ARCHAEOLOGICAL OVERVIEW AND ASSESSMENT OF THE CUMBERLAND GAP NATIONAL HISTORICAL PARK, KENTUCKY, TENNESSEE, AND VIRGINIA

By Todd M. Ahlman, Gail L. Guymon, and Nicholas P. Herrmann

Report Prepared for:

National Park Service
Cumberland Gap National Historical Park
Attn: Superintendent
P.O. Box 1848
Middlesboro, KY 40965
(606) 246-1052

Boyce Driskell, Co-Principal Investigator
Todd Ahlman, Co-Principal Investigator
Archaeological Research Laboratory
Department of Anthropology
The University of Tennessee
250 South Stadium Hall
Knoxville, Tennessee 37996-0720
(865) 974-3781

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SECTION 1. MANAGEMENT SUMMARY

At the request of the National Park Service (NPS), the Archaeological Research Laboratory (ARL) at the University of Tennessee's (UT's) Department of Anthropology has prepared an Archaeological Overview and Assessment (AOA) of the Cumberland Gap National Historical Park (CUGA). The primary purpose of this AOA is to investigate, describe, and assess the known and potential archaeological resources within the CUGA boundaries. An AOA is the first step in creating a comprehensive cultural resource management plan within the park and provides the park a baseline for future archaeological investigations and research.

This report is divided into 10 sections. Section 1 is the Management Summary. Section 2 is an Introduction to the volume. Section 3 is the Environmental Setting that describes the physiography of the park, soils and geology, climate, and modern flora and fauna. Section 4 is the Cultural Overview that describes the prehistoric and historical setting and the known and potential archaeological sites within the park. It is within this section that a predictive model for the occurrence of archaeological sites is developed and revised and the results of the limited archaeological survey to test the model are reported. Section 5 is a Chronological List of Archaeological Reports on file at CUGA and the Kentucky, Virginia, and Tennessee State Historic Preservation Offices (SHPOs). In addition, references to CUGA accession numbers are provided. Section 6 is an Assessment of Previous Research. Section 7 discusses Archaeological and Cultural Resources Management Issues relative to the types of sites at the park and past research. This section covers documentation issues, management issues, and treatment issues. Section 8 places the known archaeological sites within the NPS's Thematic Framework. Section 9 provides Recommendations for Future Archaeological Research within the park. Section 10 is the References Cited section.

Before the commencement of this AOA, there were 84 known cultural resources recorded within the park, all of which may have an archaeological component. As a result of the limited testing of the predictive model, 5 archaeological sites were recorded bringing the total to 89 known cultural resources within the park. The majority of the known cultural resources within CUGA is located in Kentucky (n=57), followed by Virginia (n=22), then Tennessee (n=10) with one unknown. Only 21 of the cultural resources have been recorded as archaeological sites with the appropriate state historic preservation officer.

This AOA has identified several issues regarding the identification, recording, and stewardship of archaeological sites within CUGA. First, there is a lack of consistent standards regarding the recording of archaeological sites. Second, larger sections of the park should be surveyed for archaeological sites. Third, a stewardship plan should be enacted that includes training of park employees and hiring of a park archaeologist.

This AOA recommends that CUGA develop a programmatic agreement (PA) pursuant to Section 106 of the National Historic Preservation Act and is implement regulations at 36 CFR § 800with the Kentucky, Tennessee, and Virginia state historic preservation officers as well as any Native American tribes or other interested parties. This PA should outline

survey and reporting standards for archaeological surveys as well as ways to implement surveys to test and revise the predictive model developed in this AOA.

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SECTION 2. INTRODUCTION

At the request of the National Park Service (NPS), the Archaeological Research Laboratory (ARL) at the University of Tennessee's (UT's) Department of Anthropology has prepared an Archaeological Overview and Assessment (AOA) of the Cumberland Gap National Historical Park (CUGA). The primary purpose of this AOA is to investigate, describe, and assess the known and potential archaeological resources within the CUGA boundaries. An AOA is the first step in creating a comprehensive cultural resource management plan within the park and provides the park a baseline for future archaeological investigations and research.

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This AOA was prepared by Dr. Todd M. Ahlman, Gail L. Guymon, and Dr. Nicholas P. Herrmann. Drs. Boyce Driskell and Todd M. Ahlman served as principal investigators. Gail L. Guymon conducted the majority of the background research at the CUGA headquarters. Todd M. Ahlman and Nick Herrmann conducted the archaeological fieldwork for testing the predictive model. The crew for the archaeological fieldwork included Dan Marcel, John Baker, Rachael Black, Greg Marsh, Howard Haygood, Ashley Savage, Erin Richmond, and Jonathan Witcoski.

SECTION 3. ENVIRONMENT SETTING

CUGA is comprised of approximately 22,000 acres in Bell and Harlan Counties in Kentucky, Lee County in Virginia, and Claiborne County in Tennessee (Figure 1). CUGA is located primarily in Bell County, Kentucky; however, the 'tri-state" area within its southeastern boundaries also includes portions of Harlan County, Kentucky; Lee County, Virginia; and Claiborne County, Tennessee. The park's name is derived from the Cumberland Mountains which pass through this area on a northeast-southwest axis. Cumberland Gap is a notch within Cumberland Mountain caused by a block fault that runs perpendicular to the axis of the mountain chain. The Gap is situated between Tri-State Peak (where Kentucky, Tennessee, and Virginia meet) to the southwest and the Pinnacle to the northeast.

A natural passage exists through the Gap that runs northwest at an elevation of 411.48 m (1,350 ft) at the base of the mountain in Virginia. It enters Kentucky at 502.92 m (1,650 ft) in an area known as "the saddle of the Gap" then turns southward as it descends the western slope to an elevation of 30.48 m (1,000 ft) at the base of the mountain. The Pinnacle has an elevation of 731.52 m (2,400 ft) and 243.84 m (800 ft) above the saddle, while the elevation of Tri-State Peak is 603.50 m (1,980 ft). The area around the Gap was originally covered with an oak-chestnut hardwood forest but the steep slopes were deforested during the Civil War. The area is presently covered by second and third growth mixed hardwood forest (Morgan 1978).

PHYSIOGRAPHY

CUGA is located primarily in the Valley and Ridge physiographic province with a small portion of the park located in the Cumberland Plateau physiographic province (Figure 2). The Valley and Ridge physiographic province is characterized by a series of long linear ridges interspersed with linear valleys oriented in a northeast-southwest manner. It was formed from a series of folded and faulted rocks ranging in age from Precambrian to Mississippian. The underlying geology is what has created the series of ridges and valleys. The valleys are formed from less resistant shales, siltstones, and limestones while the ridges are formed from limestones and sandstones. Most of the Valley and Ridge is relatively low in elevation; however, within CUGA, the elevation ranges from 335 m above mean sea level (amsl) to 1,070 m amsl with the highest elevations at the northern end of the park in the vicinity of White Rocks cliff.

To the immediate west and north of CUGA is the Cumberland Plateau physiographic subprovince of the Alleghany Plateau physiographic province. The Cumberland Plateau physiographic subprovince is formed from the same geologic sources as the Valley and Ridge, but is marked by a flat lying landscape at relatively high elevations resulting in lower degrees of erosion. A small portion of CUGA lies within the Cumberland Plateau at the southwestern end of the park.

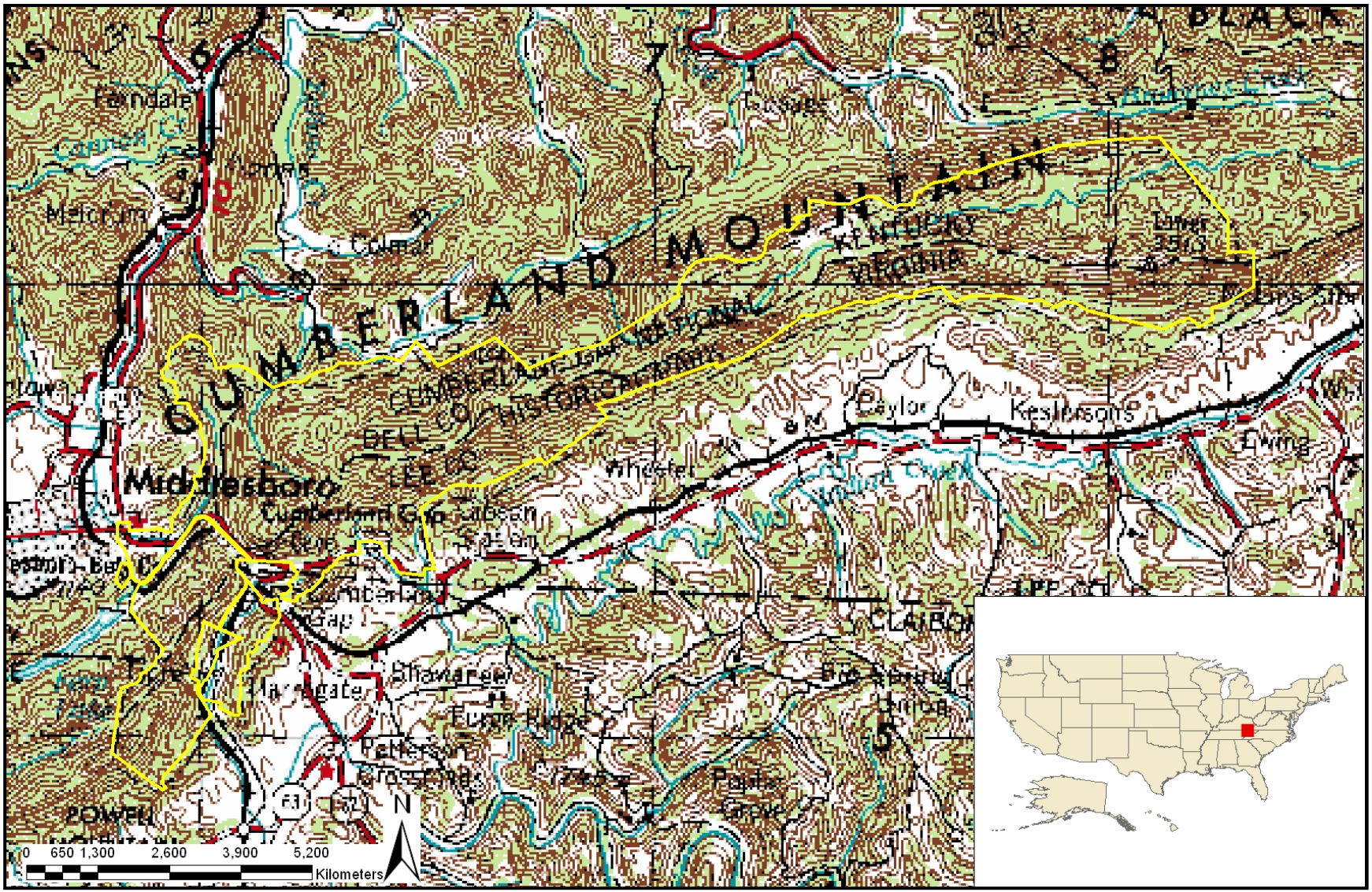

Figure 1. Location of Cumberland Gap National Historical Park.

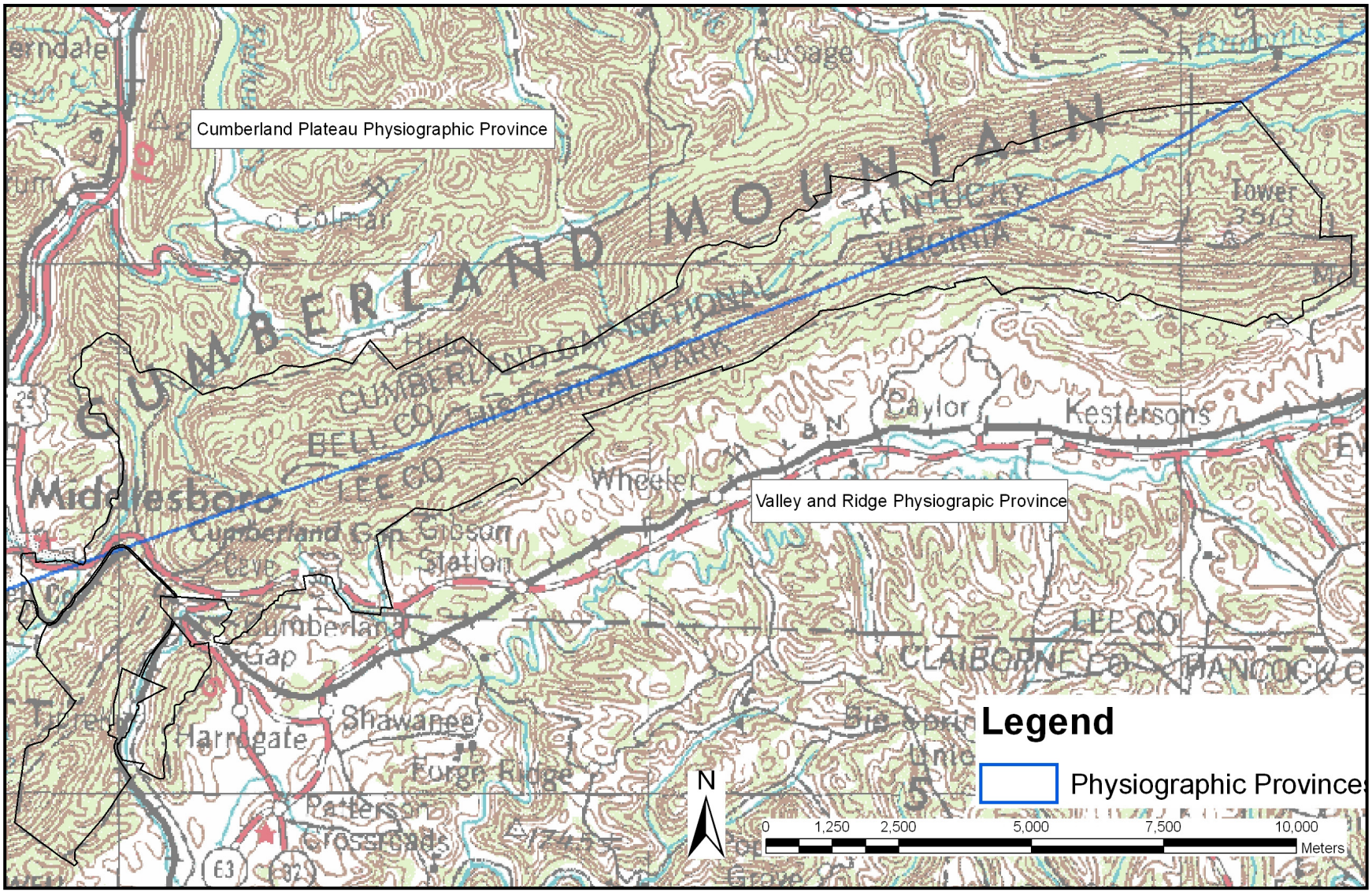

Figure 2. Physiographic provinces.

CUGA is centered along the Cumberland Mountain, often considered the eastern boundary of the Cumberland Plateau and the divide for the Tennessee River Valley. This feature makes the CUGA terrain generally rugged and steeply sloped. Less than 30 percent of the park has a slope of less than 15 percent.

SOILS AND GEOLOGY

Based on the USDA NRCS State Soils Geographic (STATSGO) databases for Kentucky, Tennessee, and Virginia there are 16 different soils series within the Cumberland Gap National Historical Park (Table 1, Figure 3). The soils are formed in either residuum or colluvium of limestone, shale, siltstone, or sandstone. Most of the soils are relatively shallow.

There are 35 different mapped geologic units within CUGA from seven parent materials (Table 2, Figure 4). Sandstone is the most frequent mapped material covering 6593 acres. Shale (3,096 acres) and limestone (1,759 acres) are the next most frequent mapped materials. There are also 5,098 acres mapped as a combination of shale and sandstone and 722 acres mapped as shale, siltstone, and sandstone. In all, sandstone is the most frequent parent material and occurs most often on the west side of Cumberland Mountain adjacent to the Cumberland Plateau physiographic province (Figure 4).

FLORA AND FAUNA

The Ridge and Valley and Cumberland Plateau falls within the Mixed Mesophytic Forest region. Typical species include tulip poplar (*Liriodendron tulipifera*), white oak (*Quercus alba*), red oak (*Quercus borealis*), hemlock (*Tsuga canadensis*), basswood (*Tilia heterophylla*), beech (*Fagus grandifolia*), and sugar maple (*Acer saccharum*). The old peneplain surface is dominated by oak or oak-hickory forest (Braun 1950:39,114).

Animals native to the Ridge and Valley and Cumberland Plateau area include white-tailed deer (*Odocoileus virginianus*), opossum (*Didelphis marsupialis*), raccoon (*Procyon lotor*), Eastern gray squirrel (*Sciurus carolinensis*), woodchuck (*Marmota monax*), Eastern cottontail (*Sylvilagus floridanus*), black bear (*Ursus americanus*), and wild turkey (*Meleagris gallopavo*). Historically known species that are no longer present include elk (*Cervus canadensis*), wolf (*Canis lupus*), and panther (*Felis concolor*). Rivers and streams on the Ridge and Valley and Cumberland Plateau support a variety of fish, aquatic turtles, and mollusks. Fish native to the Cumberland Plateau area include channel catfish (*Ictalurus punctatus*), walleye (*Stizostedion vitreum*), muskellunge (*Esox masquinongy*), white bass (*Morone chrysops*), smallmouth (*Micropterus dolomieu*) and rock bass (*Ambloplites rupestris*), and longear sunfish (*Lepomis megalotis*).

Table 1. Mapped Soil Series within the CUGA Boundaries.

Soil Series	Formed	Parent Material(s)	Taxonomic Class
Alticrest	Residuum	Acid Sandstone	Typic Dystrudepts
Shelocta	Colluvium/Colluvium and Residuum	Shale, Siltstone, and Sandstone	Typic Hapludults
Kimper	Colluvium/Colluvium and Residuum	Sandstone, Siltstone, and Shale	Typic Dystrudepts
Hazelton	Residuum	Sandstone	Type Dystrudepts
Pineville	Colluvium	Sandstone, Shale, and Siltstone	Type Hapludults
Berks	Residuum	Shale, Siltstone, and Sandstone	Type Dystrudepts
Grimsley	Colluvium over Shale Residuum	Cobbles, Stone, Shale	Typic Hapludults
Jefferson	Colluvium from soils formed in Residuum	Sandstone, Shale, and Siltstone	Typic Hapludults
Talbott	Residuum	Limestone	Typic Hapludulfs
Colbert	Residuum	Argillaceous and Shaly Limestone	Vertic Hapludalfs
Rigley	Colluvium	Sandstone and Siltstone	Typic Hapludults
Bouldin	Colluvium	Stone	Typic Paledults
Caneyville	Residuum	Limestone	Typic Hapludalfs
Montevallo	Residuum	Siltstone and Silty Shale	Typic Dystrudepts
Collegedale	Colluvium	Limestone and Limestone interbedded with Shale	Typic Paleudults
Armuchee	Residuum	Shale	Inceptic Hapludults

Table 2. Mapped Geologic Formations within the CUGA Boundaries.

Formation	Parent Material	Formation	Parent Material
Alluvium	Alluvium	Lee Formation-Sandstone Member	Sandstone
Ben Hur Limestone	Limestone	Lee Formation-Sandstone and Shale Member	Sandstone, Shale
Chattanooga Shale	Shale	Lee Formation-Shale and Sandstone Member	Shale, Sandstone
Clinch Sandstone	Sandstone	Lee Formation-Shale and Sandstone Member-Coal Bed	Coal Bed
Clinton Shale	Shale	Lee Formation-Undifferentiated	
Colluvium	Colluvium	Lee Formation-White Rock Sandstone Member	Sandstone
Eggleston Limestone	Limestone	Mingo Formation-Harlen Coal Bed	Coal Bed
Grainger Formation	Shale, Siltstone, Sandstone	Newman Limestone-Lower Member	Limestone
Hance Formation-Coal Bed	Coal Bed	Newman Formation-Upper Member	Limestone
Hance Formation-Middle Sandstone Member	Sandstone	Pennington Formation-Lower Member	Shale, Sandstone
Hance Formation-Upper Sandstone Member	Sandstone	Pennington Formation-Upper Member	Shale, Sandstone
Hance Formation-Yellow Creek Sandstone Member	Sandstone	Reedsville Shale	Shale
Hancock Dolomite	Dolomite	Rockwood Formation-Lower Shale Member	Shale
Hardy Creek Limestone	Limestone	Rockwood Formation-Sandstone Member	Sandstone
Hignite Formation	Sandstone	Rockwood Formation-Upper Shale Member	Shale
Lee Formation-Bee Rock Sandstone Member	Sandstone	Sequatchie Formation	Shale, Limestone
Lee Formation-Lower Tongue	Shale, Sandstone	Trenton Limestone	Limestone
Lee Formation-Naese Sandstone Member	Sandstone		

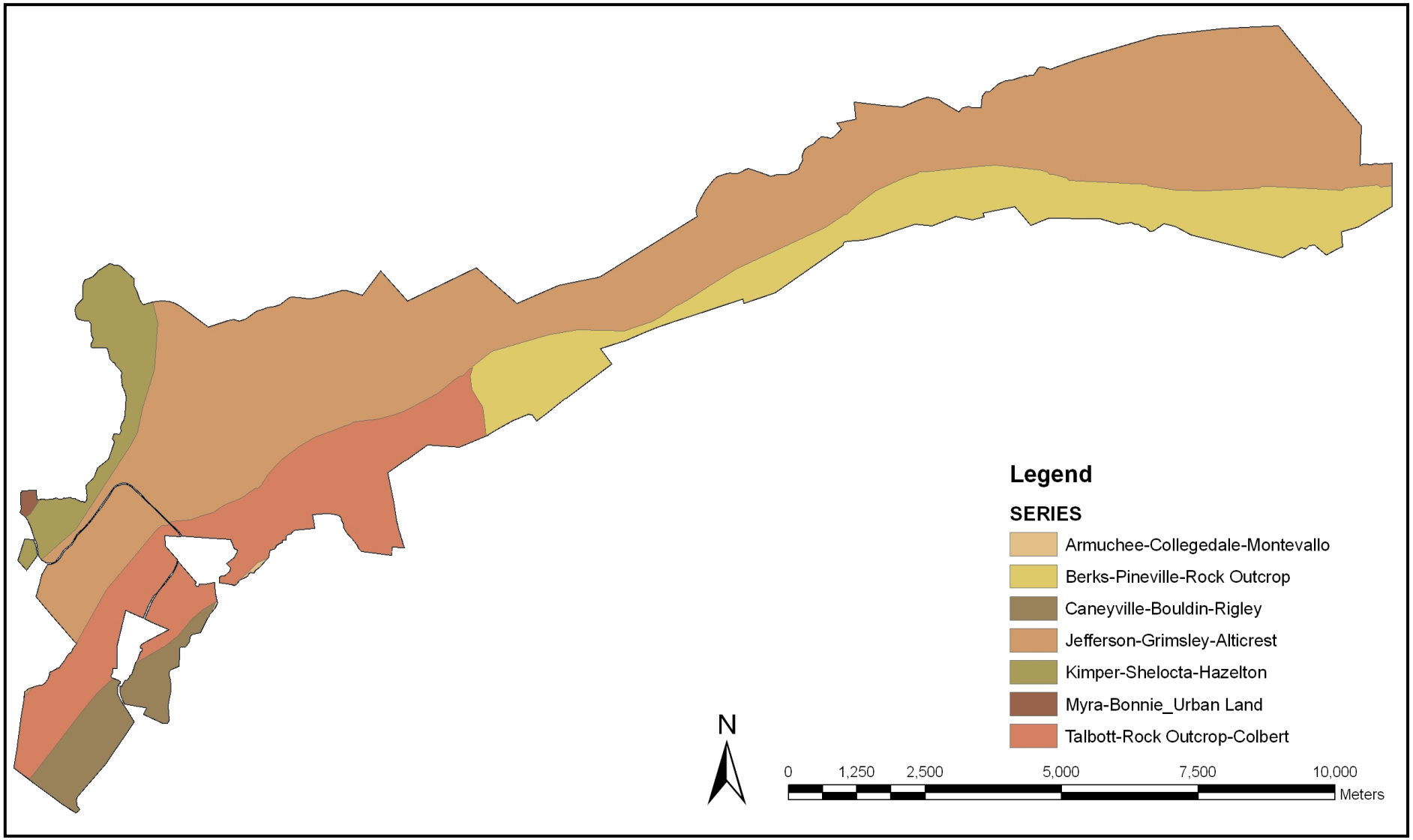

Figure 3. Mapped soil series within the CUGA boundaries.

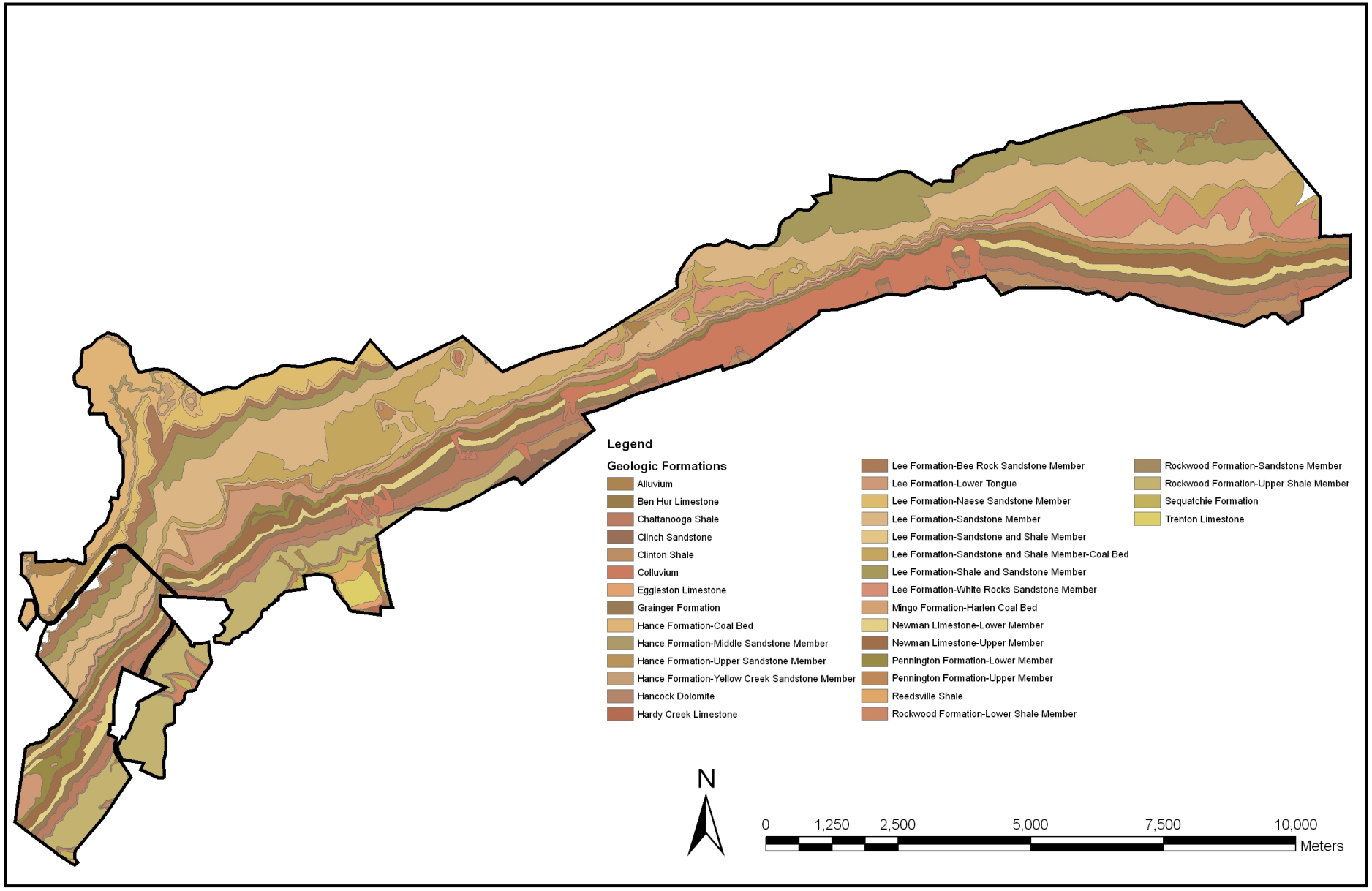

Figure 4. Mapped geologic formations within the CUGA boundaries.

SECTION 4. CULTURAL OVERVIEW

The cultural chronology of the Cumberland Gap is typically divided into five broad periods: Paleoindian (10,000 B.C.–8000 B.C.), Archaic (8000 B.C.–1000 B.C.), Woodland (1000 B.C.–A.D. 900), Mississippian (A.D. 900–A.D. 1600), and Historic (A.D. 1600–present).

PALEOINDIAN PERIOD (10,000 B.C.–8000 B.C.)

The first recognized human expansion into the Cumberland Gap occurred during the Paleoindian period. Little is known about this period in the region because few if any campsites or stratified deposits have been identified, and most Paleoindian artifacts have come from surface finds (see Chapman 1985 regarding east Tennessee). Chapman (1985:36) has suggested that Paleoindian sites in eastern Tennessee and the Tennessee River Valley may have been destroyed by subsequent scouring and truncation of Pleistocene land surfaces as a result of increased runoff from the melting and retreating Wisconsin glaciation. The Paleoindian period in the Valley and Ridge province is represented by lanceolate fluted and unfluted basally ground projectile points found in uplands and along rivers and terraces (Chapman 1985). Late Paleoindian sites, which are also rare in the Valley and Ridge province, are typified by Dalton cluster projectile points. During the Paleoindian period, social organization may have involved highly mobile bands of hunter-gatherers who focused on Pleistocene megafauna in some areas. It is likely, however, that in the Valley and Ridge province plant foods, white-tailed deer, and small game played a vital role in subsistence strategies (see Anderson et al. 1992; Chapman 1985).

ARCHAIC PERIOD (8000 B.C.–1000 B.C.)

The Paleoindian period in the Cumberland Gap was followed by the Archaic period, which is further divided into Early (8000 B.C.–6000 B.C.), Middle (6000 B.C.–3000 B.C.), and Late (3000 B.C.–1000 B.C.) subperiods. Overall, the Archaic period is characterized by a diversification of subsistence practices in response to environmental changes that saw the extinction of certain Pleistocene game species, the reduction of oak-hardwood forests, and the development of estuarine zones along the coastline. An increased reliance on small game, aquatic resources, and wild plant foods has been observed in the archaeological record for this period.

The Early Archaic period is characterized as a gradual shift from Paleoindian nomadism to a more sedentary lifeway and a broader-based economy that included plant foods, aquatic resources, and small game. Although some sites of this period still consist of small kill and butchering sites, larger sites, which contained dense lithic scatters and possibly represent central base camps, also appear. Settlement consisted of a main residential base camp located on alluvial terraces with smaller specialized hunting and gathering camps located in the uplands (Chapman 1975, 1985). Diagnostic tool types include earlier Kirk and later Bifurcate-base cluster projectile points/knives (PPKs). The

Kirk cluster PPKs include an earlier corner-notched form and a later form that is straight-stemmed and often has a serrated edge.

The Middle Archaic period is associated with a warmer and drier climate in the Valley and Ridge province as well as an apparent decrease in the number of sites recorded in the upper Tennessee River Valley (Ahlman et al. 2000; Chapman 1985; Davis 1990). Subsistence and settlement during this period was similar to that of the preceding Early Archaic period; however, there appears to have been an increase in the utilization of aquatic resources and multiseasonal camps along riverways. In Virginia and northeast Tennessee, sinkholes used as hunting and butchering locations during the Early Archaic were abandoned in the Middle Archaic.

Diagnostic stone tools of this period include stemmed Kirk type PPKs as well as Morrow Mountain, White Springs, Benton, and Stanly clusters. Groundstone atlatls and notched, cobble netsinkers made their first appearance during the Middle Archaic (Chapman 1985). The Late Archaic period marks an increase in population in the upper Tennessee River Valley that can be attributed to "improved adaptive strategies for extracting food from the local environments" (Chapman 1985:50). A more sedentary life is evidenced by an increase in the number and size of habitations. Evidence from the Watts Bar Reservoir indicates that there is a fourfold increase in the number of sites with Late Archaic components relative to the Middle Archaic. There is also evidence of an intensification in the use of aquatic resources, and the appearance of horticulture can be seen in the types of plant and animal remains recovered from these sites. Chapman (1985:52) reports the recovery of charred squash rind from a feature at the Bacon Bend Site that dates to the Late Archaic. The temporally diagnostic artifacts of this period include steatite bowls and storage vessels, grooved axes, and Savannah River/Appalachian stemmed and Iddins PPKs.

WOODLAND PERIOD (1000 B.C.–A.D. 900)

Shifts in settlement and subsistence patterns as well as changes in social organization characterize the Woodland period. Generally in the southeast, the Woodland period is subdivided into three subperiods: Early (1000 B.C.–A.D. 100), Middle (A.D. 100–A.D. 600), and Late (A.D. 600–A.D. 900). Kimball (1985) has divided the Woodland into four subperiods: Woodland I, Woodland II, Woodland III, and Woodland IV; however, this chronology is not widely used in the region.

The Early Woodland period in the Valley and Ridge province is marked by the appearance of pottery and structural remains suggesting increased sedentism. Limited excavations of Early Woodland period components in the Little Tennessee River Valley revealed large multiseasonal base camps and smaller base camps situated along the Little Tennessee River, with small logistical camps located on the first, second, and older terraces of the river (Davis 1990). Subsistence during this period involved hunting and gathering with increased reliance on cultigens such as cucurbits and oily seed crops.

The Early Woodland has been further divided into the Watts Bar (1000 B.C.–400 B.C.) and Long Branch (400 B.C.–100 B.C.) phases based on changing pottery decoration and temper. The Watts Bar phase is characterized by quartz-tempered fabric- and cord-marked pottery, and the subsequent Long Branch phase is represented by limestone-

tempered fabric- and cord-marked varieties. Projectile points during the Early Woodland were typically large and triangular in shape and include Greenville, Camp Creek, Nolichucky, and McFarland types, which persisted into the Middle Woodland.

Although there is an increase in the number of sites with Middle Woodland period components in eastern Tennessee compared to the number for earlier periods (Ahlman et al. 2000; Davis 1990), there is less known about these sites than those of the preceding and subsequent periods. The subsistence and settlement patterns of the period appear to be similar to those of the preceding Early Woodland, with an increased reliance on the cultivation of native plants and maize. Maize was recovered at the Icehouse Bottom Site in the Little Tennessee River Valley that dated to around A.D. 400 (Chapman 1985:61). Franklin and Frankenberg (2000:88, 92) report a 10-row maize kernel from a feature at Site 40LD179, which is across the Emory River from the project area. A radiocarbon date assayed on hickory and walnut shell from the feature gave a calibrated radiocarbon age of A.D. 555 to 680 (Beta-100578).

There is evidence of winter and summer structures for Middle Woodland sites in middle Tennessee (Faulkner 1977); however, there is no such evidence for eastern Tennessee. There is also evidence of increasing social complexity, suggested by the occurrence of exotic trade items that are Hopewell-like and the appearance of stone-capped burial mounds (Chapman 1985).

Like the Early Woodland, the Middle Woodland period has been subdivided into two shorter phases that represent changing ceramic decoration and temper. McCollough and Faulkner (1973) argue for two Middle Woodland phases, consisting of the Candy Creek phase, represented by limestone-tempered plain, stamped, brushed, and cord-marked pottery; and the Connestee phase, represented by sand-tempered pottery. Cridlebaugh (1981) found Candy Creek and Connestee pottery to be coterminous in the Little Tennessee River Valley. Based on data from the Little Tennessee River Valley, the Middle Woodland has been divided into the Patrick phase (200 B.C.–A.D. 350) and the Icehouse Bottom phase (A.D. 350–A.D. 600). Schroedl (1978) has correlated the early Patrick phase with the latter part of the Early Woodland and the later phase with Candy Creek. Triangular projectile point forms such as Greenville, McFarland, and Copena continue through this period.

The Late Woodland period is one of the less well-known periods in the region. Although other prehistoric periods in eastern Tennessee have been extensively investigated, habitation sites attributable to the Late Woodland period have not been widely examined; burial mounds have been the main focus of investigation. Based on information from the Chickamauga Reservoir, Lewis and Kneberg (1946; Lewis and Kneberg-Lewis 1995) speculated that Late Woodland Hamilton phase sites in eastern Tennessee would have small shell middens associated with dispersed households on river floodplains. These households, for which no evidence of structures was recorded, represented sedentary settlements where shellfish made up the bulk of the diet. Based on evidence from the Doughty Site along the Tennessee River, McCollough and Faulkner (1973) agreed with Lewis and Kneberg that shellfish made up the bulk of the diet but disagreed on settlement patterns. They postulated that Late Woodland settlement and subsistence involved a seasonal round of population aggregation and movement. Under their model, summer-fall settlements consisted of band-sized camps on the floodplains where incipient horticulture

was practiced, and winter-summer settlements were family-sized base camps on higher terraces that were characterized by small shell middens. In addition, during the winter and spring there were hunting camps in the "coves and valleys of the uplands" where meat processing occurred (McCollough and Faulkner 1973:127–128).

Schroedl and Boyd (1991) have questioned these models, primarily because there are no data to support them. These authors suggest that it is difficult to discern deposits and assemblages directly associated with the shell middens because these sites "occur amidst deposits containing both earlier and later cultural remains" (Schroedl and Boyd 1991:80). Late Woodland manifestations unconnected with shell middens and located on tributaries are not addressed in the previous McCollough and Faulkner and Lewis and Kneberg models. Schroedl and Boyd (1991:85) find that "this has contributed to the difficulties and reluctance of researchers to identify Late Woodland occupations in these areas."

Based on information from excavations at Sites 40LD179 and 40RH62, Ahlman et al. (1999:124) suggest that there may have been smaller, family-sized resource extraction camps located in the uplands during the fall and winter. Both Site 40LD179 and Site 40RH62 are small, single-component sites located on older alluvial terraces where there were small pit features that contained hickory nutshells (Ahlman et al. 1999; Prescott 1977). Only a limited amount of shell was recovered at Site 40RH62, and none was recovered at Site 40LD179. In addition to problems with models of Late Woodland settlement, ceramic typologies for both the Middle and Late Woodland periods in eastern Tennessee are muddled. Consistent determinations of ceramic types for both the Middle Woodland and the Late Woodland are difficult, primarily because limestone-tempered, cord-marked, and plain pottery types are characteristic of both temporal periods. During excavations undertaken in the Little Tennessee River Valley, no distinctive Late Woodland sites were encountered. Chapman attributes this to "our inability to recognize artifacts that are distinct to this period; on the sites we can identify, the artifacts are associated with and dated to the phase transitional to the Mississippian period" (Chapman 1985:72). Schroedl and Boyd (1991) suggest a further examination of Kneberg's (1961) Roane-Rhea ceramic complex as a way to address Late Woodland pottery assemblages.

MISSISSIPPIAN PERIOD (A.D. 900–A.D. 1600)

The Mississippian period in the southeastern United States is generally divided into three subperiods: Early (A.D. 900–A.D. 1000), Middle (A.D. 1000–A.D. 1300), and Late (A.D. 1300–A.D. 1600). The Mississippian period marks profound changes in prehistoric settlement and subsistence patterns that reflect increasing social complexity, the rise of chiefdoms, a reliance on maize agriculture, and increased population (Bense 1994; Chapman 1985). The different subperiods are characterized by changing material culture, especially pottery and personal artifacts indicating rank.

The Early Mississippian period, or Martin Farm phase in eastern Tennessee, is characterized by larger permanent settlements situated along first terraces, by square- or rectangular-wall trench houses with central hearths, and by occasional platform mounds (Schroedl et al. 1985, 1990). During this period, subsistence involved intensive cultivation of maize as well as such other cultigens as cucurbits and sunflowers, along

with hunting and gathering. The appearance of shell-tempered pottery and continued use of limestone-tempered wares is characteristic of the Martin Farm phase.

During the Middle Mississippian, or Hiwassee Island phase in eastern Tennessee, settlements were located on high ground away from river bottoms; they may have had stockades, and they had platform mounds on which important civil structures were built (Chapman 1985; Davis 1990; Schroedl et al. 1990). Houses of this period were circular- or rectangular-wall trench structures. During this period, subsistence continued to be based on intensive maize agriculture, and pottery was exclusively shell tempered.

The peak in prehistoric social complexity and organization in eastern Tennessee is represented by the Late Mississippian Dallas phase. Hierarchical societies and complex chiefdoms characterize this period. Settlements were primarily located on second terraces and varied in size from small hamlets to large towns. Houses were located around a central plaza with a platform mound, and defensive palisades surrounded towns. Subsistence during this period continued to rely upon intensive maize agriculture. Dallas phase material culture is characterized by shell-tempered pottery and small triangular projectile points, as well as many imported or traded raw materials and specialized tools and ornaments (Bense 1994; Chapman 1985; Davis 1990).

HISTORIC PERIOD (A.D. 1600–A.D. PRESENT)

Long before the steady stream of settlers began pouring through the Gap, the trail through the passage was used by Native Americans following herds of bison and by Long Hunters in the early- to mid-eighteenth century (Kincaid 1947:72). Over time it became known as the Warrior's Path; part of an extensive trail system that extended across the Carolinas and Georgia and continued into East Tennessee. The branch that ran through East Tennessee began in the Cherokee town of Chota (on the Little Tennessee River), continued northward along the western side of the Appalachian Mountains, and passed through the "Dark and Bloody Ground" of present day Kentucky. The northern terminus of the Warrior's Path was Lake Erie (Page 1997:36).

The earliest recorded account of the existence of Cumberland Gap was written by Abraham Wood, a Virginian, in the 1670s. In 1748 another Virginian, Dr. Thomas Walker, was hired by the Loyal Land Company to locate and explore 800,000 acres of Virginia and North Carolina. (The western boundary of Virginia at that time was the Mississippi River and included the land inside the boundaries of CUGA) (Des Jean 2003:4).

Walker kept a journal of his travels and arrived at the Gap (known as Cave Gap at the time) on April 12, 1750. He named the pass as well as the plateau and river to the west for the Duke of Cumberland (Hamer 1933:61). Walker's journal entry for April 26, 1750, offers evidence that other white men had used and marked the trail running through the Gap by blazing trees prior to his arrival (Johnston 1898:54). In 1775, a portion of this trail was further cleared and marked by Daniel Boone and a group of 30 axe men employed by the Transylvania Company. They began at Long Island on the Holston River and ended at a site which became Boonesborough, Kentucky ten days later. Walker states that the short time period indicates Boone and his men "did little more than mark already existing trails along most of the route" (1975:15).

The Wilderness Road

By the late-eighteenth century, the need for additional and better roads in the area was readily apparent. In 1795, a legislative act was approved by Kentucky Governor Isaac Shelby which mandated that a good wagon road between Crab Orchard and Virginia be opened. The *Kentucky Gazette* published a notice on October 15, 1796, announcing the completion of the road:

> THE WILDERNESS ROAD from Cumberland Gap to the settlements in Kentucky is now completed. Waggons *[sic]* loaded with a ton weight, may pass with ease, with four good horses…" (Kincaid 1947: 191).

Shortly after it opened, toll gates were placed along the road to generate money for maintenance and future improvements.

Davis Station/Tavern was one of several places along the Wilderness Road where travelers could stop to get a meal and spend the night or seek shelter from attacks by Native Americans. Information from plats is inconsistent with respect to its exact location relative to Yellow Creek and the foot of Cumberland Mountain, however it *was* within the present boundaries of the Cumberland Gap National Historical Park.

It is believed to have been in existence from about 1795 until 1815 when Richard Davis died. The famous Methodist preacher, Bishop Francis Asbury, stopped there at least twice (September 28, 1800 and October 1805) (Walker 1975:33; Torres-Reyes 1969:10–11).

In 1958 archaeologist Jackson W. Moore attempted to locate the Davis Station/Tavern sitting off an azimuth from a 1798 plat. Evidence from the test units was inconclusive and although historic, neither the artifact density nor the assemblage was consistent with what could be expected from a station/tavern site. The conclusion reached by Walker (1975:36) was that in all likelihood, the site had been destroyed by highway or modern construction.

Until the east-west Cumberland Road (the National Road) was completed about 1818, the Wilderness Road was the primary overland route for travelers and livestock moving to the West. After the signing of the Treaty of Greeneville in 1795, travel on the Ohio River became much less hazardous and difficult and traffic on the Wilderness Road steadily declined. By 1840, the Wilderness Road had been abandoned (Columbia Encyclopedia 2001–2004).

The Whigs held a tri-state meeting in Cumberland Gap in 1840 and by that time, the area had changed significantly. On his way to the rally, Senator John J. Crittendon noted some of these changes (Kincaid 1947:215):

> As Crittendon rode along the old Road to Cumberland Gap, he was impressed with the changes which had taken place since his father had moved to Kentucky in 1788. Instead of a dark unsettled wilderness in the rugged hills, he was finding along the worn-out Road countless cabins, occasional substantial homes, and little cultivated patches hanging on hillsides or reaching back into narrow coves.

Portions of the Wilderness Road (by this time also called "the State Road," "the Kentucky Road," or "the Wilderness Turnpike") were pressed into use to transport

supplies, troops and ordnance during the Civil War since there was no military railroad near the Gap. Both armies occupied the Gap at various times, and their ability to remain there for any length of time was heavily dependent on receiving supplies at regular intervals via this important artery because food supplies in the area were quickly exhausted by large numbers of troops on foraging expeditions.

After the war, the Gap and the Wilderness Road once more served primarily as a transportation corridor and trade route. Various men bought land and established farms in the area while others became merchants. In 1866, Samuel C. Jones purchased 120 acres in the saddle of the Gap, built a home and operated a prosperous saloon there (Des Jean 2003:10). A number of similar establishments at five and ten mile intervals along the route also served as trading posts where local products were collected and loaded onto wagons headed to Baltimore and other markets in the east. When the wagons returned, they brought back merchandise that was purchased by people who lived in and around the Gap (Kincaid 1947:288–289).

Town of Cumberland Gap/Iron Furnace

U.S. Census figures for Claiborne County in 1870 indicate there were 57 whites and 45 African Americans living in the town of Cumberland Gap at the time. These numbers included two physicians, a teacher, and three ministers. A variety of trades were also represented in the occupations of the small population: sawmill operators, cabinet makers, a cooper, and a shoemaker. The African Americans were clustered around the large spring and for the most part, worked at the Iron Furnace until it permanently closed less than 20 years later (Vial 1991:22–22, Kincaid 1947:314).

John Newlee, the owner of the Iron Furnace, was in the process of having it rebuilt in 1870 when its appearance was captured in a sketch done by New York City magazine artist and illustrator, Harry Fenn.

The illustrations drawn by Harry Fenn appeared in the book *Picturesque America*, edited by William Cullen Bryant and published in 1872. Accompanying the drawings was text written by Felix Gregory de Fontaine, a writer who had accompanied Fenn on his trip to Cumberland Gap. In it, he mentioned the wealth of minerals in the soil.

Fontaine's comments no doubt influenced funding for a multi-year geological study conducted during the mid 1870s by Harvard University. The resulting report provided a clear picture of the economic opportunities that lay untapped in the rich seams of coal and iron ore in the Cumberland Mountains. There was also some discussion of building a railroad from central Kentucky through the Gap to provide a cost effective means of shipping out the bituminous coal and pigged ore.

Middlesboro and the American Company's Industrial Empire

Interest in the mineral resources in the area was furthered even more when the June 1886 issue of *Harper's New Monthly Magazine* featured an article entitled "Through Cumberland Gap on Horseback." The article, written by James Allen Lane, also mentioned the veins of coal and iron ore. A few weeks after this article was published, the area was visited by Alexander A. Arthur, an agent for the Richmond and Danville Railroad Company. "He visualized a town, a railroad connection, and a tunnel through

the mountains to take commercial natural resources (coal, timber, etc.) to market" (Des Jean 2003:11).

Returning the next year with financial backing from Great Britain, Arthur organized the American Association, Limited. Between 1887 and 1893, the company invested more than 20 million dollars in the construction of railroads, two railroad tunnels, coal mines, steel mills, and the towns of Middlesboro, Kentucky and Cumberland Gap, Tennessee (Des Jean 2003:11).

The American Association, Limited built the 700 room Four Seasons Hotel in Harrogate, Tennessee (a short distance south of the Gap), the Harrogate Inn, and the Cumberland Gap Hotel. The investors envisioned both Harrogate and Cumberland Gap as resort towns with Middlesboro, Kentucky functioning as a manufacturing center with a tannery and steel mills.

The rich and famous were visitors to this area and patronized the hotels. Bryson (n.d.) describes some of the activities common at the time:

> The life was evidently similar to the life in a hard-riding sportsman-like English community. Foxes were imported and the hunts here were in regular English fashion and, in English costumes. The horses were docked. Near Hillside Cottage…dog kennels were established…."

In addition to fox hunting, activities included trips to the area's caves and skeet shooting. Prominent guests at the grand opening of the Four Seasons Hotel included President Grover Cleveland, Lord and Lady Pauncefote (the British ambassador and his wife), the Duke and Duchess of Marlborough…and a number of the richest people in the United States. So many people were coming to the area the L & N Railroad ran at least six trains a day between Middlesboro and Cumberland Gap to handle the number of passengers.

The economic boom came to an end a mere five years later when the British bank which financed the American Association went bankrupt due to an economic recession in Britain. The following year, the United States economy was dealt a severe blow by the Panic of 1893. These two events put an end to the stream of money that had poured into the area. The hotels closed, the assets of the American Association were liquidated, and the railroads sold—all at a fraction of their original cost.

Kincaid (1947:338) sums up the effect these events had on the economies of Middlesboro, Cumberland Gap, Harrogate, and the people who were left behind:

> What had begun as the framework of a group of towns in a big industrial empire was left a raw, ghastly, unfinished wreck, deserted by thousands who had come during the first wild years. Most of those remaining were Kentuckians, Tennesseans and Virginians who had been lured into the valley. They had little to begin with, and they took over the ruins to salvage what they could. For months, business was reduced to barter.

Despite this enormous setback, the area began to recover although in a more modest way than Arthur had envisioned. New investors put money into coal mines, iron ore, railroads, and real estate. By 1900, Cumberland Gap and the surrounding area became more prosperous than ever before.

By 1907, appropriations had been secured by several counties for the construction of an "Object Lesson Road" to be built in cooperation with the federal government. The road was a two lane macadamized artery which ran from southwestern Virginia into Tennessee and into Kentucky through the Gap. A portion of the Wilderness Road known locally as the "Devil's Stairway" was straightened and paved as a part of this project. After a number of delays, the Object Lesson Road was completed on October 3, 1908 (Kincaid 1947:350–351).

The Creation of Cumberland Gap National Historical Park

The nationwide boom in road building which followed on the heels of this program made it easier for people to travel across the United States and the tourism industry began to flourish as motels, restaurants, souvenir shops, and gas stations sprang up along these newly paved roads.

As early as 1922, efforts began to petition the NPS to create a National Park to memorialize Cumberland Gap. In response, NPS conducted a survey of the area in 1937.

Congress authorized the creation of a national park in 1940 as a memorial to the early pioneers who traveled the Wilderness Road (PL 93-87) as well as to preserve a number of physical features and cultural resources associated with a number of historic themes. The features and resources included the Gap itself, the Pinnacle, Civil War fortifications, Soldiers and King Solomon's (Gap) Cave, White Rocks, the Warrior's Path and the Wilderness Road.

The governors of Kentucky, Tennessee, and Virginia met at Middlesboro in 1947 to sign a cooperative agreement appropriating funds to purchase land for the park. The lands were formally transferred to the United States in 1955. Cumberland Gap National Historical Park was formally dedicated on July 4, 1959. Then Vice President Richard M. Nixon attended some of the pre-dedication activities (Des Jean 2003:1).

ARCHAEOLOGICAL SITES IN CUGA

Before the commencement of this AOA, there were 84 known cultural resources within the CUGA boundaries based upon records on file as CUGA and the files of the Kentucky, Tennessee, and Virginia State Historic Preservation Offices (SHPO) (Table 3, Figure 5). Some of these cultural resources do not have specifically identified archaeological components, but all of them are likely to have associated archaeological components. For instance, the numerous standing structures within the Hensley Settlement in the north central portion of the park have been recorded as cultural resources but have not been examined for the presence of archaeological deposits.

In addition to the previously known cultural resources, 5 new archaeological sites were recorded during the testing of the archaeological predictive model prepared for this AOA bringing the total to 89 known cultural resources within the park. The majority of the known cultural resources within CUGA is located in Kentucky (n=57) followed by Virginia (n=22) then Tennessee (n=10) with one unknown. Portions of the Battery Complex and Road Complex in the Cumberland Gap National Register Historic District (Historic District) and the Railroad Complex cross multiple states (Haney 2004). Of the

previously known resources, only 21 had been given official state archaeological site numbers assigned by the appropriate state agency. The total number of sites with official state site numbers, including those recorded during the AOA survey, follows this same trend as seen in the general distribution of archaeological sites across the park with 16 in Kentucky, 8 in Virginia, and 2 in Tennessee.

Table 3. Archaeological Sites within CUGA Boundaries.

CUGA No.	State	State Site Number	Name	Temporal Period
CUGA00001	KY	15BL123	Fort McRae Complex*	Historic
CUGA00002	KY	15BL117	Fort Edgar Complex*	Historic
CUGA00003	KY	15BL120	Fort Nathaniel Lyon Complex*	Historic
CUGA00004	KY/TN/VA		Battery Complex (8 batteries according to Haney 2004)*	Historic
CUGA00005	KY/VA		Road Complex (Haney 2004 recorded four roads in the Historic District)*	Historic
CUGA00006	KY/TN		Railroad Complex	Historic
CUGA00007	TN		Crockett Minton House	Historic
CUGA00008	TN		Howard Gulley House	Historic
CUGA00009	KY		Millstone Site	Historic
CUGA00010	KY		Mortar Battery	Historic
CUGA00011	KY		Coal Mines	Historic
CUGA00012	KY		Logging Sites	Historic
CUGA00013	KY	15BL119	Fort Foote Complex*	Historic
CUGA00014	KY		Morgan's Commissary Complex (Union Commissary in Haney's 2004 report)*	Historic
CUGA00015	KY	15BL118	Fort Farragut Complex*	Historic
CUGA00016	VA		John G. Newlee Iron Foundry Complex*	Historic
CUGA00017	KY		Union Powder Magazine*	Historic
CUGA00018	KY	15BL122	Fort Robert L. McCook Complex*	Historic
CUGA00019	VA		Tazewell Branch	
CUGA00020	KY		Fort Halleck (Destroyed)*	Historic
CUGA00021	KY	15BL121	Fort McClellan*	Historic
CUGA00022	KY	15HL001	Sand Cave	Prehistoric
CUGA00023	KY		Davis Station Tavern	Historic
CUGA00024	KY		Davis Mill	Historic
CUGA00025	KY		Unidentified House	Historic
CUGA00026	KY		Paved Road	Historic

CUGA No.	State	State Site Number	Name	Temporal Period
CUGA00027	KY		Horse Path	Historic
CUGA00028	KY		George Robbins Complex	Historic
CUGA00029	KY		Water Tank	Historic
CUGA00030	KY		Iron Company	Historic
CUGA00031	KY		Middlesboro Brewery	Historic
CUGA00032	KY		Schneider Meat Packing	Historic
CUGA00033	KY		Middlesboro Distilling	Historic
CUGA00034	TN	40CE006	Watt Brothers House	Historic
CUGA00035	KY		Willie Gibbons Complex**	Historic
CUGA00036	VA		Liege Hensley Complex**	Historic
CUGA00037	TN		Park Hensley Complex**	Historic
CUGA00038	VA		Hensley Graveyard**	Historic
CUGA00039	TN		Coal Tipple Complex	Historic
CUGA00043	KY		Bert Hensley Complex**	Historic
CUGA00044	KY		Brush Mountain School Complex**	Historic
CUGA00045	KY		Finley Hensley Complex**	Historic
CUGA00046	KY		Sherman Hensley Complex**	Historic
CUGA00047	KY		Wallace Hensley Complex**	Historic
CUGA00048	KY		Liege Gibbons Complex**	Historic
CUGA00049	KY	15BL070	Brashear	Historic
CUGA00050	VA	44LE102	None	Historic
CUGA00051	TN	40CE007	None	Historic
CUGA00052	VA	44LE103	None	Historic/Prehistoric
CUGA00053	VA	44LE104	None	Historic/Prehistoric
CUGA00054	KY	15BL072	None	Historic
CUGA00055	KY	15BL073	Cumberland Mountain Hotel	Historic
CUGA00056	KY	15BL074	Wilson Farm	Historic/ Prehistoric
CUGA00061	KY		Unnamed	
	KY		FS 1—Historic Homestead*	Historic
	KY		FS 2—Historic Homestead*	Historic
	KY		FS 3—Historic Homestead*	Historic
	KY		FS 4—Historic Homestead*	Historic
	VA		FS 5—Historic Homestead*	Historic

CUGA No.	State	State Site Number	Name	Temporal Period
	VA		FS 6—Historic Homestead*	Historic
	VA		FS 7—Historic Homestead*	Historic
	KY		FS 8—Historic Homestead*	Historic
	KY		FS 9—Historic Homestead*	Historic
	VA		FS 10—Historic Homestead*	Historic
	VA		FS 11—Historic Homestead*	Historic
	KY		Cudjo Cave*	Historic/Prehistoric
	VA	44LE145	Russell/Colson Site	Historic/Prehistoric
	VA	44LE146	Station Creek Site	Historic/Prehistoric
	VA	44LE147	Minnie Laws Colson Site	Historic
	VA	44LE148	Susan Baker/C.C. Powell Site	Historic/Prehistoric
	KY		Hensley Settlement Service Road Site	Historic/Prehistoric
	TN?		Braden House Site (Davis Hollow House Site #1)	Historic
	TN		Pennington House Site (Davis Hollow House Site #2)	Historic
	VA		Colson Lane and Chimney Fall Site	Historic
			Martin's Fork Campground	Historic
	KY	15BL	Unnamed	Historic
	VA	44LE	Unnamed	Historic
	KY	15HN	Unnamed	Prehistoric
	KY	15HN	Unnamed	Prehistoric
			Unnamed	Prehistoric

*Located within Historic District

**Located in Hensley Settlement

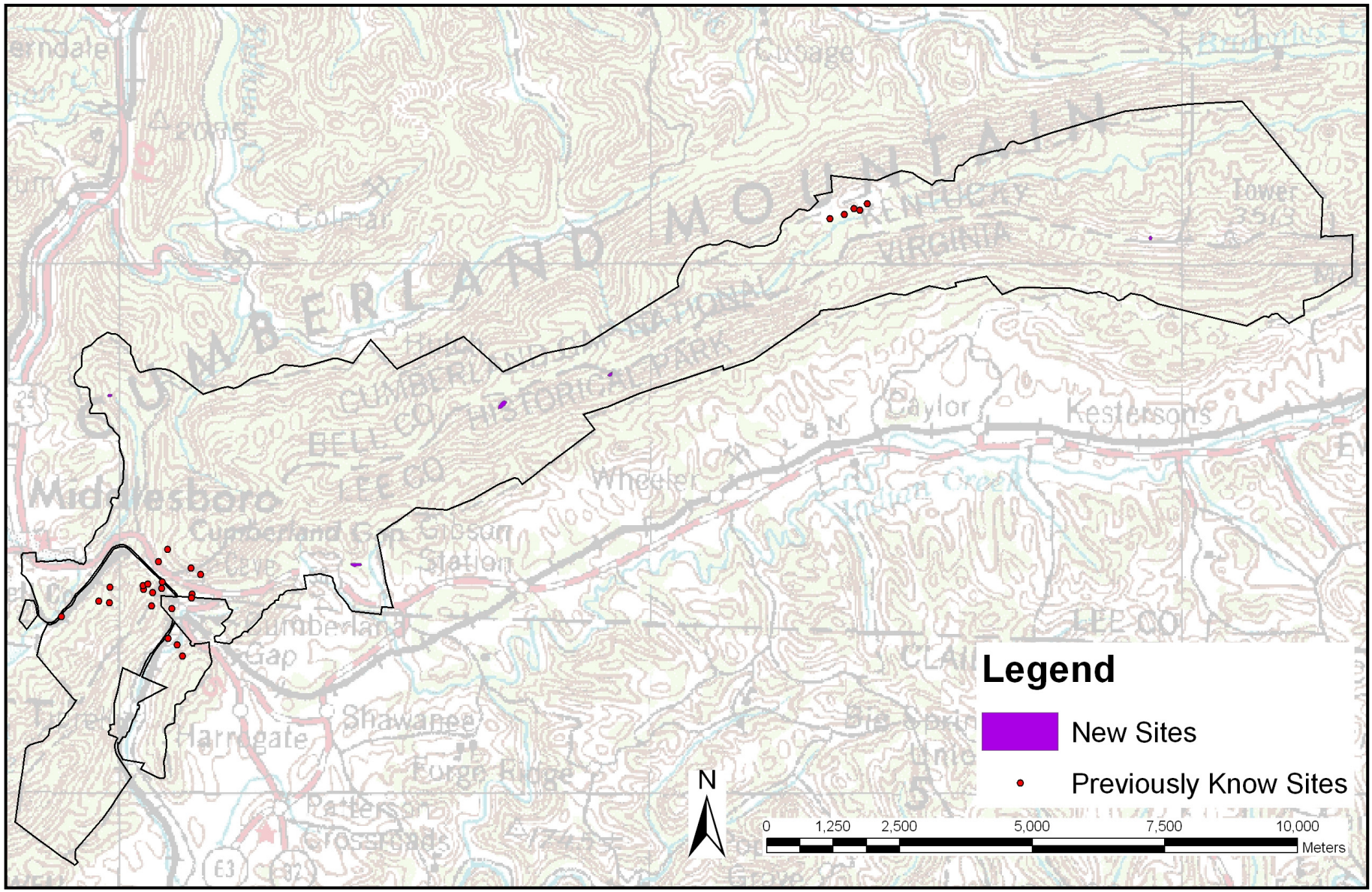

Figure 5. Location of known archaeological sites.

The temporal range for the sites is from the Middle Archaic period to the recent Historic period; however, all but three of these sites have a Historic period component. Only 10 sites have a noted prehistoric component. It is not surprising, therefore, that the majority of the known archaeological sites relate to or are located within either the Historic District (n=36) or the Hensley Settlement. The Historic District is a National Register of Historic Places (National Register) listed district that includes elements that contribute to the area's distinction as an important location during the Civil War. The contributing elements (n=18) include Civil War era earthworks, batteries, and roads as well as an iron furnace. Two of the elements appear to have been destroyed: Fort Halleck and Battery No.1 (Haney 2004). Only seven of the contributing elements to the Historic District have official state archaeological site numbers assigned by the appropriate state agency. Cudjo Cave is considered a non-contributing element.

The majority of the recorded sites with a prehistoric component are located in Virginia. These sites were recorded prior to the realignment of Highway 58 (Horvath 1991; Cornelison et al. 1999) in the 1990s. Most of these sites were impacted during the realignment of Highway 58. All of these sites have been given an official state archaeological site number by the appropriate state agency.

Locational information for many of the archaeological sites is lacking with data on file at CUGA and/or the appropriate state agency for only 55 archaeological sites. However, these locational data are often suspect for many of the sites and likely do not reflect the true location of the site. It is advisable that all the sites noted in Table 3 other than the ones with official state site numbers recorded by Haney (2004, see Table 9.1) should be relocated and an accurate location be obtained using a global positioning system (GPS) unit with submeter accuracy.

Archaeological Potential

As Table 3 indicates, few archaeological sites relative to the size of the park have been recorded and only a small portion of the park has been surveyed for archaeological sites (see below); therefore, it is safe to assume that there is an under representation of the number of recorded archaeological sites within the park. This makes it difficult for the park staff to monitor and protect archaeological sites as well as know if archaeological sites are present prior to the initiation of an undertaking. Although it is highly recommended, surveying the entire park to record all of the archaeological sites in the park is cost and time prohibitive; therefore, a predictive model for the occurrence of archaeological sites has been prepared and tested. This predictive model will help the park not only manage archaeological sites but will aid CUGA staff in conducting the necessary archaeological site inventory prior to the initiation of an undertaking. A model was first prepared and then tested using a one percent sample of the park. Using the results of the archaeological survey, the model was then refined.

The CUGA archaeological predictive model was prepared using the expert weights method of the ArcView GIS 3.*x* extension Weights of Evidence (Kemp et al. 1999). Weights of Evidence is based on Bayes's Rule of Probability. This approach assumes conditional independence of variables and that a training point set, which is a set of known points such as recorded archaeological sites, has common characteristics that in

aggregate will predict the occurrence of other similar points. The common characteristics are typically known as evidential themes in Weights of Evidence and include environmental variables such as soils, geology, distance to water, slope, or aspect. In an instance where there are too few training points, the Weights of Evidence extension allows the user to set the model weights by determining the percentage of the training points that will fall into each evidential theme class or the likelihood ratio for each class (Kemp et al. 1999).

The three evidential themes used for the initial model were slope, aspect, and distance to water. Slope and aspect were derived from the USGS 30 m digital elevation models (DEMs). Slope was derived with the ArcView GIS 3.*x* extension Demat using the Zevenbergen and Thorne method into degrees and was then parsed into five categories: 0 degrees–10 degrees, 10 degrees–20 degrees, 20 degrees–30 degrees, 30 degrees–40 degrees, and 40 degrees–90 degrees (Figure 6). Aspect was divided into flat and eight directions: north, northeast, east, southeast, south, southwest, west, and northwest (Figure 7). Distance to water was derived from the TIGER hydrology files from the NRCS. Buffers were placed around the streams using the ArcView GIS 3.*x* extension Spatial Analyst 1.1. Buffers were placed at 100 m intervals up to 500 m resulting in five categories: 0 m–100 m, 100 m–200 m, 200 m–300 m, 300 m–400 m, and 400 m–500 m (Figure 8).

Using the expert weights method, the evidential theme classes were assigned a percent of the number of sites likely to occur in that location. Since there is little information about settlement patterning in CUGA or the surrounding area, information from the nearby Big South Fork National Recreational Area (Big South Fork) (Ferguson et al. 1986) was used. Big South Fork was used as an example because of similar topography, hydrology, and geology. Table 4 shows the percentages used in this analysis.

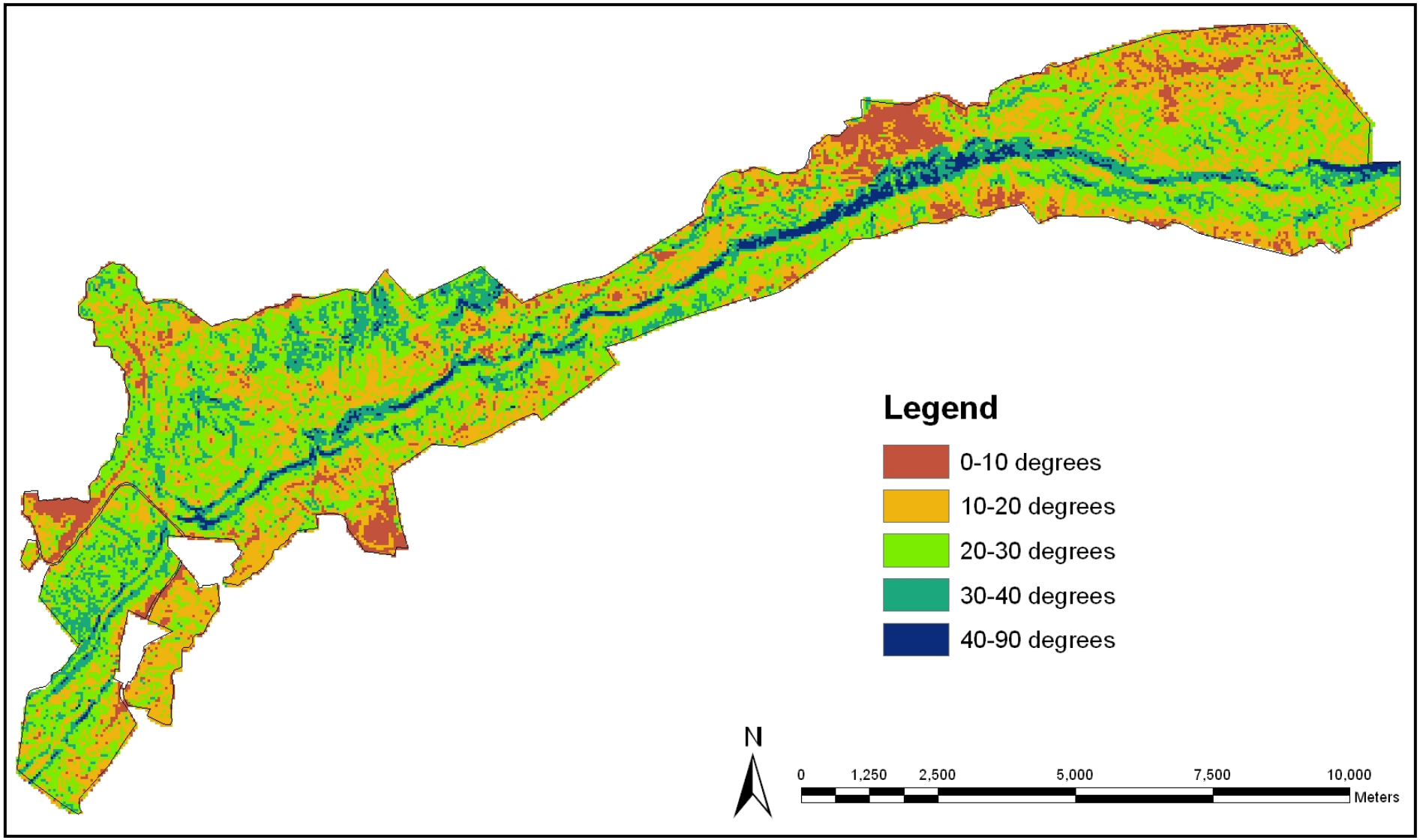

Figure 6. Slope.

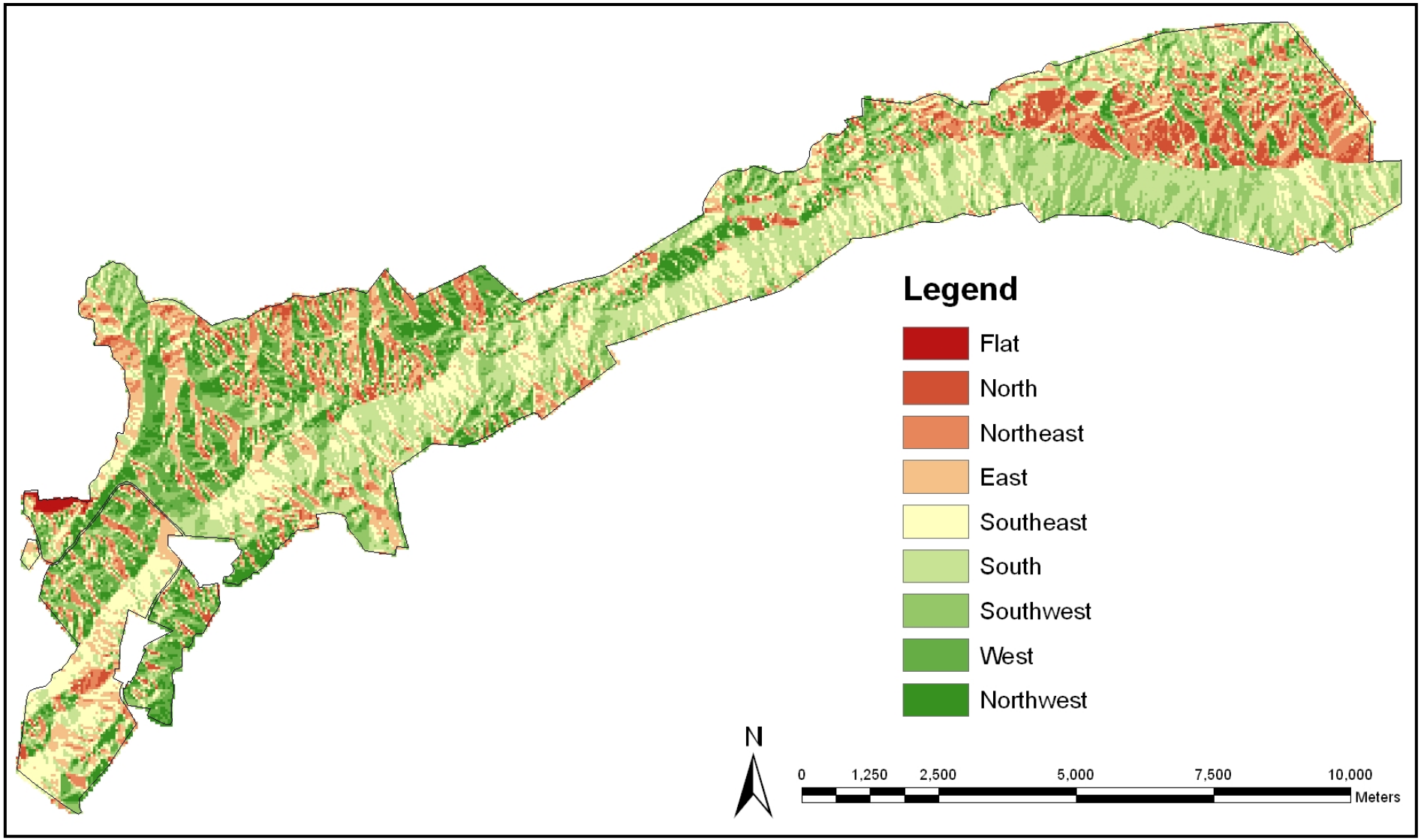

Figure 7. Aspect.

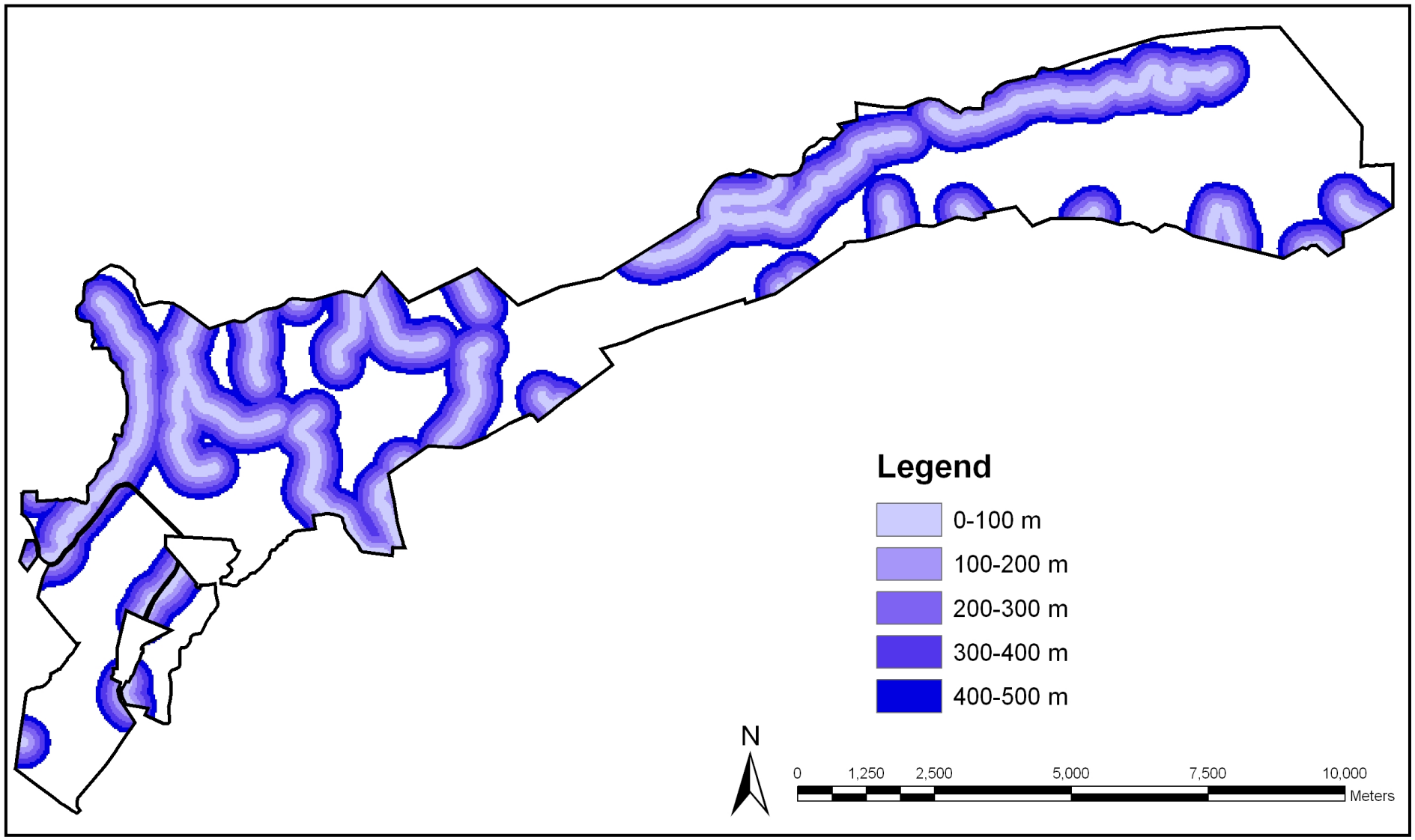

Figure 8. Distance to water.

Table 4. Expert Weights Percentages used in Model Development.

Slope		Distance to Water		Aspect	
Degrees	**Percent**	**Distance**	**Percent**	**Aspect**	**Percent**
0–10	20	0 m–100 m	30	Flat	15
10–20	30	100 m–200 m	20	North	5
20–30	10	200 m–300 m	30	Northeast	5
30–40	30	300 m–400 m	15	East	15
40–90	5	400 m–500 m	5	Southeast	15
				South	20
				Southwest	10
				West	10
				Northwest	5

Weights of Evidence calculates a posterior probability that can graphically display the potential for the occurrence of archaeological sites given the percentages input during the expert weights procedure. The resulting probability had a conditional independence of 1.13, indicating the evidential themes are independent of each other. The resultant posterior probability ranged from 0.163–0.984 (Figure 9) and was equally divided into three classes that represent low (0.163–0.434), medium (0.434–0.626), and high (0.626–0.984) potential for the occurrence of archaeological sites. Medium potential locations cover the greatest area (7,928 acres) followed by high potential (6,611 acres) and low potential (5,502 acres). As Figure 9 graphically displays, a majority of the high and medium potential area occur along the southern and eastern facing slopes of Cumberland Mountain.

To test the model, ten 20-acre blocks (a one percent sample of the park) were selected and surveyed for archaeological sites. A 20-acre grid was placed across the park using the ArcView GIS 3.x extension Grid Creation. Seven 20-acre plots were randomly selected using the extension Random Point Generator while three were chosen because of 1) proximity to a rockshelter near the Henley Settlement, 2) to fill a gap between the northern and southern ends of the park in the sampling units created by the random point generator, and 3) to fill a gap in the Tennessee portion of the park (Figure 10).

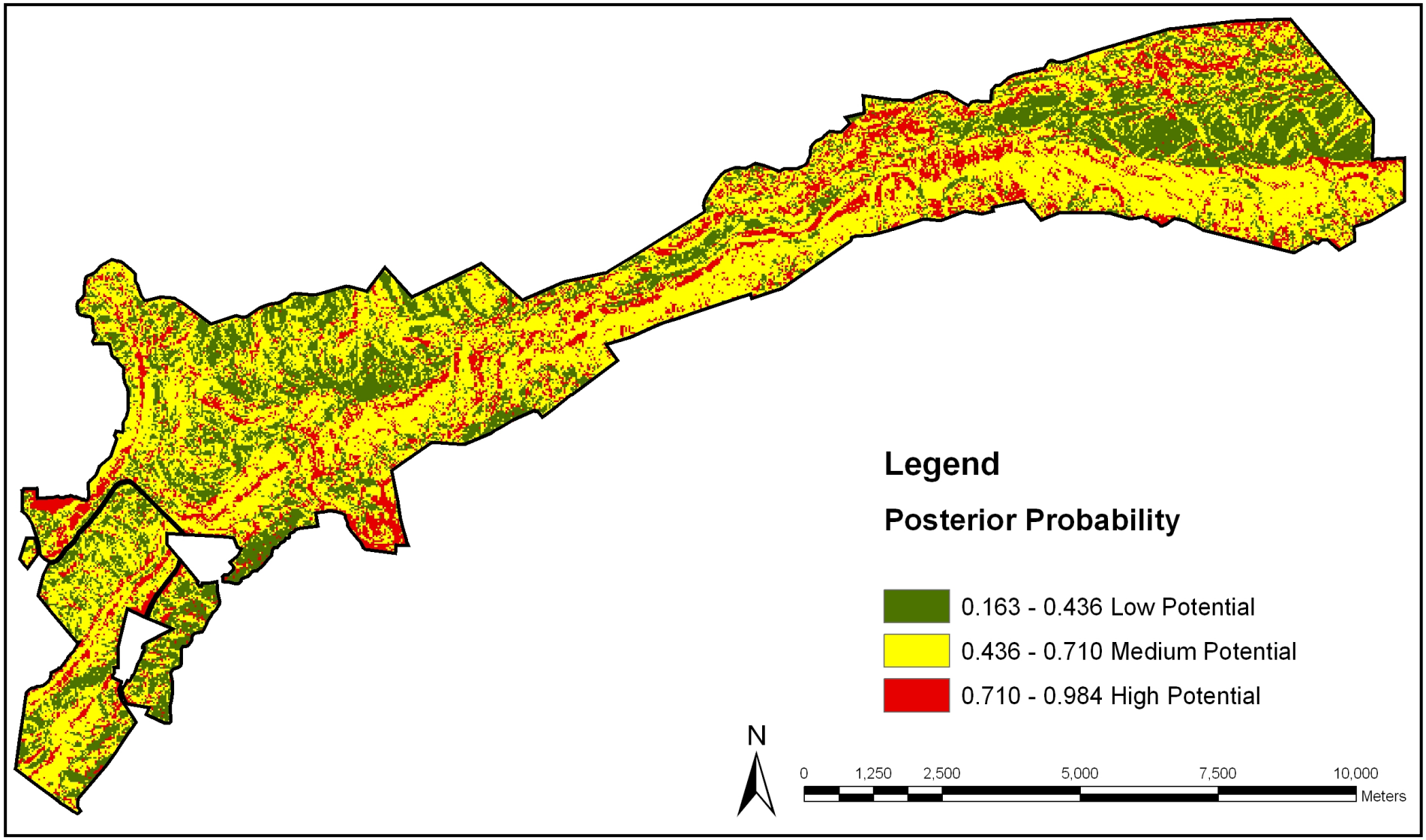

Figure 9. Predictive model posterior probability showing potential for the occurrence of archaeological sites.

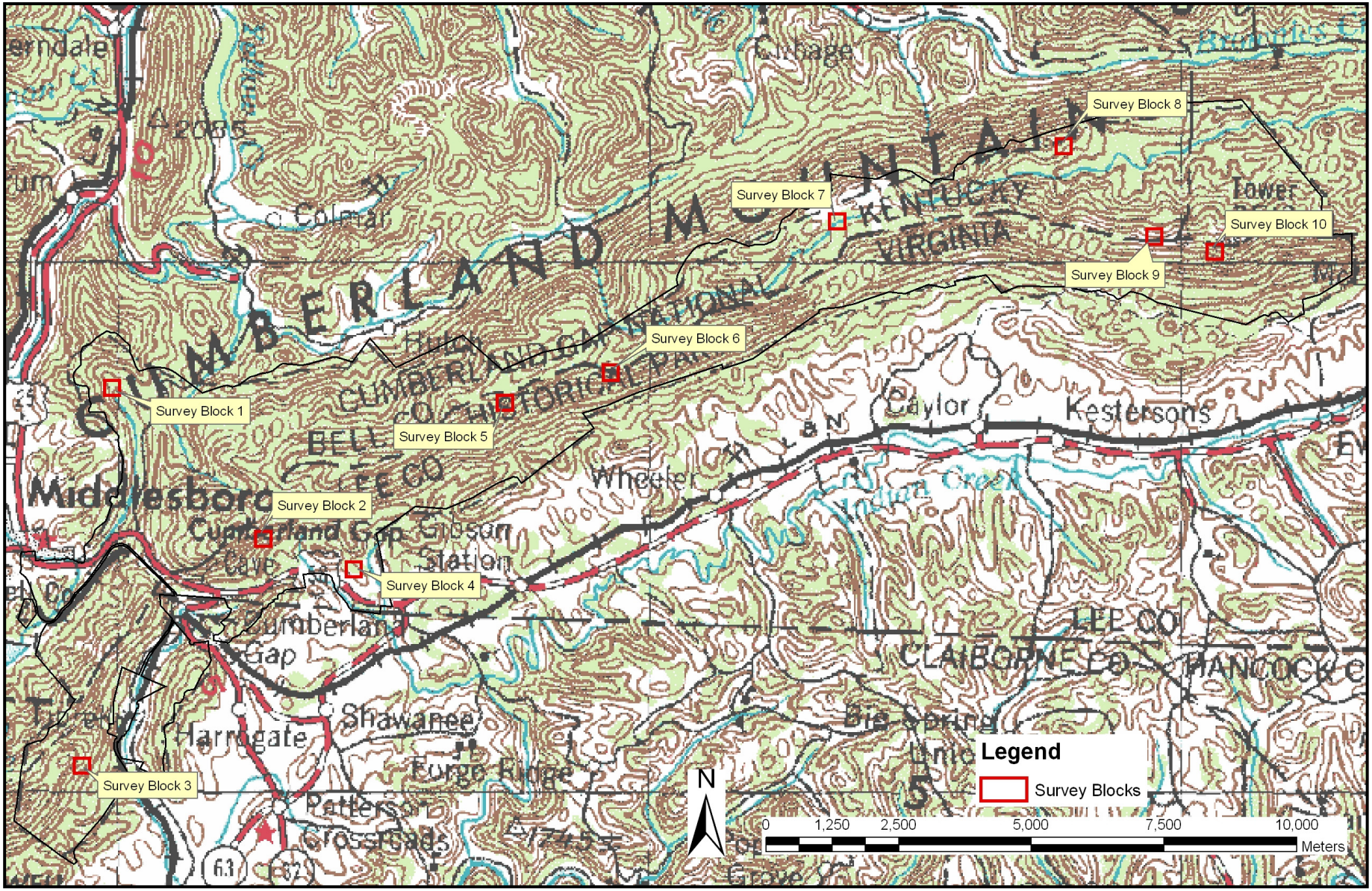

Figure 10. Twenty-acre survey blocks to test predictive model.

The evidential themes for the ten survey blocks indicates a common theme of relatively steep slopes (>10 degrees) and, based on the TIGER hydrology, greater than 500 m to a mapped water source. The aspect is concentrated to eastern, southern, and southeastern facing slopes. The posterior probability for the ten survey blocks shows that they were composed primarily of high potential areas (93.83 acres) followed by medium (69.13 acres) and low (37.04 acres) (Table 5).

Table 5. Posterior Probability for Survey Blocks.

Block Number	Posterior Probability (in acres)		
	Low Potential	Medium Potential	High Potential
1	2.47	7.90	9.63
2	0	8.40	11.60
3	0	4.44	15.56
4	9.14	6.17	4.69
5	0.25	7.90	11.85
6	2.72	6.17	11.11
7	0.99	4.69	14.32
8	6.17	8.64	5.19
9	15.06	4.20	0.74
10	0.24	10.62	9.14
Total	37.04	69.13	93.83

Model Testing Results

The archaeological survey consisted of pedestrian survey and the hand excavation of shovel test pits (STP). In all locations where it was possible within the 20-acre block, the ground surface was inspected for the presence of cultural material, features, or structural remains. Shovel test pits were excavated at 30 m intervals where the ground visibility was less than 50 percent and the slope was less than 15 percent. This interval proved to be effective in identifying archaeological sites. When shovel test pits were positive for cultural material, the interval was shortened to 15 m or less depending on site conditions. All soil from the shovel tests was passed through 0.25 in (6.35 mm) hardware cloth and any encountered cultural material was retained and returned to ARL for processing. The location of shovel tests and encountered archaeological sites was recorded on 7.5 minute USGS topographic quadrangles as well as with a GPS unit.

Block 1 is located in the northwestern portion of the park in Bell County, Kentucky (see Figure 10). The block was classified as primarily less than 10 percent slope, northern facing aspect, and less than 200 m to a mapped water source. While the block was primarily flat, there was a small stream cutting through it with a relatively large beaver dam to the south creating wet soils and swampy areas throughout. In addition, a

maintenance road paralleled the stream to the west. The posterior probability for the block was mainly high and medium potential for the occurrence of archaeological sites. A total of six shovel tests were excavated in the block at the location of Field Site 1 (see description below).

Block 2 is located in the west central portion of the park to the west of the Wilderness Road Campground in Lee County, Virginia (see Figure 10). The block was classified as primarily greater than 10 percent slope, southern and southeastern facing aspect, and more than 200 m from a mapped water source. The posterior probability was medium and high potential for the occurrence of archaeological sites. The entire block was investigated by pedestrian survey. No shovel tests were excavated and no archaeological sites were identified.

Block 3 is located in the southwestern portion of the park in Claiborne County, Tennessee (see Figure 10). The block was classified as primarily slopes greater than 10 percent, southern facing aspect, and greater than 300 m to a mapped water source. The posterior probably was medium and high potential for the occurrence of archaeological sites. The entire block was investigated by pedestrian survey. No shovel tests were excavated and no archaeological sites were identified.

Block 4 is located in the west central portion of the park at the northern edge of the Wilderness Road Campground in Lee County, Virginia (see Figure 10). This block was bisected by an entrance road into the campground and the picnic area to the west. In addition, numerous trails cut through the area connecting the picnic area, campground, and other trails within the park. The block was classified as mostly less than 10 percent slope, northern and southern facing aspect, and primarily within 200 m of a mapped water source. The posterior probability for the block was mainly low and medium potential. A total of 13 shovel tests was excavated and one archaeological site was identified (Field Site 2).

Block 5 is located in the central portion of the park in Lee County, Virginia (see Figure 10). The block was almost equally split between less than 10 percent slope and greater than 10 percent slope. The aspect was mostly southern and eastern facing and none of the block was within 500 m of a mapped water source. The posterior probability was mostly medium and high potential for the occurrence of archaeological sites. The block was surveyed by pedestrian survey and the excavation of 12 shovel tests. One archaeological site was identified.

Block 6 is also located in the central portion of the park in Lee County, Virginia (see Figure 10). Like Block 5, is was almost equally split between less than 10 percent slope and greater than 10 percent slope. The aspect was mostly southern and eastern facing and none of the block was within 500 m of a mapped water source. The posterior probability was mostly medium and high potential for the occurrence of archaeological sites. The block was surveyed by pedestrian survey and the excavation of 10 shovel tests. One archaeological site was identified.

Block 7 is located in the central portion of the park in Bell County, Kentucky just to the south of the Hensley Settlement (see Figure 10). The block was classified as primarily less than 10 percent slope, western facing aspect, and less than 200 m to a mapped water source. The posterior probability was mostly high potential for the occurrence of

archaeological sites. The block was investigated by pedestrian survey and the excavation of 24 shovel tests. No archaeological sites were identified.

Block 8 is located in the northeastern portion of the park near its northern boundary in Bell County, Kentucky (see Figure 10). The block was classified as less than 20 percent slope, eastern and western facing aspect, and greater than 200 m to a mapped water source. The posterior probability was primarily low and medium potential for the occurrence of archaeological sites. The block was investigated by pedestrian survey and the excavation of six shovel tests. No archaeological sites were identified.

Block 9 is located to the north of the peak of the Cumberland Mountain in Bell County, Kentucky (see Figure 10). The block was classified as primarily 10 percent–30 percent slope, north and northeastern facing aspect, and 200 m–500 m from a mapped water source. The posterior probability was primarily low potential for the occurrence of archaeological sites. The site was investigated through pedestrian survey. One archaeological site was identified.

Block 10 is located along the southern face of Cumberland Mountain in the White Rocks area in Lee County, Virginia (see Figure 10). The block was classified as primarily 10 percent–30 percent slope, southern and southwestern facing aspect, and 400 m–500 m from a mapped water source. The posterior probability was primarily medium and high potential for the occurrence of archaeological sites. No archaeological sites were identified.

Five archaeological sites were recorded during the survey of the ten 20-acre blocks (see Figure 10). This was surprising given the relatively high number of acres that were classified has having either a medium or high potential for the occurrence of archaeological sites suggesting a major revision in the structure of the archaeological predictive model.

Field Site 1

This site is an early-twentieth-century farmstead located along the southern edge of Block 1 on a low bench at the toe of a slope overlooking a small stream (Figure 11, see Figure 10). The site measures 35 m x 40 m in size and the boundaries were determined by the extent of positive STPs to the north and south, the presence of cultural features on west and a two-track road to the east. Cultural features evident on the ground surface include a house remains, a cluster of machine made bricks, a cluster of sandstone blocks, and a sandstone block retaining wall between the house remains and the two-track trail. The house remains include a sandstone chimney pad with an associated chimney fall, a cellar pit measuring 3 m x 4 m, and several sandstone footers. The slope around the house had been cut leveling it for the house. This site was identified in a medium potential with a slope of 10 percent–20 percent, east facing aspect, and distance to water of 0 m–100 m. The parent geology in this location is sandstone.

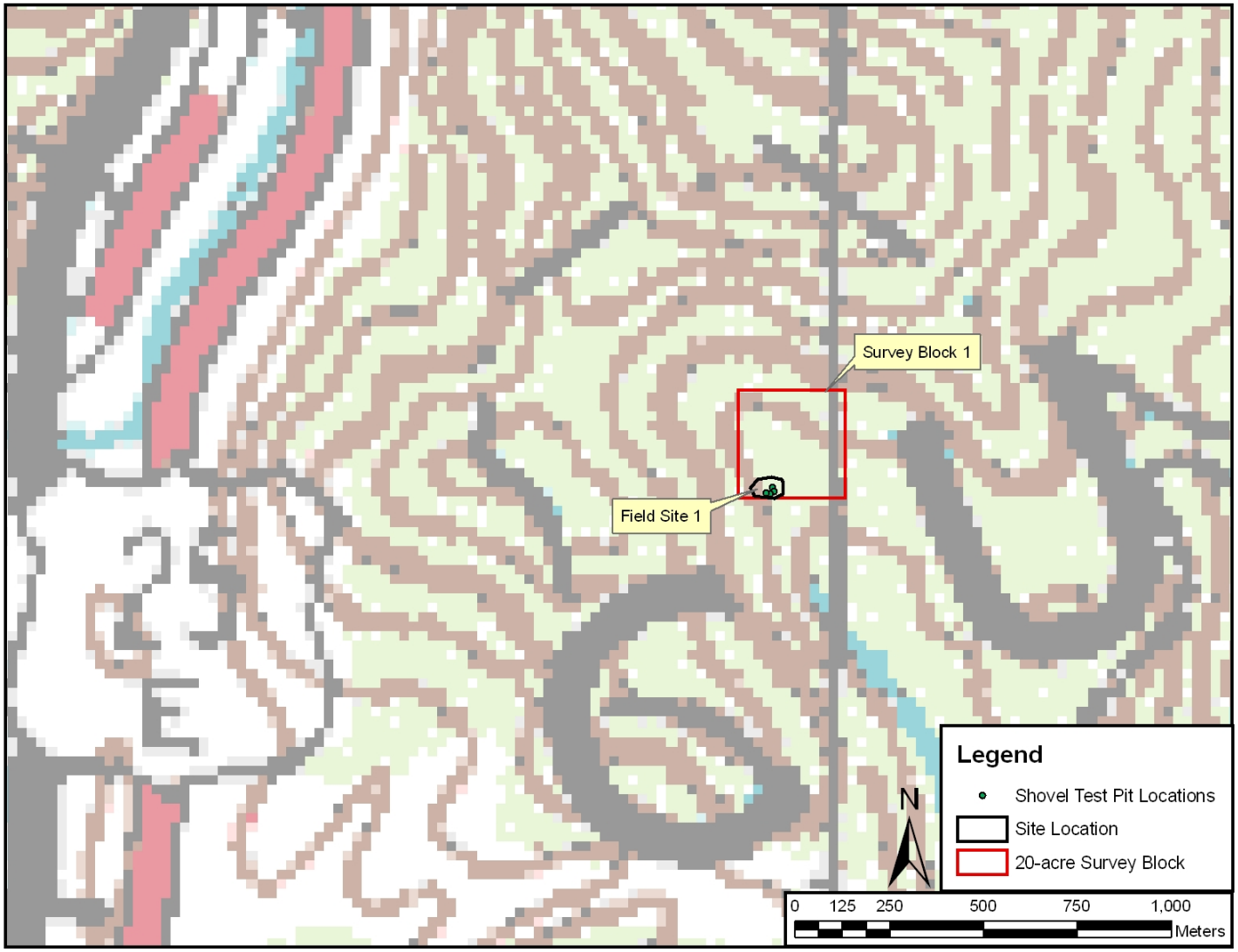

Figure 11. Plan View of Field Site 1.

Six shovel test pits were excavated at the site and cultural material was found in two. Two clear flat glass fragments were recovered from STP 2 and a piece of coal cinder and a clear glass sherd were found in STP 3. These artifacts are not highly datable beyond a twentieth century affiliation.

This site appears to have a high degree of integrity and likely contains intact subsurface deposits. ARL recommends addition archaeological evaluation and archival research to assess whether Field Site 1 is eligible for inclusion in the National Register under Criterion D because it may contain important information about isolated farmsteads in the Valley and Ridge and Cumberland Plateau Physiographic provinces.

Field Site 2

This site is an early- to mid-twentieth-century farmstead located in the middle of Block 4 on a low bench adjacent to an intermittent stream (Figure 12, see Figure 10). The site measures 15 m x 30 m and is bounded by trails on the north, west, and south and negative STPs to the east. The cultural features identified on the ground surface include a scatter of early- to mid-twentieth-century tinwares, glass, and ceramics measuring approximately 7 m in diameter and a few scattered sandstone blocks. The site was identified in a high potential area with a slope of less than 10 percent, south facing aspect, and distance to water of 200 m–300 m. The parent geology in this location was shale.

Three STPs were excavated at the site and cultural material was recovered from two. Coal and cinder was recovered from STP 3 and discarded in the field and two pieces of clear curved glass was found in STP 4. The curved glass likely dates to the mid-twentieth century.

This site is located on a slight slope and has been impacted by erosion as well as the creation and maintenance of the trails that surround it. It likely does not retain sufficient integrity to have intact subsurface deposits that may yield important information about history. ARL recommends that Field Site 2 is not eligible for inclusion in the National Register.

Field Site 3

This site represents an open prehistoric habitation located on a narrow ridge crest on the southeastern slope of Cumberland Mountain (Figure 13, see Figure 10). The site is positioned directly below Gibson Gap. The vegetation at the site is a mix of hardwood forest and a thick understory of rhododendron. Tree species include white oak, beech and popular. The site was identified across medium and high potential locations with a slope of 0 percent, southwest-west-northwest facing aspect, and more than 800 m to the nearest mapped water source. The parent geology in this location is sandstone.

A single shovel test pit transect was placed on the crest of the ridge. Six of the thirteen shovel test pits yielded lithic artifacts. The soil profile is uniform across the site with a brown (7.5YR 5/2) sandy loam above a reddish yellow (7.5YR 6/8) sand and eroded sandstone. No subsurface concentrations or features were identified. Artifacts were restricted to the upper soil zone.

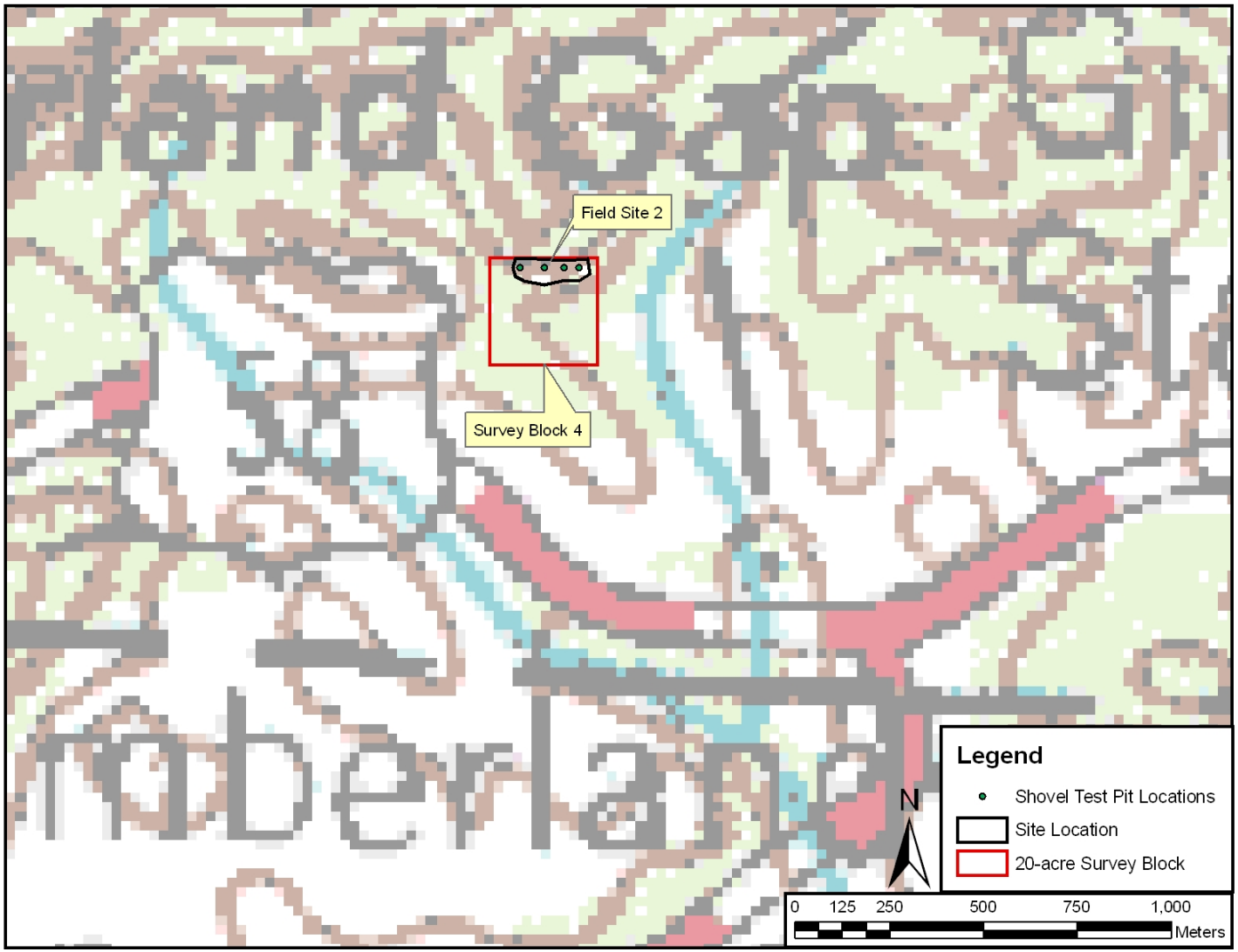

Figure 12. Plan view of Field Site 2.

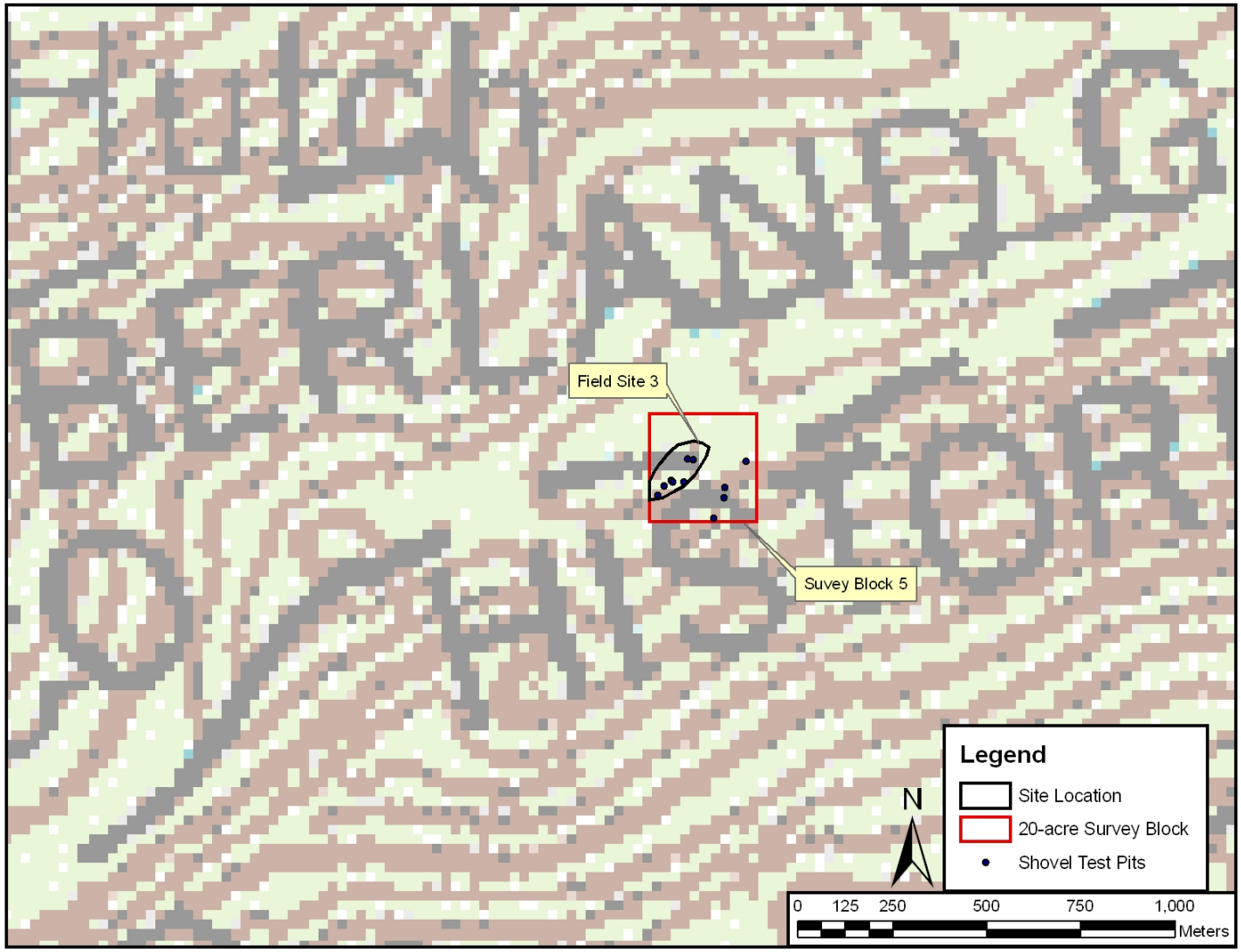

Figure 13. Plan view of Field Site 3.

The site is uniquely positioned at the edge of Cumberland Mountain to give access to the bluff line below and the Gibson gap. The view from the site overlooks the entire valley below. Artifacts recovered include 25 Knox chert flakes. The Knox chert debitage is a mix of heated and non-heated material. No temporally diagnostic artifacts were identified. Although no subsurface features were identified during our survey, intact deposits may be present. ARL recommends that additional archaeological evaluation be undertaken at this site to determine if it is eligible for inclusion in the National Register.

Field Site 4 The site represents a small rock shelter on the north side of Walden Ridge in Bell County, Kentucky (Figure 14, see Figure 10). The shelter is relatively hidden in the thick undergrowth. A small sandstone outcrop forms the top of the shelter which measures 6.5 m wide by 5 m deep by 2 m high. The floor of the shelter is clear of debris with limited roof fall. The sandstone roof is actively eroding creating a uniform sandy floor. This site was identified on a low potential area with a slope of 0 percent–10 percent, northeast facing aspect, and 400 m–500 m from the nearest mapped water source. The parent geology in this location is sandstone.

No artifacts were identified on surface, and the shelter has not been disturbed by looters. Two shovel tests were placed 3 m apart. The first STP was negative, but it terminated on a sandstone block approximately at 15 cm below surface. The second STP extended to 49 cm below surface. A total of 20 Knox chert flakes and one small piece of mica were recovered. The Knox chert debitage is a mix of heated and non-heater material. No temporally diagnostic artifacts were identified. The upper 20 cm consisted of uniform light sand that had eroded from the shelter roof. Artifacts were concentrated in the lower 30 cm of the STP. The soil is a much darker sandy loam with a marked increase in charcoal. ARL recommends that additional archaeological evaluation be undertaken at this site to determine if it is eligible for inclusion in the National Register.

Field Site 5

The site represents a rock shelter on the southeast slope of the Cumberland Mountain, southwest of Butchers Gap (Figure 15, see Figure 10). The shelter is located the grayish sandstone of the Lower Tongue of the Lee Formation. The shelter measure 25 m wide by 5 m deep by 2.5 m high and is oriented 160 degrees east of north. The vegetation at the site is a mix of hardwood forest and a thick understory of rhododendron. Tree species include white oak, beech and popular. The rock shelter is off the main park trail system and is infrequently visited. This site was identified on a high potential location with a slope of greater than 30 percent, southern facing aspect, and greater than 900 m to the nearest mapped water source. The parent geology in this location is sandstone.

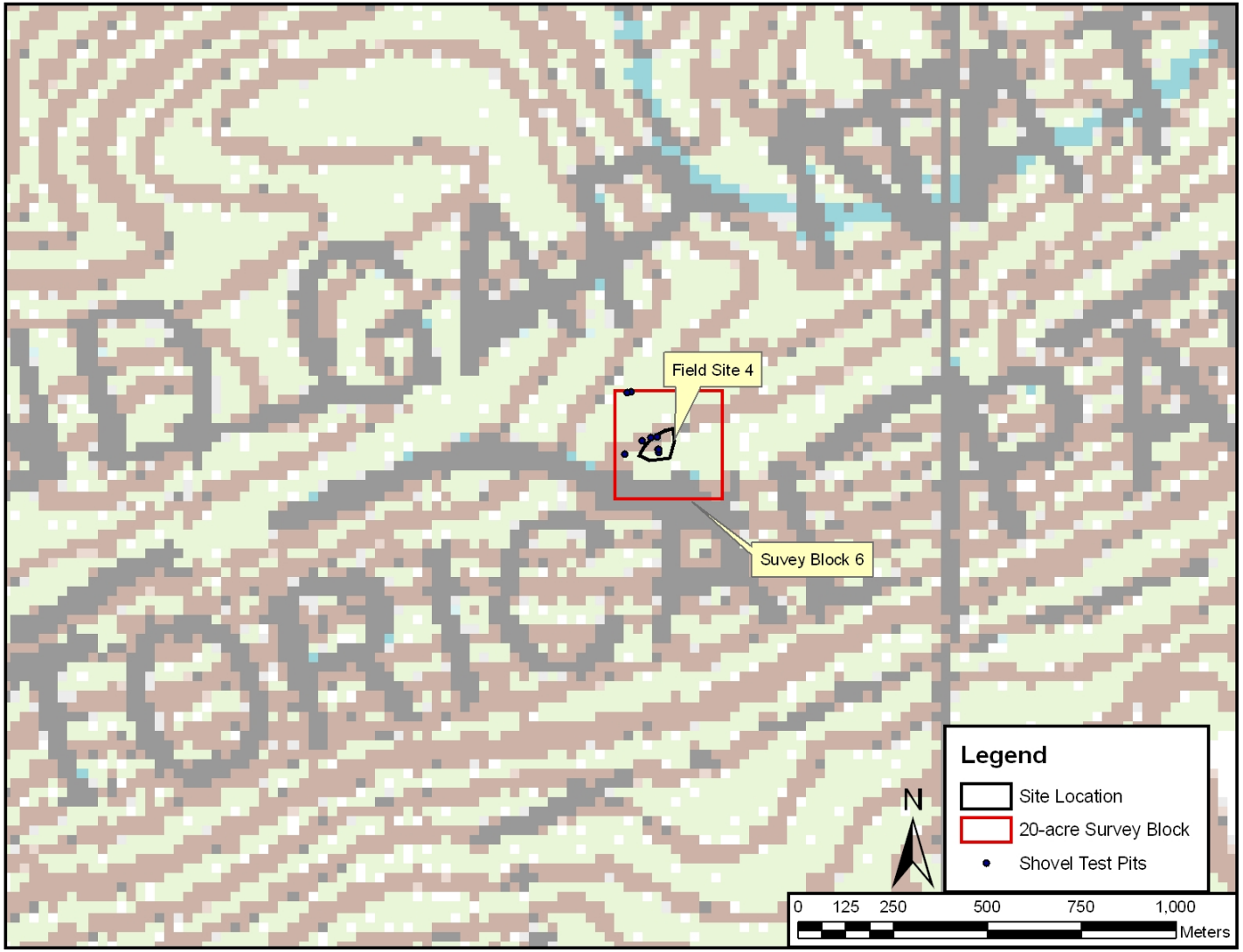

Figure 14. Plan view of Field Site 4.

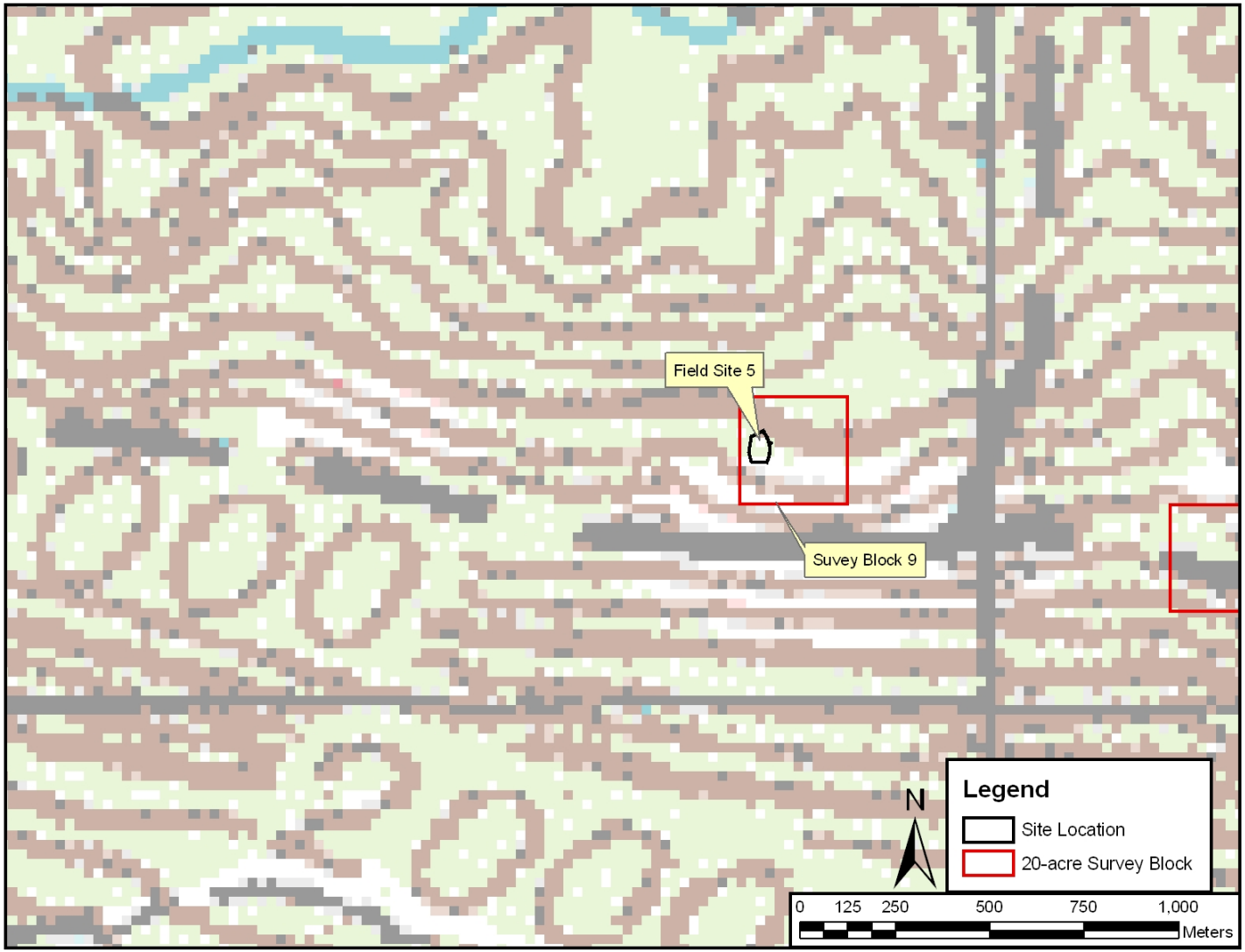

Figure 15. Plan view of Field Site 5.

The shelter floor is comprised of eroded sandstone, vegetation and roof fall. A Knox chert biface base and a single heated Knox chert flake were recovered from the surface. A single shovel test pit was placed near the center of the shelter. The STP extended to a depth of 35 cm below surface, and two stratigraphic zones were identified. The upper zone is a dark brown (7.5YR3/4) fine sandy loam extending to 15 cmbs and the lower is a light brown (7.5YR6/4) fine sand. No artifacts were recovered from the test pit.

The site location provides access to the valley below and Butchers Gap above. Artifacts were limited to the two item described, and no temporally diagnostic artifacts were identified. Although no subsurface features were identified during our survey, intact deposits may be present. ARL recommends that additional archaeological evaluation be undertaken at this site to determine if it is eligible for inclusion in the National Register.

Predictive Model Revision

The limited number of archaeological sites encountered during the testing of the initial archaeological predictive model was unexpected given the relatively abundant area for high and medium potential locations for the occurrence of archaeological sites in that model. The initial model, based on information from the Big South Fork National Park, only included three evidential themes (slope, aspect, and distance to water) and assumed there would be no difference in the location of archaeological sites relative to soil classification or geology. It became apparent during the testing of the initial model, however, that rockshelters and caves occur more frequently in locations of sandstone parent geology than other geological material (i.e., limestone, dolomite, and shale). As rockshelters and caves were frequently inhabited and used by people through the prehistoric and historical periods and two rockshelters with prehistoric occupations were recorded during the testing, it became apparent that including geology in the revised model would increase its accuracy. Mapped geologic formation data are readily available for the park as digital raster graphs (DRGs) available from the Kentucky Division of Geographic Information (http://ogi.ky.gov/). The geologic formations were digitized by ARL staff and encoded with data from the DRGs.

As stated previously, there are 35 mapped geologic formations within the CUGA boundary from seven parent materials (see Table 8). For this analysis the formations were grouped according to their parent material (Figure 16). Similar groupings by parent material for soils have been shown to be effective in the preparation of predictive models for the occurrence of archaeological sites (Ahlman and Duplantis 2003; Frankenberg and Herrmann 2001). In instances where two or more parent materials have been identified (e.g., shale and sandstone), the formation was included with the parent material that was more likely to be suggestive for the occurrence of an archaeological sites.

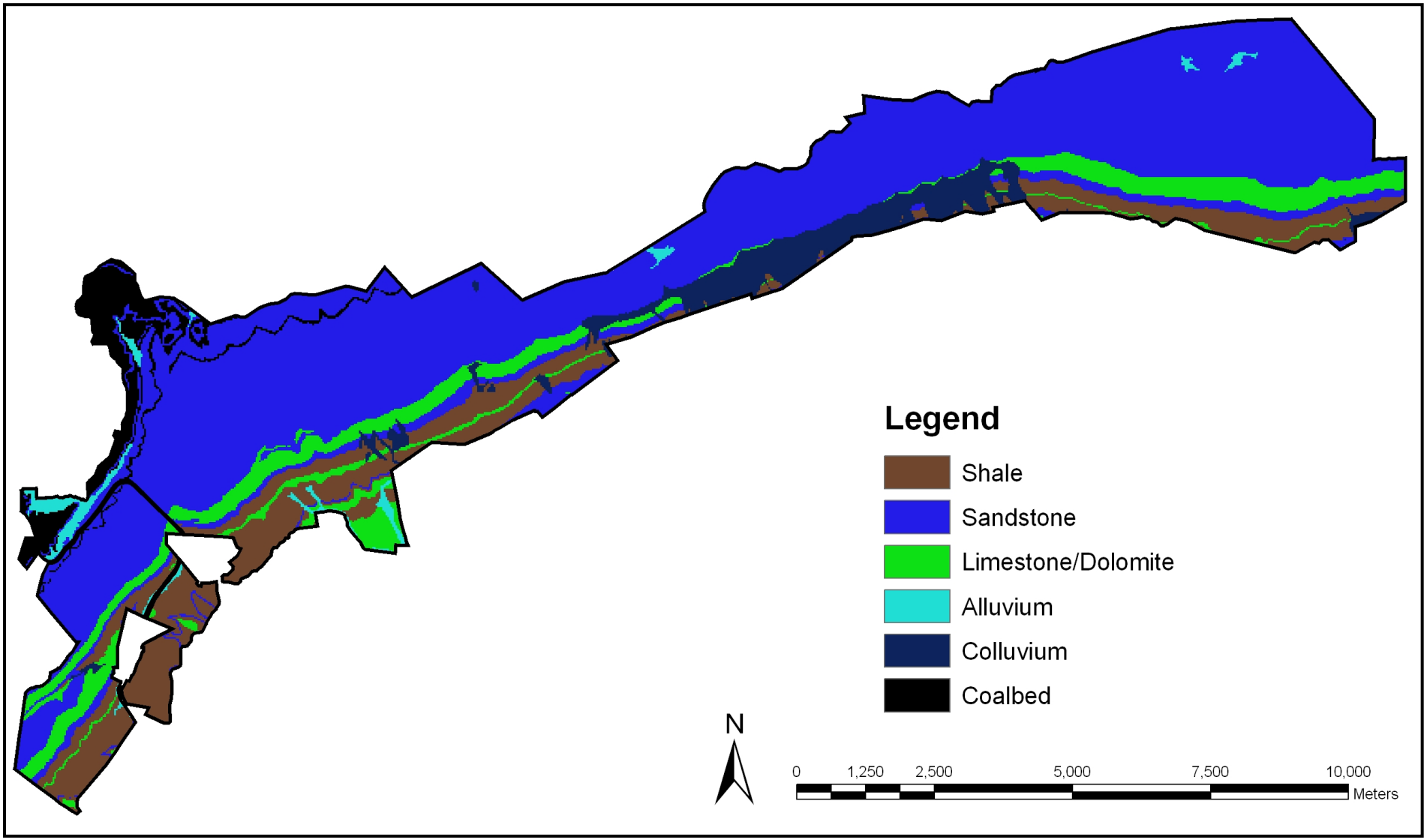

Figure 16. Geologic parent materials.

Percentage changes were also made for the other evidential themes based on evidence from the survey and a reanalysis of area for each evidential theme (Table 6). The distance to water percentages were not changed; however, a different data set for the water source was used. Rather than TIGER hydrology, data from the National Hydrological Dataset for the four counties was downloaded from the NRCS Geospatial Data Gateway and clipped to the park. This dataset provided a better coverage of the park than the TIGER hydrology dataset and likely is a more realistic representation of the sources available to prehistoric and historic peoples. Buffers were placed around these water sources at 100 m increments up to 500 m (Figure 17).

In the initial model, it was assumed that sites would tend to be located on slopes of less than 10 percent as well as between 20 percent and 30 percent. In the revised model, slope was revised to reflect the fact that the previously recorded sites and sites identified during the archaeological survey are located on slopes of less than 10 percent. The rockshelters noted during the survey were identified on slopes greater than 30 percent, but less than 3 percent of the park has a slope of greater than 30 percent so the percentage of sites was adjusted to reflect this relatively low acreage.

In the initial model, it was assumed that sites would be located on locations classified as flat or southern facing with secondary associations with eastern and southeastern facing locations. The survey and a review of the area covered for the classified aspect suggested a revision. In the revised model, aspect was adjusted to reflect a greater weight toward southern and eastern facing aspects, where sites tend to be located and not weighted toward flat aspect because no areas of the park were classified as flat based on how the ArcView GIS extension DEMAT classified aspect.

The revised model had a conditional independence of 1.06, indicating the evidential themes are independent of each other. The resultant posterior probability ranged from 0.000–0.067 (Figure 18) and was divided into three classes that represent low (0.000–0.012), medium (0.012–0.027), and high (0.027–0.067) potential for the occurrence of archaeological sites. Medium potential locations cover the greatest area (12,064.63 acres) followed by high potential (6,576.92 acres) and low potential (1427.70 acres). As Figure 18 graphically displays, a majority of the high and medium potential areas occur in the northern half of the park.

As stated previously, there are an inadequate number of recorded archaeological sites to test a predictive model and the survey to test the initial model did not increase this database sufficiently. To test whether the revised model is predictive for a patterned occurrence, the resultant posterior probability was compared to 30 sets of 100 randomized points. If the model is not random in its predictability the random points should not score above random using a test of the model. Some researchers have used Kvamme's gain statistic (Kvamme 1988) to test the efficacy of their models (Ahlman and Duplantis n.d.; Hobbs 1997; Kuiper and Wescott 1999; Wescott and Kuiper 2000). The gain statistic is a method to test whether a model is predictive or merely random and is based on the premise that if the area where sites are likely to occur is small and the percentage of sites occurring within this area is high, then the model is assumed to be accurate in its predictive capacity. The gain statistic is calculated: 1 - (percent area/percent sites).

Table 6. Expert Weights Percentages used in Revised Model Development.

Slope		Distance to Water		Aspect		Geologic Parent Material	
Degrees	**Percent**	**Distance**	**Percent**	**Aspect**	**Percent**	**Parent Material**	**Percent**
0–10	30	0 m–100 m	30	Flat	0	Shale	19
10–20	35	100 m–200 m	20	North	10	Sandstone	65
20–30	20	200 m–300 m	30	Northeast	12	Limestone/ Dolomite	10
30–40	10	300 m–400 m	15	East	10	Alluvium	2
40–90	5	400 m–500 m	5	Southeast	10	Colluvium	2
				South	27	Coalbed	2
				Southwest	12		
				West	12		
				Northwest	7		

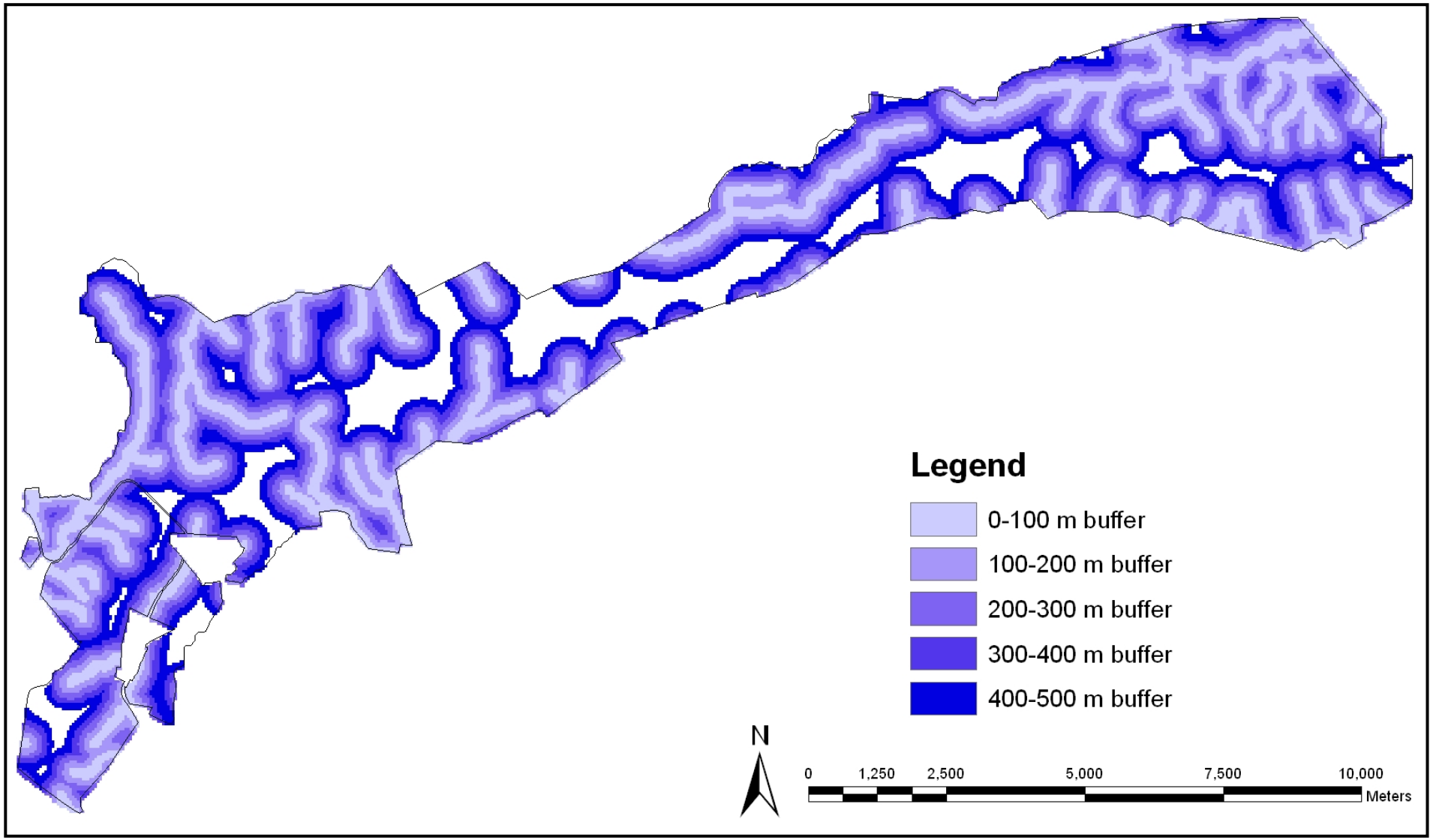

Figure 17. Revised distance to water.

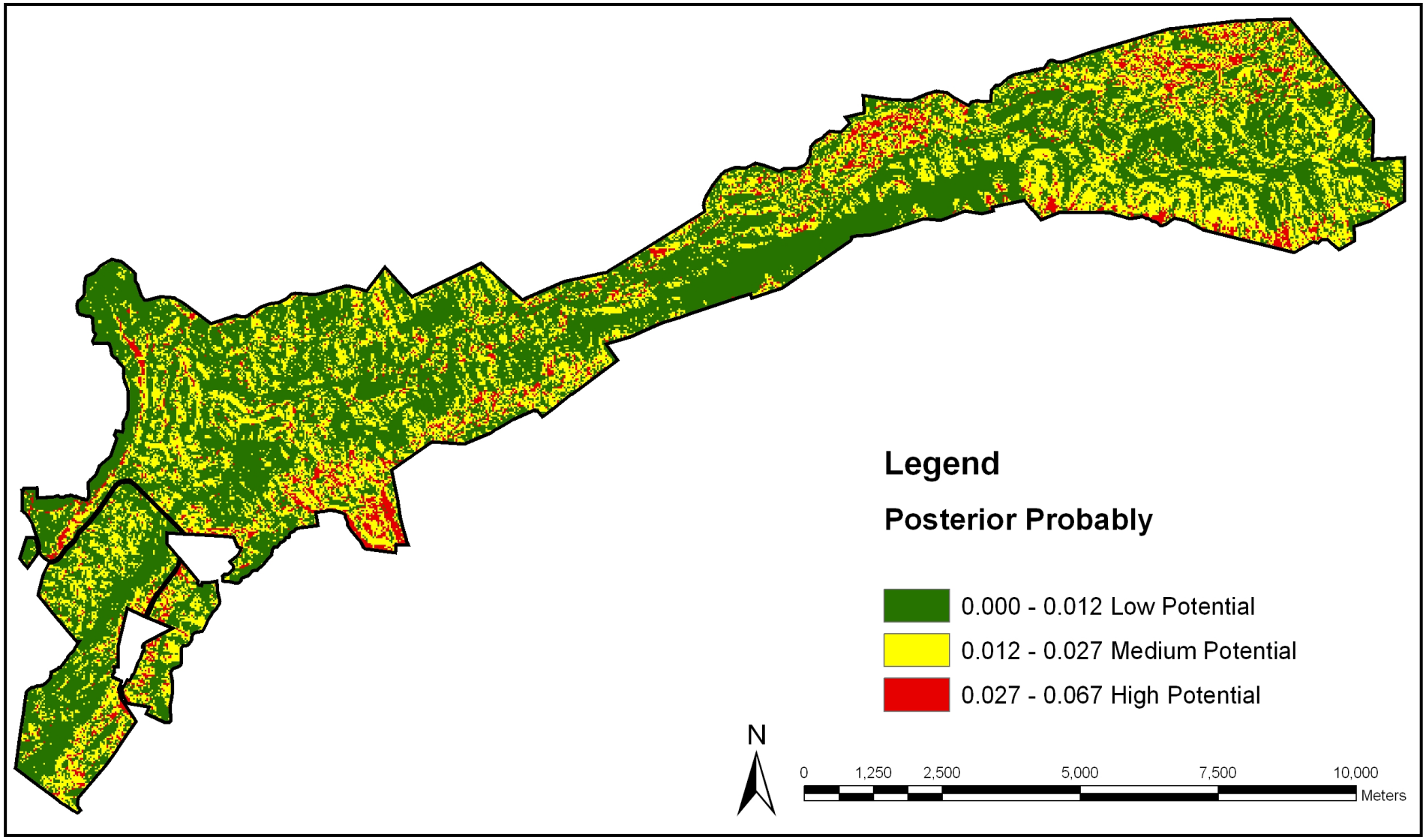

Figure 18. Revised predictive model posterior probability showing potential for the occurrence of archaeological sites.

The Kvamme Gain Statistic has a range from 0–1 where higher values indicate better model performance. Any value above 0.50 suggests that the potential for the occurrence of an archaeological site in that area is greater than chance. For this analysis, any score below 0.50 would suggest that the model is predictive in its capabilities. In addition, any negative score for the randomized tests would show a strong patterning to the model.

None of the randomized data sets scored above 0.50 for the areas identified as having a high or medium potential for the occurrence of archaeological sites. The highest score was 0.41 with the lowest being -2.55. In fact, over half (56 percent) of the comparisons scored a negative number showing that there is "reverse predictive utility" (Kvamme 1988:329) to the model relative to the random points and demonstrates that the model is not random in its predictability for the occurrence of archaeological sites.

The randomized tests demonstrate that the revised predictive model is not random in its predictability and it can be effectively used to predict where archaeological sites are likely to occur within the park. For compliance purposes, it is recommended that the medium and high potential locations be surveyed more intensively (20 m intervals for transects and shovel tests) than the low potential areas (30 m intervals for transects and shovel tests).

The true test for the efficacy of the predictive model is best borne out through extensive testing. It is recommended that a sample of at least 10 percent of the park be surveyed to test this model. This testing should include a random sample like the one used above and should include systematic methods where the low, medium, and high potential areas are all surveyed at the same transect and shovel test interval (20 m). The data from the results of this survey should validate the model developed here and lead to a slight revision in its results.

SECTION 5. CHRONOLOGICAL LIST OF ARCHAEOLOGICAL RESEARCH

The following is a chronological list of reports on file at CUGA or Big South Fork National River and Recreation Area (BISO) pertaining to archaeological resources within the boundaries of the park from 1937 through 2003. There are references in these reports and in the correspondence files to a report written by Jackson W. Moore in 1958 which has been lost. CUGA Accession numbers are included where available.

Porter, Charles W.

1937 *Historical Report Cumberland Gap Area.* National Park Service, United States Dept. of the Interior. Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- While this report does not deal with archaeological survey or testing *per se*, there is some discussion of a number of cultural resources such as the Wilderness Road, which provides background information for subsequent archaeological surveys.

Cumberland Gap National Park

1960 *Completion Report, Account No. 333.11, Archeological Exploration Cumberland Gap National Historical Park, Middlesboro, Kentucky.* Manuscript on file, Cumberland Gap National Historical Park. Original photographs on file, CUGA Archives, Middlesboro, Kentucky.

- Discusses the work done at the Iron Furnace.

Torres-Reyes, Ricardo

1969 *Davis Tavern Site Location Study, CUGA, Kentucky-Tennessee-Virginia*. Division of History, Office of Archeology and Historic Preservation, U.S. Dept. of the Interior, NPS. Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- Contains CUGA Historian Frank B. Sarles's Preliminary Orientation Report on Davis Tavern Site (1957) and a summary of Archaeologist Jackson W. Moore's report, 1958.

Walker, John W.

1975 *Assessment of Archeological Resources of Cumberland Gap National Historical Park.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky and Southeast Archeological Center, National Park Service, Tallahassee. CUGA Archives ARX-75-2.

Wilson, Charles W. and Louis De Vorsey, Jr.

1975 *Preliminary Research Report: Wilderness Road Cumberland Gap Historical Geography Research Project.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

United States Department of the Interior, National Park Service

1978 *Final Environmental Statement, Cumberland Gap National Historical Park/KY-TN-VA.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky. CUGA Archives GPX-78-1.

- Pages 40, 53, and 61 from the report and a topo map. Discusses the Hensley Settlement, sections of a roadbed in Middlesboro, industries, and resources in the process of being nominated to the NR. Map title: Cumberland Gap Archeological Base Map and Effects of Alternative Routes for Relocation of U.S. 25E on Archeological Resources.

1979 *Master Plan, Cumberland Gap National Historical Park/KY-TN-VA.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky. CUGA Archives GPX-79-1.

- Two page excerpt from report dealing with Historic Compliance, Boundary Changes, and Land Acquisition. Attached is memo, 19 September, 1996 from the Superintendent to the files regarding 106 compliance and broken bottles in the road fill at the old Schneider Plant site.

Williams, Maurice

1982 *Archaeological Data Section for the Preliminary Cultural Resource Management Plan of CUGA.* Manuscript on file, Southeast Archeological Center, National Park Service, Tallahassee. Copy on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky. CUGA Archives ARX 82-1.

Kline, Gerald W.

1983 *An Archaeological Reconnaissance Survey of the Proposed Cumberland Gap Wastewater Treatment Plant Site, Claiborne County, Tennessee.* Midsouth Anthropological Research Center, Department of Anthropology, University of Tennessee, Knoxville. Manuscript on file, Tennessee Division of Archaeology, Nashville.

Krakow, Jere L.

1987 *Location of the Wilderness Road at Cumberland Gap National Historical Park.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

Prentice, Guy and Bruce Manzano

1988 *Archeological Investigation of the Watts Brothers Site (40CE6), Cumberland Gap, Claiborne County, Tennessee.* Manuscript on file, Southeast Archaeological Center, National Park Service, Tallahassee.

Bryne, Stephen

1989 *Trip Report of Recent Field Investigations at Ocmulgee National Monument, Mammoth Cave National Park, and Cumberland Gap National Historical Park.* H4217 (SER-OSC).

- Presents findings from survey associated with the realignment of the Henley Settlement Road and the construction of the Cumberland Gap Tunnel. Shovel testing and reconnaissance was undertaken in four or five areas of the park. Three archaeological sites were identified (Site 1, Site 2 [Cumberland Hotel], and Site 3). No real information is provided about the identified sites.

Horvath, Elizabeth A.

1989 *Archaeological Investigations Conducted for the Cumberland Gap Tunnel Project—Phase I Cumberland Gap National Historical Park: Bell County, Kentucky, Lee County, Virginia, and Claiborne County, Tennessee.* Copy on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

Byrne, Stephen C.

1990 *Phase II Archeological Investigations for the Cumberland Gap Tunnel Project Area (CUGA 25E4 & 25E9), Cumberland Gap National Historical Park; Bell County, Kentucky, And Claiborne County, Tennessee.* Manuscript on file, Southeast Archeological Center, National Park Service, Tallahassee.

- Cumberland Gap Tunnel project. Identified three archaeological sites (CUGA-54/15BL172; CUGA-55/15BL173; and CUGA-56/15BL174). None of the sites were recommended as eligible for inclusion in the National Register. No additional work is needed in these areas.

Prentice, Guy

1990 *Trip to Cumberland Gap 12/12/90. H2215 (SER-OSC).* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- Concerns investigations of the reported location of the Union Army's arms cache reported to have been buried in 1862 next to the Commissary. Field notes, photos, and artifactual materials recovered are curated under Accession # 894.

Wild, Kenneth

1990 *Trip Report of Waterline and Footbridge Reconnaissance.* H2217 (SER-OSC). Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- Reconnaissance survey for proposed waterline and footbridge. No subsurface testing undertaken.

Horvath, Elizabeth A.

1991a *Trip Report for CUGA US58 Relocation Project (SEAC Acc 916, CUGA Acc. 267).* Manuscript on file, Southeast Archeological Center, National Park Service, Tallahassee.

1991b *Archeological Research Design for the Relocation and Widening of US Highway 58 and the Construction of a New Entrance Road for the Campground, Cumberland Gap National Historical Park.* Manuscript on file, Southeast Archeological Center, National Park Service, Tallahassee.

Brown, Daniel

1992 *Memorandum to Superintendent through Chief I & RM, 20 March. Investigation of House Site on Wilderness Road Trail.* (Concerns removal of approx. 35 linear ft. of rock wall associated with the Goforth House near the Iron Furnace parking area). Copy on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

Leabo, Regina and Wendy Nettles

1995 Trip Report on the Location of the Wilderness Road, CUGA 6/26-30/95; SEAC Accession #1188. Manuscript on file, Southeast Archeological Center, National Park Service, Tallahassee.

- Trenching and shovel testing associated with locating the Wilderness Road, three historic structures, and the Object Lesson Road. Did not find evidence of either road. Identified one historic archaeological site (CUGA-61).

Des Jean, Tom

1995a *Trip Report to Cumberland Gap National Historical Park. (Proposed Hiking Trail Construction Area).* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- Identified stock pond and excavated a shovel test, but did not shovel test entire length of trail. Trail along steep route so likely did not require shovel testing. No additional work is needed in this location; however, it is unclear where the work is conducted according to the paperwork in the files.

1995b *Trip Report to CUGA.* Copy on file, Big South Fork National River and Recreation Area, Oneida, Tennessee.

- Along hiking trail near Tipprell, Tennessee. Found historic pit feature; probably a stock pond ca. 1915. Recommend to preserve and tell public it is associated with stock raising to minimize associations of feature with Civil War. Attached documentation.

Cornelison, John

1996a E-mail message to Suzanne Barrett at NP-SER re Questions Concerning Section 106 and the Middlesboro Brewery area. Copy on file, Big South Fork National River and Recreation Area, Oneida, Tennessee.

1996b Memo, 14 February to Jackie Powell, NPS-DSC, H2215 (SER-OSC). Copy on file, Big South Fork National River and Recreation Area, Oneida, Tennessee.

- Discusses Horvath's work at CUGA, mentions completion of Highway 58 final report by end of FY and selection of Tom Des Jean, BISO, as Archeological Advisor for CUGA. Attached copy of Horvath's trip report to locate historic portion of the gap road and related memos.

Kentucky Heritage Council

1996 Memo to the file. Re: Complaint Received by Kentucky Heritage Council.

- Concerns work conducted at the Middlesboro Brewery and the uncovering and subsequent reburial of a number of antique bottles. Complainant stated work was not halted nor was an archaeologist called in to evaluate and register the site. The site had been investigated as part of the EA for the CUGA Master Plan and cleared prior to this incident. Author was instructed to collect supporting documentation from reports on file.

United States Department of the Interior, National Park Service

1997 *Cave Management Plan for Cudjo Cavern, Formal Review Draft, Cumberland Gap National Historical Park, Lee County, Virginia.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

Des Jean, Tom

1998a *Section 106 Compliance Trip Report to CUGA to Investigate Possible Impacts Two Proposed Projects May Have on Cultural Resources. Impacts associated with restoration of the Cudjo Caverns Tour Trail; Testing along the route of the proposed Oak Path Hiking Trail.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

1998b *Section 106 Compliance Trip Report to CUGA to investigate possible impacts two proposed projects might have on cultural resources in compliance with Section 106 of the NHPA.* Copy on file, Big South Fork National River and Recreation Area, Oneida, Tennessee. Attached documentation.

- Re Cudjo Cavern Tour Trail and approximately 2000 LF of the proposed Oak Patch Hiking Trail. No adverse effect.

United States Department of the Interior, National Park Service

1998 *Cave Management Plan for Cudjo Cavern, Cumberland Gap National Historical Park, Lee County, Virginia.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

Cornelison, John E., Jr., Elizabeth A. Horvath, Jeff Jones, Debbie Leslie, Marc Tiemann

1999 *Cumberland Gap National Historical Park; U.S. Highway 58 Relocation Phase I and Phase II Archeological Testing.* Manuscript on file, Southeast Archeological Center, National Park Service, Tallahassee, Florida and Big South Fork National River and Recreation Area, Oneida, Tennessee.

Des Jean, Tom

1999a *Trip Report for Section 106 Archeological Testing Compliance Investigations at Hensley Settlement, VC Waterline, and the Pinnacles Trail.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

1999b *Investigation of Possible Archeological Impact Areas Associated With Planting Chestnut Trees on the Boundary of Hensley Settlement.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

1999c *Investigations of Construction of Waterline in Disturbed Area at CUGA Visitor Center.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

1999d *Impacts Associated with the Construction of the Hiking Trail from Ft. McCook to the Pinnacles.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

1999e *Section 106 compliance for CUGA Ranger Station waterline replacement.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

1999f *Letter from BISO archeologist to CUGA Supertintendent, 20 August. Re Section 106 compliance for CUGA Ranger Station Waterline.* Copy on file, Big South Fork National River and Recreation Area, Oneida, Tennessee. Attached documentation.

- Area has been intensively disturbed a number of times over the last 80 years and compromised any archeological resources that may have been present at one time.

Garza, Rolando

1999 *Trip Report, Cumberland Gap Trails Project, 10/27-29/98, SEAC 1383.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

United States Department of Transportation, Federal Highways Administration

1999 *Plans for Proposed Project NPS-CUGA 25E 19, 20 Grading Drainage and Other Work From Relocated 25E in Kentucky to North Cumberland Drive in Virginia: Bell County, Kentucky, Lee County, Virginia.* Manuscript on file, Eastern Federal Lands Highway Division, Sterling, Virginia.

Woods, Mark H.

1999 Memo, 4 March. Re Clearance of Archeological Projects. Report on file, Big South Fork National River and Recreation Area, Oneida, Tennessee. Attached documentation.

- Projects cleared: replacement of 3,000 LF water line, construction of a 9,000 LF hiking trail, and tree planting in the Hensley Settlement.

Des Jean, Tom

2000a *Trip Report to do Section 106 Compliance Survey and Testing and Cumberland Gap NHP*. Report on file, Big South Fork National River and Recreation Area, Oneida, Tennessee. Attached documentation.

- Regards testing for Iron Furnace field, Cudjo Cavern electric line, CUGA Visitors Center, O'Dell House utility corridor, Ft. McCook camping area, and Colson Lane Trail. Construction in all areas except the Cudjo Cavern and O'Dell House utility corridors must have additional, more extensive compliance for the activities proposed.

2000b Memo, 11 October. Section 106 Compliance status for Archeological testing at several sites at Cumberland Gap National Historic Site.

- Re archeological testing along utility line routes at the Federal Highways Building and an evaluation of potential archaeological resources at the Cumberland Gap "Cigarette Store", the LMU Water Tank, structural expansion sites for the Pinnacles Repeater Towerhouse, and the Pinnacles Pumphouse. Work proposed meets exclusions stipulated in the 1995 Servicewide Agreement.

Halchin, Jill Y.

2000a *Research Design for Archeological Testing for Trails and Parking Lots, Rehabilitation of the Gap (CUGA 139-06). Cumberland Gap National Historical Park, Kentucky, Virginia, Tennessee. SEAC Acc. # 1460.* Manuscript on file, Southeast Archeological Center, National Park Service, Tallahassee.

2000b *Trip Report on Archeological Investigations for Trails.* Cumberland Gap National Historical Park, 3/27-4/4/2000 (SEAC 1460).

- Research design for survey associated with trails and parking lots in conjunction with the reconstruction of the Wilderness Road and Object Lesson Road.

Unrau, Harlan D.

2000 *Special Resource Study: Rediscovery of Cumberland Gap and Wilderness Road. Cumberland Gap National Historical Park: Kentucky/Virginia/Tennessee.* Denver Service Center, National Park Service, Denver.

Des Jean, Tom

2001a *Trip Report to do Compliance Survey and Testing at Cumberland Gap NHP*. Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

2001b *Trip Report For 31 May: Section 106 Archeological Testing Compliance for Three Bat Gate Installations or Replacements at Little Salt Cave, Bridge Cave, and Indian Cave.* Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- Construction of gates as proposed will not adversely impact archeological features or archeological resources in this small area. Attached documentation.

2001b Memo, 8 November. Section 106 compliance for construction of weather station at CUGA. No effect.

Rhodes, Diane

2001 *Documentation of Sites Within Cumberland Gap National Historical Park: Two Twentieth Century Historic Sites, Cigarette Store, and Water Tank.* Denver Service Center, National Park Service, Denver. (Additional information provided by Rhodes to supplement original report on file at CUGA).

- Summary of work for the Cigarette Store, water tank, and monument base associated with Wilderness Road and Object Lesson Road rehabilitation. Work consistent with existing standards.

Des Jean, Tom

2002a *Trip Report for Section 106 Testing and Evaluation Along the Proposed Harlan Road Hiking Trail.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- Results of survey along Harlan Road Hiking Trail for proposed improvements. Reconnaissance survey with only a couple shovel tests excavated because of rocky soil and modern disturbance. Did not find any intact or significant archaeological resources.

2002b Trip Report for 14 February, 2002: Archeological Testing and Evaluation at Big Saltpeter Cave. Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- Recommends replacement of bat gate and subsurface archeological testing for any proposal for new construction anywhere past the breakdown area, approximately 30' in from the cave entrance. Attached photos.

2002c *Trip Report for August 12, 2002: Archeological Review of Animal Bone Discovery at Cumberland Gap National Historical Park.*

- Summary of artifacts found along trail by Student Conservation Association Volunteers during rehabilitation of Harlan Road Hiking Trail. No real assessment of archaeological sites/potential undertaken other than a metal detector survey that found no artifacts.

2002d *Trip Report for August 16, 2002: Archeological Evaluation of Mammal Bone Discovery along the Harlan Road Hiking Trail.*

- Materials found determined not to be significant. Limits on future soil removal recommended. Attached field forms

Morgan, David L.

2002 Letter, 24 July from Director, Kentucky Heritage Council and SHPO to Mark H. Woods, CUGA Superintendent. Re: Reroute Harlan Road Trail, CUGA, Bell County, Kentucky.

- Relocation will impact portions of the historic roadway which contributes to the Cumberland Gap Historic District. Must conduct archeological survey of the proposed diversion route prior to the commencement of trail work. Report must be submitted to KY SHPO prior to any construction activities. Attached documentation CUGA-BISO.

Woods, Mark H.

2002a Letter to David L. Morgan, KY SHPO, 19 June. Re: Work on the Harlan Road Trail for the Wilderness Road Rehab project. Several sections badly eroded and require fill material to construct a practical foot trail. Enclosed Section 106 forms and what CUGA proposes to minimize impact, etc.

2002b Letter to Dr. Ethel R. Eaton, Dept. of Historic Resources, Richmond, Virginia, 24 June.

- Describes actions proposed to negate the safety hazard created by installing several feet of sand in the floor of the Iron Furnace to minimize accidental falls. Includes form: Assessment of Actions Having an Effect on Cultural Resources.

Burkhart, Carol

2003 Memo to BISO Archeologist. 7 March (H4215). Re: Section 106 Compliance, Harlan Road Trail Work, Phase II. Copy on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- Requested materials enclosed. Mentions meeting on 3/19 and archeological work to be done.

Des Jean, Tom

2003a *Archeological Site Monitoring For The Cumberland Gap Rehabilitation Project, 2001–2002.* Manuscript on file, Cumberland Gap National Historical Park, Middlesboro, Kentucky.

- This report presents the findings of the monitoring during the rehabilitation of the Gap and Wilderness Road following opening of the tunnel.

2003b *Trip Report for 31 March: Archeological evaluation Section 106 evaluations for planned hiking trail construction along the Harlan Road Hiking Trail.* Copy on file, Big South Fork National River and Recreation Area, Oneida, Tennessee.

- Only modern material discovered and collected. Project may proceed as planned. Attached documentation. Copy on file, Big South Fork National River and Recreation Area, Oneida, Tennessee.

2003c Memo 30, October. Re Section 106 Evaluations for planned enlargement of existing comfort station shower facilities at the Wilderness Campground, Virginia. Attached documentation. Copy on file, Big South Fork National River and Recreation Area, Oneida, Tennessee.

2004 Memo. 8 March. Re Section 106 Compliance for utility line trenching at the Hensley Settlement. Attached documentation. Copy on file, Big South Fork National River and Recreation Area, Oneida, Tennessee.

Haney, Jennifer

2004 *Documentation and Survey for Archaeological Resources in the Cumberland Gap National Register District.* Report prepared for the Cumberland Gap National Historic Park, Middlesboro, Kentucky. Report prepared by Archaeological Research Laboratory, University of Tennessee, Knoxville, Tennessee.

SECTION 6. ASSESSMENT OF PREVIOUS ARCHAEOLOGICAL RESEARCH

Prior to the implementation of the National Historic Preservation Act (NHPA) in 1966, only limited archaeological research was conducted within CUGA and focused on elements of the Gap itself rather than park wide research. Since 1966, archaeological research within the CUGA boundaries has been primarily driven by compliance with Section 106 of the NHPA and its implementing regulations at 36 CFR § 800, which requires federal agencies to take into account their actions on historic properties. These compliance projects have typically been small-scale focusing on individual locations, short sections of trails, or not involving subsurface testing. As such, there have been no intensive, large-scale archaeological inventory surveys of any portion of CUGA. It is likely that prior to the implementation of this AOA, less than one percent of the park had been inventoried for archaeological sites. With the inclusion of this AOA, approximately 2 percent of the park has been surveyed for archaeological sites using pedestrian and subsurface testing (Figure 19).

An accurate and complete assessment of the acreage that has been surveyed for the occurrence of archaeological sites is almost impossible and shows the major shortcoming of the previous research conducted at CUGA. Most of the material on file at CUGA or the various state agencies does not include a copy of a section of the appropriate 7.5 minute USGS topographic quadrangle depicting the location of the investigation as required by the guidelines for archaeological investigations conducted in Kentucky (Saunders 2001), Tennessee (Garrison 2000), and Virginia (VDHR n.d.). Without this locational information it is unknown precisely where most of the archaeological investigations within the CUGA boundaries have taken place. Without these data it has to be assumed then, that outside of the known surveyed areas depicted in Figure 19 the entire park will need to be surveyed for the presence of archaeological sites if an archaeological identification survey is required under the auspices of Section 106 of the NHPA.

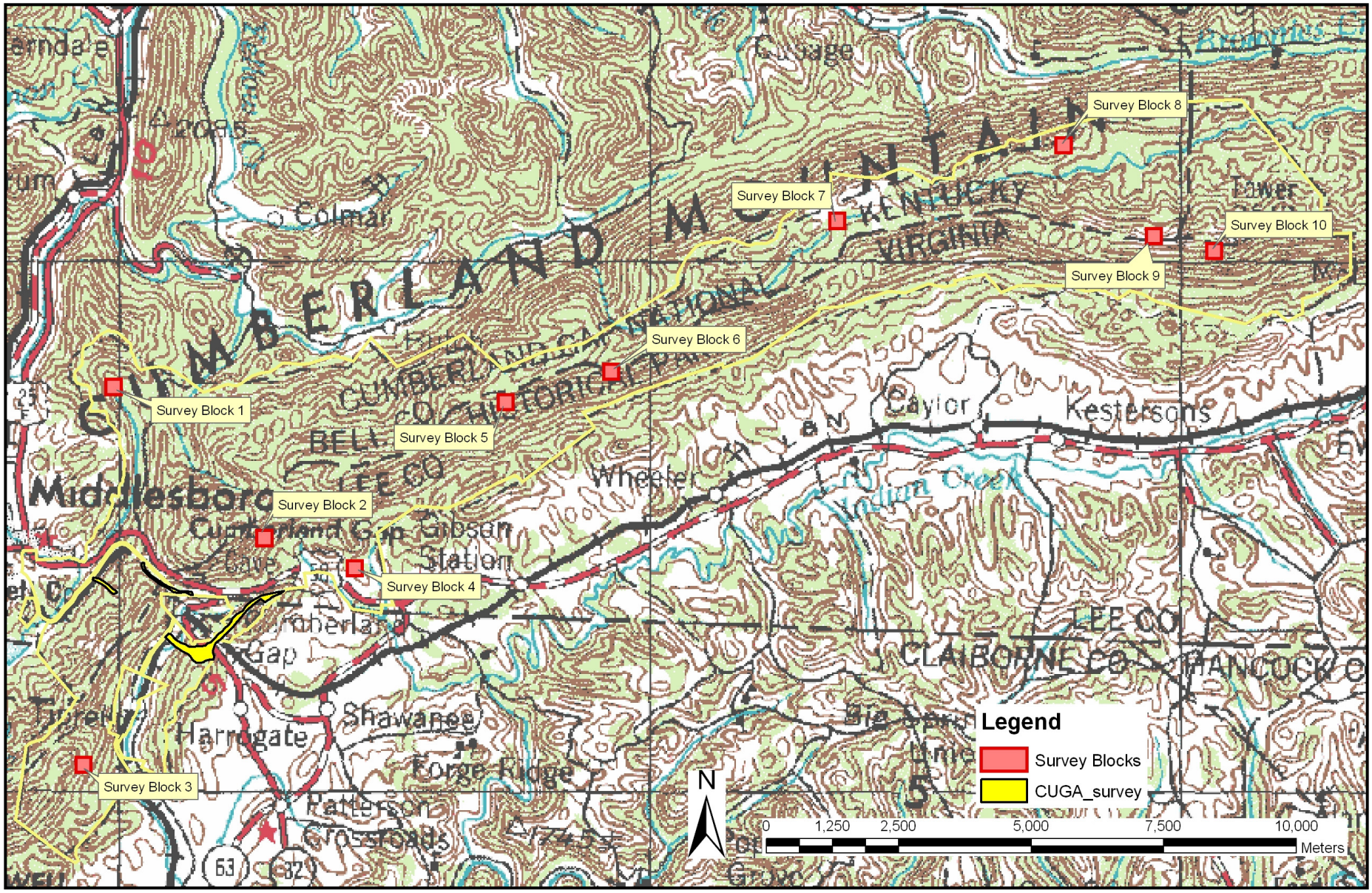

Figure 19. Locations Surveyed for Archaeological Sites with CUGA.

Some of the trip reports on file at CUGA indicate instances where small numbers of artifacts are recovered during a survey in an area that meets each state's minimum criterion for receiving an official state archaeological site number, but no site form was apparently filed with the appropriate state agency. These sites are minimally recorded with the CUGA cultural or natural resources office, but oftentimes these forms are missing important information regarding the location of the find. It appears that official state site forms were not completed and submitted for these sites because they did not meet the criteria for inclusion in the National Register. The lack of information and official state site numbers reduces the capabilities of the CUGA staff to effectively manage all archaeological sites within the park's boundaries and restricts the capabilities of each state's state historic preservation officer from assisting the park in archaeological site preservation and management. It should become standard operating procedure for CUGA to require all archaeological sites (regardless of National Register eligibility) identified during any archaeological investigation (regardless of scope and scale) to have official state archaeological site forms completed and submitted. A copy of the completed site forms with official state site numbers should be submitted to CUGA with the final report of any investigation. In addition, a clear statement regarding each site's eligibility for inclusion in the National Register should be included in these reports.

In general, while the level of effort for the fieldwork phase of previous archaeological investigation appears to have been generally adequate, the level of reporting is usually not in line with the guidelines and requirements of the various states where the park is located. Unless additional information from the surveys of small portions of the park comes to light, it is recommended that any new undertakings within CUGA outside of these three areas be surveyed for archaeological sites. Other than the current survey and the investigations involved with the realignment of Route 58 in Virginia, construction of the Highway 25E tunnel, and Haney's (2004) partial survey of the National Register District, it is generally not known where the previous investigations undertaken within CUGA have taken place. It is also important to note that Haney did not completely survey the Historic District but focused on the identification and accurate mapping of the contributing elements to the district's listing in the National Register.

SECTION 7. ARCHAEOLOGICAL AND CULTURAL RESOURCE MANAGEMENT ISSUES

Several issues regarding the management of archaeological and cultural resources within CUGA should be carefully addressed. These issues fall within three categories: documentation, treatment, and monitoring.

DOCUMENTATION ISSUES

First and foremost, past reporting of investigations and recording of archaeological sites often fail to follow the guidelines for reporting of archaeological investigations as outlined by appropriate agencies in Kentucky, Tennessee, and Virginia. The guidelines for conducting archaeological investigations and the reporting of these investigations in Kentucky are laid out in the June 2001 version of the Kentucky Heritage Council's *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* (Saunders 2001). This report is available on the Internet at http://www.state.ky.us/agencies/khc/specs_reports.htm. The Tennessee Historical Commission's guidelines for "Archaeological and Architectural Resource Identification Studies (Survey Reports)" is included as Appendix "B" of the document *Section 106 Review in Tennessee Under the Revised 36 CFR Part 800 Regulation* (Garrison 2000). These guidelines are also available on the Internet at http://www.state.tn.us/environment/hist/sect106.php. The Virginia Department of Historic Resources guidelines are spelled out in the document *Guidelines for Conducting Cultural Resource Survey in Virginia*. This document is also available on the Internet at http://www.dhr.virginia.gov/arch_DHR/archaeo_index.htm.

The guidelines in the above listed documents for reporting of archaeological investigations are similar and if a researcher follows the guidelines of one state the report will likely meet the guidelines of the other states. The guidelines for conducting an archaeological inventory survey do differ, however, among the states. For instance, the recommended shovel test pit interval in Tennessee is 30 m, in Kentucky it is 20 m, and in Virginia it is approximately 18 m (50 ft). It is recommended that CUGA enter into a Programmatic Agreement (PA) with the state historic preservation officers from Kentucky, Tennessee, and Virginia to create a standardized shovel test pit interval so that researchers do not have to change methodologies when surveying across the various states. Although the 30 m interval used in the model proved reliable, a compromise distance between transects and shovel tests would be 20 m interval to be used for those areas of the park delineated as having a high and medium potential for the occurrence of archaeological sites in the revised model described above and a 30 m interval to be used for the low potential areas. The PA should also outline a consistent reporting standard between the three states for investigations that identify archaeological sites as well as for abbreviated reports (management summaries) for investigations that fail to identify archaeological sites. In addition, CUGA should require all researchers conducting archaeological investigations within the park's boundary to document the location of

these investigations with a GPS unit and supply the park with these data in a format consistent with the park's current geographic information system (GIS) software.

Each archaeological site that is recorded during any investigation within the park should have a clear statement regarding the eligibility for inclusion in the National Register. The criteria for inclusion can be found on the Advisory Council on Historic Preservation (ACHP) website: http://www.achp.gov/nrcriteria.html. In essence, archaeological sites are eligible for inclusion in the National Register if they retain integrity and/or meet one or more of four criteria. The four criteria are: a) association with events that have made a significant contribution to our broad patterns of history; b) association with lives of a person who is significant to our past; c) embody distinctive characteristics of a time, period, or method of construction; and d) may yield important information about history or prehistory. Most archaeological sites are recommended as eligible for inclusion in the National Register or included in the National Register under Criterion D.

Prior to the initiation of this AOA, there were 84 known archaeological sites within the CUGA boundaries and only 21 of these have official state archaeological site numbers as granted by the appropriate state agency. In addition, the locational information for many of these sites either does not exist or it does not accurately portray where the site is located. While it is understood that limited access to the location of the known archaeological sites is paramount to their preservation, the locations of these sites are protected according to Section 304 of the NHPA, and these data do not have to be released to the public. The National Register status for many of these sites is unknown and should be evaluated. The appropriate state agency cannot assist in the preservation of these resources without knowing their location or their National Register status. Furthermore, researchers studying the region's settlement patterning and land use do not have access to these data and cannot make informed assessments without knowing where the sites are located. It is recommended that a program be initiated to identify and revisit all of the previously recorded archaeological sites on file at CUGA.

Reviews of site and report files of the appropriate state agencies in Kentucky, Tennessee, and Virginia revealed that few of the reports on the investigations conducted within CUGA have been submitted to the State Historic Preservation Office for review. Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR § 800, the Advisory Council on Historic Preservation, appropriate State Historic Preservation Officers and Tribal Historic Preservation Officers, and any interested parties are given the opportunity to review and comment on the archaeological investigations undertaken as a result of Section 106. Without completed reports on investigations undertaken in the park, these parties are not given their legislatively mandated opportunity to comment on the effects an action may have on historic properties.

As noted above, between the previous investigations and the fieldwork conducted for this AOA less than 2 percent of the park has been surveyed for archaeological sites. Section 110 of the National Historic Preservation Act requires federal agencies to establish a preservation program to protect and preserve historic properties including the inventory, evaluation, and nomination of historic properties under their jurisdiction to the National Register. It is recommended that major portions of the park be surveyed for archaeological sites to comply with this section of the NHPA.

TREATMENT ISSUES

The NHPA requires Federal agencies to manage and maintain the historic properties under their jurisdiction in a manner that is consistent with their preservation. The limited information regarding the number and type of archaeological sites throughout the park makes it difficult for CUGA to fully comply with this mandate. As mentioned throughout this overview and assessment, CUGA should enter into a program for the identification and evaluation of the archaeological sites within the park in order to fully understand the resources that are present. This is the first step for a treatment program that is compliant with the NHPA. The next step is to develop a comprehensive management plan that takes into account the breadth of resources present in the park. CUGA has undertaken two projects within the Historic District that should be viewed as a baseline for future management plans for the treatment of archaeological sites.

First, Haney's (2004) survey of portions of the Historic District provided a documentation of the condition of the military related works in the Gap. Haney used a variety of methods including pedestrian survey, subsurface testing involving shovel testing, and geophysical methods to document the contributing elements to the Historic District. In addition, all of the above surface features of these contributing elements were mapped using a total station and GPS unit. A generalized plan for the treatment of the contributing elements, which includes increasing vegetation and removing dead trees, is provided in her report. It is recommended that all of the contributing elements be given a state site number by the appropriate state agency in order for that agency to assist in the preservation of these archaeological sites.

As a follow up to Haney's work, Hodges (2005) has recently prepared an earthworks management plan for the contributing elements for the Historic District. This document outlines specific plans for the treatment of the contributing elements of the Historic District. In it, there are plans for the removal of dead vegetation, planting and maintenance of vegetation to decrease erosion, and the rerouting of existing trails to lessen damage caused by foot traffic.

MONITORING ISSUES

Monitoring of the archaeological sites within CUGA's boundary should fall along two lines: stewardship and stopping illegal destruction of the resources. As mentioned above, Section 110 of the NHPA requires Federal agencies to prepare a stewardship program for the preservation of historic properties in the park. This stewardship plan would best be undertaken as part of a comprehensive archaeological site management plan that should be completed following the survey of significant portions of the park. Until the full range of archaeological sites present within the park is known, a comprehensive management plan cannot be undertaken. The partial survey of the Historic District and the subsequent earthwork's management plan are examples of comprehensive management plans. In addition, the park can increase public education about the preservation of historic properties and train park staff about the Archaeological Resources Protection Act (ARPA).

As mentioned above, Haney's (2004) and Hodges's (2005) work in the Historic District provides a good baseline from which to monitor conditions of the contributing elements of the Historic District. Haney provides descriptions of the physical remains of each above ground feature of the contributing elements. In addition, she mapped the cultural features at each element and the impacts occurring to each element. These maps can be used to monitor future impacts to each of the contributing elements.

Hodges (2005) outlines specific issues regarding the preservation of the recorded Civil War earthworks within the Historic District. The guidelines provided by Hodges include an annual evaluation schedule, stabilization work to arrest ongoing damage and protect from future damage, and possible development and interpretive actions intended to limit future damage. In addition, a vegetation evaluation is provided as a baseline for all future evaluation and development associated with the elements of the Historic District.

NHPA and ARPA protect archaeological sites on federal property from unauthorized excavation and collecting. Specifically, ARPA makes it illegal for unauthorized collection of archaeological materials from archaeological sites. The exception is the collection of "arrowheads" from the ground surface. These artifacts, however, are government property and can be confiscated. All CUGA park rangers, especially law enforcement, should take a class offered in ARPA enforcement by the Department of Treasury's Federal Law Enforcement Training Center. This class will help park rangers understand the pertinent laws regarding historic preservation, how to identify illegal activities, and how to document damage to historic properties.

All park employees should be educated about the fragile nature of archaeological resources and the ways they can protect them. This should be the first step in a long-term program where CUGA undertakes an initiative to educate park visitors about the archaeological sites common within the park, how easily these resources are damaged, and the laws that protect archaeological sites from unauthorized excavation and collecting. The people who are in contact with the public are the park's first line of defense against illegal activities and historic preservation. If sites are properly recorded (state site numbers and location information), the park can keep its employees well informed and they can monitor the sites for vandalism, erosion, or any changes that may affect their integrity.

In addition, it is recommended that an archaeologist be hired as part of the park's staff. This person would aid not only it assisting the park to adequately document its cultural resources but can provide the needed person power to monitor the known resources in the park to ensure that they are adequately protected.

SECTION 8. THEMATIC FRAMEWORK

The NPS has, since 1937, maintained and revised a thematic framework that it used to evaluate prehistoric and historic cultural resources. The framework was most recently revised in 1994 to assist the NPS as well as other local, state, and federal agencies and private interests in the effort to 1) evaluate the significance of resources in listing in the National Register, 2) assess the theme's representation in the NPS, and 3) enhance the interpretative programs within NPS units (NPS n.d.). The thematic framework is meant to cut across prehistory and history by interconnecting people, place, and time. The framework is divided into eight categories that represent aspects of the human experience in the historic and prehistoric periods (Figure 20). The eight categories of the framework are 1) Peopling Places, 2) Creating Social Institutions and Movements, 3) Expressing Cultural Values, 4) Shaping the Political Landscape, 5) Developing the American Economy, 6) Expanding Science and Technology, 7) Transforming the Environment; and 8) Changing Role of the U.S. in the World Economy.

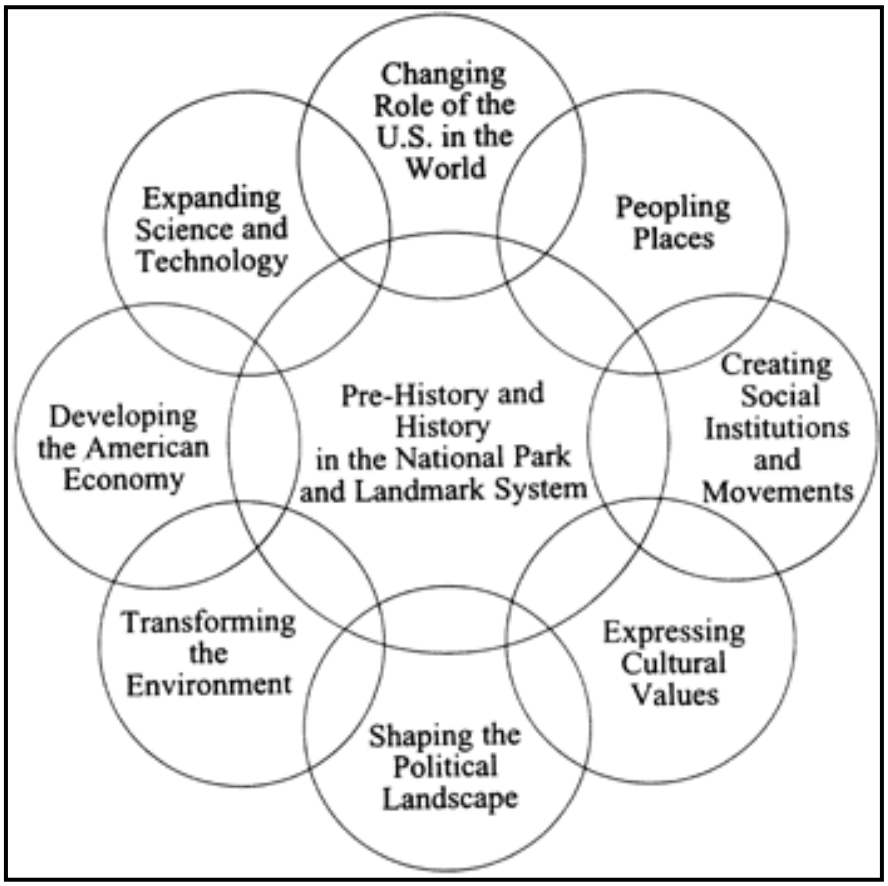

Figure 20. NPS thematic framework.

The Peopling Places theme is meant to examine how people migrated to their location, family formation, the development of communities, and interactions, encounters, and conflicts. Many of the historical cultural resources within CUGA may be significant under this theme because the Cumberland Gap was a crucial transportation conduit during the historic period. In addition, many of the recorded Civil War features in the National Register District are significant under this theme. The role the Cumberland Gap played in prehistoric migration and transportation has not been fully studied and deserves more research.

The Creating Social Institutions and Movements theme is meant to address the formation of formal and informal organizations or movements such as reform movements, religious institutions, and recreational activities. Currently there is no information about the representation of reform movements within CUGA. The formation of the park and its facilities around the Cumberland Gap and the preservation of the Civil War era properties best represent this theme.

The Expressing Cultural Values theme is meant to address people's beliefs and how they communicate these beliefs. This includes such topics as the arts, literature, architecture, landscape architecture, and popular or traditional culture. The cultural resources within CUGA are best represented by the historic farmsteads (e.g., the Henley Settlement), where the layout of the buildings represents the occupant's expression of their cultural heritage. The spatial arrangement of prehistoric sites (e.g., burial location) is also part of this theme.

The Shaping the Political Landscape theme is meant to address the governmental institutions that create public policy and the institutions that try to shape public policy. This includes sites relating to organizations, movements, campaigns, and political activities. The topics that define this theme are military institutions and activities, governmental institutions and movements, and political associations. Within CUGA the Civil War related sites are most closely related to this theme. The prehistoric political economy of the park is poorly understood and needs to be investigated further.

The Developing the American Economy theme is meant to address the ways that Americans have worked as well as how they have maintained themselves. The topics that define this theme include production, extraction, consumption, distribution, transportation, and trade. The role of the Cumberland Gap as a vital conduit for not only people but resources shows the role the park played in this theme. In addition, the historic farmsteads and logging camps throughout the park play a role in the interpretation of this theme. Again, the prehistoric economy within the park's boundary is poorly understood and needs to be examined further.

The Expanding Science and Technology theme is meant to address how people organize and use their knowledge of the world around them. The topics used to define this theme are experimentation, invention, technological applications, and scientific thought and theory.

The Transforming the Environment theme is meant to address how people interact with and change their environment. The topics used to define this theme include manipulating the environment, adverse conditions and stresses on the environment, and the protection

of the environment. The entire park itself is an example of this theme because one of its roles is to protect the natural and cultural environment. Regarding cultural resources, individual historic farmstead and prehistoric sites are microcosms of environmental manipulation and contribute to this theme.

The Changing Role of the United States in the World Community theme is meant to address issues of diplomacy, trade, expansion, and imperialism. The topics used to define this theme are international relations, commerce, expansion, and immigration. Again, the Cumberland Gap itself is important within this theme because of the important role the gap played in commerce and expansion. One avenue of research for this theme is the study of commodification on the historic farmsteads and the locations from where they acquired their durable goods (i.e., ceramics and glassware).

The recorded archaeological sites fit into many of the Thematic Framework themes and add to the overall significance of CUGA. The sites themselves each have significance within some of the eight thematic categories (Table 7). The most common themes among the sites are Peopling Places, Expressing Cultural Values, Shaping the Political Landscape, and Developing the American Economy.

Table 7. Placement of Known Archaeological Sites within Thematic Framework.

CUGA No.	State Site Number	Relevant Themes
	44LE145	Expressing Cultural Values, Developing the American Economy Expressing Cultural Values, Developing the American Economy
	44LE146	Expressing Cultural Values, Developing the American Economy
	44LE147	Expressing Cultural Values, Developing the American Economy
	44LE148	Expressing Cultural Values, Developing the American Economy
CUGA00001		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00002		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00003		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00004		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00005		Peopling America, Expressing Cultural Values, Developing the American Economy
CUGA00006		Peopling America, Expressing Cultural Values, Developing the American Economy
CUGA00007		Expressing Cultural Values, Developing the American Economy
CUGA00008		Expressing Cultural Values, Developing the American Economy
CUGA00009		Expressing Cultural Values, Developing the American Economy
CUGA00010		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00011		Developing the American Economy, Changing Role of the U.S. in the World Economy
CUGA00012		Developing the American Economy, Changing Role of the U.S. in the World Economy
CUGA00013		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00014		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape

CUGA No.	State Site Number	Relevant Themes
CUGA00015		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00016		Developing the American Economy, Expanding Science and Technology, Transforming the Environment, Changing Role of the U.S. in the World Economy
CUGA00017		Developing the American Economy, Expanding Science and Technology, Transforming the Environment, Changing Role of the U.S. in the World Economy
CUGA00018		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00019		
CUGA00020		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00021		Peopling America, Creating Social Institutions and Movements, Shaping the Political Landscape
CUGA00022	15HL001	Peopling America, Creating Social Institutions and Movements, and Expressing Cultural Values
CUGA00023		Creating Social Institutions and Movements, Developing the American Economy
CUGA00024		Developing the American Economy, Expanding Science and Technology, Transforming the Environment, Changing Role of the U.S. in the World Economy
CUGA00025		Expressing Cultural Values, Developing the American Economy
CUGA00026		Peopling America
CUGA00027		Peopling America
CUGA00028		Expressing Cultural Values, Developing the American Economy
CUGA00029		Developing the American Economy
CUGA00030		Developing the American Economy
CUGA00031		Developing the American Economy, Expanding Science and Technology, Transforming the Environment, Changing Role of the U.S. in the World Economy

CUGA No.	State Site Number	Relevant Themes
CUGA00032		Developing the American Economy, Expanding Science and Technology, Transforming the Environment, Changing Role of the U.S. in the World Economy
CUGA00033		Developing the American Economy, Expanding Science and Technology, Transforming the Environment, Changing Role of the U.S. in the World Economy
CUGA00034	40CE006	Expressing Cultural Values, Developing the American Economy
CUGA00035		Expressing Cultural Values, Developing the American Economy
CUGA00036		Expressing Cultural Values, Developing the American Economy
CUGA00037		Expressing Cultural Values, Developing the American Economy
CUGA00038		Expressing Cultural Values
CUGA00039		Developing the American Economy, Transforming the Environment
CUGA00043		Expressing Cultural Values, Developing the American Economy
CUGA00044		Creating Social Institutions and Movements, Expressing Cultural Values, Expanding Science and Technology
CUGA00045		Expressing Cultural Values, Developing the American Economy
CUGA00046		Expressing Cultural Values, Developing the American Economy
CUGA00047		Expressing Cultural Values, Developing the American Economy
CUGA00048		Expressing Cultural Values, Developing the American Economy
CUGA00049	15BL070	Expressing Cultural Values, Developing the American Economy
CUGA00050	44LE102	Expressing Cultural Values, Developing the American Economy
CUGA00051	40CE007	Expressing Cultural Values, Developing the American Economy
CUGA00052	44LE103	Expressing Cultural Values, Developing the American Economy
CUGA00053	44LE104	Expressing Cultural Values, Developing the American Economy

CUGA No.	State Site Number	Relevant Themes
CUGA00054	15BL172	Expressing Cultural Values, Developing the American Economy
CUGA00055	15BL173	Expressing Cultural Values, Developing the American Economy
CUGA00056	15BL174	Expressing Cultural Values, Developing the American Economy
CUGA00061		
	15BL	Expressing Cultural Values, Developing the American Economy
	44LE	Expressing Cultural Values, Developing the American Economy
	15HN	Peopling America, Expressing Cultural Values
	15HN	Peopling America, Expressing Cultural Values

SECTION 9. RECOMMENDATIONS FOR FUTURE ARCHAEOLOGICAL RESEARCH

There are several recommendations for future archaeological investigations and research within CUGA that relate to past research, federal regulations, and the results of this AOA. First is the level of effort and recording of investigations. As noted above, while the level of effort for the majority of the fieldwork mandated under Section 106 is generally adequate and meets the guideline standards for the states where the park is located, the reporting of these investigations does not meet these guidelines. As mentioned through this AOA, pursuant to 36 CFR § 800.14(b) CUGA should enter into a PA with the SHPOs of Kentucky, Tennessee, and Virginia as well as the tribal historic preservation officers of the Eastern Band Cherokee Indians, Cherokee Nation of Oklahoma, and United Keetoowah Band of Cherokee Indians in Oklahoma to 1) standardize field methods between the states; 2) develop standardized reporting for the results of the investigations; and 3) formulate a short report (e.g., a management summary) when no sites are identified during the investigations. This agreement should set a standardized shovel test interval of 20 m for those areas identified in the revised archaeological predictive model as having a medium to high potential for the occurrence of archaeological sites. In addition, those areas identified as having a low potential for the occurrence of archaeological sites should be surveyed at a 30 m interval. It is important that the PA include language to the effect that the park anticipates updating and revising the model based on results of subsequent surveys and that the survey methods will apply to all revisions of the model.

Until a PA is reached, however, each investigation, no matter how small, should follow the standards outlined by each state and include at a minimum: 1) a summary of the work with specific information about where the investigations took place, 2) the number and location of any excavated shovel test pits in the text as well as graphically displayed on a section of the appropriate 7.5 minute USGS topographic quadrangle, and 3) a detailed results section outlining what was found with clear recommendations relative to the criteria for inclusion in the National Register.

Pursuant to Section 110 of the NHPA, the NPS is required to establish a preservation program to protect and preserve historic properties within CUGA including the identification, evaluation, and nomination of historic properties to the National Register. The development of a stewardship program that incorporates the archaeological predictive model developed here is an ideal beginning for this program. A systematic program that involves surveying for archaeological sites within the park followed by evaluative testing that result in the nomination of properties eligible for inclusion in the National Register is the logical conclusion of the program and is compliant with the spirit of the NHPA.

As noted above, the majority of the recorded archaeological sites within CUGA are historic and relate to either the National Register district or the Hensley Settlement resulting in the under representation of other site types and temporal periods throughout the remainder of the park. Future research should first focus on recording sites in the

eastern and northern portions of the park. The testing of the archaeological predictive model developed here was the first archaeological survey in this portion of the park. While this survey for the model testing only recorded two archaeological sites in that portion of the park, it should be remembered that with this survey less than 0.5 percent of that portion of the park has been surveyed for archaeological sites. As approximately 45 percent of the park has been classified as having a medium or high potential for the occurrence of archaeological sites in the revised model, it is highly likely that many archaeological sites occur within the park and have not been recorded.

Future research should also focus on recording prehistoric archaeological sites throughout the park. As noted above, only 10 of the 87 known archaeological sites have a prehistoric component. The age of many of these sites is unknown and little can be said about prehistoric settlement patterning and subsistence from the current knowledge base. The unique geology of the Cumberland Gap as a gateway for migration between the Valley and Ridge and Cumberland Plateau physiographic provinces not only was important historically but likely was an important conduit prehistorically. Understanding how prehistoric peoples used the gap and the surrounding area should shed light on diachronic changes in migration, exchange, and technology.

It is important to note that the Kentucky State Plan (Pollock 1990) identifies the CUGA area in Kentucky as a location where there are few recorded archaeological sites and little is known about prehistoric cultural behavior in the area. The plan does indicate that most known archaeological sites are open air habitations without mounds and rockshelters, but there is little information about the behaviors at these sites because few excavations have been undertaken. The identification and evaluation of archaeological sites within CUGA would aid in the understanding of past cultural behavior that the Kentucky State Plan advocates. This AOA is not, however, advocating the wanton excavation of archaeological sites because this would not be part of a good stewardship program. The identification and evaluation process should accomplish the necessary data collection to answer questions regarding past human behavior.

The majority of the known archaeological sites in the park are historic; however, little is known about the historic occupation of the area outside of the military occupation. An effort should be made to better understand this period. The entire park warrants research along this line but there are two areas of the park that can shed light on the historic occupation of the park: the Historic District and the Hensley Settlement. The survey of a portion of the Historic District inventoried 11 previously unknown historic homesites (Haney 2004). Due to time constraints, these sites were not fully documented and little is known about them. These sites should be documented further and official state site forms should be completed. A complete survey of this portion of the park should be undertaken to inventory all archaeological sites. In addition, the historic occupation of the Hensley Settlement is very visible to the park visitor because of the standing structures but little is known about the presence of archaeological deposits in this area. This area appears to have been heavily disturbed by development during the mid-twentieth century, and it appears that the subsurface archaeological deposits are likely not intact. Without a proper archaeological survey, however, we do not know whether this is true.

The data regarding the location for the majority of the recorded archaeological sites within the park is very poor and inadequate for the preservation of these resources pursuant to the NHPA. A program to revisit all the previously recorded archaeological sites should be established. Once each site has been located, the boundary should be recorded with a GPS unit with sub-meter accuracy and supplied to CUGA staff in an ArcView or ArcGIS compliant format with appropriate metadata. In addition, each site that has not been clearly evaluated relative to the criteria for inclusion in the National Register should be investigated further through a program of systematic excavation of shovel test pits and 1 m x 1 m test units.

Finally, it is recommended that the park hire an archaeologist to aid in the identification, evaluation, and nomination of archaeological sites as well as overall stewardship of the cultural resources within the park. This person should have training in archaeological survey and excavation techniques, GIS, and knowledge of the region's prehistory and history. This person should also be given the task of implementing the preservation plan outlined by Hodges (2005) report on the Historic District.

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