and Research. Continue investigations and archeological research, including the following research needs.

   a. Identify currently unknown resources at the outlying areas using magnetometry or other non-invasive archeological techniques.

   b. Investigate techniques for marking or rehabilitation of archeological features to fully understand potential impacts on below-grade archeological features.

2. Best Practices - Preservation of Features. Preserve all extant below- and above-grade archeological features. Stabilize and repair features as necessary, following best practices.

   a. Preserve all extant below- and above-grade archeological features.

   b. Stabilize and repair archeological features as needed, following best practices.

   c. Do not allow visitor access on top of the mounds or earthen walls or in borrow pits.

   d. Monitor the streambank and stabilize areas of erosion that threaten archeological resources.

3. Rehabilitation of Archeological Spaces. Rehabilitate archeological spaces to reveal their mass, form and scale. Delineate the earthwork complex by marking archeological features when no discernible topographical relief occurs in LiDAR imagery or through visual observations.

a. Depict the archeological space of the earthwork complex through the following techniques. Use a consistent palette of materials.

- Use one consistent vegetation type and vegetation management technique to depict the space of the enclosure and earthwork complex.

- Use a different vegetation management technique for archeological features such as mounds and walls to differentiate between the three-dimensional archeological features and adjacent spaces.

- Use a taller grass / herbaceous mix at the edges of the archeological spaces and in areas of archeological scatter, to distinguish these from the surrounding landscape.

- Maintain a distinct vegetation management technique to differentiate between the earthwork complex and visitor and administrative / maintenance areas.

4. Rehabilitation of Archeological Features. Rehabilitation of non-extant archeological features is recommended. This may include creating three-dimensional depictions using new soil or the use of vegetation.

a. Rehabilitate non-extant archeological features to depict their mass, form, and character, as documented by Shetrone in 1922 to 1925, or based upon most recent archeological investigations.

- Cross section examples provided in ILLUSTRATION 6-1 represent examples of applicable rehabilitation techniques.

b. Use markings, e.g. soil, rock cobble, gravel paths, flags, or vegetation to depict outlines and dimensions of verified non-extant archeological and other above-grade features.

- Use a non-permanent material that differs from the extant materials of the archeological features to differentiate these as contemporary features.

- Verified features to be delineated include the following.

  - Southern portion of the east wall of the Great Enclosure.
  - South, east and north walls of the Square Enclosure.
  - East and south walls of the D-Shaped Enclosure.
  - North, east, and south walls of the Great Circle.
  - Five mounds.

- Specific features to be delineated when verified include the following.

  - North portion of west wall of the Great Enclosure.
  - South portion of the west wall of the Great Enclosure.
  - Portions of the north and west walls of the D-Shaped Enclosure.
  - Portion of the west wall of the Great Circle.
  - Thirty-three mounds.
  - The ditch at the southeast portion of the east wall of the Great Enclosure.
  - The ditch around the Great Circle.
  - The ditch around the D-Shaped Enclosure.
  - The ditch at the northern portion of the west wall of the Great Enclosure.

Circulation
The existing circulation system at Hopewell Mound Group will be modified to remove routes that do not relate to the archeological landscape, and add routes that foster understanding of the archeological landscape. The vision for the circulation system at Hopewell Mound Group is to improve existing pedestrian circulation by adding routes that allow for understanding of the earthwork complex and removing routes that do not support this goal. Sulphur Lick Road and the bicycle route will eventually be removed from locations where they impact the earthwork complex. The visitor parking area will remain in its current location with access provided from the east.

Access to the earthwork complex via the river will be added to reflect this circulation route that existed at the time of the Hopewell.

1. Vehicular Circulation. Remove vehicular routes that impact the earthwork complex.

    a. NPS will work with the township and other local community representatives to develop a long-range plan to remove the portions of Sulphur Lick Road and the trail that are impacting the earthwork complex. This will occur only when local access needs have been addressed.

2. Pedestrian Circulation. Add pedestrian trails and an overlook, update existing overlooks, and add links to the North Fork Paint Creek to improve visitor understanding of the earthwork complex.

    a. Retain the existing overlook and viewshed at the northeast corner of the Great Enclosure and update the wayside.

    b. Add a new overlook at a location to the west of the existing overlook that gives the best overview of the earthwork complex.

    c. Update the existing overlook on the east side of the Square Enclosure to provide improved orientation to the earthwork complex.

    d. Create pedestrian and bicycle links to the North Fork Paint Creek to improve the relationship of the earthwork complex to the river.

    e. Relocate the rails to trails path to the south of the south wall of the Great Enclosure.

    f. Create an interconnected water route between all park units with a new canoe / kayak access.

Vegetation
Treatment of vegetation at Hopewell Mound Group will focus on creating greater visibility and preservation of the archeological features. Vegetation will be managed to assist in defining the spatial organization of the earthwork complex, framing views and screening undesirable views.

In most locations, the earthwork complex will be maintained free of woody vegetation surrounded by grassland. This appearance will be achieved by removing trees and fencerow vegetation and reintroducing grasses. Woody vegetation will be maintained in locations where it is protecting archeological resources.

1. Vegetation types and management techniques will be used to preserve the archeological features.

2. Utilize distinct vegetation types to reveal the form and spaces of the earthwork complex:

    a. Use a low growing grass mix (<6 to 12 inches in height) in spaces of the earthwork complex, mounds, and borrow pits. Archeological features may be managed as tall and less frequently mown to further differentiate.

    b. Use tall grass and forbs in areas surrounding the earthwork complex.

3. Maintain vegetation that stabilizes steep slopes or protects the earthwork complex from impacts.

    a. Maintain vegetation along the west portion of the north wall of the Great Enclosure.

    b. Maintain vegetation that screens views to the visitor parking area at the east side of the earthwork complex.

4. Add vegetation to screen undesirable views at the southwest portion of the property.

Buildings and Structures

Long-term treatment recommendations are to remove all buildings and structures from the earthwork complex, in order to protect the setting of the archeological landscape.

1. The park will work with property owners to develop a long-term plan to remove buildings that impact the earthwork complex.

2. The park will work with utility companies to develop a long-term plan to mitigate the effects of the high-voltage transmission towers and overhead lines that are impacting the earthwork complex. Removal is the preferred option, but other possible choices for mitigation could include:

    a. Relocation of transmission towers and lines to a new site beyond the viewshed of the earthwork complex (off NPS property).

    b. Relocation of transmission towers and lines to a location where they do not impact the earthwork complex within NPS property.

    c. Replace transmission towers with substations outside the earthwork complex and relocate high voltage lines underground.

    d. Replace the existing lattice towers with less intrusive towers.

    e. Move the existing overlook to minimize the visual impact of the towers by orienting views to the north south rather than east west.

Small Scale Features

The small scale features at Hopewell Mound Group play a minor role and do not distract from the archeological landscape. Any new small scale features will be minimal and unobtrusive.

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Legend

- Legislated Boundary
- Protect Adjacent Lands
- 100 Year Floodplain
- Creek Embankment
- Woodland
- Tall Grass and Forbs
- Low Mixed Vegetation
- Trail
- V — Visitor Orientation
- P — Parking
- Existing Feature to Protect and Mark
- Earthen Wall / Feature to Mark
- Unverified Feature - Potential to Mark
- Existing Ditch / Borrow Pit to Mark with Vegetation
- Ditch - Potential to Mark
- O — Overlook
- Unverified Habitation Site- Potential to Mark with Vegetation

TIC# 353 128149

MARCH 2015

UNITED STATES
DEPARTMENT OF THE INTERIOR

HOPEWELL CULTURE NATIONAL
HISTORICAL PARK

ILLUSTRATION 6-5

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
AND ENVIRONMENTAL ASSESSMENT

TITLE OF DRAWING
HOPEWELL MOUND GROUP - TREATMENT PLAN

NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK

REGION	COUNTY	STATE	
MIDWEST	ROSS	OHIO	6-45

Seip Earthworks

The treatment plan for Seip Earthworks emphasizes the interpretation of Hopewell ceremonialism. The archeological landscape will be rehabilitated to focus visitor experience on the creation and use of earthwork. This will be accomplished through delineation of previously unreconstructed mounds and earthen walls, improvements in circulation routes, removal of damaging vegetation, and separation between the visitor orientation area and the ceremonial landscape. Located within the 100-year flood zone, treatment recommendations for Seip Earthworks include protecting the riparian corridor to maintain a healthy stream corridor, and placing visitor services out of the floodplain. In accordance with the GMP, Seip Earthworks will provide a gateway for a grand tour of the Hopewell sites, with interpretive facilities and linkages with the nearby school and community.[6-33]

Rehabilitation is the treatment approach for Seip Earthworks. Rehabilitation allows for compatible uses through repair, alterations, and additions while preserving those features which convey its historic and cultural significance.

Treatment goals for Seip Earthworks include the following:

- Preserve extant above-grade archeological features.
- Spatially depict the three-dimensional earthwork complex.
- Relocate visitor facilities (buildings, roads, parking, etc.) away from the earthwork complex.
- Reveal the relationship to the river and other earthwork complexes.
- Remove non-contributing features that impact the visitor's ability to discern the archeological landscape.
- Provide an authentic visitor experience.

The preferred alternative for Seip Earthworks includes protecting all archeological features either through conservation easements or acquiring property from willing sellers, in order protect the entirety of the earthwork. Currently, portions of the Large Circle and Small Circle are in private ownership. Agreements with adjacent properties will be necessary to provide visitor access to the parking and orientation area.

The treatment plan for Seip Earthworks (ILLUSTRATION 6-6) illustrates the desired landscape condition.

Spatial Organization/Topography/Views
The vision for the spatial organization is for the forms and patterns of the archeological landscape to be revealed. The full spatial qualities of the earthwork complex and the relationship to the surrounding landscape will be depicted.

1. The spatial organization will be rehabilitated through removal of non-contributing features; removal of vegetation that obscures the earthwork complex and archeological features; rehabilitation of non-extant above-grade archeological features; and establishing pedestrian circulation routes that assist in defining the spatial qualities of the earthwork complex.

    a. Spatially depict the three-dimensional form of the earthwork complex and surroundings through markings and vegetation.

6-33 *GMP*, 36.

b. Remove hazardous trees and woody vegetation that impact archeological features or diminish the visitor's understanding of the spatial qualities of the earthwork complex and individual spaces.

   - When considering the removal of trees for visitor understanding of spatial qualities, consider benefit of shade trees in some locations, provided they will not damage archeological resources.

c. Remove non-contributing features from the immediate surroundings of the earthwork complex.

   - Remove the Blackstone House, and fish camp buildings. This will require review under the Section 106 process.

   - Relocate the picnic shelter, parking, roads and utilities either to a less intrusive area on-site further from the earthwork complex, or off-site.

d. Maintain a consistent vegetation type on the archeological features to distinguish them from visitor areas and the adjacent landscape.

e. Add a dense screen of trees and vegetation between the earthwork complex and the adjacent properties on the north and east.

f. Create a view between the earthwork complex and the river, by thinning vegetation along a portion of the riverbank.

g. Work with property owners to establish protection (through easements or other agreements) for the inholding on U.S. 50, west third of small circle and buffer around the east half of the square to manage for conservation and visual consistency with the earthwork complex.

Archeological Features
The treatment plan provides for protection and rehabilitation of the archeological features at Seip Earthworks.

1. Investigations and Research. Continue investigations and archeological research, including the following research needs.

   a. Currently, less information is available on the form and height of earthwork complex at Seip Earthworks. New research is helping to fill this gap, however the treatment recommendations favor "softer" approaches to mound and earthwork marking until such time as research informs a "harder" approach to rehabilitation.

   b. Identify currently unknown resources at the outlying areas using magnetometry or other non-invasive archeological techniques.

2. *Best Practices - Preservation of Features.* Preserve all extant below- and above-grade archeological features. Stabilize and repair features as necessary, following best practices.

   a. Preserve and maintain the existing reconstructed Seip-Pricer Mound and the reconstructed wall of the Large Circle as contributing features.

   b. Stabilize and repair archeological features as needed, following best practices.

   c. Do not allow visitor access on top of the mounds, borrow pits, or earthen walls.

3. Rehabilitation of Archeological Spaces. Rehabilitate archeological spaces to reveal their mass, form, and scale. Delineate the earthwork complex by markings or rehabilitating archeological features when no discernible topographical relief occurs in LiDAR imagery or through visual observations. The desired aesthetic should include open spaces with vegetation at different heights, that assists in the visibility of the earthworks.

    a. Depict the archeological space of the earthwork complex through the following techniques. Use a consistent palette of materials.

    b. Use vegetation types or vegetation management techniques to differentiate between different types of features and the surroundings.

    c. Maintain a different vegetation type on the earthwork complex from adjacent areas of archeological scatter and riparian areas.

4. Rehabilitation of Archeological Features. Rehabilitation of non-extant archeological features is recommended. This includes creating three-dimensional depictions using new soil or vegetation.

    a. Rehabilitate non-extant archeological features to depict their mass, form, and character, as documented by Squier and Davis in 1848, or based upon most recent archeological investigations.

        - Specific treatment for each archeological feature is provided in ILLUSTRATION 6-6 Cross section examples provided in ILLUSTRATION 6-1 represent examples of applicable rehabilitation techniques.

    b. Use earthen markings to rehabilitate outlines and dimensions of non-extant earthen walls.

        - Specific features to be rehabilitated include the following.

            — Small Circle
            — Large Circle
            — Large Square

        - Where discernible topographical relief occurs, only vegetation or non-permanent markings will be used to delineate features.

        - Use the most current, reliable archeological investigations to locate markings or rehabilitations, and to determine the size and scale. At this time, the most current information is 2015 magnetic surveys.

        - Use a non-permanent material that differs from the extant materials of the archeological features and the reconstructed Seip-Pricer Mound, to differentiate these as contemporary.

    c. Use vegetation to delineate outlines and dimensions of borrow pits.

    d. Use a cobble marking / cover to rehabilitate the outlines and dimensions of mounds.

        - Specific features to be rehabilitated with cobble include the following.

            — Seip-Pricer Mound
            — Seip Conjoined Mound (Note: additional earthen marking needed to reflect original mound mass)

Circulation
The existing circulation system at Seip Earthworks will be modified in order to protect the archeological features, and to provide an engaging visitor experience. A new parking area and visitor orientation is recommended to be located at the adjacent Paint Valley High School Property, with pedestrian trails connecting the orientation area, earthwork complex, and river.

1. Vehicular Circulation. The vehicular circulation system will be modified to relocate vehicular routes as far from the earthwork complex as possible.

    a. Remove existing parking area and adjacent pedestrian paths.

    b. Remove road and drive to the Blackstone House.

    c. Remove and relocate Dill Road where it crosses and damages archeological features.

    d. Create a new visitor parking area at the Paint Valley High School Property, with vehicular access from Highway 50.

2. Pedestrian Circulation. The existing pedestrian circulation system will be improved by adding routes that assist in defining the spatial qualities of the earthwork complex. Routes will be added that express and allow for understanding of the earthwork's geometry.

    a. Provide pedestrian access from the new visitor orientation area to the earthwork complex.

    b. Allow for informal pedestrian access inside the earthwork complex, providing access to the Small Circle, Large Circle, and the small square, connecting to the visitor orientation area.

    c. Provide a trail to Paint Creek that forms a loop trail along the creek and connects back to the earthwork. Create an overlook and canoe/kayak access point on the creek.

    - Provide access and information to the interconnected water route between all park units.

Vegetation
Treatment of vegetation at Seip Earthworks will focus on preservation of the archeological features. Vegetation will be managed to assist in defining the spatial organization of the earthwork complex, to clarify the visitor experience.

1. Vegetation management techniques will be used to preserve the archeological features.

    a. Remove trees and woody vegetation that impact archeological features or diminish the spatial qualities of the earthwork complex, specifically the fencerow vegetation around the perimeter of the previously state-owned property, and the removal of trees at the west half of the Small Circle.

2. Vegetation will be used to interpret various spaces including utilizing different grass types and mowing techniques to indicate spaces and distinct archeological features. Utilize distinct vegetation types to reveal the form and spaces of the earthwork complex:

    a. Use low mown vegetation in spaces of earthwork complexes including

the interior of the Large Circle, Small Circle, and small square (archeological features may be managed as low/mown, or tall/unmown to further differentiate).

- Plant the reconstructed Seip-Pricer Mound with taller vegetation (<6 to 12 inches in height), or marked with a stone cobble cover.
- Plant the earthen walls with taller vegetation (<6 to 12 inches in height).
- Plant the extant Seip-Conjoined Mound with taller vegetation (<6 to 12 inches in height), or marked with a stone cobble cover.
- Plant borrow pits with taller mown vegetation (<6 to 12 inches in height).
- Plant interior spaces of the enclosures with shorter mown vegetation (<6 inches in height).

b. Use a mix of native herbaceous species maintained consistently (mow 1-2 times per year) in areas surrounding earthwork complex.

3. Maintain woodland and riparian vegetation along the edge of Paint Creek and at the property boundaries.

4. Establish a wooded edge to screen negative views and impacts, specifically to the east to screen the Paint Valley High School.

5. Consider planting shade trees that can benefit visitors in summer or provide scenic landscape value. Provide trees in strategic locations where no known features exist around the earthworks.

Buildings and Structures

The preferred alternative includes assessing the historical significance of the existing structures and removal of these buildings because they negatively impact the archeological landscape. New structures will be added to provide visitor functions, sited away from the archeological features.

1. Evaluate buildings and structures that may be significant in their own right, but that are non-contributing features to the archeological landscape.
   - Prepare documentation of the fish camp buildings prior to demolition.
2. Remove non-contributing buildings and structures from the archeological landscape, after full documentation.
   a. Remove the Blackstone House and outbuildings. The Blackstone House has been determined eligible for the national register, and removal of the building will require Section 106 process.
   b. Remove fish camp buildings and related structures.
   c. Remove existing picnic area, including picnic shelter, portable restroom, tables, and corresponding small scale features.
3. Add new structures and small scale features for visitor orientation to assist in the interpretation of the earthwork complex on the Paint Valley High School property.

Small Scale Features
The preferred alternative allows for small scale features that assist in visitor experience and interpretation of the earthwork complex.

Small scale features that are non-contributing and do not serve an active role in interpretation of the earthwork complex will be removed.

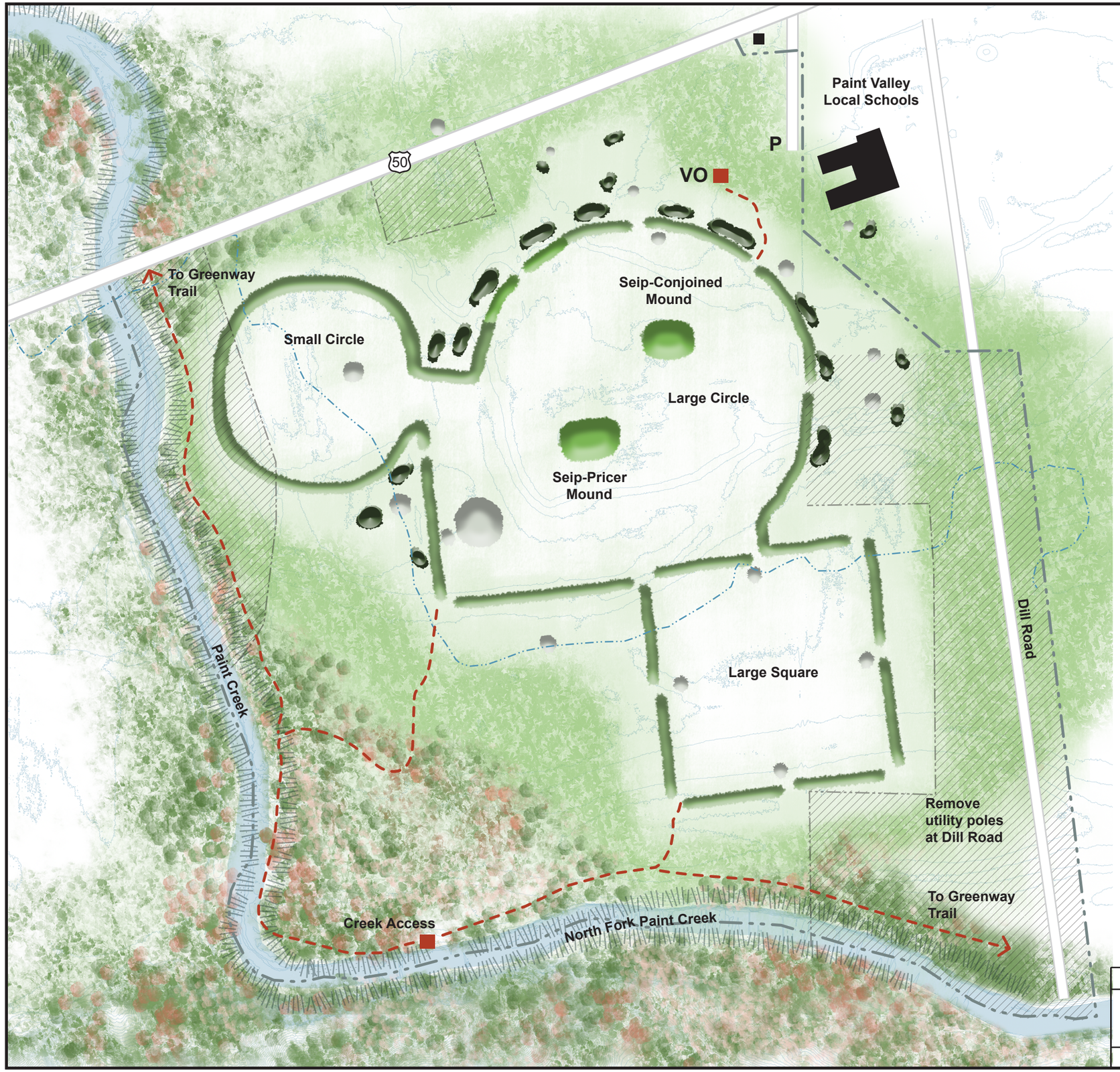
a. Remove small scale features at the picnic area, including parking area bollards, picnic tables, drinking fountain, and trash and recycling receptacles.

b. Remove small scale features at the Blackstone House, including fences and overhead utility lines.

c. Remove overhead utility lines on Dill Road.

4. New small scale features will be minimal and unobtrusive.

    a. Design and situate new small scale features such as signs and interpretive panels, to be low-profile and unobtrusive. Consider movable panels that will not impact resources below-grade.



Legend

- Legislated Boundary
- Protect Adjacent Lands
- 100 Year Floodplain
- Creek Embankment
- Woodland
- Tall Grass and Forbs
- Low Mixed Vegetation
- Trail
- VO — Visitor Orientation
- P — Parking
- Existing Mound - Potential Rehabilitate with Cobble Marking
- Unverified Mound / Feature - Potential Mark / Rehabilitate
- Earthen Wall / Feature to Mark / Rehabilitate
- Borrow Pit to Mark with Vegetation

N
W E
S

0 250 500
1" = 500'-0"

Sources:
Magnetic Survey 2015, GIS HOCU 2012 LiDAR; 1848, High Bank Works, Davis and Squire; Seip Marshall NAD83; https://msc.fema.gov/portal/search?Address Query=chillicothe; http://www.fws.gov/wetlands/Data/Mapper.html; 2014 Google Maps

TIC# 353 128149

MARCH 2016	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: SEIP EARTHWORKS - PREFERRED ALTERNATIVE
ILLUSTRATION 6-6	NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK REGION: MIDWEST · COUNTY: ROSS · STATE: OHIO · 6-53

High Bank Works

The treatment plan for High Bank Works emphasizes the interpretation of Hopewell ceremonialism. The archeological landscape will be preserved, while allowing visitors to discover the creation and use of the mounds. This will be accomplished through delineation of unreconstructed mounds, improvements in circulation routes, and removal of damaging vegetation. In accordance with the GMP, High Bank Works will be used primarily for research and as an archeological preserve.[6-34]

Preservation is the treatment approach for High Bank Works. This approach protects and preserves those features which convey its historic and cultural significance.

Treatment goals for High Bank Works include the following:

- Preserve extant above-grade archeological features.
- Spatially depict the two-dimensional earthwork complex.
- Locate visitor facilities (roads, parking) away from earthwork complex.
- Reveal the relationship to the river and other earthwork complexes.
- Remove non-contributing features that impact the visitor's ability to discern the archeological landscape.
- Provide an authentic visitor experience.

The preferred alternative for High Bank Works includes protecting all archeological features either through conservation easements, or acquiring property from willing sellers, in order protect the entirety of the earthwork. Currently, the middle portion of the earthwork (the Parallel Walls) are in private ownership. Easements will be necessary to provide access to the lower terrace, the Scioto River, and the South Earthwork.

The treatment plan for High Bank Works (ILLUSTRATION 6-7) illustrates the desired landscape condition.

Spatial Organization/Topography/Views
The vision for the spatial organization at High Bank Works is for the forms and patterns of the archeological landscape to be revealed. The full spatial qualities of the earthwork complex and the relationship to the surrounding landscape will be depicted.

1. The spatial organization will be repaired through removal of non-contributing features; removal of vegetation that obscures the earthwork complex and archeological features; and establishing pedestrian circulation routes that assist in defining the spatial qualities of the earthwork complex.

    a. Spatially depict the three-dimensional form of the earthwork complex and surroundings through vegetation management. Delineate the mass, scale, and form of the earthwork complex by marking non-extant above-grade archeological features, i.e. earthen walls, mounds, and borrow pits, and the spaces of the earthwork.

    b. Remove hazardous trees and woody vegetation that impact the archeological features or diminish the visitor's understanding of the spatial qualities of the earthwork complex and individual spaces.

6-34 HOCU GMP, 39.

c. Remove non-contributing features from the immediate surroundings of the earthwork complex, including buildings, structures, roads, utilities, etc.

d. Maintain a consistent vegetation type on the archeological features to distinguish them from the adjacent landscape. Clarify the forms of the earthwork complex by utilizing two distinct vegetation types. One vegetation type will be used on the earthwork complex, and another type will be used in adjacent areas.

e. Create a view between the earthwork complex and the river, by thinning vegetation along a portion of the riverbank and opening select views of Paint Creek and Scioto River.

f. Add vegetative buffers to screen negative views, specifically the railroads tracks and road at the northeast property line.

Archeological Features

The treatment plan provides for protection and repair of the archeological features at High Bank Works to spatially depict the massive earthen walls, borrow pits, and mounds that are not currently visible. The desired aesthetic should include open spaces and low vegetation that assists with visibility of the earthworks.

1. Investigations and Research. Continue investigations and archeological research, including the following research needs.

    a. Identify currently unknown resources at the outlying areas using magnetometry or other non-invasive archeological techniques.

2. Best Practices - Preservation of Features. Preserve all extant below- and above-grade archeological features. Stabilize and repair features as necessary, following best practices.

3. Repair of Archeological Spaces. Repair archeological spaces to reveal their form and scale. Delineate the earthwork complex by marking with vegetation or utilizing vegetation management techniques that highlight the archeological features when no discernible topographical relief occurs in LiDAR imagery or through visual observations.

    a. Depict the three-dimensional form of the earthwork complex through the use of one or more of the following techniques. Use a consistent palette of materials.

        - Use vegetation types or vegetation management techniques to differentiate between the earthwork complex and the surrounding landscape.

        - Use a taller grass / herbaceous mix at the edges of the archeological spaces and in areas of archeological scatter, to distinguish these from the earthwork complex and woodland areas.

4. Preservation of Archeological Features. Non-extant archeological features at High Bank Works will be preserved, and marked through the use of vegetation or other impermanent methods.

    a. Repair non-extant archeological features to depict their mass, form and character, as documented by the 2013 Burks magnetic survey, or

based upon most recent archeological investigations.

- Specific treatment for each archeological feature is provided in ILLUSTRATION 6-7. Cross section examples provided in ILLUSTRATION 6-1 represent examples of applicable marking techniques.

b. Use vegetation maintained at different heights to depict outlines and dimensions of non-extant mounds and earthen walls.

- Specific features to be delineated include the following.

  – Great Circle
  – Octagon
  – Parallel Walls
  – South Earthwork
  – Borrow pits

Circulation

The vision for the circulation system at High Bank Works is to remove all non-contributing features, including roads and parking areas, and to add pedestrian routes that assist in defining the spatial qualities of the earthwork complex. Access to the earthwork complex via the river will be added to reflect the circulation route that existed at the time of the Hopewell.

1. Vehicular Circulation. The vehicular circulation system will be modified to remove vehicular routes from the earthwork complex, while providing for safe visitor and maintenance access.

   a. Remove existing gravel and dirt roads.

   b. Add a second vehicular route and parking area, open to visitors, at the South Earthwork.

2. Pedestrian Circulation. A network of pedestrian paths will provide access to the earthwork and the edge of the Scioto River.

   a. Improve pedestrian access at the north parking area into the earthwork complex. Work long-term with the railroad company to provide safe access across the railroad tracks.

   b. Improve existing pedestrian circulation by adding routes that allow for understanding of the earthwork complex.

      - Maintain informal pedestrian circulation routes throughout the interior space of the earthworks.

      - Add a path from the south vehicular entry into the South Earthwork.

   c. Create a path from the south vehicular entry to the Scioto River. Create a canoe / kayak access at the river edge. Provide a river overlook in this location.

Vegetation

Vegetation at High Bank Works will be managed to provide visibility and preservation of the earthwork complex. Trees and shrubs that grow on the earthwork complex will be removed, hardwood forest will be maintained around the earthwork complex, and riparian vegetation will remain along the river edge.

1. Vegetation management techniques will be used to preserve the archeological features.

   a. Remove hazardous trees and woody vegetation that impact contributing archeological features or diminish

the spatial qualities of the earthwork complex, specifically the area southwest of the Octagon.

b. Remove the native grassland at the Octagon.

2. Vegetation will be used to interpret various spaces including utilizing different grass types and mowing techniques to indicate spaces and distinct archeological features. Use two distinct vegetation types to reveal the form and spaces of the earthwork complex:

   a. Low/mown vegetation in spaces of earthwork complex including the interior of the Great Circle, Octagon, Parallel Walls and South Earthwork (archeological features may be managed as low/mown, or tall/ unmown to further differentiate).

      - Plant the Great Circle, Octagon, Parallel Walls, and South Earthwork with taller vegetation (<6 inches in height).

      - Plant borrow pits with taller mown vegetation (<6 inches in height).

      - Plant interior spaces of the enclosures with shorter mown vegetation (3 to <6 inches in height).

   b. Use a mix of native herbaceous species maintained consistently in areas surrounding earthwork complex.

      - This could be the same mix as currently used in the Octagon. Mow once a year, in the winter.

3. Maintain woodland and riparian vegetation along the edge of the Scioto River.

4. Add a vegetative buffer along the northeast property line to screen the existing railroad and road from the earthwork complex.

Small Scale Features

The preferred alternative allows for small scale features that assist in visitor experience and interpretation of the earthwork complex.

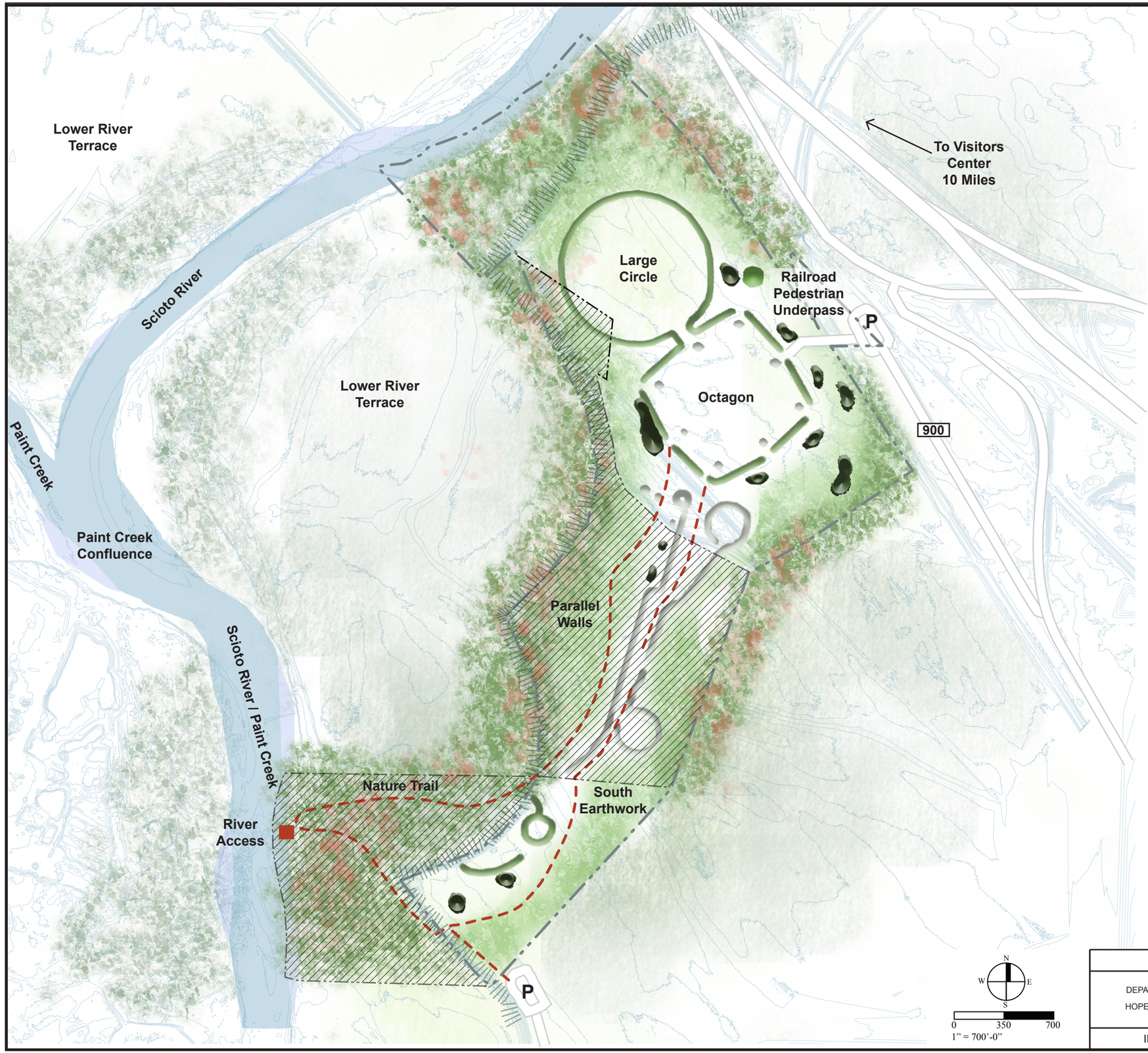
1. Small scale features that are non-contributing and do not serve an active role in interpretation of the earthwork complex will be removed.

   a. Remove all non-contributing small scale features. This includes the fence adjacent the Large Circle, the utility poles and lines along the dirt access road.

2. Any new small scale features will be minimal and unobtrusive.

   a. Design and situate new small scale features such as signs and interpretive panels, to be low-profile and unobtrusive.

   b. Add a fence along the northeast property line to provide a separation between the earthwork and existing railroad.



Legend

- Legislated Boundary
- Protect Adjacent Lands
- 100 Year Floodplain
- Creek Embankment
- Woodland
- Tall Grass and Forbs
- Low Mixed Vegetation
- Trail
- P — Parking
- Existing Feature to Protect and Mark with Vegetation
- Unverified Feature to Protect and Mark with Vegetation
- Earthen Wall / Feature to Protect and Mark with Vegetation
- Borrow Pit to Protect and Mark with Vegetation

Sources:
Burks 2013 High Bank Works Magnetic Survey; Burks 2013 Turpen Tract-High Bank Works Magnetic Survey; GIS HOCU 2012 LiDAR; 1848, High Bank Works, Davis and Squire; http://www.fws.gov/wetlands/Data/Mapper.html; https://m-sc.fema.gov/portal; 2014 Google Maps

TIC# 353 128149

MARCH 2016	TITLE OF PROJECT: CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR HOPEWELL CULTURE NATIONAL HISTORICAL PARK	TITLE OF DRAWING: HIGH BANK WORKS - PREFERRED ALTERNATIVE NAME OF PARK: HOPEWELL CULTURE NATIONAL HISTORICAL PARK
ILLUSTRATION 6-7	REGION: MIDWEST · COUNTY: ROSS · STATE: OHIO · 6-59

Implementation

This section provides guidance for implementing the treatment recommendations. The recommendations are organized into distinct tasks, with subtasks identified. These tasks will guide preparation of Project Management Information System (PMIS) project statements.

The tasks are presented by park unit, in table form. Each task has been assigned a phase, or priority, that indicates when implementation should occur. These phases include: Phase 1 (1 to 5 years); Phase 2 (5 to 10 years); and Phase 3 (10 to 15 years).

TABLE 6-2. Implementation

CLR Treatment Recommendation / FMSS Work Order	CLR Task Component/ FMSS Task Component	Phase / Priority Phase 1 (1 to 5 years) Phase 2 (5 to 10 years) Phase 3 (10 to 15 years)
Mound City Group		
Task 1. Protect Views	Task 1.1 Establish screen/vegetation buffer at property edges Task 1.2 Thin veg to reveal mountain views Task 1.3 Screen Visitor Center	Phase 1
Task 2. Relocate Visitor Center, Administrative, and Maintenance Buildings	Task 2.1 Determine new location for Administrative and Visitor Center Task 2.2 Remove Visitor Center, picnic shelter, Administrative, Maintenance Buildings, and relocate	Phase 3
Task 3. Remove vehicular circulation	Task 3.1 Determine new access routes Task 3.2 Remove existing roads, parking areas	Phase 3
Task 4. Investigate Small Scale Features	Task 4.1. Document features for significance Task 4.2 Repair/ remove as determined	Phase 2
Task 5. Add Trails	Task 5.1 Create river access point Task 5.2 Create new trail through North 40 Task 5.3 Extend river trail Task 5.4 Create trail and connection across river to Hopeton Earthworks Task 5.5 Extend bike path from Tri County Triangle Trail to Mound City Group	Phase 2
Task 6. Protect Soundscape	Task 6.1 Create agreement/partnership to mitigate noise	Phase 1
Task 7. Establish Native Vegetation (North Forty)	Task 7.1 Transition North Forty from haying to native grasses and forbs	Phase 1 to 3
Task 8. Maintain Previously Reconstructed Mounds (Mounds 1 through 23)	Task 8.1 Establish grass mix, mown 3-6” Task 8.2 Establish cobble marking on largest mounds (#1,2,3,4,5,7,8,18)	Phase 1 Phase 2

CLR Treatment Recommendation / FMSS Work Order	CLR Task Component/ FMSS Task Component	Phase / Priority Phase 1 (1 to 5 years) Phase 2 (5 to 10 years) Phase 3 (10 to 15 years)
Mound City Group, Cont.		
Task 9. Rehabilitate Mounds X1 & X2; 24 & 25	Task 9.1 Conduct archeological investigations to verify Task 9.2 Rehabilitate mounds	Phase 3
Task 10. Maintain Enclosure (interior space)	Task 10. Establish grass mix, mown 3-6"	Phase 1
Task 11. Maintain Enclosure Walls	Task 11. Establish grass mix, mown 6-12"	Phase 1
Task 12. Maintain Borrow pits	Task 12. Establish grass mix, mown 6-12"	Phase 1
Task 13. Maintain Non-reconstructed borrow pit	Task 13. Establish grass mix, mown 6-12"	Phase 1

CLR Treatment Recommendation / FMSS Work Order	CLR Task Component/ FMSS Task Component	Phase / Priority Phase 1 (1 to 5 years) Phase 2 (5 to 10 years) Phase 3 (10 to 15 years)
Hopeton Earthworks		
Task 1. Protect Views and Land Use	Task 1.1 Establish vegetation to screen property edges	Phase 1
Task 2. Visitor Parking, access	Task 2.1 Create visitor parking, visitor orientation	Phase 3
Task 3. Remove gravel road	Task 3.1 Remove existing road	Phase 2
Task 4. Add Trails	Task 4.1. Add a nature trail through the park unit, and connect trail to Mound City Group	Phase 3
Task 5. Establish Native Vegetation (outside of earthworks)	Task 5.1 Transition vegetation from haying to native grasses and forbs	Phase 1
Task 6. Maintain and Rehabilitate Great Circle, Square	Task 6.1 Verify extents and establish grass mix, mown 6-12"	Phase 2
Task 7. Maintain earthwork enclosures (interior spaces)	Task 7.1 Transition from haying to establish grass mix, mown 3-6"	Phase 2
Task 8. Maintain and Rehabilitate Parallel Walls, Circle A, B, and C	Task 8.1 Verify extents and establish grass mix, mown 6-12"	Phase 2
Task 9. Maintain and Rehabilitate Mounds	Task 9.1 Verify extents and establish grass mix, mown 6-12"	Phase 3
Task 10. Maintain Borrow pits	Task 10.1 Establish grass mix, mown 6-12"	Phase 2

CLR Treatment Recommendation / FMSS Work Order	CLR Task Component/ FMSS Task Component	Phase / Priority Phase 1 (1 to 5 years) Phase 2 (5 to 10 years) Phase 3 (10 to 15 years)
Hopewell Mound Group		
Task 1. Protect Views	Task 1.1 Establish vegetation to screen the adjacent land uses Task 1.2 Remove utilities that cross earthworks	Phase 1 Phase 3
Task 2. Visitor access	Task 2.1 Provide visitor parking area	Phase 2
Task 3. Remove Sulphur Lick Road	Task 3.1 Work with agencies, community to provide a new route	Phase 3
Task 4. Trails and river access	Task 4.1. Relocate Tri-County Trail away from earthworks Task 4.2 Maintain nature trail and add overlook Task 4.3 Provide creek access	Phase 2
Task 5. Establish Native Vegetation (outside of earthworks)	Task 5.1 Transition vegetation from haying to native grasses and forbs	Phase 1
Task 6. Maintain and Rehabilitate Great Enclosure, Square Enclosure, and D-shaped Enclosure	Task 6.1 Establish grass mix, mown 6-12” Task 6.2 Verify extents and rehabilitate	Phase 1 Phase 3
Task 7. Maintain earthwork enclosures (interior spaces)	Task 7.1 Transition from haying to establish grass mix, mown 3-6”	Phase 1
Task 8. Maintain and Rehabilitate Mounds (5 verified)	Task 8.1 Establish grass mix, mown 6-12” Task 8.2 Verify extents and rehabilitate	Phase 1 Phase 3
Task 9. Verify and Rehabilitate Mounds (33 unverified)	Task 9.1 Verify Mounds, archeological research Task 9.2 Establish grass mix, mown 6-12” Task 9.3 Rehabilitate	Phase 1 Phase 2 Phase 3
Task 10. Rehabilitate Ditches	Task 10.1 Establish grass mix, mown 3-6”	Phase 1 Phase 3
Task 11. Maintain Borrow pits	Task 11.1 Establish grass mix, mown 6-12”	Phase 1

CLR Treatment Recommendation / FMSS Work Order	CLR Task Component/ FMSS Task Component	Phase / Priority Phase 1 (1 to 5 years) Phase 2 (5 to 10 years) Phase 3 (10 to 15 years)
Seip Earthworks		
Task 1. Protect Views and Land Use	Task 1.1 Establish vegetation to screen the school from the earthworks	Phase 1
Task 2. Relocate Visitor Parking, picnic, access	Task 2.1 Determine new location for parking, visitor orientation Task 2.2 Remove picnic shelter, parking, and associated features.	Phase 3
Task 3. Move Dill Road	Task 3.1 Determine new route, to be located off of earthwork features. Task 3.2 Remove existing road and utility poles	Phase 3
Task 4. Add Trails	Task 4.1. Add a nature trail to follow Paint Creek and create a loop through the park unit Task 4.2 Connect trail to the greater greenway trail system	Phase 1
Task 5. Document and remove Blackstone House and Fish Camp Buildings	Task 5.1 Document the Fish Camp buildings and related structures, and remove Task 5.2 Remove the Blackstone House, outbuildings, and other associated features (road, utilities). Undertake Section 106 process prior to removal.	Phase 1 - 2
Task 6. Establish Native Vegetation (outside of earthworks)	Task 6.1 Transition vegetation from haying to native grasses and forbs	Phase 1
Task 7. Maintain and Rehabilitate Large Circle	Task 7.1 Establish grass mix, mown 6-12” Task 7.2 Verify extents and rehabilitate circle	Phase 2
Task 8. Maintain earthwork enclosures (interior spaces)	Task 8.1 Transition from haying to establish grass mix, mown 3-6”	Phase 1
Task 9. Maintain Seip-Pricer Mound	Task 9.1 Establish cobble marking on mound	Phase 3
Task 10. Maintain Conjoined Mound	Task 10.1 Verify extents, add soil to define mound, as determined necessary Task 10.2 Establish cobble marking on mound	Phase 3
Task 11. Rehabilitate Small Circle and Large Square	Task 11.1 Establish grass mix, mown 6-12” Task 11.2 Verify extents and rehabilitate	Phase 1 Phase 3
Task 12. Maintain Borrow pits	Task 12.1 Verify extents and establish grass mix, mown 6-12”	Phase 2

CLR Treatment Recommendation / FMSS Work Order	CLR Task Component/ FMSS Task Component	Phase / Priority Phase 1 (1 to 5 years) Phase 2 (5 to 10 years) Phase 3 (10 to 15 years)
High Bank Works		
Task 1. Protect Views and Land Use	Task 1.1 Establish a view to the river from the earthwork complex Task 1.2 Establish vegetation to screen the adjacent railroad tracks from the earthwork complex	Phase 1
Task 2. Provide Visitor access	Task 2.1 Provide a new parking area and visitor access to the South Earthwork Task 2.2 Provide visitor parking area and safe passage across the railroad tracks	Phase 2
Task 3. Remove gravel road	Task 3.1 Remove gravel roads and utilities that cross the earthworks	Phase 3
Task 4. Add Trails and river access	Task 4.1. Add a nature trail to the river edge, with river access. Create a looped trail through the park unit.	Phase 2
Task 5. Establish Native Vegetation (outside of earthworks)	Task 5.1 Transition vegetation from haying to native grasses and forbs	Phase 1
Task 6. Maintain and Rehabilitate Great Circle	Task 6.1 Verify extents and establish grass mix, mown 6-12”	Phase 1
Task 7. Maintain earthwork enclosures (interior spaces)	Task 7.1 Transition from haying to establish grass mix, mown 6-9”	Phase 1
Task 8. Maintain and Rehabilitate Octagon	Task 8.1 Establish grass mix, mown 6-12”	Phase 1
Task 9. Maintain and Rehabilitate Parallel Walls	Task 9.1 Verify extents and establish grass mix, mown 6-12”	Phase 2
Task 10. Rehabilitate South Earthwork	Task 10.1 Verify extents and establish grass mix, mown 6-12”	Phase 2
Task 11. Maintain Borrow pits	Task 11.1 Verify extents and establish grass mix, mown 6-12”	Phase 1

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Appendix B - Terminology

Above-grade archeological features
: Features with discernible topographic relief on LiDAR imagery or through visual observations.

Archeological feature
: The element(s) of a landscape that contributes to the significance and that can be the subject of a treatment intervention. Examples include a earthen walls, mounds, borrow pits, scatter, and remnants of structures.

Archeological landscape
: A geographic area that includes archeological, cultural, and natural resources that may be associated with a historic event, activity, or person. The archeological landscape include both below- and above-grade archeological features.

Below-grade archeological features
: Features with no discernible topographic relief on LiDAR imagery or through visual observations, but are evident utilizing magnetometry or by other archeological investigations.

Borrow pit
: A depressional area that may have been excavated by the Hopewell people to construct earthworks, or intentionally created as a water feature.

Building
: A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity.

Character-defining features
: A prominent or distinctive aspect, quality, or characteristic of an archeological landscape that contributes significantly to its physical character. Earthen walls, mounds, borrow pits, structures, vegetation, spatial relationships, views, and materials may be such features.

Contributing Feature
: A feature that contributes to the significance of the archeological landscape.

Crop
: Yearly cultivated crop species, generally corn, soybeans, or wheat.

Earthen wall
: An earthwork that creates an enclosure of a designed and specific configuration. The Hopewell people constructed earthen walls in squares, circles, octagons, and other geometric forms. Multiple earthen walls are often combined into unique geometric configurations.

Earthworks

Constructed or intentionally manipulated piles of placed soil or rocks. Built by the Hopewell people, these include earthen walls, mounds, and borrow pits.

Earthwork Complex

Constructed by the Hopewell people, a designed grouping of archeological features (earthen walls, mounds, borrow pits, etc.) that may function as ritual, ceremonial, and burial places.

Enclosure

The interior space defined by constructed, geometric earthen walls.

Gateway

An intentional break in an earthen wall, that may have been an entrance or gateway into the ceremonial earthwork complex. In Hopewellian construction, mounds were often located at gateway locations.

Hay Fields

Primarily grass species with regular or occasional cultivation. Within the park units, it is generally an Orchardgrass-Timothy-Fescue-Goldenrod species blend with a wide variety of shrub or herb meadows. Introduced grasses have been planted or volunteered into old fields, with goldenrod as the primary species. Shrubs may or may not be present, but generally account for less than 25% of the total cover. Common shrubs include dogwood, sumac, blackberries, and eastern red cedar. Non-native shrubs commonly include multi-flora rose, Japanese honeysuckle, and Russian olive.

Historic Character

The sum of all visual aspects, features, materials, and spaces associated with an archeological landscape's history, i.e. the original configuration together with losses and later changes. These qualities are often referred to as character-defining.

Hopewell

The term "Hopewell" describes a broad interregional network of different American Indian groups during the Middle Woodland period. They left no written language and little is known about their daily life, including what they called themselves. The name "Hopewell" refers to Captain Mordecai Hopewell who owned a farm that contained the major archeological site, known today as Hopewell Mound Group.

Integrity

The authenticity of a property's historic identity, evinced by the survival of physical characteristics that existed during the property's historic or prehistoric period. The seven qualities of integrity as defined by the National Register Program are location, setting, feeling, association, design, workmanship, and materials.

Mound

An artificial elevation of the earth constructed by the Hopewell people as ceremonial or burial places.

Mown Lawn

Mown lawn includes turf grass species that are mown regularly.

Native Grasslands

A combination of planted grasses and forbs. In the park units, it usually includes a combination of big bluestem, indiangrass, switchgrass as dominant species. Both native and non-native grasses and forbs tend to volunteer in areas that have been planted with prairie grasses and forbs. Other important species include Canada goldenrod, sideoats grama, blackeyed and browneyed susan, wild bergamont, and stiff goldenrod. Shrubs and small trees include Pennsylvania blackberry, American elm, multiflora rose and slippery elm.

Non-Contributing Feature

A feature that does not contribute to the significance of the archeological landscape.

Ornamental Planting

Ornamental planting areas may include trees, shrubs, perennials, and groundcovers. It generally includes non-native or introduced plant species. Ornamental planting areas may include trees, shrubs, perennials, and groundcovers.

Park Unit

The NPS jurisdictional boundary, including inholdings.

Preservation

Includes measures necessary to sustain the existing form, integrity, and materials of extant archeological features, including earthen walls, mounds, and borrow pits. Work may include stabilization measures and ongoing maintenance.

Reconstruction

Includes the previously reconstructed archeological features at Mound City Group (earthen walls, mounds, and borrow pits) and Seip Earthworks (Seip-Pricer Mound and a portion of the earthen wall). The reconstructed features were built, by means of new construction to the size, scale, and configuration reflective of the most accurate archeological studies and investigations at that time.

Restoration

Includes measures necessary to depict the form of the earthwork complex as it appeared during the period of significance, through the removal of non-contributing features and reconstruction of missing features.

Rehabilitation

Includes measures necessary to depict the spatial form of the earthwork complex as an interpretive element. Earthen walls, mounds, and borrow pits may be marked with rock cobble, vegetation, or defined with earthen construction to depict the spatial qualities of the earthwork complex.

Riparian

Vegetation typical to floodplain forests and along rivers or streams. In the park units, the riparian community is dominated by a combination of silver maple (Acer saccharinum), sycamore (Platanus occidentalis), hackberry species (Celtis spp.), American elm (Ulmus americana), and green ash (Fraxinus pennsylvanica). Vines, including eastern poison ivy (Toxicodendron radicans) and creepers (Parthenocissus spp.) are often abundant. Most areas are under water for some period each spring, and microtopography is important for defining water regimes on a local scale.

Shrubland

Woody shrub and tree species account for most of the vegetation coverage in shrublands. In the park unit, this includes areas that show evidence of heavy human use (clearing, plowing). Woody species volunteer into these cleared areas more or less spontaneously, and vegetation is dominated (>80% cover) by ruderal or exotic species. A wide variety of woody species may be present, and these species may occur as monodominant or mixed stands. Some typical woody dominates include eastern red cedar (Juniperus virginiana), pines (Pinus spp.), hawthorns (Crataegus spp.), red maple (Acer rubrum), honey locust (Gleditsia triacanthos), and black walnut (Juglans nigra). Other associated shrubs and herbaceous species are generalist species.

Significance

The meaning or value ascribed to a archeological landscape based on the National Register criteria for evaluation. It normally stems from a combination of association and integrity.

Site

A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archeological value regardless of the value of any existing structure.

Structure

The term “structure” is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.

Treatment

Work carried out to achieve a particular historic preservation goal.

Type-site

The first archeological site discovered for a particular culture. Hopewell Mound Group is the type-site of the Hopewell Culture.

Woodland

Hardwood forest or woodlands that within the park units show evidence of heavy human use (clearing, plowing). Woody species volunteer into these cleared areas more or less spontaneously, and vegetation is dominated (>80% cover) by ruderal or exotic species. A wide variety of woody species may be present, and these species occur as monodominant or mixed stands. Some typical woody dominates include eastern redcedar (Juniperus virginiana), pines (Pinus spp.), hawthorns (Crataegus spp.), red maple (Acer rubrum), honey locust (Gleditsia triacanthos), and black walnut (Juglans nigra). Other associated shrubs and herbaceous species are generalist or ruderal species.

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Appendix C: Spruce Hill Preserve

Introduction

This document presents an abbreviated Cultural Landscape Report (CLR) for the Spruce Hill Preserve, an affiliated property owned and managed by the Arc of Appalachia. The property was added to the legislated boundary of Hopewell Culture NHP in 2009 as it possesses the same resource management issues as the NPS owned park units. These include questions on how to address the desired landscape condition, long-term maintenance, protection of resources, the potential for opening and interpreting the site to visitors, and identifying future studies and resource needs.[1]

This abbreviated CLR includes an overview of the earthwork's historical development, a general description of the property's existing condition, an analysis of integrity, and general treatment recommendations. The intent of this document is to record the complex's existing condition based upon secondary information, provide a preliminary assessment of integrity, and provide initial recommendations for its preservation and continued stewardship.[2]

This abbreviated CLR was conducted at a limited level of investigation, relying on secondary sources that were readily available. Background information includes maps and drawings provided from the NPS archives and files, and previous archeological reports on file. A brief field investigation in October 2014 provided an initial review of the complex's existing condition; however, overgrown vegetation limited the extent of the investigation.

Study Area

Spruce Hill Preserve is a nationally significant property associated with the Hopewell Culture of southern and central Ohio, which developed between 1 AD and 400 AD. The complex is west of Chillicothe, Ohio in Ross County. Spruce Hill is a 150-acre archeological complex sited on top of a flat-topped mesa that juts out from the Paint Valley floor, approximately 300 feet above Paint Creek. Seip Earthworks, another park unit of Hopewell Culture NHP, is to the west approximately 10 miles. Spruce Hill's archeological features consist of a series of stone walls that enclose the level mesa of the hill, and circumscribe the top of the bluff. Spruce Hill is accessed by an abandoned road. The complex is currently closed to the public however it may be opened to the public in the future

Park Significance

The monumental architecture and artifacts of the Hopewell Culture reflect a pinnacle of achievement in the fields of art, astronomy, mathematics, and engineering, the likes of which was seldom seen again in eastern North America. The Hopewell Culture was a critical period in the development of an agricultural lifestyle that sustained later populations. "It is clear they had a stable society, capable of major efforts to build earthworks, as well as establishing their network of contacts with other peoples."[3] They produced sculptures of stunning grace, skill and beauty, and had a complex spiritual and ritual life.[4]

[1] NPS, Hopewell Culture NHP Scope of Work for CLR / EA, 2014, 3.
[2] NPS, Hopewell Culture NHP Scope of Work for CLR / EA, 2014, 3.
[3] NPS, Draft General Management Plan / Environmental Assessment, 3.
[4] *Hopewell Culture National Historical Park, Ohio, Long-Range Interpretive Plan (*NPS, 1997), v.

Spruce Hill is a rare extant example of a large hilltop 'fortress.' Built between 1 AD and 400 AD, it was likely used for ceremonies rather than defense. While other major ceremonial sites were built on the level floodplain along rivers, only a few complexes, including Spruce Hill, were built upon hilltops. The Spruce Hill complex is unique in that its walls are made entirely of stone, as opposed to earthen walls, typical of other Hopewell earthworks. Spruce Hill retains integrity as many of its archeological features remain unchanged by development or agriculture in the past 200 years. Hopewellian hilltop enclosures remain among the least studied and least understood type of Hopewellian architecture. Spruce Hill has immense potential for further research and investigations that might answer questions about the Hopewell Culture.[5]

Abbreviated Site History

Around 1 AD the Hopewell Culture emerged as the dominant culture of the Scioto River Valley. The Hopewell built large ceremonial earthworks that typically spanned several acres. These were used for ceremonies and burial sites. During this time, Spruce Hill was built of stacked stone at the edge of the hilltop. It is unknown how Spruce Hill was used by the Hopewell people.

Spruce Hill was first recorded by Caleb Atwater in 1820. He described Spruce Hill Works in "Description of Antiquities Discovered in the State of Ohio and Other Western States," and created the first known map of the complex. Atwater assumed Spruce Hill was built as a defensive military fortification. His drawing describes the site as a "Stone Fort, situated on a hill between 300 and 400 feet high." The drawing shows two openings into the 'fort,' one on the north and one on the east, as well as roads leading to / from each opening.[6] Atwater described the wall as built of undressed sandstone with 30 'furnaces' marked by burned clay and cinders thought to be the by-product of brickmaking or ironworking.[7]

The earthworks along the Scioto River Valley were extensively investigated by amateur archeologists Ephraim George Squier and Edwin Hamilton Davis from 1845 to 1847. The two documented all six park units of Hopewell Culture NHP as well as many others in the region, including Spruce Hill. The survey completed of Spruce Hill by Squier and Davis labeled the complex simply as "Ancient Stone Work near the Village of Bourneville." It indicated a portion of the interior of the complex as farmland with two structures within the stone walls and a central pond.[8] A large portion of the enclosure was forested. They described the stone walls as forming curved gateways, which clearly rose above the natural outcrop and rise of the hill.[9]

The Spruce Hill hilltop enclosure did not produce many artifacts in comparison to the earthworks in the river valleys, and as such not much archeological work was completed after these early studies. A few other archeologists including Warren Moorhead in the 1890s recorded Spruce Hill, but did not work extensively at the complex. In 1934, Emerson Greenman conducted the first professional

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5 "Saving Spruce Hill, Native American Earthworks & Appalachian Cove Forest," *Arc of Appalachia Preserve System*, http://www.arcofappalachia.org/arc/spruce-hill.html (accessed January 23, 2015).

6 Caleb Atwater. "Description of the Antiquities Discovered in the State of Ohio and Other Western States." Archaeologia Americana: Transactions and Collections of the American Antiquarian Society 1, (Worchester, MA: William Manning, 1820).

7 Bret Ruby, "Spruce Hill Earthworks: The 1995-1996 National Park Service Investigations." In, Mark Lynott, *Footprints: In the Footprints of Squier and Davis, Archeological Fieldwork in Ross County, Ohio.* (Lincoln, NE: NPS, 2009), 50.

8 E.G. Squier and E. H. Davis, *Smithsonian Contributions to Knowledge, Vol. 1. Ancient Monuments of the Mississippi Valley: Comprising the Results of Extensive Original Surveys and Explorations* (New York: Smithsonian Institution, 1848), Plate IV.

9 Squier and Davis, *Ancient Monuments of the Mississippi Valley*, 12.

archeological excavations at Spruce Hill. He discovered quantities of 'slag' along the rock wall. He assumed this was a result of an intense fire of a structure.[10] The site was not investigated again until 1948 when Captain Arlington Mallery visited and claimed to find evidence of several 'bloomery' furnaces similar to Iron Age examples from Northern Europe. Mallery believed the site was from a northern European Iron Age occupation, a theory that is not sustained by credible evidence.[11] In the 1990s, additional work was completed at similar complexes with furnace-like features. It was determined that the burned stone and soil at Spruce Hill differs from that at other sites, and is a different phenomenon.[12]

In 1972 the site was added to the National Register of Historic Places. In 1988 the Archaeological Conservancy considered acquiring Spruce Hill. However, a reconnaissance indicated that the walls were not necessarily man-made features and if they were, they were too damaged, resulting in the Conservancy abandoning its plans. When Hopewell Culture NHP was established in 1992, Spruce Hill was not included in the group of park units. Instead, the enabling legislation directed archeological studies be undertaken to evaluate the desirability of adding Spruce Hill to the park.[13] These studies were undertaken between 1995 and 1996. They described, surveyed, and mapped the site. In 1995, the Arc of Appalachia Preserve System was founded. Together with the Ross County Park District, they purchased the land and began to co-manage Spruce Hill as an archeological complex. In 1998 a summary report on the "Significance, Suitability and Feasibility of the Spruce Hills Works as a Potential Addition to Hopewell Cultural National Historical Park" was authored by the National Park Service. Spruce Hill was added to the park's legislated boundary in 2009.

Existing Condition and Analysis

This section provides an overview of the existing condition of Spruce Hill, based upon the 2014 CLR limited field investigations and review of readily available archeological studies, historic records, and maps. This section evaluates Spruce Hill through four landscape characteristics.

- Spatial Organization / Topography / Views
- Archeological Features
- Circulation
- Vegetation

Spatial Organization / Topography / Views

Spruce Hill occupies a prominent hill that is part of the Appalachian Plateau. The hill juts northward into the Paint Creek Valley, with the creek just below and to the north of the hill. The hill is steep sloped with a flat-topped mesa. The bedrock of the mesa is made of level sandstone.[14] The archeological site is entirely built upon the brow of the hill, artificially extending the height of the native rock outcropping. The steep hillside plunges downward from stone walls into Paint Creek, an elevation change of approximately 300 feet. The steep slope separates the mesa from the creek

[10] Emerson Greenman, *"Archaeological Field Work in North America during 1934, Ohio"* American Antiquity (1935), 127-128.
[11] Ruby, "Spruce Hill Earthworks," 51.
[12] Ruby, "Spruce Hill Earthworks," 51.
[13] Ruby, "Spruce Hill Earthworks," 49.
[14] Ruby, "Spruce Hill Earthworks," 49.

valley below. Views are obscured by vegetation, but if cleared, there would be views of the valley below and the hills opposite the river valley. Views across the mesa are not open due to overgrown vegetation. The spatial organization and topography are in good condition. The condition of views is unknown.

The spatial arrangement and topography of Spruce Hill remains from the period of significance. The topographic features are unchanged, and steep hillsides continue to physically separate the mesa on which Spruce Hill is built from the valley below. While is it unknown why the Hopewell chose to develop this complex, the spatial arrangement and topographical separation must have been critical in their choice of location. These characteristics are contributing features to the archeological landscape. Views from the period of significance are unknown.

Archeological Features

The archeological features of Spruce Hill consist of the stone wall, which is actually a series of walls that frame the irregular hillside and create an enclosure around the flat mesa of the hill. Other archeological features include the individual components of the wall — gateways, burned stones, and deposits. Spruce Hill has not been recorded by magnetometer or LiDAR; however, below-grade archeological features are likely present, but unverified.

The stone wall is difficult to discern in places. Where it is visible, the stone wall is a broad band (approximately 30 feet wide) of sandstone blocks extending just below the brow of the hill. The 1995 to 1996 survey noted: "as one nears the areas identified as 'gateways' at A,B, C, and D on the Squier and Davis map, the line of the feature rises above the brow of the hill and the density of stones increases markedly."[15] Area D on Squier and Davis's map indicates an 'Isthmus' where the stone wall separates the broad enclosed plateau of the north from the southern portion of the hill. These were not investigated for this CLR; however, the 1995 to 1996 survey documented this area, noting that it is the most easily traced portion of the wall. Other archeological features, including the burned 'furnaces' / burned rock and soil are not apparent, but are extant below-grade.

It is unknown how the stone wall appeared during the period of significance. Further research is needed to identify the full extent of the stone wall and its components, including the intensely burned rock at the site. Due to its elevated position and difficulty in accessing the mesa, Spruce Hill's archeological features have suffered less from the effects of agriculture and development than other Hopewell earthwork complexes. The Spruce Hill archeological features are contributing features of the archeological landscape.

Circulation

Access to Spruce Hill is from State Route 50. A turn-off onto Blain Highway leads to the base of the hill at the north end of the site at Black Run Road. A gate controls access to a level area for parking. An unimproved road, Spruce Hill Road, leads to the top of the hill at a distance of just over one-half mile. Visitors may enter with permission, but must hike up the hill on Spruce Hill Road. On the top of the hill, the road ends, and only pedestrian circulation is possible throughout the archeological complex. Spruce Hill Road is washed out in places with an uneven surface and is in fair condition.

Historically, the circulation system to the mesa likely followed the alignment of the gateways within the stone wall. In the mid-1800s, Squier and Davis recorded three gateways in the wall, and three

[15] Ruby, "Spruce Hill Earthworks," 54.

paths that led through the gateways. These routes likely date from the original construction, and it stands to reason that these were the original access points to the hilltop.

Since the period of significance, Spruce Hill Road was built to access the top of the mesa. This route was likely present during the time of the Hopewell, as it follows an easy grade up the hillside and aligns with one of the gateways in the stone wall. The route of Spruce Hill Road up the hillside contributes to the archeological landscape. Other routes are not extant and are unknown.

Vegetation

Spruce Hill is heavily vegetated, covered with a native, hardwood forest across the hillside and the majority of the mesa. The interior of the mesa is more open, covered with native grasses and shrubs.

It is unknown what the vegetation was during the period of significance. In the mid-1800s, based on the Squier and Davis map, half the mesa was cleared for farmland, and half was forested vegetation. Since it is unknown how the vegetation appeared during the time of the Hopewell, it is unknown if the existing vegetation patterns reflect the historic setting. Further research into the use of the complex is needed to provide insight into how the vegetation was maintained during Hopewell use.

Treatment Recommendations

This section presents the treatment recommendations for the preservation and stewardship of Spruce Hill Preserve. This treatment plan protects the archeological resources and fosters continued archeological research and investigations. This section provides a treatment approach, goals, and recommendations for the treatment of the archeological landscape.

Spruce Hill possesses many of the same resource management issues as the NPS owned park units. These include questions on how to address the desired landscape condition, long-term maintenance, protection of resources, and identifying future studies and resource needs.

A preservation approach is recommended for Spruce Hill Preserve. This approach allows for protection of the archeological features, and allows actions that sustain the existing form, integrity, and materials of the features. Actions are allowed that protect and stabilize the archeological features, and focus on ongoing maintenance and repair.

Treatment goals for Spruce Hill include the following:

- Preserve extant archeological features;
- Maintain the property as both a natural area and a significant archaeological site.
- Repair the spatial arrangement of the archeological site at the top of the bluff;
- Maintain access for staff and occasional visitors.

Treatment - Spatial Organization / Topography / Views

Spruce Hill Preserve is sited on top of a flat-topped mesa and archeological features consist of a series of stone walls that enclose the level mesa of the hill and circumscribe the top of the bluff. The spatial organization is characterized by the open mesa at the top of the bluff, surrounded by woodland vegetation on the slopes of the hill.

1. Strengthen the spatial organization by removal and management of vegetation.
    a. Remove trees and large shrubs that obscure the open setting of the mesa at the top of the bluff. Maintain the open grassland as open space.
    b. Maintain woodland vegetation on the slopes of the hill in order to enhance the sense of enclosure within the mesa.
    c. Remove vegetation from the stone walls at the edge of the bluff, to protect the material of the stone architecture.

Treatment – Land Use

Spruce Hill Preserve was added to the park's legislated boundary in 2009, and is owned and managed by the Arc of Appalachia.

1. Maintain the property as a natural area and archaeological site.
    a. Fulfill both needs compatibly, including both the protection of native biodiversity of the site, and the protection of the site's capacity to yield research for the professional archaeological community.
2. Develop a management plan to guide future actions by the NPS and its partners.
3. Consider property acquisition to protect all archeological resources.
    a. Only a portion of the archeological features are within the boundaries of the preserve, and land acquisition is necessary to protect these features is desirable.
    b. Develop public outreach and cooperation with private property owners to preserve archeological features on private land.
4. Continue to provide access for the Arc of Appalachia and NPS staff. Provide visitor access by permission and special tours as requested.
    a. Enhance public outreach and education of Spruce Hill Preserve through off-site programs.

Treatment - Archeological Features

Spruce Hill is a rare extant example of a large hilltop 'fortress,' unique in that its walls are made entirely of stone. The site retains integrity as many of its archeological features remain unchanged, and additional features are likely below-grade. The archaeological integrity of the site shall be protected at all times, and archaeological impact shall be researched before any educational development or archaeological research is developed. NPS shall continue to serve as the technical advisor who reviews and advises all archaeological research proposals submitted to occur on the property.

1. Preserve all below- and above-grade archeological features.
    a. Stabilize and repair stone walls as necessary, following best practices.
    b. Maintain the stone walls free of vegetation.
    c. Preserve areas of potential archeological scatter.
2. Continue investigations and archeological research.
    a. Conduct field investigations to verify the full extents and condition of the stone walls and related features. Record all extant archeological features, which may

include the individual components of the wall — gateways, burned stones, and deposits.

b. Identify currently unknown resources using magnetometry or other non-invasive archeological techniques.
c. Continue research on Hopewellian hilltop enclosures and Hopewellian stone architecture.

Treatment - Circulation

Currently a gated parking area connects to Spruce Hill Road which leads to the top of the hill. On the top of the hill, the road ends, and only pedestrian circulation is possible throughout the archeological complex. Treatment recommendations include retaining the existing circulation system and access.

1. Maintain existing circulation system to provide gated access to the vehicular parking area.
2. Maintain the existing pedestrian circulation system.
    a. Maintain and improve as necessary Spruce Hill Road to provide pedestrian access to the top of the hill.
    b. Add a mown grass pedestrian route at the edge of the stone walls, to follow the outline of the top of the bluff.

Treatment - Vegetation

Spruce Hill is covered with a hardwood forest across the hillside. The mesa has native grasses and shrubs, although forest grows at the edges.

1. Use vegetation management techniques to preserve the archeological features.
    a. Remove trees and woody vegetation that impact archeological features or diminish the complex's spatial qualities.
2. Utilize distinct vegetation management techniques to preserve the archeological features and to reveal the form and spaces of the complex.
    a. Use a mix of native herbaceous species, mown 1 to 2 times per year on the mesa.
        i. Consider a mowing rotation that is sensitive to ground-nesting birds (e.g. mow half the grasslands one year and half the next).
        ii. Maintain the grasslands free of invasive species.
        iii. Maintain the mesa free of trees encroaching into the open space.
        iv. Mow pedestrian paths more frequently, in order to provide access and accentuate the form of the complex.
    b. Maintain the hardwood forest on the hillside below the archeological features.
    c. Remove dead and dying trees and vegetation.

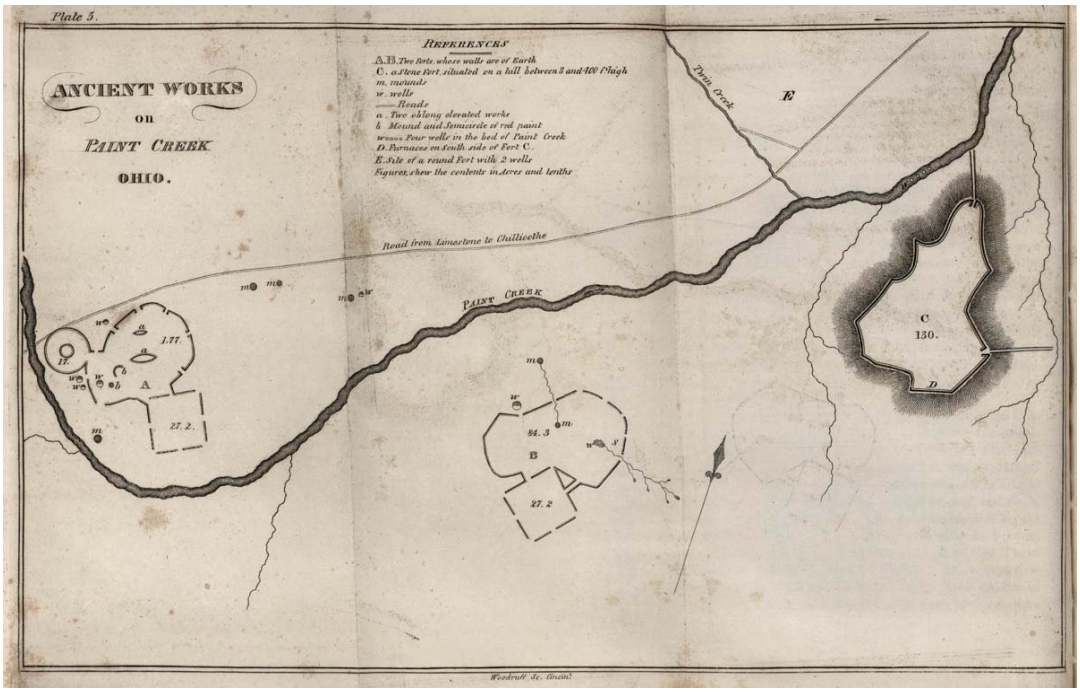


Figure 1. Caleb Atwater created the first known map of Spruce Hill in 1820, at far right. Seip Earthworks is on the far left. (Hopewell Culture NHP Archives)



Figure 2. In the 1940s, Arlington Mallery visited Spruce Hill to determine the cause of the burned rocks along the wall at Spruce Hill. He believed these served as bloomery furnaces for heating iron. (NPS)

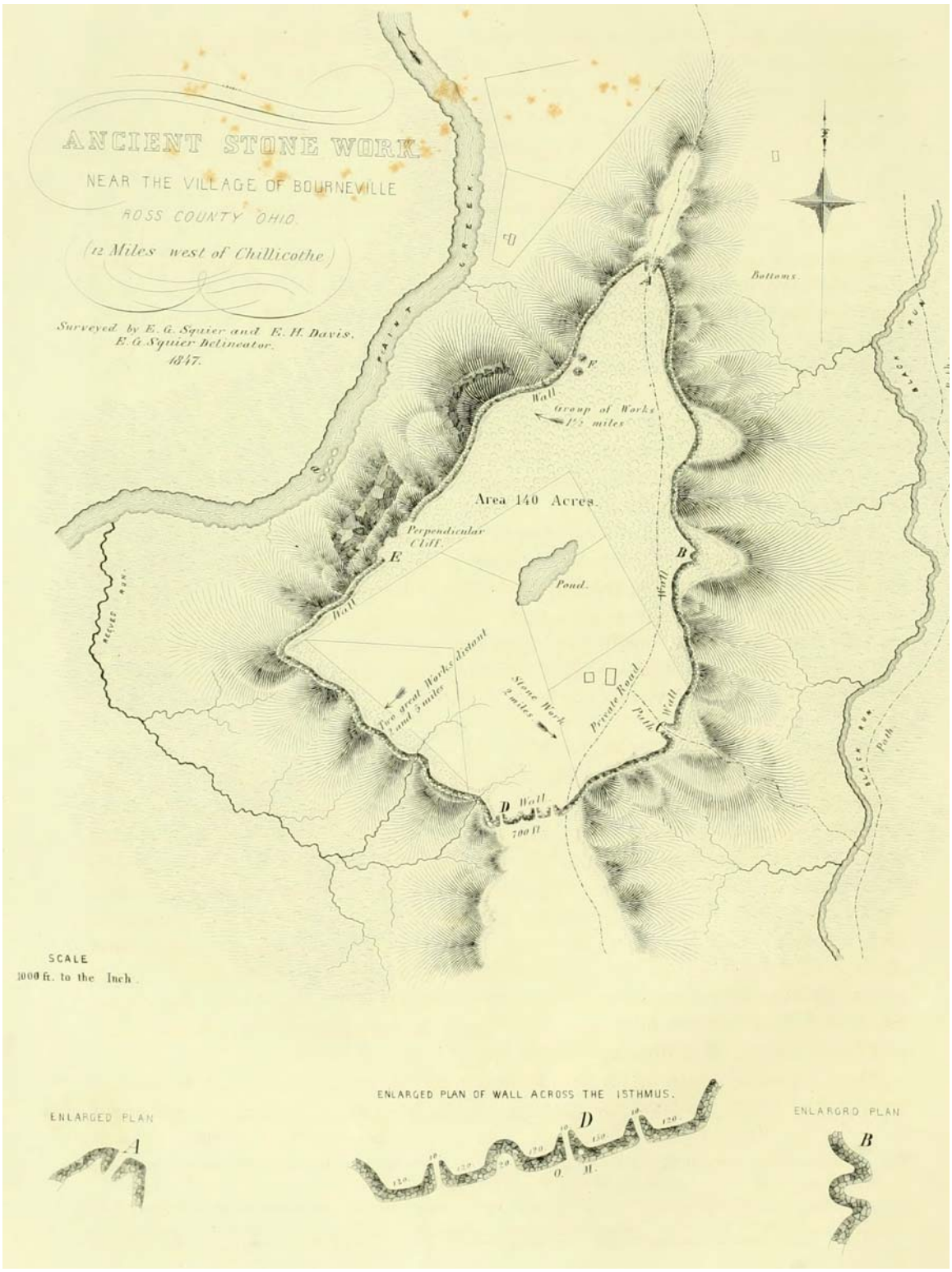


Figure 3. E.G. Squier and E.H. Davis mapped Spruce Hill in the mid-1800s as part of their archeological investigations of the Ohio River Valley. Note the gateways in the rock walls and the paths leading to the top of the hill. (Hopewell Culture NHP Archives)



Figure 4. In the winter, distant hills and valleys can be seen from the top of Spruce Hill. (NPS)



Figure 5. Spruce Hill is topographically and spatially distinct from the adjacent river valley. The hill is approximately 300 feet above Paint Creek. A flat, open mesa occupies the center of the hill. (Jeffery Wilson)



Figure 6. The level, open mesa at the top of Spruce Hill contrasts with the wooded hillside. (Quinn Evans Architects 2014)



Figure 7. The rock wall is more apparent at the gateways. Spruce Hill Road enters the top of the hillside through the prehistoric gateway. (Quinn Evans Architects 2014)



Figure 8. The rock wall is difficult to trace in places, but forms a nearly continuous berm at the crest of the hill. (Quinn Evans Architects 2014)



Figure 9. Some stones are visible along the wall and show evidence of high-temperature fire. (Quinn Evans Architects 2014)



Figure 10. The stone wall is a broad band (approximately 30 feet wide) of sandstone blocks extending just below the brow of the hill. (Quinn Evans Architects 2014)



Figure 11. Spruce Hill Road provides access to the top of the hill. It is not open to vehicular traffic. (Quinn Evans Architects 2014)



Figure 12. A mown path occurs through the mesa. Vegetation includes native and exotic grasses. (Quinn Evans Architects 2014)

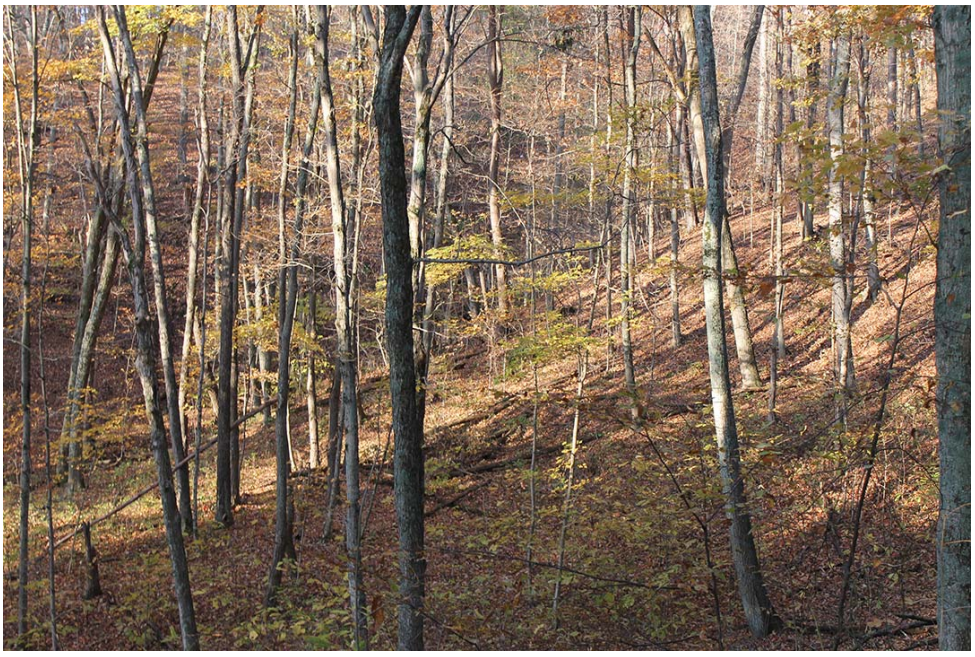


Figure 13. The vegetation on the hillside of Spruce Hill is composed of a young, hardwood forest. (Quinn Evans Architects 2014)

Spruce Hill deed restriction:

Archeological Research and Historical Importance:

The archaeological integrity of the site shall be protected at all times, and archaeological impact shall be researched before any educational development or archaeological research is developed. The National Park Service at Hopewell Culture National Historical Park shall serve as the technical advisor who reviews and advises all archaeological research proposals submitted to occur on the property, ensuring that all approved research proposals conform with the same current regulations and guidelines that would apply to archaeological research occurring on federal property. Proposals from professional archeological researchers will be reviewed by the National Park Service and current owners of the site, and no permission will be given unless the National Park Service makes a positive recommendation concerning the research proposal, and the environmental protection and insurance requirements of the Owners are met. This property shall be protected into perpetuity as both a natural area and a significant archaeological site, and both purposes shall be met compatibly, including both the protection of native biodiversity of the site, and the protection of the site's capacity to yield research for the professional archaeological community.

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Appendix D : Archeological Investigations

Table C-2. Summary of Archeological Investigations

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1820	Caleb Atwater	Atwater, Caleb. *Archaeologia Americana: Transactions and Collections of the American Antiquarian Society, Description of the Antiquities Discovered in the State of Ohio and Other Western States,* Vol. 1. Worchester, MA: 1820.	Hopewell Mound Group; Seip Earthworks; Spruce Hill	This publication described earthworks throughout the Ohio Valley and contained some of the earliest descriptions and illustrations of Hopewell Mound Group, Seip Earthworks, and Spruce Hill.
1845 to 1847	Squier & Davis	Squier, E.G., A.M., and E. H. Davis, M.D. *Smithsonian Contributions to Knowledge, Vol. 1. Ancient Monuments of the Mississippi Valley: Comprising the Results of Extensive Original Surveys and Explorations.* New York: Smithsonian Institution, 1848.	Mound City Group; Hopeton Earthworks; Hopewell Mound Group; Seip Earthworks; High Bank Works.	Squier and Davis documented hundreds of Hopewellian earthwork sites in detail. They conducted surveys and limited excavations throughout the region.
1889	Cyrus Thomas	Thomas, Cyrus. *The Circular, Square, and Octagonal Earthworks of Ohio.* Washington D.C.: Smithsonian Institution Government Printing Office, 1889.	Hopeton Earthworks; High Bank Works	Described and surveyed the earthworks, noting their precise dimensions and corroborating with Squier and Davis on the mathematical accuracy of the earthworks.

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1890	Colonel Middleton, Bureau of American Ethnology	Thomas, Cyrus. "Report on the Mound Explorations of the Bureau of Ethnology." *Twelfth Annual Report of the Bureau of American Ethnology for the Years 1890-91,* Washington, D.C. 1894.	Hopeton Earthworks	The first detailed topographic survey at the Hopeton Earthworks, Colonel Middleton surveyed the site for the Bureau of American Ethnology in 1890.
1891	William H. Holmes		High Bank Works	Holmes and a team of surveyors from the USGS experimented with contour mapping techniques. Their results confirmed the geometric precision of the earthworks.
1891 to 1892	Warren K. Moorehead	Moorehead, Warren K. *The Hopewell Mound Group of Ohio.* Chicago: Field Museum of Natural History, 1922.	Hopewell Mound Group	Moorehead was one of the pioneering archeologists to work at the Hopewell Mound Group. He changed the site name from "Clark's Works" to be named after the landowner Mordecai Cloud Hopewell. He excavated approximately half of the mounds, including about a quarter of the largest mound, Mound 25. The artifacts he collected were displayed in the Columbian Exposition of 1893 in Chicago.
1906	William Mills		Seip Earthworks	
1908	William Mills		Seip Earthworks	
1920s	Henry Shetrone and William Mills, Ohio Historical Society	Mills, William C. "Exploration of the Mound City Group," *Ohio Archaeological and Historical Quarterly,* Volume 31, 423-584, 1922.	Mound City Group	Investigation of Mound City Group while Camp Sherman buildings were still extant. Reconstruction of several of the mounds.

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1921 to 1925 or 1926	Henry Shetrone and William Mills, Ohio Historical Society	Shetrone, Henry C. *The Mound-Builders.* New York: D. Appleton and Company, 1930.	Seip Earthworks	Excavated Seip Mound (Mound 1) and revealed floors, fire pits and burials of two very large connected buildings with a small building between them. Among the artifacts found was the famous clay Seip Head, copper breast plates, and intact samples of Hopewell cloth, woven of milkweed fibers. Seip Mound was partially reconstructed after excavation.
1922 to 1925	Henry Shetrone and William Mills, Ohio Historical Society	Shetrone, Henry C. "Explorations of the Hopewell Group of Prehistoric Earthworks," *Ohio Archaeological and Historical Quarterly, Volume 35*, 1-277, 1926.	Hopewell Mound Group	It was the archaeological excavations of Henry Shetrone in the 1920s that remain as the existing authority on the Hopewell Mound Group. Shetrone located and mapped the mound and earthwork locations, which remains a valuable tool today as the mounds become less visible. At the completion of his fieldwork, almost every mound had been excavated, if not by him, then by previous excavators. Shetrone concluded that these earthworks were a great ceremonial center (Hopewell CLI).
1925 to 1926	Spetnagel and Henry Shetrone, Ohio Historical Society		Mound City Group	Reconstruction
1931	Henry Shetrone & Greenman		Seip Earthworks	

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1945	Griffin		Mound City Group	
1959	John L. Cotter, NPS		Hopeton Earthworks	Site survey was completed by NPS archaeologist John L. Cotter to formulate a definite opinion as to the nature and value of the site.
1960s	Raymond Baby, Ohio Historical Society		Mound City Group; Seip Earthworks	Baby was contracted to rectify the differences between the Squier and Davis survey with the restoration work by Mills and Shetrone. James A. Brown from the Illinois State Museum served as Baby's on-site project manager throughout the 1963 field season. The 1963 archeological investigations indicated that Mounds 10 and 13 were reconstructed in the wrong place during the 1920's restoration efforts, as well as the entire southern enclosure wall.

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1963 through 1970s	Ohio Historical Society and James Brown, Northwestern University	Brown, James. *Inventory and Integrative Analysis: Excavations of Mound City, Ross County, Ohio, Overview of Archaeological Investigations of the Mound City Group National Monument.* Report on file, Hopewell Culture NHP, Chillicothe, Ohio.	Mound City Group	In 1963 through the 1970s, the Ohio Historical Society and James Brown of Northwestern University continued research on the site. They clarified locations of mounds, gateways, borrow pits, and conducted radiocarbon dating (Mound City, CLI). At Mound City, the earth walls at the southeast and east embankment were excavated (LCS, Earth Walls, Mound City Group, 3). Mound #10 at Mound City was excavated, revealing the remains of an early habitation structure (LCS, Mound #10, Mound City Group, 3). Mound #12 and #13 at Mound city was excavated (LCS, Mound #12, Mound City Group, 3). In 1963, Brown discovered an eighth pit in the southeast corner of the site, adjacent to the embankment wall. This discovery led to the interpretation that the pits may have a symmetrical arrangement, with one pit at each of the corners and a pit on either side of the gateways along the embankment walls
1964	Richard Faust		Mound City Group	Mounds #4 and #5 excavated and restored at Mound City Group (LCS, Mound #4, Mound City Group, 3; Administrative History, Chapter 4).

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1965			Mound City Group	The northeast embankment of the earthwork wall at Mound City was excavated (LCS, Earth Walls, Mound City Group, 3). Mound #5 at Mound City Group excavated and reconstructed by the NPS (LCS, Mound #5, Mound City Group, 3).
1966			Mound City Group	The east embankment of the earthwork wall at Mound City was excavated (LCS, Earth Walls, Mound City Group, 3).
1968			Mound City Group	Mound #17 at Mound City Group was excavated, and was restored to a diameter of 55-feet (LCS, Mound #17, Mound City Group, 3). Mound 23 was excavated.
1969			Mound City Group	Excavation at Mound City, Mound #1 and Mound #19 (LCS, Mound #1, Mound #19, Mound City Group, 3).
1970			Mound City Group	Mounds #6, #20, and #24 at Mound City Group were excavated (LCS, Mound City Group).
1971			Mound City Group	Mounds 11, 12, and 16 at Mound City were excavated (LCS, Mound City Group, 3).
1972	Shane	Orrin C. Shane. *Report on the Excavation at the High Bank Earthwork, Ross County, Ohio.* Paper presented at the Annual Meeting of the Ohio Academy of Sciences, Cleveland. 1973.	High Bank Works	Recorded and excavated. Five stratigraphic trenches excavated through the walls of the Great Circle and Octagon.

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1973			Mound City Group	Mound #15 at Mound City Group excavated (LCS, Mound #15, Mound City Group, 3).
1974			Mound City Group	Mound #14, #21, and #22 at Mound City Group excavated (LCS, Mound #14, Mound City Group, 3).
1975	Raymond Baby and Suzanne Langlois	Baby, Raymond S., and Suzanne M. Langlois. *Excavation of Sections 01 and 02 Mounds 8 and 9, Mound City Group National Monument.* Manuscript on file, Midwest Archeological Center, Lincoln, Nebraska. 1977.	Mound City Group	Mounds #8 and #9 at Mound City Group were excavated (LCS, Mound #8, #9, Mound City Group, 3).
1976	David S. Brose	Brose, David S. "An Historical Archaeological Evaluation of the Hopeton Works, Ross County, Ohio." Department of Archaeology, Cleveland Museum of Natural History, Cleveland, 1976.	Hopeton Earthworks	Archeological testing was completed by David S. Brose in order to determine the integrity and significance of the Hopeton Earthworks.
1979			Mound City Group	Excavation and reconstruction of Mound 9, Mound City Group (Administrative History, Chapter 4).

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1979	Raymond Baby and Suzanne Langlois	Baby, Raymond S. and Suzanne M. Langlois. *Seip Mound State Memorial: Nonmortuary Aspects of Hopewell. In Hopewell Archaeology: The Chillicothe Conference.* Edited by David Brose and N'omi Greber. Kent, Ohio: The Kent State University Press, 1979.	Seip Earthworks	
1979	N'omi Greber		Seip Earthworks	
1980 to 1981	Mark Seeman, Kent State University	Seeman, Mark F. "An Archaeological Survey of the Hopewell Site (33R027) and Vicinity." Submitted to the Ohio Historic Preservation Office, Columbus, Ohio, 1981.	Hopewell Mound Group	A site survey of the Hopewell Mound Group, accurately relocating most of the mounds through aerial photography and surface survey (Hopewell Mound Group CLI, 24). Surface collections and limited excavation.
1982	Lynott, Mark J. and Susan M. Monk		Mound City Group	The primary purpose of the study was to inventory and evaluate archeological resources which might be present in a 49.83 acre tract to the north of the National Monument boundary
1984	N'omi Greber & Shane		High Bank Works	Subject of multi-year archeological research conducted by Dr. Nomi Greber, Cleveland Museum of Natural History.

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1984	Ray Hively & Robert Horn	Hively, Ray and Robert Horn. "Hopewellian Geometry and Astronomy at High Bank," *Archaeoastronomy Supplement to Journal for the History of Astronomy,* Vol. 15 (S85-S100) 1984.	High Bank Works	After their investigations, Ray Hively and Robert Horn, of Earlham College, believed that the earthwork served as astronomical observatories. The earthwork incorporates alignments to the rising and setting of the moon through its 18.6-year cycle. The High Bank Earthworks also include alignments to the summer and winter solstice sunrises and sunsets.
1985	John Blank, Department of Anthropology, Cleveland State University, Cleveland.	Blank John E. *An Aerial Photo-grammetrical Analysis of the Hopeton National Historic Landmark, Ross County, Ohio.* Report on file, NPS, MWAC, Lincoln, NE. 1985.	Hopeton Earthworks	
1985	Mark Lynott and Susan M. Monk	Lynott, Mark J., and Susan M. Monk. "Mound City, Ohio, Archeological Investigations." *Occasional Studies in Anthropology,* No. 12. Midwest Archeological Center, Lincoln, Nebraska, 1985.	Mound City Group	
1990s	Bret Ruby, NPS		Hopewell Mound Group	

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
1994	NPS-MWAC		Hopeton Earthworks	The Midwest Archeological Center initiated a long-term study of the Hopeton Earthworks, beginning research in 1994 with a combination of geophysical surveys and strategic testing.
	Note: After 1994, refer to Annotated Bibliography by MWAC	Annotated Bibliography for Hopewell Culture National Historical Park (1995-2011), Kasey Mathiesen and Timothy Schilling, Midwest Archeological Center		
1995	N'omi Greber		Seip Earthworks	
1996	Bret Ruby, NPS		Hopeton Earthworks; Spruce Hill	
1997 to 1998	Mark Lynott		Hopeton Earthworks	
1999	N'omi Greber	Greber, N'omi. "Combining Geophysics and Ground Truth at High Bank Earthworks, Ross County, Ohio." *The Ohio Archaeological Council Newsletter II* (I):8-11, 1999.	High Bank Works	
2000	N'omi Greber and Ruhl			
2001	NPS & Ohio State University		Hopewell Mound Group	

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
2001 to 2003	Weinberger	Geophysical Explorations in Non-Mound Space at Hopewell Mound Group	Hopewell Mound Group	Geophysical survey
2001 to 2008	NPS		Hopeton Earthworks	Excavations were begun in 2001 and continued through 2008 to determine how the earthwork was constructed as well as to look further at anomalies found in the geophysical readings.
2001	Bruce Bevan	Bevan, Bruce. G*eophysical Tests at the Hopeton Mound Group.* Virginia: Geosight, 2001.	Hopeton Earthworks	
2001	Mark Lynott	Lynott, Mark J. "The Hopeton Earthworks: An Interim Report," *Hopewell Archeology,* 4(2): 1-5, 2001.	Hopeton Earthworks	
2002	N'omi Greber	Greber, N'omi. "A Preliminary Comparison of 1997 and 2002 Limited Excavations in the Great Circle Wall, High Bank Works, Ross County, Ohio." *Hopewell Archeology* 5(2):Article I, 2002.	High Bank Works	
2002	Mark Lynott		Hopeton Earthworks	
2002	Jarrod Burks		Mound City Group	

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
2002	Johnston		Hopewell Mound Group	
2002	Katherine A. Speilman	Spielman, Katherine A. "Field Notes for Hopeton Earthwork Unit 6 Excavations, Summer 2002." Manuscript on file, NPS, MWAC, Lincoln, NE.	Hopeton Earthworks	
2003	Mills		Hopewell Mound Group	
2003	Rolfe Mandel	Mandel, Rolfe D., Trina L. Arpin, and Paul Golderg. *Stratigraphy, Lithography, and Pedology of the South Wall at the Hopeton Earthworks, South-Central Ohio.* Kansas Geological Survey Open File Report 2003-46.	Hopeton Earthworks	
2004	N'omi Greber	Greber, N'omi. *Report to Hopewell Culture National Historical Park on 2004 Field Work at the High Bank Works.* Submitted to Hopewell Culture NHP, and the MWAC, Lincoln, NE, 2004.	High Bank Works	

Date of Investigation	Archeologist	Report	Site(s)	Key Findings
2005	N'omi Greber	Greber, N'omi. Report to Hopewell Culture National Historical Park on 2005 Field Work at the High Bank Works. Submitted to Hopewell Culture NHP, and the MWAC, Lincoln, NE, 2005.	High Bank Works	
2006	N'omi Greber	Greber, N'omi. Report to Hopewell Culture National Historical Park on 2006 Field Work at the High Bank Works. Submitted to Hopewell Culture NHP, and the MWAC, Lincoln, NE, 2006.	High Bank Works	
2007	N'omi Greber	Greber, N'omi. Report to Hopewell Culture National Historical Park on 2007 Field Work at the High Bank Works. Submitted to Hopewell Culture NHP, and the MWAC, Lincoln, NE, 2007.	High Bank Works	
2012	NPS		High Bank Works	High-resolution LiDAR topographic mapping
2012 to 2013	NPS	Burks	High Bank Works	Large-scale, high-resolution magnetic survey

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Appendix E : Spatial Data and Rationale

Mound City Group

Spatial Data and Rationale

Preparation of the Mound City Group existing conditions plan was completed in ESRI ArcMAP 10.2, AutoCAD 2013 and Adobe Illustrator. A basemap of the project area was assembled in ArcMAP from spatial data gathered from the Hopewell Culture National Historical Park GIS Database (courtesy of Bret Ruby), the U.S. Census Bureau, the State of Ohio Department of Transportation, the National Fish and Wildlife Service, and the FEMA. New spatial data layers were created or modified by the consultant to depict conditions at Mound City Group at the time of the site visit in October, 2014. To facilitate accurate mapping, all existing layers were projected to a consistent projected coordinate system (NAD_1983_UTM_Zone_17N) prior to production of new data. Process and rationale for the existing conditions layers is described below.

- *Unit Boundary:* Data provided by park in Ruby geodatabase

- *Existing roads (outside park boundary):* Spatial data from State of Ohio Location Based Response System road centerlines.

- *Existing roads, trails, buildings and structures, fences, and overhead lines (within park boundary):* Layer created by consultant based on park CAD files (Landuse.dwg,353040-3.dwg) and verified with Google Maps aerial photograph and consultant field observation, October 2014.

- *Waterbodies:* Spatial data from U.S. Census Bureau's Master Address File / Topographically Integrated Geographic Encoding and Referencing Database.

- *Floodplain:* Spatial data from FEMA National Flood Hazard Layer.

- *Wetlands:* Spatial data from http://www.fws.gov/wetlands/Data/Mapper.html.

- *Contours:* One foot interval contours developed by consulting team from digital elevation model provided by park.

- *Earthworks:* Spatial data for Mounds 1-25, Building Remnant 15, The Extant Above-Grade Earthen Wall, and The Extant Above-Grade Borrow Pits were provided by the park in the Ruby geodatabase. Extramural Mounds X1 and X2 were interpolated from the Contour Data, and the Unverified Borrow pit was traced from the 1965 General Development Plan, Part of the Master Plan.

- *Vegetation:* Spatial data modified by the consultant from the data provided by the park of the 2014 vegetation survey. The 2014 vegetation survey data was clipped to the current park boundary and modified based on field observations at the October 2014 site visit and 2014 aerial photographs.

- *Trees:* GPS data gathered at the time of the site visit in October, 2014.

Hopeton Earthworks

Spatial Data and Rationale

Preparation of the Hopeton Earthworks existing conditions plan was completed in ESRI ArcMAP 10.2 and Adobe Illustrator. A basemap of the project area was assembled in ArcMAP from spatial data gathered from the Hopewell Culture National Historical Park GIS Database (courtesy of Bret Ruby), the U.S. Census Bureau, the State of Ohio Department of Transportation, the National Fish and Wildlife Service, and the FEMA. New spatial data layers were created or modified by the consultant to depict conditions at Hopeton Earthworks at the time of the site visit in October, 2014. To facilitate accurate mapping, all existing layers were projected to a consistent projected coordinate system (NAD_1983_UTM_Zone_17N) prior to production of new data. Process and rationale for the existing conditions layers is described below.

- Unit Boundary: Data provided by park in Ruby geodatabase

- Property not in NPS ownership: Layer created by consultant based on boundary and tract data provided by park in Ruby geodatabase.

- Existing roads (outside park boundary): Spatial data from State of Ohio Location Based Response System road centerlines.

- Existing roads and trails (within park boundary): Layer created by consultant based on park CAD file (ccimow.dwg) and verified with ESRI 2014 aerial photograph and consultant field observation, October 2014.

- Waterbodies: Spatial data from U.S. Census Bureau's Master Address File / Topographically Integrated Geographic Encoding and Referencing Database.

- Floodplain: Spatial data from FEMA National Flood Hazard Layer.

- Wetlands: Spatial data from National Fish and Wildlife Service Wetlands Mapper.

- Railroad: Spatial data from U.S. Census Bureau's Master Address File / Topographically Integrated Geographic Encoding and Referencing Database.

- Contours: One foot interval contours developed by consulting team from digital elevation model provided by park.

- Earthworks: Spatial data was developed by the consultant based on Lidar, magnetometer, historic aerial photographs, and historic surveys. First, the consultant georeferenced magnetometer data from the 2004 and 2013 surveys to the location of the earthworks based on the 1996 survey grid used for all geophysical surveys at the site. The magnetometer surveys covered the area of the large circle enclosure, the large square enclosure, and an area southwest of the square enclosure south of the earthen causeway. All earthworks traced from the survey are coded on the plan as "known." Sections of earthworks that were recorded by the as visible on the site at the October 2014 site visit are coded on the plan as "known extant," while sections of earthworks that are only visible on the magnetometer scan are identified as "known below grade." Lidar data was used to verify the locations of these features. Magnetometer scan data

was most effective to identify the location of the square and large circle enclosures, however, the earthen causeway, small circular enclosures, mounds, and borrow pits were not visible on the scan or Lidar, or not within the area recorded by the scan. Visible portions of these features were traced from the 1938 aerial photograph of the site and labeled as "known below grade" on the existing conditions plan. All additional features which were not visible on the magnetometer, lidar, or historic aerial photograph were traced from Squier and Davis, 1846. As the georectified Squier and Davis plan does not align precisely with existing site conditions, the placement of these features is the least geographically accurate, and their location is indicated on the plan as "unknown." Features indicated as "Unknown" on the existing conditions plan should not be used as a definitive location for the earthworks.

- Buildings and Structures: Spatial data developed by the consultant based on 2014 aerial photographs and verified at the October 2014 site visit.

- Overhead Lines: Spatial data developed by the consultant based on 2014 aerial photographs and verified at the October 2014 site visit.

- Vegetation: Spatial data modified by the consultant from the data provided by the park of the 2014 vegetation survey. The 2014 vegetation survey data was clipped to the current park boundary and modified based on field observations at the October 2014 site visit and 2014 aerial photographs.

- Fences: Spatial data developed by the consultant based on HOCU CAD drawing ccimow.dwg and verified at the October 2014 site visit.

Hopewell Mound Group

Spatial Data and Rationale

Preparation of the Hopewell Mound Group existing conditions plan was completed in ESRI ArcMAP 10.2 and Adobe Illustrator. A basemap of the project area was assembled in ArcMAP from spatial data gathered from the Hopewell Culture National Historical Park GIS Database (courtesy of Bret Ruby), the U.S. Census Bureau, the State of Ohio Department of Transportation, the National Fish and Wildlife Service, and the FEMA. New spatial data layers were created or modified by the consultant to depict conditions at Hopeton Earthworks at the time of the site visit in October, 2014. To facilitate accurate mapping, all existing layers were projected to a consistent projected coordinate system (NAD_1983_UTM_Zone_17N) prior to production of new data. Process and rationale for the existing conditions layers is described below.

- Unit Boundary: Data provided by park in Ruby geodatabase

- Property not in NPS ownership: Layer created by consultant based on boundary and tract data provided by park in Ruby geodatabase.

- Existing roads (outside park boundary): Spatial data from State of Ohio Location Based Response System road centerlines.

- Existing roads and trails (within park boundary): Layer created by consultant based on park shapefile (Hopewell_Trail_GPS_2011 from Ruby geodatabase) and verified with ESRI 2014 aerial photograph and consultant field observation, October 2014.

- Waterbodies: Spatial data from U.S. Census Bureau's Master Address File / Topographically Integrated Geographic Encoding and Referencing Database.

- Floodplain: Spatial data from FEMA National Flood Hazard Layer.

- Wetlands: Spatial data from National Fish and Wildlife Service Wetlands Mapper.

- Railroad: Spatial data from U.S. Census Bureau's Master Address File / Topographically Integrated Geographic Encoding and Referencing Database.

- Contours: One foot interval contours developed by consulting team from digital elevation model provided by park.

- Earthworks: Spatial data was developed by the consultant based on Lidar, magnetometer, historic aerial photographs, and historic surveys. First, the consultant referenced magnetometer data from the 2013 survey to the location of the earthworks, using the georeferenced raster layer included in the Ruby geodatabase (Hopewell_Magnetics_2013). The magnetometer survey covered the area of the square enclosure, a portion of the Great Enclosure, small circle enclosure, and a portion of the D-shaped enclosure. All earthworks traced from the survey are coded on the plan as "known." Sections of earthworks that were recorded by the as visible on the site at the October 2014 site visit are coded on the plan as "known extant," while sections of earthworks that are only visible on the magnetometer scan are identified as "known below grade." LiDAR data was used to verify the locations of these features. Magnetometer

scan data was most effective to identify the location of the Great Enclosure, the circle enclosure, the D-shaped enclosure, and several mounds. The Square Enclosure and four mounds contained within it are not visible on the magnetometer scan. However, visible portions of the Square Enclosure were traced from the 1951 aerial photograph included in the park's geodatabase. These features were labeled as "known below grade" on the existing conditions plan.

While topography at the site is very flat, a number of existing features were able to be traced from the 2012 LiDAR scan. These features included several mounds and a portion of the north and west sides of the Great Enclosure and associated ditch. As with the earthworks visible on the magnetometer survey, all earthworks traced from the LiDAR are coded on the plan as "known." Sections of earthworks that were recorded by the as visible on the site at the October 2014 site visit are coded on the plan as "known extant," while sections of earthworks that are only visible on the LiDAR are identified as "known below grade."

All additional features which were not visible on the magnetometer, LiDAR, or historic aerial photograph were traced from four surveys conducted on the site: Squier and Davis' 1848 survey, Cowan's 1892 survey, Shetrone's 1926 survey, and Seeman's 1981 survey. All surveys of Hopewell Mound Group indicate slightly different conditions for the site, including varying numbers and locations of mounds, and none of the surveys align precisely with the magnetometer and LiDAR data. Due to these inconsistencies, the location of all earthworks placed using historic surveys of the site are indicated on the existing conditions plan as "unknown." As the most recent and most accurately fitting survey, Seeman's 1981 survey was used as the primary reference for placing the rest of the earthworks. Where Seeman's survey refers to mounds only located prior to 1930, the earlier survey was referenced for the mound or borrow pit location and form (Cowan, 1892 or Shetrone, 1926). Gateways, which were generally not specified on the Cowan, Shetrone, and Seeman surveys, were placed based on Squier and Davis, 1848. Features indicated as "Unknown" on the existing conditions plan should not be used as a definitive location for the earthworks.

- Buildings and Structures: Spatial data developed by the consultant based on 2014 aerial photographs and verified at the October 2014 site visit.

- Overhead Lines: Spatial data developed by the consultant based on 2014 aerial photographs and verified at the October 2014 site visit.

- Vegetation: Spatial data modified by the consultant from the data provided by the park of the 2014 vegetation survey. The 2014 vegetation survey data was clipped to the current park boundary and modified based on field observations at the October 2014 site visit and 2014 aerial photographs.

Seip Earthworks

Spatial Data and Rationale

Preparation of the Seip Earthworks existing conditions plan was completed in ESRI ArcMAP 10.2, AutoCAD 2013 and Adobe Illustrator. A basemap of the project area was assembled in ArcMAP from spatial data gathered from the Hopewell Culture National Historical Park GIS Database (courtesy of Bret Ruby), the U.S. Census Bureau, the State of Ohio Department of Transportation, the National Fish and Wildlife Service, and the FEMA. New spatial data layers were created or modified by the consultant to depict conditions at Seip Earthworks at the time of the site visit in October, 2014. To facilitate accurate mapping, all existing layers were projected to a consistent projected coordinate system (NAD_1983_UTM_Zone_17N) prior to production of new data. Process and rationale for the existing conditions layers is described below.

- Unit Boundary: Data provided by park in Ruby geodatabase

- Property not in NPS ownership: Layer created by consultant based on boundary and tract data provided by park in Ruby geodatabase.

- Existing roads (outside park boundary): Spatial data from State of Ohio Location Based Response System road centerlines.

- Existing roads and trails (within park boundary): Layer created by consultant based on Google Maps aerial photograph and consultant field observation, October 2014.

- Waterbodies: Spatial data from U.S. Census Bureau's Master Address File / Topographically Integrated Geographic Encoding and Referencing Database.

- Floodplain: Spatial data from FEMA National Flood Hazard Layer.

- Wetlands: Spatial data from http://www.fws.gov/wetlands/Data/Mapper.html.

- Contours: One foot interval contours developed by consulting team from digital elevation model provided by park.

- Earthworks: Spatial data for the Central Mound and the Conjoined Mound provided by park in Ruby geodatabase.

- Spatial data for the Large Circle, Small Circle, and Large Square was developed by the consultant based on GIS HOCU 2012 LiDAR imagery, Seip Marshall NAD83 and Squier and Davis, 1846. All additional features which were not visible on the magnetometer, lidar, or historic aerial photograph were traced from Squier and Davis, 1846. As the georectified Squier and Davis plan does not align precisely with existing site conditions, the placement of these features is the least geographically accurate, and their location is indicated on the plan as "Unverified." Features indicated as "Unverified" on the existing conditions plan should not be used as a definitive location for the earthworks.

- Buildings and Structures: Spatial data developed by the consultant based on 2014 aerial photographs and verified at the October 2014 site visit.

- Overhead Lines: Spatial data developed by the consultant based on 2014 aerial photographs and verified at the October 2014 site visit.

- Vegetation: Spatial data modified by the consultant from the data provided by the park of the 2014 vegetation survey. The 2104 vegetation survey data was clipped to the current park boundary and modified based on field observations at the October 2014 site visit and 2014 aerial photographs.

- Trees: GPS data gathered at the time of the site visit in October, 2014

- Fences: Spatial data developed by the consultant based on HOCU CAD drawing ccimow.dwg and verified at the October 2014 site visit.

High Bank Works

Spatial Data and Rationale

Preparation of the High Bank Works existing conditions plan was completed in ESRI ArcMAP 10.2, AutoCAD 2013 and Adobe Illustrator. A basemap of the project area was assembled in ArcMAP from spatial data gathered from the Hopewell Culture National Historical Park GIS Database (courtesy of Bret Ruby), the U.S. Census Bureau, the State of Ohio Department of Transportation, the National Fish and Wildlife Service, and the FEMA. New spatial data layers were created or modified by the consultant to depict conditions at High Bank Works at the time of the site visit in October, 2014. To facilitate accurate mapping, all existing layers were projected to a consistent projected coordinate system (NAD_1983_UTM_Zone_17N) prior to production of new data. Process and rationale for the existing conditions layers is described below.

- Unit Boundary: Data provided by park in Ruby geodatabase

- Property not in NPS ownership: Layer created by consultant based on boundary and tract data provided by park in Ruby geodatabase.

- Existing roads (outside park boundary): Spatial data from State of Ohio Location Based Response System road centerlines.

- Existing roads and trails (within park boundary): Layer created by consultant based on Google Maps aerial photograph and consultant field observation, October 2014.

- Waterbodies: Spatial data from U.S. Census Bureau's Master Address File / Topographically Integrated Geographic Encoding and Referencing Database.

- Floodplain: Spatial data from FEMA Floodplains Map #39141C0375D.

- Wetlands: Spatial data from http://www.fws.gov/wetlands/Data/Mapper.html.

- Railroad: Spatial data from U.S. Census Bureau's Master Address File / Topographically Integrated Geographic Encoding and Referencing Database.

- Contours: One foot interval contours developed by consulting team from digital elevation model provided by park.

- Earthworks: Spatial data was developed by the consultant based on Lidar, magnetometer, historic aerial photographs, and historic surveys. The consultant referenced Page 68 from Burks 2013 High Bank Works Magnetic Survey, Page 47/48 from Burks 2013 Turpen Tract-High Bank Works Magnetic Survey. Then the consultant referenced GIS HOCU 2012 LiDAR imagery High_Bank.jpg, to finish referencing mounds and portion of mounds that were not included in the Magnetic Survey. The magnetometer surveys covered the area of the large circle enclosure, the large square enclosure, and an area southwest of the square enclosure south of the earthen causeway. All earthworks traced from the survey are coded on the plan as "known." Sections of earthworks that were recorded by the as visible on the site at the October 2014 site visit are coded on the plan as "known extant," while sections of earthworks that are only visible on the magnetometer scan are identified as "known below grade." Magnetometer scan data was most effective to identify the location of the Great Circle, the 250' Circle and Octagon enclosures, however,

the Parallel Walls were not visible on the scan or Lidar, or not within the area recorded by the scan. These features were traced from Squier and Davis, 1846. As the georectified Squier and Davis plan does not align precisely with existing site conditions, the placement of these features is the least geographically accurate, and their location is indicated on the plan as "Unverified." Features indicated as "Unverified" on the existing conditions plan should not be used as a definitive location for the earthworks.

- Buildings and Structures: Spatial data developed by the consultant based on 2014 Google Maps aerial photographs and verified at the October 2014 site visit.

- Overhead Lines: Spatial data developed by the consultant based on 2014 aerial photographs and verified at the October 2014 site visit.

- Vegetation: Spatial data modified by the consultant from the data provided by the park of the 2014 vegetation survey. The 2014 vegetation survey data was clipped to the current park boundary and modified based on field observations at the October 2014 site visit and 2014 aerial photographs.

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Appendix F: Consultation / Coordination Documents

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

Dr. Mary Knapp
Field Supervisor
Ohio Field Office
U.S. Fish and Wildlife Service
4625 Morse Road, Suite 104
Columbus, OH 43230

Dear Dr. Knapp,

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Federally Listed Threatened and Endangered Species

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). The park consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

(1) Mound City Group	327324E, 4360420N
(2) Hopeton Earthworks	329544E, 4361421N
(3) Hopewell Mound Group	319711E, 4358965N
(4) Seip Earthworks	308325E, 4345356N
(5) High Bank Earthworks	334650E, 4351240N
(6) Spruce Hill Works	315650E, 4349550N

The sites include a mixture of deciduous hardwood forests; riparian zones; cultivated fields; native and non-native meadows; and developed areas with roads, trails, and visitor facilities.

The primary objective of the CLR/EA is the preservation and maintenance of the HOCU cultural landscape, with a focus on establishing a stable vegetative cover with appropriate and compatible visitor amenities at each of the six units. In addition to a no action alternative, the CLR/EA will evaluate a number of action alternatives to provide for the long-term stewardship of the HOCU cultural landscape, with specific recommendations for preservation, repair, or improvements for extant features including vegetation and views. The action alternatives will likely include a mix of rehabilitating and preserving

cultural landscape features, which may include activities that would disturb existing vegetation, such as converting portions of existing forested areas into mowed fields or native grass meadows.

Section 7 of the Endangered Species Act of 1973 requires that a federal agency consult with the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service on any action that may affect endangered, threatened, or candidate species or that may result in adverse modification of critical habitat. As part of the EA analysis, NPS reviewed the most current list of federally listed species that may occur in Ross County, Ohio, the county in which the study area is located.

The USFWS Ohio Field Office website identifies the following species as potentially being present in Ross County, Ohio:

Species	Federal Status
Bald Eagle (*Haliaeetus leucocephalus*)	BGEPA
Indiana Bat (*Myotis sodalis*)	LE
Clubshell Mussel (*Pleurobema clava*)	LE
Northern Riffleshell (*Epioblasma torulosa rangiana*)	LE
Rayed Bean Mussel (*Villosa fabalis*)	LE
Eastern hellbender (*Cryptobranchus alleganiensis alleganiensis* (Daudin))	SC
Timber Rattlesnake (*Crotalus horridus*)	SC

LT = Listed threatened, LE = Listed Endangered, SC = Species of Concern.

No federally listed species are documented for the park, but the park lies within habitat range of federally protected bald eagle and Indiana bat. Additionally, although not currently listed, northern long-eared bat (*Myotis septentrionalis*) is a candidate species proposed for listing that has been documented in the park. Section 7(a)(4) of the ESA states, "Each Federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed or result in the destruction or adverse modification of critical habitat proposed to be designated for such species." Therefore, NPS proposes that this species be added to the above list.

This letter constitutes initiation of informal consultation under section 7(c) of the Endangered Species Act for the HOCU CLR/EA. We would appreciate it if you would confirm the list of species that should be addressed in the CLR/EA. Once prepared, we will provide you with a draft of the CLR/EA with NPS' preliminary effects determination and proposed mitigation, if any, for your review and concurrence.

Please respond to Bret J. Ruby, PhD, Chief of Resource Management, at (740) 774-1126 if you have any questions or concerns about this request, or if you require additional information. This letter will serve as a record that the NPS is initiating informal consultation with your agency pursuant to the requirements of the 1973 Endangered Species Act, as amended and 2006 *NPS Management Policies*.

We appreciate your continuing assistance with National Park Service projects.

Sincerely,

Dean Alexander
Superintendent

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

Mr. Burt Logan
State Historic Preservation Officer
800 E. 17th Ave.
Columbus, OH 43211-2474

Reference: Hopewell Culture National Historic Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear Mr. Logan,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historic Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). The park consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

(1) Mound City Group	327324E, 4360420N
(2) Hopeton Earthworks	329544E, 4361421N
(3) Hopewell Mound Group	319711E, 4358965N
(4) Seip Earthworks	308325E, 4345356N
(5) High Bank Earthworks	334650E, 4351240N
(6) Spruce Hill Works	315650E, 4349550N

The sites include a mixture of deciduous hardwood forests; cultivated fields; native and non-native meadows; and developed areas with roads, trails, and visitor facilities.

In addition to a no action alternative, the CLR/EA will evaluate a number of action alternatives to provide for the long-term stewardship of the HOCU cultural landscape, with specific recommendations for preservation, repair, or improvements for extant features including vegetation and views. The action alternatives will likely include a mix of rehabilitating and preserving cultural landscape features, which may include activities that would disturb existing vegetation, such as converting portions of existing forested areas into mowed fields or native grass meadows.

The primary objective of the CLR/EA is the preservation and maintenance of the HOCU cultural landscape, with a focus on establishing a stable vegetative cover with appropriate and compatible visitor amenities at each of the five units.

While NPS will complete and submit Section 106 Review Project Summary Form, this letter serves as a record that the NPS is initiating informal consultation with your agency pursuant to the requirements of 36 CFR 800.2.c.1 and 2006 *NPS Management Policies*.

We are consulting with the following Indian tribes regarding the CLR/EA: the Absentee Shawnee Tribe of Indians of Oklahoma; the Delaware Nation; the Delaware Tribe of Indians; the Eastern Shawnee Tribe of Oklahoma; the Miami Tribe of Oklahoma; the Ottawa Tribe of Oklahoma; the Seneca-Cayuga Tribe of Oklahoma; the Shawnee Tribe; and the Wyandotte Nation.

We are currently preparing an initial draft, and will forward this to you for review and comment when it is available. Please respond to Bret J. Ruby, PhD, Chief of Resource Management, at (740) 774-1126 if you have any questions or concerns about this project, or if you require additional information.

We appreciate your continuing assistance with National Park Service projects.

Sincerely,

Dean Alexander
Superintendent

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

The Honorable Billy Friend
Chief, Wyandotte Nation
64700 E. Highway 60
Wyandotte, OK 74370

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear Chief Friend,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). HOCU consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

(1) Mound City Group	327324E, 4360420N
(2) Hopeton Earthworks	329544E, 4361421N
(3) Hopewell Mound Group	319711E, 4358965N
(4) Seip Earthworks	308325E, 4345356N
(5) High Bank Earthworks	334650E, 4351240N
(6) Spruce Hill Works	315650E, 4349550N

The sites include a mixture of deciduous hardwood forests; cultivated fields; native and non-native meadows; and developed areas with roads, trails, and visitor facilities.

In addition to a no action alternative, the CLR/EA will evaluate a number of action alternatives to provide for the long-term stewardship of the HOCU cultural landscape, with specific recommendations for preservation, repair, or improvements for extant features including vegetation and views. The action alternatives will likely include a mix of rehabilitating and preserving cultural landscape features, which may include activities that would disturb existing vegetation, such as converting portions of existing forested areas into mowed fields or native grass meadows.

The primary objective of the CLR/EA is the preservation and maintenance of the HOCU cultural landscape, with a focus on establishing a stable vegetative cover with appropriate and compatible visitor amenities at each of the six units. This letter serves as a record that the NPS is initiating consultation with your government pursuant to the requirements of the National Historic Preservation Act (36 CFR 800.2.c.2) and 2006 *NPS Management Policies*.

We are consulting with the following Indian tribes regarding the CLR/EA: the Absentee Shawnee Tribe of Indians of Oklahoma; the Delaware Nation; the Delaware Tribe of Indians; the Eastern Shawnee Tribe of Oklahoma; the Miami Tribe of Oklahoma; the Ottawa Tribe of Oklahoma; the Seneca-Cayuga Tribe of Oklahoma; the Shawnee Tribe; and the Wyandotte Nation. We are also consulting with the Ohio State Historic Preservation Officer.

We are currently preparing an initial draft, and will forward this to you for review and comment when it is available. Please respond to Bret J. Ruby, PhD, Chief of Resource Management, at (740) 774-1126 if you have any questions or concerns about this project, or if you require additional information.

We appreciate your continuing assistance with National Park Service projects.

Sincerely,

Dean Alexander
Superintendent

cc: Ms. Sherri Clemons, Tribal Historic Preservation Officer, Wyandotte Nation

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

The Honorable William Fisher
Chief, Seneca-Cayuga Tribe of Oklahoma
23701 South 655 Rd
Grove, OK 74344

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear Chief Fisher,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). HOCU consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

(1) Mound City Group	327324E, 4360420N
(2) Hopeton Earthworks	329544E, 4361421N
(3) Hopewell Mound Group	319711E, 4358965N
(4) Seip Earthworks	308325E, 4345356N
(5) High Bank Earthworks	334650E, 4351240N
(6) Spruce Hill Works	315650E, 4349550N

The sites include a mixture of deciduous hardwood forests; cultivated fields; native and non-native meadows; and developed areas with roads, trails, and visitor facilities.

In addition to a no action alternative, the CLR/EA will evaluate a number of action alternatives to provide for the long-term stewardship of the HOCU cultural landscape, with specific recommendations for preservation, repair, or improvements for extant features including vegetation and views. The action alternatives will likely include a mix of rehabilitating and preserving cultural landscape features, which may include activities that would disturb existing vegetation, such as converting portions of existing forested areas into mowed fields or native grass meadows.

The primary objective of the CLR/EA is the preservation and maintenance of the HOCU cultural landscape, with a focus on establishing a stable vegetative cover with appropriate and compatible visitor amenities at each of the six units. This letter serves as a record that the NPS is initiating consultation with your government pursuant to the requirements of the National Historic Preservation Act (36 CFR 800.2.c.2) and 2006 *NPS Management Policies*.

We are consulting with the following Indian tribes regarding the CLR/EA: the Absentee Shawnee Tribe of Indians of Oklahoma; the Delaware Nation; the Delaware Tribe of Indians; the Eastern Shawnee Tribe of Oklahoma; the Miami Tribe of Oklahoma; the Ottawa Tribe of Oklahoma; the Seneca-Cayuga Tribe of Oklahoma; the Shawnee Tribe; and the Wyandotte Nation. We are also consulting with the Ohio State Historic Preservation Officer.

We are currently preparing an initial draft, and will forward this to you for review and comment when it is available. Please respond to Bret J. Ruby, PhD, Chief of Resource Management, at (740) 774-1126 if you have any questions or concerns about this project, or if you require additional information.

We appreciate your continuing assistance with National Park Service projects.

Sincerely,

Dean Alexander
Superintendent

cc: Mr. Paul Barton, Tribal Historic Preservation Officer, Seneca-Cayuga Tribe of Oklahoma

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

The Honorable Ethel Cook
Chief, Ottawa Tribe of Oklahoma
P.O. Box 110
Miami, OK 74355

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear Chief Cook,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). HOCU consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

(1) Mound City Group	327324E, 4360420N
(2) Hopeton Earthworks	329544E, 4361421N
(3) Hopewell Mound Group	319711E, 4358965N
(4) Seip Earthworks	308325E, 4345356N
(5) High Bank Earthworks	334650E, 4351240N
(6) Spruce Hill Works	315650E 4349550N

The sites include a mixture of deciduous hardwood forests; cultivated fields; native and non-native meadows; and developed areas with roads, trails, and visitor facilities.

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We are consulting with the following Indian tribes regarding the CLR/EA: the Absentee Shawnee Tribe of Indians of Oklahoma; the Delaware Nation; the Delaware Tribe of Indians; the Eastern Shawnee Tribe of Oklahoma; the Miami Tribe of Oklahoma; the Ottawa Tribe of Oklahoma; the Seneca-Cayuga Tribe of Oklahoma; the Shawnee Tribe; and the Wyandotte Nation. We are also consulting with the Ohio State Historic Preservation Officer.

We are currently preparing an initial draft, and will forward this to you for review and comment when it is available. Please respond to Bret J. Ruby, PhD, Chief of Resource Management, at (740) 774-1126 if you have any questions or concerns about this project, or if you require additional information.

We appreciate your continuing assistance with National Park Service projects.

Sincerely,

Dean Alexander
Superintendent

cc: Ms. Rhonda Dixon; History, Archives, Library; Ottawa Tribe of Oklahoma

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

The Honorable Douglas G. Lankford
Chief, Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear Chief Lankford,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). HOCU consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

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Sincerely,

Dean Alexander
Superintendent

cc: Mr. George Strack, Tribal Historic Preservation Officer, Miami Tribe of Oklahoma
Ms. Julie Olds, Cultural Resources Officer, Miami Tribe of Oklahoma

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

The Honorable Chester "Chet" Brooks
Chief, Delaware Tribe of Indians
170 NE Barbara
Bartlesville, OK 74006

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear Chief Brooks,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). HOCU consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

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We appreciate your continuing assistance with National Park Service projects.

Sincerely,

Dean Alexander
Superintendent

cc: Dr. Brice Obermeyer, Director, Delaware Tribe Historic Preservation Office

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

The Honorable Clifford Peacock
President, Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear President Peacock,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). HOCU consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

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We appreciate your continuing assistance with National Park Service projects.

Sincerely,

Dean Alexander
Superintendent

cc: Ms. Nekole Alligood, Cultural Preservation Director, Delaware Nation
Mr. Jason Ross, Section 106 Manager, Delaware Nation

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

The Honorable Ron Sparkman
Chief, Shawnee Tribe
P.O. Box 189
29 South Highway 69A
Miami, OK 74355

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear Chief Sparkman,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). HOCU consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

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Sincerely,

Dean Alexander
Superintendent

cc: Mr. Ben Barnes, 2nd Chief, Shawnee Tribe
Mr. Roy Baldridge, Treasurer, Shawnee Tribe

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

The Honorable Glenna J. Wallace
Chief, Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear Chief Wallace,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). HOCU consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

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Sincerely,

Dean Alexander
Superintendent

cc: Ms. Robin Dushane, Cultural Preservation Director, Eastern Shawnee Tribe of Oklahoma

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, Ohio 45601

IN REPLY REFER TO

5.3 HOCU CLR/EA

February 4, 2015

The Honorable Edwina Butler-Wolfe
Governor, Absentee-Shawnee Tribe of Indians of Oklahoma
2025 South Gordon Cooper
Shawnee Oklahoma 74801

Reference: Hopewell Culture National Historical Park – Cultural Landscape Report and Environmental Assessment

Subject: Request to Initiate Section 106 Consultation

Dear Governor Butler-Wolfe,

The National Park Service (NPS) is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historical Park (HOCU or park) to achieve desired resource conditions and visitor experiences as identified in HOCU's 1997 General Management Plan (GMP). The primary resources for which the park was established are the monumental prehistoric geometric earthworks and mounds built by the American Indian Hopewell culture (A.D. 1 - 400). HOCU consists of six discrete sites that encompass 1828 acres in Ross County in south-central Ohio in the vicinity of Chillicothe, Ohio (map attached). The approximate UTM coordinates of the sites are (NAD 1983 UTM Zone 17N):

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We appreciate your continuing assistance with National Park Service projects.

Sincerely,

Dean Alexander
Superintendent

cc: Mr. Joseph H. Blanchard, Cultural Preservation Director/Tribal Historic Preservation Officer

Attachment


Hopeton Earthworks
Mound City Group
Hopewell Mound Group
Seip Earthworks
Spruce Hill
High Bank Works
35
608
114
159
23
104
50
772
167
172
921
900
0
3000
6000
JANUARY 2015
UNITED STATES DEPARTMENT OF THE INTERIOR
HOPEWELL CULTURE NATIONAL HISTORICAL PARK
TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT AND ENVIRONMENTAL ASSESSMENT
TITLE OF DRAWING
PARK EARTHWORK LOCATIONS
NAME OF PARK
HOPEWELL CULTURE NATIONAL HISTORICAL PARK
REGION MIDWEST
COUNTY ROSS
STATE OHIO

OHIO HISTORY CONNECTION

April 15, 2016

Bret J. Ruby, Ph.D.
Chief of Resource Management
Hopewell Culture National Historical Park
16062 State Route 104
Chillicothe, OH 45601-8694

Re: Hopewell Culture National Historical Park, Cultural Landscape Report
Ross County, Ohio

Dear Dr. Ruby,

This is in response to correspondence from your office dated March 31, 2016, regarding the above referenced document. The comments of the Ohio State Historic Preservation Office (SHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 USC 470 [36 CFR 800]).

The National Park Service is preparing a Cultural Landscape Report and associated Environmental Assessment to support management decisions on treatment and use of aboveground cultural landscape resources for the Hopewell Culture National Historic Park (HOCU). This document provides information on the six discrete management units (sites) that make up HOCU.

The primary quality that makes this park significant is the preservation of prehistoric mounds and earthworks dating to the Hopewell Culture, Middle Woodland Period. Without question, the Cultural Landscape Report (CLR) will add vitally important guidance to the preservation, protection, interpretation, maintenance, and appreciation of the archaeological sites, archaeological landscapes, and cultural resources that are at the heart of HOCU's mission.

The HOCU Cultural Landscape Report is no less than encyclopedic with detailed information on virtually every aspect of HOCU. It is precise, concise, and readable. In preparing our comments we focused exclusively on two issues: (1) How can the concept help archaeologists protect incredibly important cultural resources; and (2) Within the context of this report, how are cultural landscapes defined and used.

The document lays out specific treatment measures for each of the units comprising HOCU. The treatment measures build on fundamental preservation standards and include guidelines and practices for managing archaeological manifestations, archaeological features, collections, vegetation, fauna, and soils. Of particular interest is the thoughtful design of separate but integrated plans for the units. Within the Cultural Landscape Report we find a framework that is broadly inclusive in the recognition of and accommodation for different values. The overall plan accentuates the strengths of each unit within a management framework that will support and coordinate preservation, education, tourism, research, conservation, interpretation, and rehabilitation. We applaud this holistic approach.

From our perspective it is especially important to bring together archaeologists with many different skills and to make the best use of these many skills in protecting these important archaeological resources. It is vitally important to continue scientific archaeological investigations and research within the six units of HOCU. The Cultural Landscape Report (CLR) states that ongoing and continuing research is important, assists in connecting research to education, interpretation, and other components of the management framework, and, most importantly, provides a consultative process with checks and balances to ensure comprehensive and independent reviews of proposed research projects.

The CLR provides a number of different ways for archaeologists to apply their specific and different skills to bring to light new information about these archaeological and cultural heritage resources. This information is important. Equally important is that the framework connects HOCU to professionals who are dedicated to helping the National Park Service preserve and protect HOCU. In addition, the different lines of research will assist the National Park Service in evaluating the effectiveness of their management at HOCU and facilitate the adoption of new ideas and procedures that will help NPS and HOCU retain their leadership in site protection.

Turning now to the question of how the cultural landscape concept can be used to strengthen and further the protection of the archaeology and cultural heritage at HOCU the character of our comments also shifts.

Archaeological landscape is a relatively new concept/construct in archaeology. Because it is a relatively new concept, and for a number of other reasons, there is not a lot of archaeological theory and method available that shores up, sharpens, and focuses this concept. The concept of an archaeological landscape is (is becoming, or, should be) closely aligned with the concept of a cultural landscape – for which there is also a dearth of theory and method. An archaeological landscape rests on the natural topography (landscape) but the archaeological landscape is not strictly defined, delineated, or delimited by natural topography. An archaeological landscape is not simply topography, landform, and natural features, and it is not simply the distribution of artifacts, features, and manifestations.

It is much more difficult to state what an archaeological landscape is. Cartographers have developed sophisticated techniques to show by subtle color variation a landform on a two-dimensional sheet of paper. Archaeologists often show artifact distribution density maps but these are but the first steps in conveying the spatial patterning of cultural behavior. There is much archaeological theory yet to be developed to guide the transformation of frequency distribution maps into a sharply focused mapping of cultural patterns across space and through time.

The Seip-Pricer mound is similar in size and shape to many of the small to medium sized platform mounds found in middle Mississippi River valley Mississippian Period archaeological sites. Archaeologists readily distinguish the Seip-Pricer mound from Mississippian Period platform mounds not so much by size and shape, and not because they have conducted detailed comparisons of

artifact collections, but because mounds like Seip-Pricer are integrated into a cultural pattern – Middle Woodland Ohio Hopewell – that is very much different from the cultural pattern observed at Mississippian Period sites in the middle Mississippi River valley that have platform mounds. Archaeologists readily recognize and distinguish different archaeological landscapes at these distinctive sites. Of course it is helpful that there are extensive and detailed studies of collections and so forth to reinforce the archaeologists' observations.

At High Bank Works the southern earthwork enclosure forms a semi-circle on top of and extending back from the steep bluff face. It has appeared to some that the bluff face or erosion along this bluff face may have truncated the southern earthwork. Perhaps. Additional study may lead us to new interpretations. The available information, and all the information that is sure to be added through years of research, is vitally important in helping understand and interpret the High Bank Works archaeological site. But, as noted in the CLR for High Bank Works and at several other units, the site is part of both landscapes and topography. To a small extent the site is shaped by the topography, but more importantly, the relationships among the different foci of activities within the sites are both integrated by the topography and they shape and give shape to the topography. At High Bank Works it is logical to think that this earthworks complex was connected to the Scioto River within an archaeological landscape that extends beyond the limits of the artifacts and manifestations that we are able to detect. The CLR's recommendations to create openings offering visual lines-of-sight to the floodplain and river and to build canoe/kayak access recognize and support the ideas of an archaeological landscape that extends beyond the archaeological site.

Archaeological sites are places where archaeologists dig to recover artifacts (from Robert Dunnell, exact citation can be provided on request). By the very nature of site formation processes artifact scatters are not neatly contained or delimited. Archaeological site boundaries can be useful to help archaeologists to convey a specific area. When boundaries are conceived of as indelible phenomena such information has some limited use in identifying and evaluating significance, value, eligibility for inclusion in the National Register, research potential, and the like, but equally clear is that a boundary is not an intrinsic attribute of an archaeological site and is not a tangible object.

It is not clear how we should define and delineate a form and shape for an archaeological landscape. Using a boundary doesn't appear to be useful or appropriate, but we have little in the way of archaeological theory to guide this discussion. Furthermore, it isn't clear how archaeologists should define and describe the relationship between archaeological sites and archaeological landscapes. It seems to us that HOCU is particularly well suited for archaeologists to build theory and method to address these kinds of questions regarding archaeological landscapes because the sites are so very important, they are very large and contain many different kinds of activities, and they were constructed in a complex environmental setting.

An archaeological landscape contains at least one archaeological site and commonly would contain many archaeological sites. The identification of significant archaeological sites – rigorously in the sense of historic properties as defined by regulations implementing sections of the National Historic Preservation Act – played a critically important role in establishing HOCU and in demonstrating the

need for our best preservation management practices. However, now there are now equally important tasks for us including carrying out our best efforts to learn all that we can from the archaeological record of HOCU units and to teach others about these places.

These new tasks require that we also learn about the spaces between places where we've found significant archaeological sites. An archaeological landscape approach is similar in some ways to archaeological studies that emphasized settlement systems (as developed by Gordon Willey) and in some ways to archaeological studies that emphasize intra-site patterns. These spaces and patterns convey symbolically important information about Hopewell Culture. But here is the rub: these places between significant sites will contain some small areas with diffuse scatters of artifacts and even small areas where we are currently unable to identify any artifacts that by current practice would not be recognized as an historic property and would not be easily considered a contributing element. At HOCU we believe that it is essential to preserve and protect not only the historic properties but also to equally provide thoughtful and measured treatments to protect archaeological sites that aren't eligible and places that aren't even sites.

From our perspective, long-term planning for the protection of heritage resources in and around HOCU will benefit from the ongoing development and use of an archaeological landscape approach. Principle among these is that the management focus shifts from National Register eligibility criteria to implementing long-term treatment measures that emphasize the protection of archaeological resources. As demonstrated in the CLR this approach provides a foundation for instituting management plans tailored for each unit while simultaneously maintaining an integrated sense of Hopewell Culture.

In summary, the SHPO strongly supports the approach designed and developed in the HOCU Cultural Landscape Report. We believe that this approach will help the National Park Service engage a broader range of people in protecting the cultural heritage resources in HOCU and will open new opportunities for us to learn about the HOCU archaeological record and to increase the effectiveness of archaeological site protection measures in and especially around the HOCU units.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

David Snyder

David Snyder, Ph.D., RPA, Archaeology Reviews Manager
Resource Protection and Review

DMS/ds

PEPC Project ID: 59960, DocumentID: 71568
Correspondence: 1

Author Information

Keep Private: No

Name: N/A N/A

Organization:

Organization Type: I - Unaffiliated Individual

Address:

Chillicothe, OH 45601
USA

E-mail:

Correspondence Information

Status: New

Park Correspondence Log:

Date Sent: 03/20/2016

Date Received: 03/20/2016

Number of Signatures: 1

Form Letter: No

Contains Request(s): No

Type: Web Form

Notes:

Correspondence Text

Test comment.
">

PEPC Project ID: 59960, DocumentID: 71568
Correspondence: 2

Author Information

Keep Private:	No
Name:	Scott M. Wiesman
Organization:	
Organization Type:	I - Unaffiliated Individual
Address:	1440 Patton Hill Rd. Chillicothe, OH 45601 USA
E-mail:	swiesman@horizonview.net

Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 03/21/2016	Date Received: 03/21/2016
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

To whom it may concern,

I hope that the part about removing utilities, buildings and facilities doesn't mean you will be removing the restrooms and shelter house from the mounds on Anderson Station Road. My wife and I like to use the trail and bike path to run and walk and we use these facilities on a regular basis. It would be much tougher to enjoy the site without these amenities.

We like the Mound City mounds because they have been rebuilt and make visualizing easier.

We hope you will not be removing the restroom or shelter house.

I might also add that bikers and runners on the adjacent bike path use these facilities also. It's quite a draw for our area, we hope you don't change it.

Regards,

Scott Wiesman
">

PEPC Project ID: 59960, DocumentID: 71568
Correspondence: 3

Author Information

Keep Private:	No
Name:	Fletcher Wilson
Organization:	
Organization Type:	I - Unaffiliated Individual
Address:	519 East 2nd Logan, OH 43138 USA
E-mail:	Flekota@yahoo.com

Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 04/03/2016	Date Received: 04/03/2016
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I am all for preserving the sites as the original people did, grass yes large vegetation no, The People keep trees and other large vegetation off the site, even a large area around the site. This was for the reason to see the rising and setting of the moon and other Astronomical objects. Even the Milky way was part of this and the objects close to it. Erosion needs to be taken care of. But any digging into the mounds is wrong as some time the native cremated the dead and layered. the ashes into them.There are many accounts of Archaeologist digging into them and accounting of layer of ash and not thinking nothing of this.Not realizing this was ashes of the people. Yes the site must be kept as they were intended to be use, as they were by the Original people.
">

PEPC Project ID: 59960, DocumentID: 71568
Correspondence: 4

Author Information

Keep Private:	No
Name:	David M. Snyder
Organization:	Ohio State Historic Preservation Office
Organization Type:	I - Unaffiliated Individual
Address:	800 E. 17th Avenue Columbus, OH 43211 Columbus, OH 43211 USA
E-mail:	dsnyder@ohiohistory.org

Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 04/15/2016	Date Received: 04/15/2016
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form

Notes:

Correspondence Text

As discussed in correspondence sent to the Hopewell Culture National Historical Park:
The SHPO strongly supports the approach designed and developed in the HOCU Cultural Landscape Report. We believe that this approach will help the National Park Service engage a broad range of people in protecting the cultural heritage resources in HOCU and will open new opportunities for us to learn about the HOCU archaeological record and to increase the effectiveness of archaeological site protection measures in and especially around the HOCU units.
">

The Delaware Nation
NAGPRA/106 Department
31064 State Highway 281
Anadarko, OK 73005
Phone (405)247-2448 Fax (405) 247-8905

NAGPRA ext. 1182
Museum/106 ext. 1181
Library ext. 1196
Director ext. 1180

6 June 2016

To Whom It May Concern:

The Delaware Nation Cultural Preservation Department received correspondence regarding the following referenced project(s).

Section 106/NEPA consultation, Cultural Landscape Report and Environmental Assessment, Public Review Draft Available for Comment.

Our office is committed to protecting tribal heritage, culture and religion with particular concern for archaeological sites potentially containing burials and associated funerary objects.

The Lenape people occupied the area indicated in your letter during prior to European contact until their eventual removal to our present locations. According to our files, the location of the proposed project does not endanger cultural or religious sites of interest to the Delaware Nation. Interpretive improvements are necessary to maintain the public's interest, and although I do not believe we will ever truly understand the essence of these mound complexes, it is important to maintain both the sites and their continued interpretation, improving and changing as more information comes to light. On behalf of the Delaware Nation, I can find no issue with your intended plans and therefore will not intercede on your planned improvements.

Please note the Delaware Nation, the Delaware Tribe of Indians, and the Stockbridge Munsee Band of Mohican Indians are the only Federally Recognized Delaware/Lenape entities in the United States and consultation must be made only with designated staff of these three tribes. We appreciate your cooperation in contacting the Delaware Nation Cultural Preservation Office to conduct proper Section 106 consultation. Should you have any questions, feel free to contact our offices at 405/247-8903 or by email: nalligood@delawarenation.com, or jross@delawarenation.com.

Nekole Alligood
NAGPRA/106 Director
The Delaware Nation
31064 State Highway 281
Anadarko, OK 73005

Appendix G: FMSS

Cultural Landscape Feature to FMSS Data Crosswalk

	Cultural Landscape Inventory			Other CR Inventories			FMSS Data (existing & proposed)								
Landscape Characteristic	Feature Name	CLI Identification Number or CLI Feature Identification Number	Feature Contribution*	IDLCS Number / LCS Structure Number	LCS Name	Does GIS data exist?	IN FMSS?	Notes	Asset Code *(type of location)*	Facility Type	Location Number	Location Name	Asset Number *(if applicable)*	Level *(if applicable)*	Asset Description Comment *(if applicable)*
Spatial Organization / Topography / Views															
	Relationship of complexes to river terraces and foothills	N/A	Contributing	N/A	N/A	N	N								
	Complex of archeological features (above-grade and below-grade features)	N/A	Contributing	N/A	N/A	N	N								
	HMG Views	129248, 129250,	Non-contributing			N	N								
Archeological Features															
	Mound City Group	500393	contributing				Y	asset code 0000			52407	HOCU		1	
	Mound City Group - MAS	500393	contributing				Y		7200 - Maintained Archeological Sites	7210	79593	MCG		2	
	Mound City Group - MAS - Enclosure	129022	contributing	1069 / HS-MC-E01	Earth Walls	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039276	2	
	Mound City Group - MAS - Mound #1	129024	contributing	1065 / HS-MC-M01	Mound #1	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039250	2	
	Mound City Group - MAS - Mound #2	129026	contributing	6117 / HS-MC-M02	Mound #2	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039255	2	
	Mound City Group - MAS - Mound #3	129028	contributing	6118 / HS-MC-M03	Mound #3	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039256	2	
	Mound City Group - MAS - Mound #4	129030	contributing	1071 / HS-MC-M04	Mound #4	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039254	2	
	Mound City Group - MAS - Mound #5	129032	contributing	1068 / HS-MC-M05	Mound #5	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039253	2	
	Mound City Group - MAS - Mound #6	129034	contributing	1067 / HS-MC-M06	Mound #6	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039252	2	
	Mound City Group - MAS - Mound #7	129036	contributing	6119 / HS-MC-M07	Mound #7	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039272	2	
	Mound City Group - MAS - Mound #8	129038	contributing	6120 / HS-MC-M08	Mound #8	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039257	2	
	Mound City Group - MAS - Mound #9	129040	contributing	6121 / HS-MC-M09	Mound #9	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039239	2	
	Mound City Group - MAS - Mound #10	129042	contributing	6122 / HS-MC-M10	Mound #10	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039259	2	
	Mound City Group - MAS - Mound #11	129044	contributing	6123 / HS-MC-M11	Mound #11	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039261	2	
	Mound City Group - MAS - Mound #12	129048	contributing	6124 / HS-MC-M12	Mound #12	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039262	2	
	Mound City Group - MAS - Mound #13	129050	contributing	6125 / HS-MC-M13	Mound #13	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039264	2	
	Mound City Group - MAS - Mound #14	129052	contributing	6126 / HS-MC-M14	Mound #14	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039266	2	
	Mound City Group - MAS - Mound #15	129054	contributing	6127 / HS-MC-M15	Mound #15	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039269	2	
	Mound City Group - MAS - Mound #16	129056	contributing	6128 / HS-MC-M16	Mound #16	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039270	2	
	Mound City Group - MAS - Mound #17	129058	contributing	101874 / HS-MC-M17	Mound #17	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039233	2	

Cultural Landscape Feature to FMSS Data Crosswalk

	Cultural Landscape Inventory			Other CR Inventories			FMSS Data (existing & proposed)									
Landscape Characteristic	Feature Name	CLI Identification Number or CLI Feature Identification Number	Feature Contribution*	IDLCS Number / LCS Structure Number	LCS Name	Does GIS data exist?	IN FMSS?	Notes	Asset Code *(type of location)*	Facility Type	Location Number	Location Name	Asset Number *(if applicable)*	Level *(if applicable)*	Asset Description Comment *(if applicable)*	
	Mound City Group - MAS - Mound #18	129060	contributing	6129 / HS-MC-M18	Mound #18	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039271	2		
	Mound City Group - MAS - Mound #19	129062	contributing	1064 / HS-MC-M19	Mound #19	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039248	2		
	Mound City Group - MAS - Mound #20	129064	contributing	1066 / HS-MC-M20	Mound #20	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039251	2		
	Mound City Group - MAS - Mound #21	129066	contributing	6130 / HS-MC-M21	Mound #21	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039235	2		
	Mound City Group - MAS - Mound #22	129068	contributing	6131 / HS-MC-M22	Mound #22	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039273	2		
	Mound City Group - MAS - Mound #23	129070	contributing	1060 / HS-MC-M23	Mound #23	Y	Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039275	2		
	Mound City Group - MAS - Mound #24	129072	contributing	6132 / HS-MC-M24	Mound #24		Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039237	2		
	Mound City Group - MAS - Mound #25	129074	contributing	6133 / HS-MC-M25	Mound #25		Y		7200 - Maintained Archeological Sites	7210	79593	MCG	1039277	2		
	Hopeton Earthwork - MAS	501184	contributing			Y	Y		7200 - Maintained Archeological Sites	7210	233351	HE		2		
	Hopeton Earthwork - MAS - Square Enclosure	129082	contributing	73053 / HE-E03	Square Enclosure	Y	Y		7200 - Maintained Archeological Sites	7210	233351	HE	1015341	2		
	Hopeton Earthwork - MAS - Great Circle Enclosure	129088	contributing	73052 / HE-E02	Great Circle Enclosure	Y	Y		7200 - Maintained Archeological Sites	7210	233351	HE	1015340	2		
	Hopeton Earthwork - MAS - Circle A	129076	contributing	73051 / HE-E01	Circle "A" Enclosure	Y	Y		7200 - Maintained Archeological Sites	7210	233351	HE	1015339	2		
	Hopeton Earthwork - MAS - Circle B	129078	contributing	73054 / HE-E04	Circle "B" Enclosure	Y	Y		7200 - Maintained Archeological Sites	7210	233351	HE	1015342	2		
	Hopeton Earthwork - MAS - Circle C	129080	contributing	73055 / HE-E05	Circle "C" Enclosure	Y	Y		7200 - Maintained Archeological Sites	7210	233351	HE	1015343	2		
	Hopeton Earthwork - MAS - Parallel Walls	129084	contributing	73056 / HE-E06	Parallel Walls Earthwork	Y	Y		7200 - Maintained Archeological Sites	7210	233351	HE	1015344	2		
	Hopeton Earthwork - MAS - Small Circle Enclosure	129086	contributing	73057 / HE-E07	Small Circle Enclosure	Y	Y		7200 - Maintained Archeological Sites	7210	233351	HE	1015345	2		
	Hopewell Mound Group Unit	975460	contributing				Y	asset code 0000			52410			1		
	Hopewell Mound Group Earthwork MAS		contributing	HMG-E01	Hopewell Site - Hopewell Mound Group	Y	Y	Individual features have not been identified through LCS as to date so this is grouped, CLI does break out.	7200 - Maintained Archeological Sites	7210	233316	HMG	1071895	2		
	Earthworks Parallelogram NE Corner	129278	contributing		Earthworks Parallelogram NE Corner		N					HMG				
	Earthworks Parallelogram SE Corner	129280	contributing		Earthworks Parallelogram SE Corner		N					HMG				
	Earthworks Parallelogram SW Corner	129282	contributing		Earthworks Parallelogram SW Corner							HMG				
	Earthworks Parallelogram NW Corner	129284	contributing		Earthworks Parallelogram							HMG				
	Mound 25 and "D" Shaped Enclosure	129296	contributing		Mound 25 and "D" Shaped							HMG				

Cultural Landscape Feature to FMSS Data Crosswalk

	Cultural Landscape Inventory			Other CR Inventories			FMSS Data (existing & proposed)								
Landscape Characteristic	Feature Name	CLI Identification Number or CLI Feature Identification Number	Feature Contribution*	IDLCS Number / LCS Structure Number	LCS Name	Does GIS data exist?	IN FMSS?	Notes	Asset Code *(type of location)*	Facility Type	Location Number	Location Name	Asset Number *(if applicable)*	Level *(if applicable)*	Asset Description Comment *(if applicable)*
	Square Earthworks Enclosure	129298	contributing		Square Earthworks Enclosure							HMG			
	Circular Earthworks	129300	contributing		Earthworks							HMG			
	Seip Earthwork Unit		contributing				Y	asset code 0000			52411	SE			
	Seip Earthwork - MAS		contributing	SE-E01			Y	Individual features have not been identified through LCS as to date so this is grouped, not broken out by feature.	7200 - Maintained Archeological Sites	7210	233317	SE			
	High Bank Earthwork Unit		contributing				Y	asset code 0000			52413			1	
	High Bank Earthwork - MAS		contributing	HB-E01			Y	Individual features have not been identified through LCS as to date so this is grouped, not broken out by feature.	7200 - Maintained Archeological Sites	7210	52413	HB	233350	2	
Circulation															
	Overflow parking		non-contributing, incompatible				Y		1300 - Parking Area	1320	104452	MCG		2	
	Overflow parking - Traffic Surface, Surface, Other, .04 MI, 20 FT, RT 0904		non-contributing, incompatible				Y		1300 - Parking Area	1320	104452	MCG	411482	2	
	Portsmouth Road		non-contributing, incompatible				Y		1100 - Road	1110	55673	MCG		2	
	Portsmouth Road - Traffic Surface, Surface, Bituminous, 22 FT		non-contributing, incompatible				Y		1100 - Road	1110	55673	MCG	142568	2	
	Portsmouth Road - Traffic Surface, Surface, Bituminous, 22 FT, Administrative		non-contributing, incompatible				Y		1100 - Road	1110	55673	MCG	142569	2	
	Entrance Road Mound City		non-contributing, incompatible				Y		1100 - Road	1110	55681	MCG		2	
	Entrance Road Mound City - Wall, Free Standing		non-contributing, incompatible				Y		1100 - Road	1110	55681	MCG	1089512	2	entry signage wall
	Entrance Road Mound City - Traffic Surface, Surface, Bituminous, 22 FT, Entrance		non-contributing, incompatible				Y		1100 - Road	1110	55681	MCG	142564	2	
	Visitor Center Parking Lot		non-contributing, incompatible				Y		1300 - Parking Area	1310	55696	MCG		2	
	Visitor Center Parking Lot - Traffic Surface		non-contributing, incompatible				Y		1300 - Parking Area	1310	55696	MCG	36648	2	
	Visitor Center Parking Lot - Traffic Surface, Surface, Bituminous, .04 MI, 25 FT, RT 0900		non-contributing, incompatible				Y		1300 - Parking Area	1310	55696	MCG	410196	2	
	Administrative Parking Lot		non-contributing, incompatible				Y		1300 - Parking Area	1310	55700	MCG		2	
	Administrative Parking Lot - Traffic Surface		non-contributing, incompatible				Y		1300 - Parking Area	1310	55700	MCG	36567	2	
	Administrative Parking Lot - Traffic Surface, Surface, Bituminous, .13 MI, 200 FT, RT 090		non-contributing, incompatible				Y		1300 - Parking Area	1310	55700	MCG	410231	2	
	Nature Trail		non-contributing, compatible				Y		2100 - Trail	2150	55705	MCG		2	

Cultural Landscape Feature to FMSS Data Crosswalk

	Cultural Landscape Inventory			Other CR Inventories			FMSS Data (existing & proposed)								
Landscape Characteristic	Feature Name	CLI Identification Number or CLI Feature Identification Number	Feature Contribution*	IDLCS Number / LCS Structure Number	LCS Name	Does GIS data exist?	IN FMSS?	Notes	Asset Code *(type of location)*	Facility Type	Location Number	Location Name	Asset Number *(if applicable)*	Level *(if applicable)*	Asset Description Comment *(if applicable)*
	Nature Trail - Exterior Furnishing, Bench, Wood, 72 IN		non-contributing, compatible				Y		2100 - Trail	2150	55705	MCG	149060	2	
	Nature Trail - Traffic Surface, Tread, Gravel, .6 MI, 4 FT, 703 Mix		non-contributing, compatible				Y		2100 - Trail	2150	55705	MCG	149061	2	
	River Trail		non-contributing, compatible				Y		2100 - Trail	2150	55706	MCG		2	
	River Trail - Fence/Gate, Fence, Metal, 3 FT, Two Rail		non-contributing, compatible				Y		2100 - Trail	2150	55706	MCG	149064	2	
	River Trail - Traffic Surface, Tread, Bituminous, .18 MI, 4 FT		non-contributing, compatible				Y		2100 - Trail	2150	55706	MCG	149067	2	
	River Trail - Wall, Retaining, Masonry/Stone, 335 FT		non-contributing, compatible				Y		2100 - Trail	2150	55706	MCG	149071	2	
	River Trail - Walkable Structure, Other, Stone Steps		non-contributing, compatible				Y		2100 - Trail	2150	55706	MCG	149074	2	
	River Trail - Traffic Surface, Tread, Concrete, .01 MI, 10 FT, Viewing Area		non-contributing, compatible				Y		2100 - Trail	2150	55706	MCG	149075	2	
	Earthwork Road Hopeton	129793?	non-contributing				Y		1100 - Road	1120	67896	HE		2	
	Earthwork Road Hopeton - Traffic Surface, Surface, Gravel, 12 FT		non-contributing				Y		1100 - Road	1120	67986	HE	149361	2	
	Hopeton Earthwork Parking		non-contributing				Y		1300 - Parking Area	1310	243274	HE		2	
	Hopeton Earthwork Parking - Parking Surface		non-contributing				Y		1300 - Parking Area	1310	243274	HE	1320418	2	
	Hopeton Earthwork Parking - Gateway		non-contributing				Y		1300 - Parking Area	1310	243274	HE	1320422	2	
	Pit Road	129795?	non-contributing, incompatible			Y	Y		1100 - Road		104368	HE		2	
	Pit Road - Traffic Surface, Surface, Gravel, 11 FT, RT 0401		non-contributing, incompatible				Y		1100 - Road		104368	HE	411110	2	
	Hopeton Earthwork Trail		non-contributing				Y		2100 - Trail	2130	52412	HE		2	
	Hopeton Earthwork Trail - Trail Surface		non-contributing				Y		2100 - Trail	2130	52412	HE	1320402	2	
	Hopeton Earthwork Trail - Foot Bridge		non-contributing				Y		2100 - Trail	2130	52412	HE	1320413	2	
	Hopeton Earthwork Trail - Picnic Area		non-contributing				Y		2100 - Trail	2130	52412	HE	1320550	2	
	Hopewell Parking Area		non-contributing			Y	Y		1300 - Parking Area	1310	67400	HMG		2	
	Traffic Surface, Surface, Bituminous, .06 MI, 160 FT, RT 0905		non-contributing				Y		1300 - Parking Area	1310	67400	HMG	411097	2	
	Adena Trail	129244	non-contributing			Y	Y		2100 - Trail	2150	67402	HMG		2	Tri-County Trail / bicycle path

Cultural Landscape Feature to FMSS Data Crosswalk

	Cultural Landscape Inventory			Other CR Inventories			FMSS Data (existing & proposed)								
Landscape Characteristic	Feature Name	CLI Identification Number or CLI Feature Identification Number	Feature Contribution*	IDLCS Number / LCS Structure Number	LCS Name	Does GIS data exist?	IN FMSS?	Notes	Asset Code *(type of location)*	Facility Type	Location Number	Location Name	Asset Number *(if applicable)*	Level *(if applicable)*	Asset Description Comment *(if applicable)*
	Adena Trail - Traffic Surface, Tread, Bituminous, 9 MI, 10 FT		non-contributing				Y		2100 - Trail	2150	67402	HMG	149062	2	
	Hopewell Mound Group Walking Trail	129246	non-contributing			Y	Y		2100 - Trail	2130	86768	HMG		2	
	Entrance loop / parking area		non-contributing, incompatible				N	Needs to be input into FMSS as Asset	1100 - Road			SE		2	
	Asphalt drive		non-contributing, incompatible				N	Needs to be input into FMSS as Asset	1100 - Road			SE		2	
	Remnant drive		non-contributing, incompatible				N	Needs to be input into FMSS as Asset as Asphalt Drive	1100 - Road			SE		2	
	Seip Interpretive Trail		non-contributing, compatible				Y		2100 - Trail	2120	86771	SE		2	
	SE Overlook		non-contributing, compatible			N	N	Input into FMSS as an asset of SE trail	3100 - Maintained Landscapes			SE		2	
	Gravel road		non-contributing,				N	Needs to be input into FMSS as Asset	1100 - Road			HB		2	
	Dirt road		non-contributing, compatible				N	Needs to be input into FMSS as Asset	1100 - Road			HB		2	
Vegetation															
	MCG Field		non-contributing, compatible			Y	Y		3100 - Maintained Landscapes	3110	70103	MCG		2	
	MCG Woodlands		non-contributing, compatible			Y	N		3100 - Maintained Landscapes	3110	70103	MCG		2	
	MCG Riparian		non-contributing, compatible			Y	N		3100 - Maintained Landscapes	3110	70103	MCG		2	
	MCG Lawn		non-contributing, compatible			Y	N		3100 - Maintained Landscapes	3110	70103	MCG		2	
	Hopeton Field		non-contributing, compatible			Y	Y		3100 - Maintained Landscapes	3110	79590	HE		2	
	HMG Lawn		non-contributing, compatible			Y	Y		3100 - Maintained Landscapes	3110	70104	HMG		2	
	HMGU Lawn - Turfgrass/Pasture Crop, Field Grass, Functional		non-contributing, compatible			Y	Y		3100 - Maintained Landscapes	3110	70104	HMG	1181183	2	
	HMGU Field		non-contributing, compatible			Y	Y		3100 - Maintained Landscapes	3110	79490	HMG		2	
	Pond	129322	non-contributing, compatible				N	refers to streambed and spring			79490	HMG			
	HMG Woodlands		non-contributing, compatible			Y	N		3100 - Maintained Landscapes	3110	79490	HMG		2	
	Seip Field		non-contributing, compatible			Y	Y		3100 - Maintained Landscapes	3110	79587	SE		2	
	Seip Riparian		non-contributing, compatible				N		3100 - Maintained Landscapes	3110	79587	SE		2	
	High Bank Field		non-contributing, compatible				Y		3100 - Maintained Landscapes	3110	79592	HB		2	
Buildings and Structures															
	Visitor Center		non-contributing, incompatible			Y	Y		4100 - Building	4129	53274	MCG		2	
	Resource Management Building		non-contributing, incompatible			Y	Y		4100 - Building	4110	53275	MCG		2	

Cultural Landscape Feature to FMSS Data Crosswalk

	Cultural Landscape Inventory			Other CR Inventories			FMSS Data (existing & proposed)								
Landscape Characteristic	Feature Name	CLI Identification Number or CLI Feature Identification Number	Feature Contribution*	IDLCS Number / LCS Structure Number	LCS Name	Does GIS data exist?	IN FMSS?	Notes	Asset Code *(type of location)*	Facility Type	Location Number	Location Name	Asset Number *(if applicable)*	Level *(if applicable)*	Asset Description Comment *(if applicable)*
	Curation Facility		non-contributing, incompatible				Y		4100 - Building	4129	88141	MCG		2	
	Administration Building		non-contributing, incompatible			Y	Y		4100 - Building	4100	53271	MCG		2	
	Maintenance Building		non-contributing, incompatible			Y	Y		4100 - Building	4160	53276	MCG		2	
	R&M-Maintenance Storage Building		non-contributing, incompatible				Y		4100 - Building	4141	53281	MCG		2	
	Maintenance Storage Building		non-contributing, incompatible			Y	Y		4100 - Building	4141	82572	MCG		2	
	HOCU Flammable Storage Building		non-contributing, incompatible			Y	Y		4100 - Building	4141	110889	MCG		2	
	Barn Structures	132424	non-contributing			N	N		4100 - Building			HE		2	
	Cryder Farmstead building foundation	129789	non-contributing			Y	N	potentially historic; Needs to be input into FMSS as Location	4100 - Building			HE		2	
	HMGU Restroom		non-contributing			Y	Y		4100 - Building	4124	110888	HMG		2	
	Barn A - HMGU	129232	non-contributing			Y	Y		4100 - Building	4180	112273	HMG		2	Corn crib
	Barn B - HMGU	129232	non-contributing			Y	Y		4100 - Building	4180	112274	HMG		2	Large barn
	HMGU Visitor Center		non-contributing				Y		4100 - Building	4129	83231	HMG		2	
	Old Seip Farm House / Blackstone House		non-contributing, incompatible				N	historic - Currently in FMSS as planned location #242205	4100 - Building			SE			
	Old Seip Farm House / Blackstone House outbuildings		non-contributing, incompatible				N	historic - Currently in FMSS as planned asset for the Old Seip Farm House/Blackstone House Asset 31465737	4100 - Building			SE			
	Picnic Shelter		non-contributing, incompatible				N	Needs to be input into FMSS as Asset	4100 - Building			SE			
	Fish camp building		non-contributing, incompatible				N	Needs to be input into FMSS as Asset	4100 - Building			SE			
	Shed privy		non-contributing, incompatible				N	Needs to be input into FMSS as Asset	4100 - Building			SE			
	Privy		non-contributing, incompatible				N	Needs to be input into FMSS as Asset	4100 - Building			SE			
	Building remnant		non-contributing, incompatible				N	Needs to be input into FMSS as asset to Seip Field Location - Excess Property Needs to be input into FMSS	4100 - Building			SE			
Small Scale Features															
	Fence / Gate		non-contributing, compatible				Y		3100 - Maintained Landscapes	3110	70103	MCG	41061	2	
	CCC and WPA era walls, steps, stone grill		non-contributing, compatible				N	Input as assets in FMSS Mound City Field	3100 - Maintained Landscapes			MCG		2	
	Ohio Erie Canal Lock Stones		non-contributing, compatible			N	N	Input as assets in FMSS - under Interp Media (to be developed)	7500 - Interpretive Media			MCG			
	Hopeton Field - Fence Barrier		non-contributing				Y		3100 - Maintained Landscapes	3110	79590	HE	1320420	2	
	Hopeton Field - Fence/Gate		non-contributing				Y		3100 - Maintained Landscapes	3110	79590	HE	41063	2	
	Hopewell Impoundment		non-contributing			N	Y		6100 - Dam/Levee/Dike	6110	82573	HMG		2	
	HMG Waysides		non-contributing			Y	N		7500 - Interpretive Media			HMG			
	HMGU Field - Fences/Gate		non-contributing, compatible				Y		3100 - Maintained Landscapes	3110	79490	HMG	552453	2	

Cultural Landscape Feature to FMSS Data Crosswalk

	Cultural Landscape Inventory			Other CR Inventories			FMSS Data *(existing & proposed)*								
Landscape Characteristic	Feature Name	CLI Identification Number or CLI Feature Identification Number	Feature Contribution*	IDLCS Number / LCS Structure Number	LCS Name	Does GIS data exist?	IN FMSS?	Notes	Asset Code *(type of location)*	Facility Type	Location Number	Location Name	Asset Number *(if applicable)*	Level *(if applicable)*	Asset Description Comment *(if applicable)*
	SE Waysides		non-contributing, compatible			N	N		7500 - Interpretive Media			SE			
	SE Fences		non-contributing, compatible			N	N	Input into FMSS asset of SE field				SE			
	HB Waysides		non-contributing, compatible			N	N		3100 - Maintained Landscapes			HB			
	HB Fences		non-contributing, compatible			N	N	Input as asset for HB Fields	3100 - Maintained Landscapes			HB			

*Feature Contribution is further categorized by:

Noncontributing - compatible
Noncontributing-incompatible
Undetermined
Managed as a Cultural Resource

Cultural Landscape Feature to FMSS Data Crosswalk - Treatment Summary

CLR Treatment Project Component Task / FMSS Work Order	Priority	*CLR Treatment Task Component / FMSS Task	FMSS Asset Type (ASSET CODE)	FMSS Location (Parent Locations)	FMSS Asset (Asset Number)	**FMSS Work Type / Sub-Type	Recurring Maintenance Needed	Units	Unit of Measure
Mound City Group									
Task 1. Protect Views	Phase 1	1.1 Woodland: Establish screen / vegetation buffer at property edges	3100 - Maintained Landscapes	70103	Asset number needed	RM	yes	6.5 acres	AC
		1.2 Woodland: Thin vegetation to reveal mountain views					yes (annual pruning)	1 acre	AC
		1.3 Woodland: Screen Visitor Center					yes	1 acre	AC
Task 2. Relocate Visitor Center, Administrative, and Maintenance Buildings	Phase3	2.1 Determine new location for Administrative and Visitor Center	4100 - Buildings	53274; 53275; 88141; 53281; 82572; 110889			no		
		2.2 Remove Visitor Center, picnic shelter, Administrative, Maintenance Buildings, and relocate						6 buildings	EA
Task 3. Remove vehicular circulation	Phase 3	3.1 Determine new access routes	1100 - Roads 1300 - Parking Areas				no		
		3.2 Remove existing roads, parking areas						2 acres	LF / SF
Task 4. Investigate Small Scale Features	Phase 2	4.1 Document features for significance	3100 - Maintained Landscapes; 2100 - Trail	70103; 55706	149071; 149074; 149075		no	stone walls, steps	EA
		4.2 Repair / remove as determined							
Task 5. Add Trails	Phase 2	5.1 Create river access point	2100 - Trail	55706				vegetation clearing; paving	EA
		5.2 Create new trail through North Forty							
		5.3 Extend river trail		55706					
		5.4 Create trail and connection across river to Hopeton Earthworks		55706					
		5.5 Extend bike path from Tri County Triangle Trail to Mound City Group							
Task 6. Protect Soundscape	Phase 1	6.1 Create agreement / partnership to mitigate noise	3100 - Maintained Landscapes						
Task 7. Establish native vegetation (North Forty)	Phase 1 to 3	7.1 Tall Grass and Forbs: Transition North Forty from haying to native grasses and forbs	3100 - Maintained Landscapes				yes	33 acres	AC

Cultural Landscape Feature to FMSS Data Crosswalk - Treatment Summary

CLR Treatment Project Component Task / FMSS Work Order	Priority	*CLR Treatment Task Component / FMSS Task	FMSS Asset Type (ASSET CODE)	FMSS Location (Parent Locations)	FMSS Asset (Asset Number)	**FMSS Work Type / Sub-Type	Recurring Maintenance Needed	Units	Unit of Measure
Task 8. Maintain Previously Reconstructed Mounds (Mounds 1 through 23)	Phase 1	8.1 Low Mixed Grasses: Establish grass mix, mown 3 - 6"	7200 - Maintained Archeological Sites	79593	1039250; 1039275; 1039255; 1039256; 1039254; 1039253; 1039252; 1039272; 1039257; 1039239; 1039259; 1039261; 1039262; 1039264; 1039266; 1039269; 1039270; 1039233; 1039271; 1039248; 1039251; 1039235; 1039273	DM / PM	yes	23 mounds	EA
	Phase 2	8.2 Establish cobble marking on largest mounds (#1, 2, 3, 4, 5, 7, 8, 18)			1039250; 1039255; 1039256; 1039254; 1039253; 1039272; 1039257; 1039271			8 mounds	EA
Task 9. Rehabilitate Mounds X1, X2; 24 & 25	Phase 3	9.1 Conduct archeological investigations to verify	7200 - Maintained Archeological Sites	79593	1039237; 1039277			4 mounds	EA
		9.2 Rehabilitate mounds							
Task 10. Maintain Enclosure (interior space)	Phase 1	10.1 Low Mixed Grasses: Establish grass mix, mown 3 -6"	7200 - Maintained Archeological Sites	79593	1039276		yes	16 acres	AC
Task 11. Maintain Enclosure Walls	Phase 1	11.1 Low Mixed Grasses: Establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	79593	1039276		yes	3165 LF	LF
Task 12. Maintain Borrow Pits	Phase 1	12.1 Low Mixed Grasses: Establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	79593	Asset Number Needed		yes	7 borrow pits	EA
Task 13. Maintain Non-reconstructed borrow pits	Phase 1	13.1 Low Mixed Grasses: Establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	79593	Asset Number Needed		yes	1 borrow pit	EA
Hopeton Earthworks									
Task 1. Protect Views and Land Use	Phase 1	1.1 Establish vegetation to screen property edges	3100 - Maintained Landscapes	Location Number Needed	Asset Number Needed	RM	yes	5 acres	AC
Task 2. Visitor Parking, access	Phase 3	2.1 Create visitor parking, visitor orientation	1300 - Parking Areas	243274	1320418; 1320422	NC	yes	160 feet roadway; 3960 square feet parking	LF/SF
Task 3. Remove gravel road	Phase 2	3.1 Remove existing road	1100 - Roads	Pit road 104368; Earthwork road 67986	149361; 411110	DEM	no	16540 linear feet roadway; 4925 linear feet utilities	LF

Cultural Landscape Feature to FMSS Data Crosswalk - Treatment Summary

CLR Treatment Project Component Task / FMSS Work Order	Priority	*CLR Treatment Task Component / FMSS Task	FMSS Asset Type (ASSET CODE)	FMSS Location (Parent Locations)	FMSS Asset (Asset Number)	**FMSS Work Type / Sub-Type	Recurring Maintenance Needed	Units	Unit of Measure
Task 4. Add Trails	Phase 3	4.1 Add a nature trail through the park unit, and connect trail to Mound City Group	2100 - Trail	52412	1320402; 1320413; 1320550; Asset number needed for new trail sections	NC	yes	5480 feet nature trail; 7530 trail to Mound City Group	LF
Task 5. Establish Native Vegetation (outside earthworks)	Phase 1	5.1 Tall Grass and Forbs: Transition vegetation from haying to native grasses and forbs	3100 - Maintained Landscapes	79590	Asset number needed	RM	yes	45 acres	AC
Task 6. Maintain and Rehabilitate Great Circle, Square	Phase 2	6.1 Low Mixed Grasses: verify extents and establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	233351	1015341; 1015340	DM / PM	yes	Great Circle 3040 linear feet; Square 2250 linear feet	LF
Task 7. Maintain Earthwork Enclosures (interior spaces)	Phase 2	7.1 Low Mixed Grasses: Transition from haying to establish grass mix, mown 3-6"	7200 - Maintained Archeological Sites	233351	1015341; 1015340; 1015339; 1015342; 1015343; 1015344; 1015345	DM / PM	yes	Great Circle 20 acres; Square 20 acres; Parallel Walls 4 acres; Circle A 1.6 acres; Circle B 0.6 acres; Circle C 0.8 acres	AC
Task 8. Maintain and Rehabilitate Parallel Walls, Circle A, B, C	Phase 2	8.1 Low Mixed Grasses: verify extents and establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	233351	1015339; 1015342; 1015343; 1015344; 1015345	DM / PM	yes	Parallel walls 4656 linear feet; Circle A 800 linear feet; Circle B 660 linear feet; Circle C 650 linear feet	LF
Task 9. Maintain and Rehabilitate Mounds	Phase 3	9.1 Low Mixed Grasses: verify extents and establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	233351	Asset Number Needed	DM / PM	yes	3 mounds	EA
Task 10. Maintain Borrow Pits	Phase 2	10.1 Low Mixed Grasses: establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	233351	Asset Number Needed	DM / PM	yes	6 borrow pits	EA
Hopewell Mound Group									
Task 1. Protect Views	Phase 1	1.1 Establish vegetation to screen the adjacent land uses	3100 - Maintained Landscapes; 5400 - Electrical System	Location Number Needed	Asset Number Needed	RM	yes	2 acres	AC
	Phase 3	1.2 Remove utilities that cross earthworks		Location Number Needed	Asset Number Needed	DEM		5260 linear feet	LF
Task 2. Visitor access	Phase 2	2.1 Provide visitor parking area	1300 - Parking Areas	67400	411097	RM	yes	34000 square feet parking (existing); .06 MI, 160 ft (existing)	SF

Cultural Landscape Feature to FMSS Data Crosswalk - Treatment Summary

CLR Treatment Project Component Task / FMSS Work Order	Priority	*CLR Treatment Task Component / FMSS Task	FMSS Asset Type (ASSET CODE)	FMSS Location (Parent Locations)	FMSS Asset (Asset Number)	**FMSS Work Type / Sub-Type	Recurring Maintenance Needed	Units	Unit of Measure
Task 3. Remove Sulphur Lick Road	Phase 3	3.1 Work with agencies, community to provide a new route	1100 - Roads	Location Number Needed	Asset Number Needed	DEM	no	4080 linear feet	LF
Task 4. Trails and River Access	Phase 2	4.1 Relocate Adena Trail away from earthworks	2100 - Trails	67402	149062	DEM / NC		4965 linear feet	LF
		4.2 Maintain nature trail and add overlook		2130	86768	DM / PM / NC	yes	5260 linear feet	LF
		4.3 Provide creek access		Location Number Needed	Asset Number Needed	NC	yes	650 linear feet	LF
Task 5. Establish Native Vegetation (outside of earthworks)	Phase 1	5.1 Tall Grass and Forbs: Transition vegetation from haying to native grasses and forbs	3100 - Maintained Landscapes	Location Number Needed	Asset Number Needed	RM	yes	22 acres	AC
Task 6. Maintain and Rehabilitate Great Enclosure, Square Enclosure, and D-Shaped Enclosure	Phase 1	6.1 Low Mixed Grasses: Establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	233316	1071895 (note: the CLI does not identify archaeological features at HMG separately)	DM / PM	yes	Great Enclosure 8630 linear feet; Square Enclosure 2550 linear feet; D-Shaped Enclosure 2050 linear feet	LF
	Phase 3	6.2 Verify extents and rehabilitate		233316	1071895		no		
Task 7. Maintain Earthwork Enclosures (interior spaces)	Phase 1	7.1 Low Mixed Grasses: Transition from haying to establish grass mix, mown 3-6"	7200 - Maintained Archeological Sites	233316	1071895	DM / PM	yes	Square Enclosure 16.5 acres; Great Enclosure 111 acres	AC
Task 8. Maintain and Rehabilitate Mounds (5 verified)	Phase 1	8.1 Low Mixed Grasses: Establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	233316	1071895	DM / PM	yes	5 mounds	EA
	Phase 3	8.2 Verify extents and rehabilitate		233316	1071895		no		
Task 9. Verify and Rehabilitate Mounds (33 unverified)	Phase 1	9.1 Verify mounds, archaeological research	7200 - Maintained Archeological Sites	233316	1071895	DM / PM	no	33 mounds	EA
	Phase 2	9.2 Low Mixed Grasses: Establish grass mix, mown 6-12"		233316	1071895		yes		
	Phase 3	9.3 Rehabilitate		233316	1071895		no		
Task 10. Rehabilitate Ditches	Phase 1 to Phase 3	10.1 Low Mixed Grasses: Establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	233316	1071895	DM / PM	yes	9350 linear feet	LF
Task 11. Maintain Borrow Pits	Phase 1	11.1 Low Mixed Grasses: Establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	233316	1071895	DM / PM	yes	1 borrow pit	EA
Seip Earthworks									
Task 1. Protect Views and Land Use	Phase 1	1.1. Woodland: Establish vegetation to screen the school from the earthworks	3100 - Maintained Landscapes	79587		RM		12 acres	AC

Cultural Landscape Feature to FMSS Data Crosswalk - Treatment Summary

CLR Treatment Project Component Task / FMSS Work Order	Priority	*CLR Treatment Task Component / FMSS Task	FMSS Asset Type (ASSET CODE)	FMSS Location (Parent Locations)	FMSS Asset (Asset Number)	**FMSS Work Type / Sub-Type	Recurring Maintenance Needed	Units	Unit of Measure
Task 2. Relocate Visitor Parking, picnic, access	Phase 3	2.1. Determine new location for parking, visitor orientation	1100 - Roads; 1300 - Parking Areas; 4100 Buildings						
		2.2. Remove picnic shelter, parking, and associated features.						.5 acre parking and road; 150 LF sidewalk; 1 picnic shelter	SF/LF/EA
Task 3. Move Dill Road	Phase 3	3.1 Determine new route, to be located off of earthwork features.	1100 - Roads						
		2. Remove existing road and utility poles.						4450 LF road; 5,770 LF utility	LF
Task 4. Add Trails	Phase 1	4.1. Add a nature trail to follow Paint Creek and create a loop through the park unit	2100 - Trails				yes		
		4.2 Connect trail to the greater greenway trail system		86771			yes		
Task 5. Document and remove Blackstone House and Fish Camp Buildings	Phase 1 to 2	5.1 Document the Fish Camp buildings and related structures, and remove	4100 - Buildings				no	3 buildings	EA
		5.2 Document the Blackstone House					no	1 building	EA
		5.3 Remove the Blackstone House, outbuildings, and other associated features (road, utilities)		Currently in FMSS as planned location #242205			no	3 structures; 250 LF road	EA/LF
Task 6. Establish Native Vegetation (outside of earthworks)	Phase 1	6.1 Tall Grass and Forbs: Transition vegetation from haying to native grasses and forbs	3100 - Maintained Landscapes	79587			yes	180 acres	AC
Task 7. Maintain and Rehabilitate Large Circle	Phase 2	7.1 Low Mixed Vegetation: Establish grass mix on circle, mown 6-12”	7200 - Maintained Archeological Sites	233317			yes	5456 LF	AC
		7.2 Verify extents and rehabilitate circle						5456 LF	AC
Task 8. Maintain earthwork enclosures (interior spaces)	Phase 1	8.1 Low Mixed Vegetation: Transition from haying to establish grass mix, mown 3 -6"	7200 - Maintained Archeological Sites	233317			yes	100 acres	AC
Task 9. Maintain Seip-Pricer Mound	Phase 3	9.1 Establish cobble marking on mound	7200 - Maintained Archeological Sites	233317			yes (regular resetting, removal of vegetation)	1 mound	EA

Cultural Landscape Feature to FMSS Data Crosswalk - Treatment Summary

CLR Treatment Project Component Task / FMSS Work Order	Priority	*CLR Treatment Task Component / FMSS Task	FMSS Asset Type (ASSET CODE)	FMSS Location (Parent Locations)	FMSS Asset (Asset Number)	**FMSS Work Type / Sub-Type	Recurring Maintenance Needed	Units	Unit of Measure
Task 10. Maintain Conjoined Mound	Phase 3	10.1 Verify extents, add soild to define mound, as determined necessary	7200 - Maintained Archeological Sites	233317				1 mound	EA
		10.2 Establish cobble marking on mound					yes (regular resetting, removal of vegetation)	1 mound	EA
Task 11. Rehabilitate Small Circle and Large Square	Phase 1; Phase 3	11.1 Low Mixed Vegetation: Establish grass mix, mown 6-12”	7200 - Maintained Archeological Sites	233317			yes	7840 LF	AC
		11.2 Verify extents and rehabilitate						2 features	EA
Task 12. Maintain Borrow Pits	Phase 2	12.1 Low Mixed Vegetation: Verify extents of borrow pits and establish grass mix, mown 6-12”	7200 - Maintained Archeological Sites	233317			yes	appx. 15 borrow pits	EA
High Bank Works									
Task 1. Protect Views	Phase 1	Task 1.1 Woodland: Establish a view to the river from the earthwork complex	3100 - Maintained Landscapes	79592			yes	1 acre	AC
		Task 1.2 Woodland: Establish vegetation to screen the adjacent railroad tracks from the earthwork complex					yes	10 acres	AC
Task 2. Provide Visitor Access	Phase 2	Task 2.1 Provide a new parking area and visitor access to the South Earthwork	1100 - Roads; 1300 - Parking Areas;				no	12,000 SF parking; 400 LF road	SF / LF
		Task 2.2 Provide visitor parking area and safe passage across the railroad tracks					no		
Task 3. Remove gravel road	Phase 3	3.1 Remove gravel roads and utilities that cross the earthworks	1100 - Roads				no	1800 LF	LF
Task 4. Add Trails and river access	Phase 2	4.1 Add a nature trail to the river edge, with river access. Create a looped trail through the park unit.	2100 - Trails						

Cultural Landscape Feature to FMSS Data Crosswalk - Treatment Summary

CLR Treatment Project Component Task / FMSS Work Order	Priority	*CLR Treatment Task Component / FMSS Task	FMSS Asset Type (ASSET CODE)	FMSS Location (Parent Locations)	FMSS Asset (Asset Number)	**FMSS Work Type / Sub-Type	Recurring Maintenance Needed	Units	Unit of Measure
Task 5. Establish Native Vegetation (outside of earthworks)	Phase 1	5.1 Tall Grass and Forbs: Transition vegetation from haying to native grasses and forbs	3100 - Maintained Landscapes				yes	50 acres	AC
Task 6. Maintain and Rehabilitate Great Circle	Phase 1	6.1 Low Mixed Vegetation: Verify extents and establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	52413	233350		yes	3423 acres	AC
Task 7. Maintain earthwork enclosures (interior spaces)	Phase 1	7.1 Low Mixed Vegetation: Transition from haying to establish grass mix, mown 6-9"	7200 - Maintained Archeological Sites	52413; 79592	233350		yes	38 acres	AC
Task 8. Maintain and Rehabilitate Octagon	Phase 1	8.1 Low Mixed Vegetation: Establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	52413	233350		yes	3220 LF	AC
Task 9. Maintain and Rehabilitate Parallel Walls	Phase 2	9.1 Low Mixed Vegetation: Verify extents and establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	52413	233350		yes	appx. 5295 LF	AC
Task 10. Rehabilitate South Earthwork	Phase 2	10.1 Low Mixed Vegetation: Verify extents and establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	52413	233350		yes	7 acres	AC
Task 11. Maintain Borrow Pits	Phase 1	11.1 Low Mixed Vegetation: Verify extents and establish grass mix, mown 6-12"	7200 - Maintained Archeological Sites	52413	233350		yes	appx. 12 borrow pits	EA

* Treatment Tasks for vegetation include the following typologies:
Woodland
Tall Grass and Forbs
Low Mixed Grasses
Low Mixed Vegetation

** FM - facility maintenance
DM - deferred maintenance. Work that is overdue or needs to be performed immediately due to deficiences or problems (stabilization needs, deterioration, etc.)
PM - preventative maintenance to be developed by park staff based on recurring maintenance required. Regularly scheduled minor maintenance (weeding, mowing, etc.)
Asset record to be assigned by park staff
RM (maintenance between 1 and 10 year cycles such as tree pruning) may be identified in all three CL documents, but most detail is in a PMP.

Appendix H: Seed Mixes

The following is based on USDA and NRCS, Ohio 2010 Seed Mix Calculator.[1] Native species with a higher diversity mix are preferred, however the preferred seed mix should be based upon current scholarship and intended use. The following seed mixes are based on current knowledge and can be changed as scholarship evolves.

Seed Reference Data		
Seed	**Seeds / Lb (x1000)**	**Average Cost /Lb.**
Native Grasses		
Big Blue Stem (Andropogon gerardii)	140	$13.19
Side Oats Grama (Bouteloua curtipendula)	190	$14.66
Canada Wild Rye (Elymus canadensis)	115	$10.58
Virginia Wild Rye (Elymus virginicus)	75	$9.16
Switchgrass (Blackwell) (Panicum virgatum)	370	$10.73
Little Blue Stem (Schizachyrium scoparium)	225	$15.37
Prairie Dropseed (Sporobulus heterolepis)	1200	$185.00
Eastern Gamagrass (Tripsacum dactyloides)	7	$14.25
Purple Top (Tridens flavus)	5000	$28.95
Sand Dropseed (Sporobulus cryptandrus)	5600	$7.50
Indiangrass (Tomahawk or NE 54) (Sorghastrum nutans)	175	$11.89
Introduced Perennial Grasses		
Festulolium	227	$4.52
Garrison Grass (Alopecurus arundinaceus)	750	$7.13

1 USDA and NRCS, Ohio 2010 Seed Mix Calculator, developed by Mark A. Scarpitii, CCA, State Agronomist, Ohio NRCS.

Seed Reference Data		
Seed	**Seeds / Lb (x1000)**	**Average Cost /Lb.**
Kentucky Bluegrass (Poa pratensis)	2200	$2.94
Orchard Grass (Dactylis glomerata)	590	$4.00
Perennial Ryegrass (Lolium Perenne L.)	237	$1.69
Reed Canarygrass (Phalaris arundinacea L.)	550	$4.31
Smooth Bromegrass (Bromus inermis)	137	$2.73
Creeping Red Fescue (Festuca rubra)	615	$4.72
Red Top (Agrostis palustris)	5000	$10.25
Tall Fescue (Festuca arundinacea)	230	$1.52
Timothy (Phleum pratense L.)	1230	$1.87
		$4.15
Introduced Legumes		
Alfalfa (Medicago sativa)	210	$4.37
Alsike Clover (Trifolium hybridum)	700	$1.96
Austrian Winter Pea (Lathyrus hirsutus)	18	$1.05
Birdsfoot Trefoil (Lotus corniculatus)	375	$6.65
Crimson Clover (Trifolium incarnatum)	140	$2.85
Red Clover (Trifolium pratense)	275	$3.88
Ladino Clover (Trifolium repens)	860	$4.56
Lespedeza, Annual (Kummerowia stipulacea)	240	$3.35
Lespedeza, Sericea - AU-Grazer (Lespedeza cuneata)	350	$4.00

Seed Reference Data		
Seed	**Seeds / Lb (x1000)**	**Average Cost /Lb.**
Hairy Vetch (Vicia villosa)	20	$3.03
Crownvetch (Coronilla varia)	140	$15.82
Native Legumes		
Canadian Milk Vetch (Astragalus canadensis)	120	$76.17
Prairie False Indigo (Baptisia leucantha)	27	$80.00
Partidge Pea (Chamaecrista fasciculata)	50	$15.36
Wild Senna (Cassia hebecarpa)	23	$67.50
Canada Tick-Trefoil (Desmodium canadense)	88	$102.75
Round-Headed Bush Clover (Lespedeza capitata)	128	$135.50
Slender Bush Clover (Lespedeza virginica)	160	$71.00
Purple Prairieclover (Dalea purpurea)	317	$78.33
Native Forbs		
Nodding Wild Onion (Allium cernuum)	138	$126.83
Swamp Milkweed (Asclepias incarnata)	102	$232.00
Butterfly Milkweed (Asclepias tuberosa)	70	$203.18
Smooth Aster (Aster laevis)	17	$187.13
New England Aster (Aster novae-angliae)	1100	$227.50
White Wild Indigo (Baptisia lactea)	25	$121.75

Seed Reference Data		
Seed	**Seeds / Lb (x1000)**	**Average Cost /Lb.**
Nodding Sticktight (Bidens cernua)	130	$108.00
Illinois Bundleflower (Desmanthus illinoensis)	60	$25.32
Purple Coneflower (Echinacea purpurea)	115	$39.40
Sneezeweed (Helenium autumnale)	1603	$119.04
Sawtooth Sunflower (Helianthus grosseserratus)	630	$440.00
Western Sunflower (Helianthus occidentalis)	207	$292.50
Smooth Oxeye (False) Sunflower (Heliopsis helianthoides)	104	$47.25
Rough Blazing-Star (Liatris aspera)	191	$364.08
Dense Blazing-Star (Liatris spicata)	135	$121.48
Lupine (Lupinus perennis L.)	18	$208.79
Wild Bergamot (Monarda fistulosa)	1200	$137.01
Virginia Mountain Mint (Pycanthemum virginianum)	6048	$447.00
Gray-Headed Coneflower (Ratibida pinnata)	625	$47.13
Pasture Rose (Rosa carolina)	50	$272.50
Black-eyed Susan (Rudbeckia hirta)	1500	$29.06
Cup Plant (Silphium perfoliatum)	34	$112.97
Prairie Dock (Silphium terebinthinaceum)	18	$271.83
Stiff Goldenrod (Solidago rigida)	656	$134.63
Showy Goldenrod (Solidago speciosa)	1675	$179.50
Ohio Spiderwort (Tradescantia ohioensis)	128	$261.58

Seed Reference Data		
Seed	**Seeds / Lb (x1000)**	**Average Cost /Lb.**
Blue Vervain (Verbena hastata)	1793	$85.60
Western Ironweed (Vernonia fasciculata)	373	$164.00
Golden Alexanders (Zizia aurea)	176	$144.71
Common Evening Primrose (Oenothera biennis)	50	$93.85
Culvers Root (Veronicastrum virginicum)	50	$229.41
Prairie Cirquefoil (Prairie Cirquefoil)	14	$145.83
Prairie Coreopsis (Coreopsis Palmata)	551	$147.50
Leadplant (Amorpha Canescens)	277	$130.93
Compass Plant (Silphium Laciniatum)	12	$129.67
Cardinal Flower (Lobelia Cardinalis)	15	$730.40
Rattlesnake Master (Eryngium Aquaticum)	252	$111.11
Lanceleaf Coreopsis (Coreopsis Lanceolata)	559	$34.01
Upright Coneflower (Ratibida Columnifera)	600	$31.33
Royal Catchfly (Silene regia)	370	$1,035.00
Cover Crops - Grasses (Additional Grasses Above)		
Rygrass, Annual (Lolium multiflorum)	228	$0.95
Sorghum/Sudan Grass (Sorghum bicolor (L.) Moench)	28	$1.45
Tiffany Teff Grass	1300	$3.30
		$1.90

Seed Mix Used at High Bank Works, 2010

Seed Mix	Input Seeding Rate lbs / ac	Seeds per lb x 1000	Seeds per sq ft. @ Seeding Rate	Price Per Pound	Cost in Mix	Percent of Total Cost of Mix
Big Blue Stem (Andropogon gerardii)	0.6	140	2	$13.19	$7.92	6.3%
Little Blue Stem (Schizachyrium scoparium)	1.5	225	8	$15.37	$23.06	18.3%
Indiangrass (Tomahawk or NE 54) (Sorghastrum nutans)	0.5	175	2	$11.89	$5.94	4.7%
Sand Dropseed (Sporobulus cryptandrus)	0.02	5600	3	$7.50	$0.15	0.1%
Side Oats Grama (Bouteloua curtipendula)	1.3	190	6	$14.66	$19.05	15.1%
Select A Seed	0	0	0	$0.00	$0.00	0.0%
Black-eyed Susan (Rudbeckia hirta)	0.1	1500	3	$29.06	$2.91	2.3%
Gray-Headed Coneflower (Ratibida pinnata)	0.12	625	2	$47.13	$5.66	4.5%
New England Aster (Aster novae-angliae)	0.02	1100	1	$227.50	$4.55	3.6%
Illinois Bundleflower (Desmanthus illinoensis)	0.2	60	0	$25.32	$5.06	4.0%
Lanceleaf Coreopsis (Coreopsis Lanceolata)	0.1	559	1	$34.01	$3.40	2.7%
Partidge Pea (Chamaecrista fasciculata)	0.4	50	0	$15.36	$6.15	4.9%
Purple Coneflower (Echinacea purpurea)	0.15	115	0	$39.40	$5.91	4.7%
Purple Prairieclover (Dalea purpurea)	0.1	317	1	$78.33	$7.83	6.2%
Upright Coneflower (Ratibida Columnifera)	0.1	600	1	$31.33	$3.13	2.5%
Sneezeweed (Helenium autumnale)	0.03	1603	1	$119.04	$3.57	2.8%
Smooth Oxeye (False) Sunflower (Heliopsis helianthoides)	0.1	104	0	$47.25	$4.73	3.7%
Wild Bergamot (Monarda fistulosa)	0.07	1200	2	$137.01	$9.59	7.6%
Select A Seed	0	0	0	$0.00	$0.00	0.0%
Butterfly Milkweed (Asclepias tuberosa)	0.01	70	0	$203.18	$2.03	1.6%
Stiff Goldenrod (Solidago rigida)	0.04	656	1	$134.63	$5.39	4.3%
Totals	lbs/ac		Seeds per sq ft.		Cost of Mix	Total Percent
	5.46		34.0		$126.02	*100.0%*



Cultural Landscape Report and Environmental Assessment

Hopewell Culture National Historical Park
Chillicothe, Ohio

2016