NPS Form 10-900
(Oct. 1990)

OMB No. 10024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

RECEIVED
2 3 2000
NATIONAL REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "NA" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Big Bone Lick State Park (Boundary Expansion)

other names/site number Big Bone Lick Archaeological District

2. Location

street & number NA NA ☐ not for publication

city or town Union ☒ vicinity

state Kentucky code KY county Boone code 015 zip code 41091

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this ☒ nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ☒ meets ☐ does not meet the National Register criteria. I recommend that this property be considered significant ☒ nationally ☐ statewide ☐ locally. (☐ See continuation sheet for additional comments.)

David L. Morgan, SHPO and Executive Director 2-11-2000
Signature of certifying official/Title Date

State Historic Preservation Office/Kentucky Heritage Council
State of Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. (☐ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is:

☑ entered in the National Register.
☐ See continuation sheet.
☐ determined eligible for the National Register
☐ See continuation sheet.
☐ determined not eligible for the National Register.
☐ removed from the National Register.
☐ other, (explain:) _____

for Erika Martin Seibert — 8/2-2/02
Signature of the Keeper Date of Action

5. Classification

Ownership of Property
(Check as many boxes as apply)

____	private
____	public-local
X	public-State
____	public-Federal

Category of Property
(Check only one box)

____	building(s)
X	district
____	site
____	structure
____	object

Number of Resources within Property
(Do not include previously-listed resources in the count)

Contributing	Noncontributing	
	19	buildings
17	3	sites
	6	structures
		objects
17	28	Total

Name of related multiple property listing
(enter "N/A" if property is not part of a multiple property listing)
N/A

Number of contributing resources previously listed in the National Register
4

6. Function or Use

Historic Functions
(Enter categories from instructions)
DOMESTIC/Village Site
DOMESTIC/Camp
FUNERARY/Graves-burials/mound
AGRICULTURE/SUBSISTENCE/Storage
AGRICULTURE/SUBSISTENCE/Processing
EDUCATION/Research Facility
DOMESTIC/ Single Dwelling - homestead

Current Functions
(Enter categories from instructions)
RECREATION AND CULTURE/ Outdoor Recreation

7. Description

Architectural Classification
(Enter categories from instructions)
No Style

Materials
(Enter categories from instructions)
foundation Stone
walls Stone (Limestone); Earth
roof Earth
other N/A

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets)

Refer to continuation sheets

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

__X__ **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.

____ **B** Property is associated with the lives of persons significant in our past.

____ **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

__X__ **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Areas of Significance
(Enter categories from instructions)

ARCHAEOLOGY (Prehistoric, Historic - Non-Aboriginal), Science

Period of Significance
12,000 B.C. to A.D. 1950

Criteria Considerations
Mark "X" in all the boxes that apply.)

Property is:

____ **A** owned by a religious institution or used for religious purposes.

____ **B** removed from its original location.

____ **C** a birthplace or a grave.

____ **D** a cemetery.

____ **E** a reconstructed building, object, or structure.

____ **F** a commemorative property.

____ **G** less than 50 years of age or achieved significance within the past 50 years

Significant Dates
N/A

Significant Person
(Complete if Criterion B is marked above)
N/A

Cultural Affiliation
Fort Ancient
Woodland
Archaic

Architect/Builder
N/A

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

___ preliminary determination of individual listing (36 CFR 67) has been requested.
X previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
___ recorded by Historic American Buildings Survey # _____
___ recorded by Historic American Engineering Record # _____

Primary location of additional data:

__X__ State Historic Preservation Office
_____ Other state agency
_____ Federal agency
_____ Local government
_____ University
_____ Other

Name of repository:
Kentucky Heritage Council

10. Geographical Data

Acreage of Property 512

UTM References
(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing		Zone	Easting	Northing
1	16	696200	4306300	3	16	695870	4305520
2	16	696090	4305490	4	16	695810	4305360

X See continuation sheet 10.2.

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Michael Striker, Matthew E. Becher, Jeannine Kreinbrink

organization Boone County Historic Preservation Review Board date 28 August, 1997; July 5, 2002

street & number 2995 Washington Street telephone 859-334-2111

city or town Burlington state KY zip code 41005

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps
A **USGS map** (7.5 or 15 minute series) indicating the property's location.
A **sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs
Representative **black and white** photographs of the property.

Additional items
(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)
name Kentucky Department of Parks

street & number Capital Plaza, 10th Floor, 500 Mero St. telephone

city or town Frankfort state KY zip code 40601

Introduction

Big Bone Lick State Park (boundary expansion) covers approximately 512 acres along Big Bone Creek, a tributary to the Ohio River, in Boone County, Kentucky. The district contains twenty-four archaeological sites and lies along a major prehistoric and historic travel route following buffalo trails to the mineral springs at Big Bone Lick State Park, between the Bluegrass region and the Ohio River. Twenty one of the 24 sites discussed below are contributing (see Table 1). Three archaeological sites located within the district (Sites 15Be441, 15Be443 and 15Be446) are noncontributing. In addition, 4 of the 21 contributing sites fall within the previously listed NRHP Big Bone Lick State Park. Table 1 lists the documented archaeological sites within the Big Bone Lick State Park (boundary expansion) with information regarding site type, time/cultural period, integrity, and significance status.

The sites within the Big Bone Lick State Park (boundary expansion) are Miller (15Be1), 15Be18, 15Be265, 15Be266, 15Be267, 15Be268, 15Be269, 15Be270, 15Be271, Glacken (15Be272), 15Be273, Buffalo Rise (15Be440), 15Be441, Upson Downs (15Be442), 15Be443, 15Be444, Baker Cemetery (15Be445), Metcalf Flats (15Be446), Matchless Day (15Be447), Hot Letter (15Be448), 15Be449, 15Be450, 15Be451, and 15Be452. The archaeological district also contains one of the richest deposits of Pleistocene megafauna remains in the world. An area of 80 acres within the archaeological district is already listed on the National Register of Historic Places. This area includes sites 15Be18, 15Be268, 15Be269, and 15Be270. The sites within the Big Bone Lick State Park (boundary expansion) contain components from the Early Archaic, Late Archaic, Early Woodland, Middle Woodland, Late Woodland, Late Prehistoric, and historic periods. In addition, Tankersley (1982) reports the presence of Paleoindian materials in the form of surface finds and states that there is a good probability that stratified Paleoindian deposits might be in the vicinity of Big Bone Lick State Park. With cultural material ranging from the Paleoindian to the historic period, the Big Bone Lick State Park (boundary expansion) contains evidence of human use of the saline springs at the site over the past 12,000 years.

Environment

The Big Bone Lick State Park (boundary expansion) is centered upon Big Bone Lick, an area of saline and sulfur springs that form back-swamps during spring snow-melt, and which have long attracted wildlife for their high mineral content (Tankersley 1986). Big Bone Lick State Park is located approximately 3.2 km east of the Ohio River, 13 km downstream from Rising Sun, Indiana, and 32 km southwest of Cincinnati, Ohio. Elevations within the district vary from 137 to 20 m above mean sea level.

Located in the Outer Bluegrass physiographic region, Big Bone Lick State Park contains soils of the Wheeling-Huntington-Alluvial association in the floodplain areas, and the Eden-Cynthiana association on the adjacent hillslopes and upland (Weisenberger, et al. 1973). Underlying these soils are Upper Ordovician formations of limestone, shaley limestone, and shale (Stokes and Lowthert 1998). The mineral springs are created by water

flowing through the underlying Ordovician formations where the trapped salts are dissolved and carried, in solution, to the surface (Boisvert and Cordiviola 1982).

Big Bone Lick State Park is located on the floodplain of Big Bone Creek and the adjacent toe slopes and uplands. Big Bone Creek originates to the east of Big Bone Lick State Park and flows west, to the Ohio River. At Big Bone Lick State Park, Big Bone Creek is fed by Gum Branch, and by the mineral springs that form the lick.

Previous Investigations

Big Bone Lick first attracted scientific interest because of the abundance of Pleistocene and Holocene faunal remains that could be found there. The first recorded European visitor to the site, Captain Charles Lemoyne de Longuiel, remarked on the presence of the fossils in 1739 (Cooper 1831). The explorer Christopher Gist obtained teeth taken from the site in 1751 although he apparently never made it to the vicinity (Semonin 2000; Stokes and Lowthert 1998). The first intensive removal of bones for the purposes of science was in 1765 when Colonel George Croghan stopped at Big Bone Lick for the express purpose of removing bones (Semonin 2000; Yealey n.d.). His collection was lost during an attack on the Ohio River about a week later (Cooper 1831) but Croghan returned the following year accompanied by Captain Harry Gordon. Croghan sent half of the collection obtained during his second visit to Great Britain and half was sent to Benjamin Franklin for study (Jillson 1936).

In 1795, future president William Henry Harrison collected thirteen large wooden casks of bones at Big Bone Lick (Cooper 1831; Jillson 1935; Semonin 2000; Stokes and Lowthert 1998). Harrison's collection, like the first of Croghan's collections, was lost somewhere on the Ohio River. In the same year the French General Collaud collected a sample of bones, some of which were later examined by Thomas Jefferson (Jillson 1935). In 1804, Dr. William Goforth of Cincinnati led an excavation that removed approximately five tons of bones (Cooper 1831, Jillson 1935). The bones were displayed in England by Thomas Ashe, and after that their existence and whereabouts are not mentioned in historical documentation.

Thomas Jefferson had taken an interest in Big Bone Lick after hearing of the large collections of huge bones taken from the site, and began corresponding with General George Rogers Clark, then stationed in Kentucky, concerning the lick (Jillson 1936). These correspondences appear to have caused confusion about who went to Big Bone Lick to collect specimens for Jefferson. Although George Rogers Clark knew the area and had been to Big Bone Lick, it was his younger brother, William Clark, recently returned from his exploration of the northwest, who visited Big Bone Lick to collect fossils for the President in 1807 (Jillson 1936, 1936; Stokes and Lowthert 1998).

Well known naturalists of the time such as James Wright and John Bartram of Philadelphia paid for collections from the site. Both also sent collections from Big Bone Lick and other sites to collectors in England who frequently requested samples of fossilized bones.

Throughout the nineteenth century Big Bone Lick was known around the world as a premier paleontological site, prompting visits by Sir Charles Lyell, the father of modern geology, and later by Harvard geologist Nathaniel Southgate Shaler (Jillson 1936, 1936). Shaler excavated almost a ton of bones from the site, which are now curated at the Peabody Museum at Harvard. Many naturalists and other early scientists recognized the Big Bone Lick vicinity as a very important source of bones, especially those of the *American incognitum* (early term for the mammoth) (Semonin 2000).

During the twentieth century, the University of Nebraska conducted large scale excavations at the site. Ellis Crawford, of the Behringer Museum (now the Behringer-Crawford Museum) in Covington, Kentucky, assisted in the University's 1962 excavations (Schultz et al. 1967; Stokes and Lowthert 1998). Crawford collected Native American artifacts during the paleontological excavations. William Lowthert and Jo Stokes examined the collections at the Behringer-Crawford Museum in 1997, and Lowthert published the results of the analysis, which correlates prehistoric artifacts recovered in 1962 with the stratigraphy of the University of Nebraska excavations (Lowthert 1998; Stokes and Lowthert 1998). See the discussion of Site 15Be270 below.

Pleistocene mammal species recovered at Big Bone Lick State Park include *Megolonyx jeffersoni*, *Mylodon harlani* (giant ground sloth), *Equus complicatus* (horse), *Tapirus haysii*, *Odocoileus virginianus*, *Cervus canadensis*, *Cervales scotti* (giant moose-like deer), *Alces americanus*, *Rangifer caribou*, *Bootherium bombiferons* (musk ox), *Symbon cavifrons*, *Bison antiquus* (large bison), *Bison bison* (modern bison), *Mammut americanus* (mastadon), *Elaphas primigenius*, and *Elaphas columbi* (Jillson 1968). Only *Odocoileus virginianus*, the whitetail deer, occurs naturally in this area today, and only *Odocoileus virginianus*, *Cervus canadensis* (the wapiti or American Elk), *Rangifer caribou* (the woodland caribou), and *Bison bison* (modern bison) survive anywhere.

Uncontrolled archaeological collections were regularly conducted at Big Bone Lick State Park until 1960, when the area became a state park. Although artifacts have been collected throughout the years, the lack of detailed provenience for these collections means that they can provide little information to archaeologists. The first scientific archaeological survey at Big Bone Lick was published by Webb and Funkhouser in 1932. Two sites were reported to Webb and Funkhouser by J.D. Moore. Collectively called the Miller Site, Sites 15Be1 and 15Be4 are, respectively, a mound of unknown origin, and a small mound and cemetery. Since its original recordation, the location of site 15Be4 has been uncertain. It is possible that 15Be4 may have been reported later as either 15Be438 or 15Be445. Another survey was conducted in the 1930s (Haag 1938) resulting in the recordation of Site 15Be18. The site appears on a map at the Office of State Archaeology in Lexington and at the office of the Kentucky Heritage Council in Frankfort within the boundaries of the park. It is reported to be a multiple component site with a Fort Ancient component (Stokes and Lowthert 1998).

In 1975, Northern Kentucky University conducted a surface survey of several plowed fields at Big Bone Lick State Park (Hopgood 1975). A large, dual component site was reported as a result of this survey (Site 15Be101A and 15Be101B. The location of this site was improperly recorded at the Office of the State Archaeologist, and it was re-recorded in 1981 as Sites 15Be265 and 15Be266 (Stokes and Lowthert 1998). The site numbers 15Be101A and 15Be101B are no longer used. Another survey was conducted in 1976 by the Kentucky Heritage Council (Sanders et al. 1976). No collections were made during this survey and no new sites were identified.

In 1981, the University of Cincinnati conducted a survey of Big Bone Lick State Park, which involved surface survey of four plowed fields, auger tests, and the excavation of eight trenches along Big Bone Creek. Nine archaeological sites were recorded, including sites 15Be265, 15Be266, 15Be267, 15Be268, 15Be269, 15Be270, 15Be271, Glacken, and 15Be273. The survey also provided information on the stratigraphy and geomorphology of Big Bone Creek. In 1982 a University of Kentucky field school conducted controlled surface collection of sites 15Be271, Glacken, and 15Be273, and excavations at the Glacken Site focusing on the Late Archaic period.

In 1993, a prehistoric feature was reported as eroding out of the bank of Big Bone Creek at site 15Be269. Excavations were conducted by Don Miller and Ken Duerksen of 3D/International Environmental Group, Inc., and several volunteers. The feature dated to the Late Woodland/Late Fort Ancient and appears to be an earth oven (Miller and Duerksen 1995).

In 1996, B. Jo Stokes and William H. Lowthert IV conducted an archaeological survey of the entire 512 acres of Big Bone Lick State Park with the purpose of relocating the previously identified sites and locating any previously unknown sites within the park boundaries (Stokes and Lowthert 1998). The survey involved shovel testing of much of the park. Thirteen new sites were recorded, Buffalo Rise (15Be440), 15Be441, Upson Downs (15Be442), 15Be443, 15Be444, Baker Cemetery (15Be445), Metcalf Flats (15Be446), Matchless Day (15Be447), Hot Letter (15Be448), 15Be449, 15Be450, 15Be451, and 15Be452 (see site descriptions below). Stokes and Lowthert's survey is the most intensive survey conducted to date, however, field methods did not provide for the identification of deeply buried sites. In 1998, Lowthert synthesized much of these data in a Master's Thesis that focused on understanding resource use and settlement around the salt springs at Big Bone Lick State Park (Lowthert 1998).

Cultural Context

Human occupation of the Big Bone Lick State Park (boundary expansion) began during the Paleoindian period (10,000 to 8,000 B.C.). The Paleoindians were hunter-gatherers who appear to have focused on large game for their subsistence. Paleoindian artifacts have been recovered at sites 15Be269, 15Be270, 15Be271, Glacken, and 15Be273. Unprovenienced collections of Paleoindian materials have been made throughout the district. The

presence of deep deposits of mammalian fossils dating to the end of the Pleistocene hold the potential for Paleoindian artifacts to be found in association with these remains.

The Archaic Period (8,000 B.C. to 1,000 B.C.) coincides with the stabilization of the climate and the development of modern environmental conditions. During this period, the human inhabitants of North America adapted their tool assemblage and lifestyle to local conditions. Subsistence patterns evolved to include a seasonal cycle and tools include new projectile point styles and groundstone artifacts. The only definitively Early Archaic (8,000 B.C. to 6,000 B.C.) component known from the park was documented by the University of Nebraska paleontological excavations at Site 15Be270 (Lowthert 1998). While there are no other definitively Early Archaic or Middle Archaic (6,000 B.C. to 3,000 B.C.) components identified in the Big Bone Lick State Park (boundary expansion), generalized Archaic components, which probably date to these periods, are listed for sites 15Be265, 15Be269, 15Be271, and 15Be273. In addition, an Early Archaic Kirk corner-notched point was removed from the stream bank at 15Be269.

The Late Archaic (3,000 B.C. to 1,000 B.C.) reflects the continuing adaptation of populations to local environments and increased social complexity as indicated by increasingly complex mortuary practices. The Late Archaic at Big Bone Lick State Park is represented by a large component, including burials, and intact features at the Glacken site (15Be272) (Tankersley 1981). Late Archaic artifacts also have been recovered from sites 15Be265, 15Be269, 15Be271, and 15Be273 (Tankersley 1981).

The Woodland Period (1,000 B.C. to A.D. 1,000) begins with the widespread appearance of ceramics in the archaeological record, and the continued presence of complex mortuary practices. Early Woodland (1,000 B.C. to 200 B.C.) artifacts have been recovered through surface collection at three sites within Big Bone Lick State Park, including sites 15Be265, 15Be271, and Glacken (Lowthert 1998). Middle Woodland (200 B.C. to A.D. 500) artifacts have been recovered only from Site 15Be265 (Lowthert 1998). While extensive Early and Middle Woodland occupation has not yet been documented, deeply buried deposits hold the potential for Early and Middle Woodland sites. In addition, if Site 15Be1, is indeed cultural, it is most likely an Adena mound constructed during the Early Woodland (French et al. 2001).

The Late Woodland (A.D. 500 to A.D. 1000) period is characterized by the increased centralization of population in home villages and a more sedentary lifestyle. Cultigens became more important and may have been the impetus for settlement. The Late Woodland at Big Bone Lick State Park is represented at Sites 15Be265 and Glacken, as well as at 15Be269, where a Late Woodland earth oven was found to be eroding out of the bank of Big Bone Creek (Lowthert 1998; Lowthert and Stokes 1998; Miller and Duerksen 1995).

The Late Prehistoric period (A.D. 1000 to A.D. 1750) in the central Ohio Valley is known as the Fort Ancient culture. Populations began living in large villages with an increased reliance on corn and beans, and shell tempered ceramics appear in the archaeological record. Fort Ancient is represented at Big Bone Lick State Park

by sites 15Be18, 15Be265, 15Be266, 15Be267, 15Be268, 15Be269, 15Be271, Glacken, 15Be273, 15Be440, and 15Be442.

The historic period in the Central Ohio River Valley begins before the American Revolution. The first European visitor to Big Bone Lick is reported to have been Captain Charles Lemoyne de Longuiel, a French explorer who visited the site in the 1730s (Cooper 1831). Other early visitors included Christopher Gist, agent for the Ohio Land Company of Virginia, and Mary Ingles, reported to be the first white woman in Kentucky (Collins 1882; Connelley and Coulter 1922; Yealey n.d.).

In 1756, Mary Ingles was captured, along with her sister-in-law and two sons, by a band of Shawnee in Virginia. The capture of early settlers was not an uncommon occurrence in the Ohio Valley as the native inhabitants of the region attempted to retain control of their territory. Later that year, Mary Ingles and "an elderly Dutch woman" went to Big Bone Lick with a party of Shawnee. The two left the main party, ostensibly to gather grapes, and fled to Virginia (Collins 1882:53). After her escape, Mary Ingles published her story and became a folk hero. Mary Ingles' story is now as much a part of the lore of the Ohio Valley frontier as that of Daniel Boone. Her story has been told and retold, most prominently in James Alexander Thom's "Follow the River."

Prominent visitors to Big Bone Lick in the latter half of the eighteenth century include Captain Thomas Bullit, Samuel Adams, Jacob Drennon, William Bracken, Simon Kenton, Daniel Boone, and William Henry Harrison (Collins 1882:53). Although many visitors came to the site to collect bones or to make salt, others were passing through on their way to other business. Big Bone Lick lay along the course of several well known bison trails which ran between Drennon's Lick and the Licking River (Chinn 1975:374). The path was used by General George Rogers Clark in his army's marches to battle the Shawnee in southern Ohio.

President Thomas Jefferson sent William Clark to collect bones for his personal study in 1807 (Jillson 1935, 1936; Stokes and Lowthert 1998). During the nineteenth century, Big Bone Lick was known throughout the world as a premier paleontological site, prompting visits by Sir Charles Lyell, the father of modern geology, and later by Harvard geologist Nathaniel Southgate Shaler (Jillson 1935, 1936). Fossils from the site were also studied by Benjamin Franklin and George Cuvier. Collections from the site are housed at London, Paris, and Philadelphia, as well as Cambridge, Massachusetts; Lincoln, Nebraska; Cincinnati, Ohio; and Covington, Highland Heights, and Union, Kentucky.

In 1809, a man by the name of Colquohon purchased the property with the thought of selling the salt produced there (Yealey n.d.). Although Fort Ancient people may have manufactured salt at the lick, this was the first commercial venture. Due to the relatively low salinity of the springs, 500 to 600 gallons of water were required to produce a single bushel of salt, but Colquohon planned to reduce cost by investing in two large furnaces with mounted kettles. By 1812 the venture had failed. The location of the furnaces has yet to be determined,

although the University of Nebraska's excavations at Site 15Be269 encountered the remains of what was interpreted as an "early pioneer salt works" (see Site 15Be269 below).

Shortly after the failure of Colquohon's salt furnace, the Henry Clay Hotel and several bath houses were built across the road from the present day park (Yealey n.d.). From 1815 to 1847 Big Bone Lick was one of the west's premier health resorts (Conrad 1987). By the late nineteenth century the springs had dried up considerably, and although another hotel was built in 1870, its days as a health resort were over.

For the remainder of the nineteenth and the first half of the twentieth century, Big Bone Lick was home to farms and a number of nineteenth century homesteads remained occupied. In 1953, the Big Bone Lick Historical Association was formed to promote the formation of a park at the site (Fitzgerald n.d.). In 1958 the association purchased 16 acres, and in 1961 the Commonwealth of Kentucky took over responsibility for the park. Over the next 30 years, the Commonwealth of Kentucky increased the acreage in the park until it reached the current 512 acres. As part of the acquisition of land, 80 acres were nominated to and placed on the National Register of Historic Places in 1971. The historic period at Big Bone Lick State Park is represented by sites 15Be267, 15Be269, 15Be270, 15Be441, 15Be444, 15Be445, 15Be446, 15Be449, 15Be450, 15Be451, and 15Be452.

Site Descriptions

The Miller Site - 15Be1

The Miller site was first reported by J.D. Moore, although the first published reference to the site is by Webb and Funkhouser (1932). The Miller Site is an earthen mound, consisting of yellow orange clay above medium brown silt (French et al. 2001). Although its authenticity as a prehistoric mound remains unverified, shovel probes around the mound have yielded prehistoric artifacts of indeterminate age as well as historic artifacts. The site has not been impacted by historic earth moving activities or other development within the park.

15Be18

Site 15Be18 lies within the area already listed on the National Register of Historic Places. It is located east of Big Bone Creek at the point where the stream makes a bend to the south, just west of its intersection with Gum Branch. It is a multiple component site with a Fort Ancient component. This Fort Ancient component was later recorded as 15Be67, the O'Roarke Village Site. A 1996 survey in Big Bone Lick State Park identified Site 15Be440, also a Fort Ancient site, to the east of Site 15Be18 (Stokes and Lowthert 1998). Although it appears that Sites 15Be18 and 15Be440 overlap only slightly, the precise relationship between Site 15Be67 and Site 15Be440 remains unclear. For the purposes of this nomination, Site 15Be67 is considered to be part of Site 15Be18. With the exception of plowing, Site 15Be18 has not been impacted by historic development.

15Be265

First identified as Site 15Be101A, Site 15Be265 was re-recorded during surface survey by Tankersley (1981). It contains Archaic, Early Woodland, Middle Woodland, Late Woodland, and Fort Ancient components. No excavations have been conducted at the site and the presence of buried deposits is undetermined. It is located on the broad floodplain on the north side of Big Bone Creek, between sites 15Be266 and 15Be267. The integrity of Site 15Be265 remains high, having been impacted only by plowing.

15Be266

First identified as Site 15Be101B, Site 15Be266 was relocated by Tankersley in 1981. The site is located on the north bank of Big Bone Creek, and the current entrance to Big Bone Lick State Park runs through the site. The site is listed as a Fort Ancient site, however, no excavations have been conducted and the presence of buried deposits remains undetermined. In addition to plowing, the site has been impacted minimally by construction of access roads and a trail within the state park.

15Be267

Site 15Be267 lies on the north bank of Big Bone Creek approximately 1.2 km east of the park entrance. Like Sites 15Be265 and 15Be266, the site was identified by a surface deposit of Fort Ancient artifacts by Ken Tankersley (1981). No excavations have been conducted to assess the subsurface potential of the site. The site retains good integrity, as it has only been disturbed by plowing.

15Be268

Site 15Be268 is located within the boundaries of the area already listed on the National Register of Historic Places. The site is located on the north side of Big Bone Creek, on the bank opposite from Site 15Be269. A Fort Ancient site, Site 15Be268 was recorded by Tankersley in 1981. No excavations have been conducted and the possibility of buried deposits is unknown. However, the site's integrity remains high as it has only been disturbed by plowing.

15Be269

Located on the south bank on Big Bone Creek, east of Gum Branch and adjacent to the mineral lick, site 15Be269 was originally recorded in 1981 and is within the area already listed on the National Register of Historic Places. Tankersley (1981) reports the presence of bison remains in association with cordmarked ceramic sherds 3.08 and 3.38 m below the surface radiocarbon dated to A.D. 1420+/-105. Tankersley also reports that two fluted Paleoindian projectile points were recovered from the site.

In 1993, a feature was excavated at Site 15Be269. Lithic tools, cores, and debitage, limestone tempered and shell tempered ceramics, fire-cracked rock, and faunal remains, including bison teeth were recovered (Miller and Duerksen 1995). The lithic tools and ceramics of Late Woodland and Fort Ancient types were recovered from a large pit. The investigators concluded that the feature was "established and used by Late Woodland people, and that the locality was subsequently occupied by Fort Ancient people after an indeterminate period of soil formation" (Miller and Duerksen 1995:155).

Site 15Be269 was investigated by University of Nebraska paleontological excavations in 1966 (Schultz et al. 1967). Ironically, UN was disappointed by the paleontological data recovered by these excavations (University of Nebraska Collecting Locality KEN-3). However, they did report finding the remains of "an early pioneer salt works and associated historic objects...including a fairly well preserved hogshead (barrel) of the early 1880's" (Schultz et al. 1967). Some of the most significant historic archaeological deposits within Big Bone Lick State Park may be located within Site 15Be269, though it is possible that these deposits have been destroyed.

Lowthert (1998) estimates the size of UN's unit KEN-3 at approximately 24.2 x 97 m (80 by 320 ft), or 0.25 ha (0.6 acre). Site 15Be269 has also been affected by portions of the Big Bone Creek interpretive trail, although construction of the trail probably did not disturb the prehistoric deposits, which are buried up to 3 m (10 ft) below the ground surface. While the Nebraska excavations appear to have destroyed up to .25 ha of the site, this represents less than 15% of the total site area, which is estimated to encompass 1.7 ha (4.1 acres). Stokes and Lowthert conducted archaeological investigations at Site 15Be269 in 1998 (Lowthert 1998; Stokes and Lowthert 1998). These investigations included the excavation of a 1 x 1 m unit, numerous shovel tests, remote sensing via magnetometer, and profiling of a cultural feature eroding into a stream. The investigations determined that Site 15Be269 includes a possible Late Archaic house and a Late Woodland midden extending for approximately 300 meters square.

15Be270

Located at the junction of Big Bone Creek and Gum Branch, Site 15Be270 was identified by Ken Tankersley (1981). The remains of an elephant of the genus *Mammut* were identified at the site in 1981. The site is listed as containing Paleoindian and historic components and is part of the original Big Bone Lick State Park National Register District.

From 1962 to 1966, teams from the University of Nebraska excavated an 24.2 x 97 m (80 by 130 ft) area designed KEN-1 in the southern end of what was later designated Site 15Be270. Faunal materials were documented in three zones (A, B, and C) between 2.1 and 4.5 m (7 and 15 ft) below the ground surface in KEN-1 (Lowthert 1998; Schultz et al. 1967). Zone A (2.1 to 2.6 m - 7 to 8.5 ft) contained the remains of domesticated animals (dog, pig, cow, and horse), modern bison, and white-tail deer, along with "fragments of crockery and china, bricks, worked building stones, hand hewn wood, logs and branches of trees, seeds, and occasional reworked bones of extinct animals" (Schultz et al. 1967). Zone A was interpreted as dating to the

nineteenth century. Zone B extended from 2.6 to 3.3 m (8.5 to 11 ft) and included the remains of American Elk and modern bison and deer. Prehistoric artifacts dating to the Middle Woodland were recovered from Zone B and are curated at the Behringer-Crawford Museum in Covington, Kentucky (Lowthert 1998). Schultz et al. (1967) observed that "the bones of the modern bison are very abundant at this level and are associated with wood, roots, nuts, leaves, broken shells of large mullosks, and pieces of flint." The deepest stratigraphic layer documented in KEN-3 (Zone C), extended from 3.3 to 4.8 m (11 to over 16 ft) (Schultz et al. 1967). The remains of the following animals were recovered from Zone C: giant ground sloth, mastodon, large bison, musk ox, giant moose-like deer, caribou, and horse. Lowthert (1998) notes that artifacts recovered from the interface between Zones B and C in unit KEN-3 date to the Late Archaic while artifacts diagnostic of the Early Archaic were recovered from Zone C.

Site 15Be270 has been minimally impacted by plowing and by the University of Nebraska's excavations in the 1960s (Schultz et al. 1967). In fact, Lowthert's 1998 analysis of the University of Nebraska work indicates that from a research standpoint, Site 15Be270 remains among the most valuable sites within the Big Bone Lick State Park (boundary expansion).

15Be271

First identified in 1981 (Tankersley), Site 15Be271 is one of three sites located on a high terrace overlooking Big Bone Creek in the southwestern corner of Big Bone Lick State Park. Site 15Be271 was revisited by a University of Kentucky field school lead by Richard Boisvert (1982a, 1982b). Approximately 2800 m^2 of the site were subjected to controlled surface collection, and approximately 800 artifacts were collected (Boisvert 1981a:4). Three 1 x 2 m test pits excavated to a depth of 10 cm below the plowzone at Site 15Be271 suggest that deposits are confined to the plowzone. Paleoindian, Archaic, Woodland, and Fort Ancient components are known from the site, which has been impacted by plowing and limited archaeological investigations.

Glacken Site (15Be272)

The Glacken Site was originally reported by Tankersley (1981), and is the second of three sites located on the terrace above Big Bone Creek in the southwestern corner of the park. The site is known to contain Paleoindian, Archaic, Woodland, and Fort Ancient deposits. In 1981 a University of Kentucky field school led by Richard Boisvert conducted a controlled surface survey of approximately 2800 m^2 of the site, resulting in the collection of approximately 4000 artifacts, including Late Archaic and Woodland artifacts (Boisvert 1981:5,7). Following the surface survey, 52.75 m^2 of the site were excavated, revealing the presence of 12 features below the plowzone.

The features excavated during the 1981 work included an adult male burial, a child burial in an earth oven, and nine additional earth ovens. The features date to the Late Archaic period. Boisvert (1981:7) concludes that there are almost certainly additional, unexcavated features at the site, and that intact, Late Archaic deposits are

located along the bank of Big Bone Creek. Like Site 15Be271, Site 15Be272 has been impacted only by plowing and minimal archaeological excavations; an appreciable amount of intact deposits is believed to remain on site.

15Be273

First identified in 1981 (Tankersley), Site 15Be273 is located on a terrace in the loop of an abandoned oxbow of Big Bone Creek. The site was revisited by a University of Kentucky field school headed by Richard Boisvert (1982a, 1982b), during which surface collections were conducted. Archaic and Fort Ancient components are represented. The site has been impacted by plowing only.

Buffalo Rise Site (15Be440)

The Buffalo Rise Site was recorded in 1996 during the intensive survey of Big Bone Lick State Park by B. Jo Stokes and William H. Lowthert IV. Stokes and Lowthert report the site as being located on a small rise south of Big Bone Creek. It spans both sides of the Discovery Trail near its intersection with the Big Bone Creek trail (Stokes and Lowthert 1998). The southwestern edge of Site 15Be440 may overlap the eastern portion of Site 15Be18. Stokes and Lowthert recovered artifacts from a plowzone to a depth of 20 cm below surface, including lithics and incised, cordmarked, and smoothed, shell tempered ceramic fragments. The ceramics appear to date to the Late Woodland to Late Fort Ancient periods. A total of 64 lithic artifacts, including one undiagnostic biface, and 24 ceramic sherds were recovered. The investigators report the possible presence of buried deposits at the site (Stokes and Lowthert 1998).

A portion of the site area was excavated in 1962 as KEN-2 by the University of Nebraska's paleontological excavations (Schultz et al. 1967). That excavation opened up an area of approximately 0.05 ha (0.11 acre) in the northeastern corner of what was subsequently identified as Site 15Be440. The Nebraska excavation recovered the remains of a variety of megafauna from the so called "blue clay layer" between 3.8 and 5 m (12.5 and 16.6 ft) below surface, including giant ground sloth, bear, mastadon, bison, musk ox, giant moose-like deer, deer, and horse (Schultz et al. 1967). Although intrusive, the 0.05 ha (0.11 acre) dug by Nebraska represents less than 3 percent of the total site area and Site 15Be440 is believed to retain good integrity.

15Be441

Located by Stokes and Lowthert (1998), Site 15Be441 includes prehistoric and historic artifacts, as well as the remains of two structures. The site is located on three toe slopes south of Big Bone Creek. The structural remains are reported by local informants to be the remnants of a barn and a cistern or root cellar. Historic artifacts recovered include nails and ceramics dating from 1851-1950. Prehistoric artifacts include three flakes and an undiagnostic fragment of a biface. The western portion of the site has been impacted by the construction of the present museum/gift shop. The central part of the site has recently been impacted by the installation of an

elevated boardwalk/trail and interpretive diorama. The site also has been bisected by the Discovery Trail. Finally, planning has begun in preparation of constructing a new museum and theater in an area that coincides with the eastern end of Site 15Be441. The accumulated impact of these various modern disturbances has compromised the integrity of Site 15Be441 and it is considered a noncontributing resource within the Big Bone Lick State Park (boundary expansion).

Upson Downs Site (15Be442)

The Upson Downs Site (15Be442) is located on a terrace approximately 50 m south of Big Bone Lick State Park (Stokes and Lowthert 1998). Sixteen sherds of shell tempered ceramics, dated to the Fort Ancient period, one hafted biface, one groundstone artifact, 75 pieces of lithic debitage, and two historic artifacts were recovered during shovel testing of the site. In addition to the artifact collection, a buried Fort Ancient period midden encompassing an area of several hundred square meters and several Archaic period pit features, were documented on the site (Lowthert 1998).

The integrity of Site 15Be442 has been compromised slightly by the construction of tennis courts, a restroom facility, walking path, and playground. However, the survival of an extensive late prehistoric midden and numerous pit features indicates that the site retains tremendous research value; it is a contributing resource within the district.

15Be443

Located on a toe slope 30 m south of Big Bone Creek, Site 15Be443 is a small prehistoric lithic scatter (Stokes and Lowthert 1998). A total of four flakes was recovered from four shovel tests; none of the material was diagnostic. The site retains little research value and is considered a noncontributing resource within the Big Bone Lick State Park (boundary expansion).

Baker Site (15Be444)

Located at the southern edge of Big Bone Lick State Park, the Baker Site is a scatter of historic artifacts associated with several historic period features. Stokes and Lowthert (1998) recovered glass container fragments dating from 1880 to 1920 during a surface collection at the site. Excavations in 2000 recovered artifacts, analysis of which expanded the period of significance from 1820-1950.

The Baker Site is located just off a trail that leads southward from Big Bone Lick State Park Campground. The site is situated on a level area just off the ridge line. Although the site probably sat in the open at one time, it is now located in a maturing woods with low underbrush. The Behringer-Crawford Museum (BCM) Junior Curator Program (an archaeology field school) conducted test excavations at the site in the summer of 2000 (Kreinbrink 2001). They identified five visible above-ground or in-ground features, including:

- Feature 1: a large pile of undressed limestone slabs.
- Feature 2: a pile of bricks and brick fragments situated adjacent to the limestone pile.
- Feature 3: an in-ground dry laid limestone cistern.
- Feature 4: an above-ground dry laid limestone root cellar covered with earth.
- Feature 5: a wood frame shed.

Artifacts recovered during the BCM archaeological field school include ceramics, glass, and metal artifacts. Most fall within a date range of 1850-1920. The features listed above, except perhaps for the wood frame shed would easily fall within that time frame. The dry laid limestone root cellar has an intact corbeled arch ceiling and stone framed doorway. The root cellar is similar in construction type although much smaller than the root cellar at Site 15Be445. The construction date for these root cellars is unknown at this time. Kennedy and Macintire (1999) briefly describe them but do not assign a date range. An illustration of a stone framed root cellar in Kennedy and Macintire (1999:15) lists a date range of 1840-1860.

Big Bone Lick State Park consisted of privately-owned farm land during the nineteenth century and for much of the twentieth century, with the exception of the area immediately around the salt/mineral springs. The Baker Site is located away from that area and represents the major land use of the larger part of the park during the nineteenth century. As such it is an important site and tool for explaining and interpreting the past use-history of Big Bone Lick State Park and is a contributing resource within the district.

Baker Cemetery Site (15Be445)

The Baker Cemetery Site consists of the Baker Cemetery and a root cellar located approximately 40 m southeast of the cemetery (Stokes and Lowthert 1998). The site is located on a bluff approximately one km south of Big Bone Creek at the present entrance to the park campground. The cemetery contains 11 monuments bearing dates from 1870 to 1927. The site as a whole represents an historic homestead site associated with the Baker family, early residents of southern Boone County.

The root cellar is an excellent example of local vernacular architecture. The stone structure is constructed of dry laid limestone slabs and supports a corbelled arch roof. The structure includes two interior rooms separated by two stone wall buttresses. The large size and continued stability of this root cellar mark it as an exceptional survivor from the nineteenth century.

The root cellar is much larger than most of the root cellars known from historic sites in Boone County (J. Kreinbrink, personal communication May 31, 2001). Above ground, the exterior of the cellar measures 12.5 m north/south by 4.0 feet east/west. The doorway at grade is 2.2 m high and 0.96 m wide and the stairway to the interior is 4.4 m long. Other root cellars known from southern Boone County include one at Site 15BE444, listed above. At least three others are known that are located within 3 km miles of Big Bone Lick State Park (J.

Kreinbrink, personal communication May 31, 2001). All are of similar construction with a corbelled arch roof and stone lintels. However, all of the other root cellars are smaller than the one at the Baker Cemetery Site.

The limestone cellar features a vaulted and buttressed interior. The cellar's interior dimensions are 3.9 m north/south by 5.4 m east/west. The ceiling is approximately 3.6 m at its peak. The interior is separated into two rooms by opposing interior buttresses. The buttresses are 0.6 m wide at their bases and widen out as they curve into the ceiling. The interior is roofed by a corbeled arch ceiling of exquisite workmanship (originally dry-laid). It is accessed via an integrated stone stair that is roofed by massive limestone slabs.

The integrity of portions of the Baker Cemetery Site has been compromised to some degree by grading associated with a park road and campground. However, the miniature golf course constructed on the north part of the site (just east of the cemetery) is a surprisingly non-intrusive feature. The "holes" of the course are concrete slabs that are poured directly on the ground surface. No grading was apparently required to construct the course. As a result, over half of the site, including the cemetery and spectacular root cellar, retain integrity.

Metcalf Flats Site (15Be446)

Located on the floodplain and a small rise east of Big Bone Creek, Metcalf Flats is a light scatter of prehistoric lithic debitage and recent historic nails, glass, and ceramics. Eight lithic artifacts were recovered from the site. The eastern half of the site has been destroyed by the excavation of a pond, and a park access road bisects the site (Stokes and Lowthert 1998). Given the limited research potential of the site and the fact that nearly half of the site area has been disturbed, the site does not retain integrity and is considered a noncontributing resource within the Big Bone Lick State Park (boundary expansion).

Matchless Day Site (15Be447)

The Matchless Day Site is located on the floodplain north of and adjacent to Big Bone Creek (Stokes and Lowthert 1998). The site measures 60 by 90 m and shovel testing has revealed six prehistoric lithic artifacts recovered from depths up to 40 cm below the surface. Shovel testing did not extend beyond this depth due to the presence of the water table, and shovel tests revealed no subsoil (site form on file at the Office of State Archaeology). Although the distribution of artifacts appears to be very sparse, the depth of the deposits indicates that archaeological deposits may lie below the maximum depth of testing to date. The southern end of Site 15Be447 appears to overlap somewhat with Site 15Be268. Although the site has been plowed in the past, the presence of artifacts at a depth of 40 cm suggests that the site retains integrity.

Hot Letter Site (15Be448)

Located on the floodplain north of and adjacent to Big Bone Creek, east of the Matchless Day Site, the Hot Letter Site appears to be a deeply buried prehistoric lithic scatter (Stokes and Lowthert 1998). Five

undiagnostic fragments of lithic debitage were recovered at depths of greater than 40 cm below surface, indicating the likelihood of a deeply buried site at this location (site form on file at the Office of State Archeology). Although Hot Letter Site has been plowed in the past and currently hosts a playground in its eastern end, the presence of deeply buried artifacts indicates that the site retains good integrity.

15Be449

Site 15Be449 consists of a brick-lined cistern, nineteenth or twentieth century glass, and a single lithic flake identified on a toe slope approximately 120 m north of Big Bone Creek and 175 m west of the Baptist Church (Stokes and Lowthert 1998). The site lies in a wooded area and is virtually untouched by modern disturbances or development within the park.

15Be450

Located on a toe slope approximately 45 m west of Site 15Be449, Site 15Be450 consists of two limestone foundations, one measuring 7 by 10 m, the other measuring 7 by 5 m. The foundations are approximately 10 m apart and are associated with 27 fragments of glass, ceramic, and metal dating from the nineteenth and early twentieth centuries, and a single prehistoric lithic flake (Stokes and Lowthert 1998). The foundations indicate the presence of intact historic deposits that are associated with Site 15Be499. As with Site 15Be449, Site 15Be450 retains good integrity.

15Be451

Site 15Be451 consists of two limestone foundations, one measuring 7 by 10 m, the other measuring 6 by 10 m, that were located approximately 220 m north of Big Bone Creek and 35 m east of Site 15Be449 (Stokes and Lowthert 1998). The foundations are approximately 10 meters apart and are associated with 102 historic artifacts, including 52 nails, glass, and ceramics dating to the late nineteenth and early twentieth centuries. Two prehistoric lithic fragments were also found at the site. The foundations indicate the presence of intact historic deposits. Like nearby Sites 15Be449 and 15Be450, Site 15Be451 retains good integrity.

15Be452

Site 15Be452 is located on a terrace north of Big Bone Creek and east of Gum Branch at the junction of the two streams (Stokes and Lowthert 1998). Twenty-three historic artifacts and 83 prehistoric artifacts were recovered as the result of shovel testing at the site. Measuring 120 by 150 m, the site appears most dense on a small knoll adjacent to Big Bone Creek. The historic artifacts recovered included glass, ceramics, and nails, which date from the early nineteenth to early twentieth centuries. Prehistoric artifacts include two bifaces, 56 flakes, two shell tempered ceramic sherds, and one grit/grog tempered sherd. The ceramics appear to date to the Late

Woodland and Early Fort Ancient periods (Stokes and Lowthert 1998). The site is situated in a field immediately northeast of Site 15Be270 and has been impacted only by plowing.

Integrity of the Big Bone Lick State Park (boundary expansion) and Sites

The integrity of each site within the Big Bone Lick State Park (boundary expansion) is addressed above within the site's description. In general, the resources within the district enjoy a high level of integrity, despite the fact that they are situated within a state park that continues to develop and function as an active interpretive and recreation facility. Only two (15Be441 and 15Be446) sites within the district have been impacted by development to the point where integrity is compromised. The remaining 22 of 24 sites retain integrity, although only 21 are considered contributing elements of the district.

The most prevalent form of disturbance in the district is plowing. Although plowing has the potential to disturb shallow subsurface features, the deeply stratified nature of many of the sites in the district mitigates this agent of disturbance. Plowing is the only known source of disturbance at Sites 15Bel, 15Be18, 15Be265, 15Be267, 15Be268, 15Be273, 15Be443 (noncontributing), 15Be444, 15Be447, 15Be449, 15Be449, 15Be450, 15Be451, and 15Be452. Two other sites (15Be266 and 15Be448) have been disturbed by plowing and/or the construction of park-related facilities, although the construction activities were not extensive enough to compromise site integrity. Two other sites (15Be271 and 15Be272) have been disturbed by plowing and limited archaeological investigations. Both of these sites still retain integrity.

Despite experiencing a moderate level of disturbance, five other sites within the district still retain good integrity, including Sites 15Be269, 15Be270, 15Be440, 15Be442, and 15Be445. The primary agent of disturbance within the first three of these sites was the University of Nebraska's excavations in the 1960s. The latter two sites have been impacted by park-related construction, which includes small buildings, tennis courts, and even a miniature golf course. However, as discussed above, all five of these sites still retain a great deal of research value and integrity. Finally, two sites (15Be441 and 15Be446) have suffered loss of integrity due to development within the park.

Contributing and Noncontributing Resources

The Big Bone Lick State Park (boundary expansion) is located at Big Bone Lick State Park. Twenty one of the 24 archaeological sites located within the district are contributing resources, including the following sites: Miller, 15Be18, 15Be265, 15Be266, 15Be267, 15Be268, 15Be269, 15Be270, 15Be271, Glacken, 15Be273, Buffalo Rise, Upson Downs, 15Be444, Baker Cemetery, Matchless Day, Hot Letter, 15Be449, 15Be450, 15Be451, and 15Be452. Four of these sites (15Be18, 15Be268, 15Be269 and 15Be270) were listed in the 1970 Big Bone Lick National Register District. The root cellar at the Baker Cemetery Site and the root cellar at Site

15Be444 are considered contributing structures. Each site and structure was present during the period of significance, relates to the documented significance of the property, and has yielded or is capable of yielding important information about prehistory or history.

Noncontributing elements located within the boundaries of the district include archaeological Sites 15Be441, 15Be443, and 15Be446, and several structures. With the exception of the root cellar at the Baker Cemetery Site and the root cellar at Site 15Be444, all structures and developments within the boundaries of the district are modern. These include several shelters, two restrooms, three sheds, the museum/gift shop, the manager's residence, a wishing well, a swinging foot bridge over Big Bone Creek, tennis courts, basketball courts, and a campground that includes modern campsites, a grocery, sewage dump station, pumphouse, miniature golf course, and water tower. The small wood shed located at Site 15Be444 is also noncontributing. The total number of noncontributing resources within the district is 28, including 19 buildings, three sites, and six structures.

Sites 15Be441, 15Be443, and 15Be446 are noncontributing sites. Site 15Be441 is a prehistoric scatter with a later historic component. However, the site has suffered from modern development within Big Bone Lick State Park and lacks integrity. Site 15Be443 is a small lithic scatter that does not, at this time, appear capable of yielding important information about prehistory and therefore does not independently meet the National Register criteria. Site 15Be446 appears to have been disturbed by the construction of a pond and therefore does not possess integrity. The structures and other elements listed above are described as noncontributing elements because they do not independently meet National Register criteria. In all, 14 noncontributing resources are located within the boundaries of Big Bone Lick State Park (boundary expansion).

It should be noted that, excepting the three sites described above and the shed at 15Be444, the noncontributing resources in the Big Bone Lick State Park (boundary expansion) are all related to the district's current use as a state park. These components of the continuing, although changing, use of Big Bone Lick State Park have the potential to become contributing resources in the future.

Table 1. Big Bone Lick State Park (boundary expansion) sites and relevant information.

SITE #	SITE TYPE	TIME/CULTURAL PERIOD	FUNCTION/USE	INTEGRITY	RESOURCE EVALUATION
15Be1	Earth mound	Unknown prehistoric – Woodland?	FUNERARY/graves-burials/mound	Good	1 contributing site
15Be18	Village	Fort Ancient	DOMESTIC/Village	Good	1 contributing site
15Be265 /101A	Camp/village	Archaic/Early Woodland/Middle Woodland/Late Woodland/Ft Ancient	DOMESTIC/Camp	Good	1 contributing site
15Be266 /101B	Camp/village	Fort Ancient	DOMESTIC/Camp	Good	1 contributing site
15Be267	Camp/village	Fort Ancient	DOMESTIC/Camp	Good	1 contributing site
15Be268	Camp/village	Fort Ancient	DOMESTIC/Camp	Good	1 contributing site
15Be269	Open, historic salt works, faunal deposits	Paleo?/Late Woodland, Fort Ancient, 18th-19th century saltworks, Pleistocene animal bone deposits	DOMESTIC/Camp	1960s Pleistocene excavations, small area disturbed, rest Good	1 contributing site
15Be270	Open, historic unknown, Pleistocene	Paleo/Middle Woodland/19th century Euro-american/ Pleistocene animal bone deposits	DOMESTIC/Camp AGRICULTURE/Subsistence/Processing EDUCATION/Research facility	1960s Pleistocene excavations, small area disturbed, rest Good	1 contributing site
15Be271	Camp/village	Paleo/Archaic/Woodland/ Ft Ancient	DOMESTIC/Camp	Good	1 contributing site
15Be272	Camp/village and burials	Paleo/Archaic/Woodland/ Ft Ancient, and burials	DOMESTIC/Village	Good	1 contributing site
15Be273	Camp/village	Archaic/Fort Ancient	DOMESTIC/Camp	Good	1 contributing site
15Be440	Open, Pleistocene	Late Woodland/Fort Ancient/ Pleistocene animal bone deposits	DOMESTIC/Camp EDUCATION/Research facility	1960s Pleistocene excavations, small area disturbed, rest Good	1 contributing site
15Be441	Open, historic homestead	Unknown prehistoric/historic homestead site 1851-1950	N/A	Major modern disturbance	Noncontributing site
15Be442	Open	Fort Ancient	DOMESTIC/Camp	Some modern surface disturbance, rest Good	1 contributing site
15Be443	Open	Unknown prehistoric	N/A	Good	Noncontributing site
15Be444	Historic homestead	Historic homestead, c1820-1950	DOMESTIC/Single Dwelling-homestead	Good	1 contributing site 1 contributing structure

SITE #.	SITE TYPE	TIME/CULTURAL PERIOD	FUNCTION/USE	INTEGRITY	RESOURCE EVALUATION
15Be445	Historic homestead, cemetery	Historic homestead, cemetery	AGRICULTURE/Subsistence/Storage	Moderate modern disturbance, root cellar structure in good condition	1 contributing site 1 contributing structure
15Be446	Open, recent historic	Unknown prehistoric/recent historic period	N/A	Major modern disturbance	Noncontributing site
15Be447	Open	Unknown prehistoric	DOMESTIC/Camp	Good	1 contributing site
15Be448	Open	Unknown prehistoric	DOMESTIC/Camp	Good	1 contributing site
15Be449	Open, historic unknown	Unknown prehistoric, Historic unknown 19th-20th century	DOMESTIC/Single Dwelling-homestead	Good	1 contributing site
15Be450	Open, historic unknown	Unknown prehistoric, Historic unknown 19th-20th century	DOMESTIC/Single Dwelling-homestead	Good	1 contributing site
15Be451	Open, historic unknown	Unknown prehistoric, Historic unknown 19th-20th century	DOMESTIC/Single Dwelling-homestead	Good	1 contributing site
15Be452	Open, historic unknown	Late Woodland/Fort Ancient/ Historic unknown early 19th century.	DOMESTIC/Camp	Good	1 contributing site

Summary Paragraph

The Big Bone Lick State Park (boundary expansion) qualifies for listing in the National Register of Historic Places under Criteria A and D. Under Criterion D, the Big Bone Lick State Park (boundary expansion) has the capacity to provide significant information pertaining to both the prehistoric and historic past of northern Kentucky and the region. The most important aspect of the Big Bone Lick State Park (boundary expansion), which is the most important for future research, is the presence of archaeological deposits from every era of the human occupation of North America. Specific issues presented in Kentucky's historic preservation plan (Pollack 1990) that can be addressed through investigations at Big Bone Lick include the need for in depth geomorphologic studies, the development of regional chronologies, and intrasite settlement patterns. The continuous use of the site, focused on the use of the unusual localized environment that exists as a result of the presence of the mineral springs, presents a unique opportunity to researchers. Although "licks" such as Big Bone Lick are found in various places in the inner and outer Bluegrass regions of Kentucky, evidence for continuous use of a lick over 12,000 years is present only at the Big Bone Lick State Park (boundary expansion). Archaeologically, the period of significance spans the past 12,000 years.

The archaeological significance of the Big Bone Lick State Park (boundary expansion) is due to the fact that the sites located in the district have contributed, and continue to contribute, to our understanding of the archaeological record of the Ohio Valley. Archaeological components from every stage of human history in the area are represented at Big Bone Lick. Five sites contain Paleoindian components, six contain Archaic components, five contain Woodland components, 11 contain Fort Ancient components, and 11 contain historic components. Other undefined archaeological components exist, as well as the possibility of deeply buried components. Local/regional prehistoric cultural contexts are briefly discussed below in relation to how the sites within the Big Bone Lick State Park (boundary expansion) fit within each context. The historic period archaeological context is discussed with regard to the historical contexts associated with Criterion A.

The Big Bone Lick State Park (boundary expansion) is eligible for the National Register under Criterion A, for its association with broad patterns of history. The general area category of significance is science: Big Bone Lick played a very tangible role in the development of the science of vertebrate paleontology during the late eighteenth and early nineteenth centuries. James Douglass, a surveyor, stopped at Big Bone in 1773 to see the source of the large bones "of which fame had said so much, the learned risked so many conjectures, and everybody knew so little" (Humphrey 1812). As described in Section 7 and reviewed below in the Paleontology/Science Context statement, Big Bone became a focus of study by naturalists and emerging geologists in both America and Europe.

Fossils from Big Bone Lick influenced the thoughts of important scientific minds of the period such as Thomas Jefferson, Benjamin Franklin, George Cuvier, Charles Lyell, and Nathaniel Southgate Shaler. The influence of Georges Cuvier and Charles Lyell, in particular, on the science of paleontology cannot be overstated. Collections from the site are housed at facilities in London, Paris, and Philadelphia, as well as Cambridge, Massachusetts;

Lincoln, Nebraska; Cincinnati, Ohio; and Covington, Highland Heights, and Big Bone Lick State Park, Kentucky. These collections continue to influence paleontologists.

Contexts important to the significance of the Big Bone Archaeological District are included below. Archaeologically, the District includes cultural material from all the prehistoric time periods from Paleo-Indian through Fort Ancient. The Kentucky Heritage Council has established a state preservation plan that divides the state into seven management areas to facilitate the interpretation of archaeological sites across Kentucky's diverse landscape. Specific research objectives have been developed to explore questions relative to specific time periods and management areas. Each prehistoric cultural period is briefly summarized.

Historically the Big Bone Lick State Park (boundary expansion) provides important information regarding historic contexts such as Science/Paleontology. Each context is summarized below, also referencing the Kentucky Heritage Council Preservation Plan (Pollack 1990). Sites located within the Big Bone Lick State Park (boundary expansion), and mentioned in the text, are listed in Table 1, included at the end of Section 7.

Context Statement: Paleoindian Period (12,000 – 8,000 B.C.)

Paleoindian peoples entered the eastern United States after the retreat of the Wisconsin glacial retreat, during a time of rapid environmental shifting (Seeman et al. 1994; Tankersley 1990, 1994). The initial, recognized Paleo tradition was the Clovis period, typified by characteristic projectile points and tool kits. Artifact types within the tool kit remained consistent from the western United States into eastern sites (Frison 1991; MacDonald 1968). During the late Paleoindian period, after approximately 8,500-8,000 years B.C., regional archaeological complexity increased (Ellis and Deller 1988). Regionally specific projectile point styles such as Quad, Dalton, and Hardaway-Dalton replaced the Clovis type (Justice 1987).

Very early Paleoindian artifacts recovered in association with extinct fauna have been reported at Site 15Be269, and the potential for comparable finds exists at Site 15Be270, Site 15Be271, and Glacken. Many unprovenienced surface finds of Paleoindian materials have been reported within the district, and the depth of the deposits indicates that there is "a strong potential" that intact, stratified Paleoindian deposits may exist (Tankersly 1982). Questions about the antiquity of human occupation of North America, and the resource base of these first Americans may be answered through future research at Big Bone Lick.

Big Bone Lick State Park (boundary expansion) falls within the Northern Bluegrass Section of the Bluegrass Management Area, and contains more than half of the Paleoindian sites reported for that management area (Pollack 1990). The possibility of *in situ* Paleoindian deposits at Big Bone Lick, particularly in association with Pleistocene megafaunal remains, provides a unique opportunity to address research questions essential to our understanding of Paleo-Indian culture. The Paleoindian period archaeological deposits at Big Bone Lick State Park have the potential to answer questions regarding which Late Pleistocene megafaunal species were contemporary with Paleoindian

cultures in Kentucky. This may aid in determining the time of extirpation or extinction for Late Pleistocene large herbivores, especially mammoth, mastodon, bison, and horse.

Although the development of a paleo-ecological database and paleo-environmental reconstruction is dependent upon the presence of sealed, stratified Paleoindian deposits, questions about the Paleoindian tool kit can be addressed by all Paleoindian deposits at Big Bone Lick. The Big Bone Lick State Park (boundary expansion) is uniquely able to provide information relative to the simultaneous existence of Late Pleistocene megafauna and human populations in Kentucky.

The Kentucky Heritage Council has established a state preservation plan which divides the state into seven management areas to facilitate the interpretation of archaeological site across Kentucky's diverse landscape. Specific research objectives have been developed to explore questions relative to specific time periods and management areas. The possibility of *in situ* Paleoindian deposits at Big Bone Lick, particularly in association with Pleistocene megafaunal remains, provides a unique opportunity to address research questions essential to our understanding of Paleoindian culture. The following research objectives outlined for the Paleoindian period can be addressed by research at Big Bone Lick archaeological district:

- Determine the nature of Paleoindian activities at Big Bone Lick. Were they exploiting the salt and mineral springs or the animal resources or both? Can evidence of either activity be located archaeologically?
- Determine the activities associated with the implements of the Paleoindian tool kit. Look for any specialized technologies that might be associated with unique cultural adaptations to certain paleoenvironments.
- Obtain, where possible, a comprehensive paleoecological database for Big Bone Lick, including pollen sequences, as well as macro and micro vertebrate and invertebrate fossil assemblages.
- Establish a diachronic paleoenvironmental reconstruction, model, or biogeography of the predominant plant communities during the Paleoindian period at Big Bone Lick, and evaluate the carrying capacity of this area.
- Determine if there was a continuity, a gradual transition, or an abrupt change between the Paleoindian and Archaic subsistence systems or economies. If there was an abrupt change, then determine the selective pressures (e.g., extinction of megafauna) that caused that change.
- Determine which Late Pleistocene megafaunal species were contemporary with Paleoindian cultures at Big Bone Lick. Determine the time of extirpation or extinction for Late Pleistocene large herbivores, especially mammoth, mastodon, bison, and horse. In other words, obtain a large suite of absolute dates for the proposed late representatives of these species.

Context Statement: Archaic Period (8,000 – 1,000 B.C.)

The Archaic period continued the development of region specific adaptations to local environments begun in the late Paleoindian period. Site investigations indicated that Archaic people made use of seasonal camps, often using a base camp with outlying activity/procurement camps, and extractive sites for periodic use throughout the year

(Chapman and Otto 1976; Dragoo 1976; Jefferies 1990). Like their Paleoindian predecessors, the Archaic people who visited the lick did so primarily to exploit the fauna attracted to the springs, but also to take advantage of the range of plants that grew there (Boisvert 1982; Lowthert 1998).

Throughout the Archaic period, the types and quantities of processing tools of all types increased in variety and form. Wood and plant processing tools including groundstone items were plentiful by the Middle Archaic period (generally placed after 6,000 B.C.). Most artifact data from this time period, however, this is based on typological data rather than intact, datable sites (Dragoo 1976).

The Late Archaic period represented a time frame of increasing local complexity and specialization among the various regional groups (Dragoo 1976; Vickery 1980; Winters 1969). By 2,000 B.C., many aspects of what is called the Woodland period were already becoming apparent (Griffin 1978; Winters 1969). Evidence included expanded trade networks, evidence of status differentiation, and possible horticultural activities (Cowan et al. 1981; Driskell 1979; Griffin 1978).

Investigations into the Archaic deposits at the Glacken Site (15Be272), located in Big Bone Lick State Park, by the University of Kentucky in 1981 (Boisvert 1982b) included the excavation of 12 features, including an adult male burial, a child burial in an earth oven, and nine earth ovens.

The UK investigators concluded that there are almost certainly additional, unexcavated features at the site, and that intact, Late Archaic deposits are located along the bank of Big Bone Creek. Uninvestigated Archaic deposits exist on four other sites within the district (Table 1). Evidence related to the subsistence patterns of Archaic populations that may be contained in these sites could provide information relevant to long-term climatic changes and their effects on human populations, as well as the resource base and settlement patterns of Archaic populations in the Ohio Valley.

Intact deposits, especially those containing features, are important for identifying environmental conditions in archaeology. The presence of intact Archaic features at Big Bone Lick has been established. An additional aid in the interpretation of environmental information is the proximity of these sites to the mineral licks known to have attracted a wide variety of wildlife. The presence of features will aid in the recognition of activity areas within the Archaic deposits at Big Bone Lick. The identification of activity areas will aid in the interpretation of material culture and the activities with which particular tool-types are associated.

The fact that intact Archaic deposits exist at Big Bone Lick has been established by Boisvert's work at the Glacken Site and Stokes and Lowthert's investigations at Site 15Be269 (Boisvert 1982; Lowthert 1998; Stokes and Lowthert 1998). The presence of burials at the Glacken Site allows for research into mortuary behavior, physical anthropology, biological anthropology, exchange, and social organization. The intact features present at Glacken may be able to provide information on paleoecology, subsistence, and intrasite activity patterns. In addition to the

Glacken Site, there are four more sites within the Big Bone Lick State Park (boundary expansion) which date to the Archaic period, including Site 15Be269, which is believed to retain evidence of a house feature (Lowthert 1998).

Evidence related to the subsistence patterns of Archaic populations which may be contained in these sites could provide information relevant to long-term climatic changes and their effects on human populations, as well as the resource base and settlement patterns of Archaic populations in the Ohio Valley.

The state plan developed for Kentucky recognizes that a refined chronology is necessary for the Archaic Period. The presence of Archaic deposits on at least five sites, particularly with adjacent Paleoindian deposits, may allow archaeologists to address the following research objectives focusing on culture history:

- The Archaic period archaeological deposits at Big Bone Lick State Park (boundary expansion) include intact features, activity areas, and habitation sites. Were these inhabitants of the Big Bone Valley utilizing all the available resources including salt, or were they focusing on the plant and animal resources. How did the utilization and exploitation of resources change through time?
- Develop and/or define regional cultural-chronological sequences for the Big Bone Lick area that can be used to study intra- and inter-regional trends.
- Identify archaeological assemblages for each Archaic cultural unit.
- Identify aspects of material culture that are temporally diagnostic.
- Document regional variation in the shift from Paleoindian to Early Archaic adaptive strategies.
- Determine if there is a correlation in changes in Archaic adaptive strategies and environmental change.

Intact deposits, especially those that contain features, are important for identifying environmental conditions in archaeology. The presence of intact Archaic features at Big Bone Lick has been established. An additional aid in the interpretation of environmental information is the proximity of these sites to the mineral licks that are known to have attracted a wide variety of wildlife. These factors will aid in addressing the following research objectives:

- Identify regional environmental characteristics during the Early, Middle, and Late Archaic.
- Determine the paleoenvironmental setting for each Archaic cultural unit.
- Determine if certain site types are associated with specific conditions.

The presence of features will aid in the recognition of activity areas within the Archaic deposits at Big Bone Lick. The identification of activity areas will aid in the interpretation of material culture and the activities with which particular tool-types are associated. Research objectives that may be addressed with such information include:

- Reconstruct the technology of Archaic flaked stone tool production.
- Identify the kinds of raw materials used for tool production during the Early, Middle, and Late Archaic.

- Investigate the relationship between raw material and tool function/type.
- Investigate the technology of Archaic bone tool production.
- Assess the relationships between tool morphology and function using macro- and microscopic techniques.
- Investigate the relationship to changes in the environment and technological change.
- Define and/or refine Early, Middle, and Late Archaic projectile point typologies.
- Identify diagnostic tools (other than projectile points) for each cultural unit.
- Document differences in Early, Middle, and Late Archaic resource procurement strategies.

Plant and animal remains recovered, particularly from features, can help to answer additional questions about subsistence. The number and variety of fauna attracted to Big Bone Lick is represented in the archaeological record and may help to pursue such research objectives as:

- Identify the techniques used to procure and process subsistence resources.
- Document the social and technological process that eventually led some Archaic groups to experiment with plant cultivation or manipulation.
- Investigate the relative importance of native and tropical cultigens to Late Archaic groups.
- Document changes in the way plant foods were stored during the Archaic period.

Part of the state plan concerning research into the Archaic Period involves intersite studies to better help archaeologists understand settlement patterning and exchange. To this end, studies at Big Bone Lick Archaeological District can help to:

- Document changes in the level of group mobility/sedentism during the Archaic period.
- Document the functional site types that comprised Early, Middle, and Late Archaic settlement systems.
- Investigate the relationships between site type, group mobility, and environmental diversity.
- Investigate intra-site artifact and feature distributions as a means of determining the size and organization of Archaic sites.
- Investigate ways of documenting and measuring the extent of interaction and exchange among Archaic cultural units.
- Document the kinds and extent of interregional exchange and interaction between Archaic groups in Kentucky and those in other parts of the East and Midwest.

Burial populations are important in helping archaeologists to understand how prehistoric people lived. The excavations of burials provide information of status of the deceased, and the deceased's role in society. Different types of burials, and the grave goods included in them, help archaeologists to interpret social organization. Human remains themselves can contribute to our understanding of past populations through the study of disease, diet, and trauma. Archaic period burials have already been recovered from archaeological sites within the Big Bone Lick

State Park (boundary expansion), and Boisvert (1982) states that additional burials are likely to be present. Information gained from the study of burials can help to:

- Determine the biological characteristics of each Archaic cultural units.
- Document the incidence of disease and trauma in Archaic burial populations.
- Assess the overall health status of Archaic burial populations.
- Document mortality rates for Archaic burial populations.
- Assess the dental health of Archaic burial populations.
- Document dietary changes using trace element, chemical, and other state-of-the-art analytical procedures.
- Investigate the relationships between changes in settlement/subsistence practices and changes in group health.
- Investigate the relationships between changes in social organization and the kinds of diseases represented in Archaic skeletal series.
- Document genetic ties among different Archaic groups using metric and nonmetric skeletal characteristics.
- Investigate the range of status variation in Archaic groups as reflected by mortuary practices.
- Reconstruct the social organization of Archaic cultural systems.
- Document changes in group organization from Early through Late Archaic.
- Investigate the distribution of features and artifacts at Archaic sites to determine the size and composition of the resident social unit.
- Document the differential distribution of nonlocal raw materials and artifacts among burials in Archaic mortuary areas.
- Identify other forms of mortuary behavior that reflect the differential treatment of individuals.
- Document the sex and age characteristics of Early, Middle, and Late Archaic social units.

Boisvert's work at the Glacken site proves that intact Archaic deposits are present at Big Bone Lick. The presence of burials at the site allows for research into mortuary behavior, physical anthropology, biological anthropology, exchange, and social organization. The intact features present at the site may be able to provide information of paleoecology, subsistence, and intrasite activity patterns. In addition to the Glacken Site, there are four more sites within the Big Bone Lick State Park (boundary expansion) that date to the Archaic period.

Context Statement: Woodland Period (1000 B.C – A.D. 1000)

The Woodland period was marked by significant shifts in subsistence strategy, technological changes, and changing settlement patterns (Railey 1990). Divided traditionally into the Early Woodland, Middle Woodland, and Late Woodland periods, those periods have been assigned the time frames: 1000 – 200 B.C., 200 B.C. – A.D. 500, and A.D. 500 - 1000 respectively. Some cultures have been identified as Middle Woodland (e.g., Hopewell) while evidence exists that cultures identified as Early Woodland (e.g., Adena) continued in other parts of the Ohio Valley especially in Kentucky (Railey 1990:254). The Early Woodland period represented a shift in subsistence and settlement strategies by the Native American occupants of the Ohio Valley.

Increased evidence of burial practices is evident during this period. Numerous burial mounds and other earthworks have been documented for northern Kentucky, especially in Boone County (Railey 1990). Site 15Bel is an earth mound located in Big Bone Lick State Park (Table 1). Some burial mounds included significant evidence of social status differentiation. The presence of copper and shell ornaments in burial contexts provided evidence for extensive trade networks among the eastern woodlands and southeast. Referred to as the Adena culture in the Ohio Valley, researchers have found evidence for their settlements on river and stream terraces, with possible upland resource extraction during the winter (Farnsworth and Emerson 1986). Railey (1990) notes that documented Adena sites in Kentucky are not known before 500 B.C. and are restricted primarily to burial mounds.

Occupation sites are rare and Railey (1990) includes little discussion of Early Woodland settlement patterns. Sites 15BE265, 15BE271, and the Glacken site at Big Bone produced Early Woodland projectile points from surface contexts (Lowthert 1998). One Early Woodland non-mortuary site located in Boone County has been professionally excavated (Bergman et al. 1998). Excavations at Site 15Be391 between 1992 and 1993 produced evidence of "a residential occupation composed of small numbers of individuals" (Bergman 1998:30). Sites such as Site 15Be391 imply a dispersed settlement system that predates the later more well known mortuary centers. The radiocarbon date ranges for the site fall within the range of 770 to 390 B.C. Later use of mortuary mounds may have served to focus, or pull together, dispersed household units.

The three archaeological sites with Early Woodland components located within Big Bone Lick State Park also may represent household occupations. Further investigation of sites such as these may provide significant information about a little known time period.

The Middle Woodland period is defined by the Hopewell complex, which was centered near Chillicothe, Ohio on the Scioto River. Another focus of development was in Illinois (Griffin 1978). The Turner Earthworks, and several large earthwork complexes near Milford, Ohio, are all situated in southwest Ohio, within 64 km of the Big Bone Valley. The Hopewellian period was characterized by elaborate geometric earthworks, burial mounds, an extensive trade network producing exotic goods, flint bladelets of a particular type, distinctive pottery and other artifacts, and a complex mortuary system. Much of the early research centered on the elaborate earthworks and burial mounds, producing extensive information about the mortuary practices, but little about subsistence or settlement. Recent research has found evidence of smaller habitations in the Ohio Valley (Genheimer 1994; Kozarek 1987). Subsistence strategies for the Middle Woodland period are still being researched and little substantive interpretation has been agreed upon (Pacheco 1996; Railey 1990).

Two sites at Big Bone Lick State Park, 15Be265 and 15Be270, produced evidence of Middle Woodland occupation such as bladelets. Railey (1990: 254) notes that because earlier researchers such as Webb classified all unexcavated mounds in Kentucky as Adena, the study of Hopewell in Kentucky has lagged behind other regions. Research into late Middle Woodland and transitional sites in northern Kentucky finds some evidence of participation by the local inhabitants in the larger Hopewellian picture. For example, the Rogers Mound (15Be35) has been considered somewhat of an anomaly among ostensibly Late Woodland mounds because of the presence of stone slabbed graves

with slabs placed upright around the graves (Kellar 1960; Pollack 1983). Large numbers of these types of graves are present at the Turner Earthworks in various contexts. The Rogers Mound also produced bladelets, mica, and a platform pipe, among other Hopewellian style artifacts (Kreinbrink 1992).

Mound building as a mortuary custom continued into the Late Woodland period in northern Kentucky (Kreinbrink 1992; Seeman 1981). Regional settlement patterns are better understood for this time period. Seasonal, and in some cases year-round, occupation of village sites located on terraces overlooking major stream valleys is seen in the Newtown phase. The Newtown phase was a Late Woodland cultural period defined for southwest Ohio and northern Kentucky (Railey 1990; Seeman 1981). Characteristic pottery rims and pottery shoulder traits, Chesser points, groundstone celts, and other tool types are found at Newtown sites in Boone County (Kreinbrink 1992). Late Woodland period ceramics and artifacts have been recovered from four sites at Big Bone Lick State Park, including Sites 15Be265, 15Be269, Buffalo Rise, and 15Be452.

Subsistence strategies included a growing reliance on domesticated plants including squash and seed plants along with maize by the end of the Late Woodland period (Seeman 1981; Wymer 1992). Wymer (1992) found an intensification and diversity in Late Woodland deposits from a number of Ohio Valley sites for this time period. Toward the end of the Late Woodland, however, she noted a decrease in plant diversity as maize increased in importance (Wymer 1992:67).

Known Woodland occupations within the Big Bone Lick State Park (boundary expansion) are located on four sites, although only Site 15Be269 has been subjected to investigations more intense than surface collection. In 1993, a feature at Site 15Be269 was reported to be eroding out of the bank of Big Bone Creek. The feature was excavated, yielding lithic tools, cores, and debitage, limestone tempered and shell tempered ceramics, fire-cracked rock, and faunal remains, including bison teeth (Miller and Duerksen 1995). The lithic tools and ceramics were determined to be of Late Woodland and Fort Ancient types.

The state plan for Kentucky is concerned with refining the chronology of the Woodland period and the phases assigned to that period. Chronologies are established based on dating and assigning certain artifact classes or styles to certain phases. As such, the analysis of material culture and the refinement of chronologies are linked. The material culture and technology from Woodland sites at Big Bone Lick State Park (boundary expansion) may help address many of the research objectives outlined in the state plan (Railey 1990).

Archaeologists currently have a poor understanding of Woodland site distribution (Pollack 1990). To better understand inter-site patterning, certain information can be learned from individual sites, and from districts of sites such as Big Bone Lick State Park (boundary expansion). In fact, the close proximity of the number of Woodland sites at Big Bone Lick may provide information on settlement patterns, spatially and chronologically, not available from single sites located at some distance from one another. Settlement patterns may also be related to exchange systems, a major focus of Woodland research (Pollack 1990). Social organization and ideology are reflected in the archaeological record by these settlement and exchange patterns, as well as by subsistence patterns, and symbolism, particularly decorative

motifs. The material culture and technology from Woodland sites at Big Bone Lick State Park (Boundary Expansion) may help address the following research objectives including many outlined in the state plan (Railey 1990):

- The Woodland period archaeological sites in the Big Bone Valley are less visible than those dating to the Archaic and later Fort Ancient periods. Did environmental and/or cultural changes occur that made utilization of the valley less attractive?
- How did resource exploitation in Big Bone Valley change throughout the Woodland period? Were they utilizing all the available resources including salt? How can this be identified archaeologically and compared with sites at other salt/mineral springs in Kentucky?
- Identify aspects of Woodland material culture that are temporally and geographically diagnostic. Assess the diagnostic potential of items other than projectile points and ceramics.
- Apply ceramic chronometry to Middle and Late Woodland materials from Big Bone Valley.
- Assess the relationship between stone tool morphology and function using macro- and microscopic techniques.
- Identify functional variation in contemporary Woodland ceramic assemblages, and identify temporal changes in ceramic form and function throughout the Woodland period.
- The recovery of faunal and floral remains from features at Woodland sites in the Big Bone Valley may help to document the development of, and changes in, the technology of food plant processing and preparation. Specifically, explore relationships between changes in feature types, ceramic vessel forms, and diet.
- Examine the age and sex composition of white-tailed deer remains from Woodland sites in the Big Bone Valley, and assess Waslkov's (1978) hypothesis that stalking (as opposed to communal drives) was the principal deer-hunting strategy employed during the Woodland period.

Settlement patterns may also be related to exchange systems, a major focus of Woodland research (Pollack 1990). Social organization and ideology are reflected in the archaeological record by these settlement and exchange patterns, as well as by subsistence patterns, and symbolism, particularly decorative motifs. The Woodland deposits at Big Bone Lick may be able to help address the following research objectives:

- Reconstruct the paleo-environment, using geomorphological data, pollen analysis, phytoliths, and floral and faunal data from archaeological contexts.
- Examine the effects of floodplain geomorphological processes on the destruction or preservation of Woodland period sites at Big Bone Lick.
- Document intra-site community patterning.
- Identify the internal structure of Early and Middle Woodland habitation sites at Big Bone Lick, and assess the seasonal and social articulation of domestic and ritual sites.
- Document the nature and extent of interregional exchange and interaction between Early, Middle, and Late Woodland Groups in the Big Bone Valley and those in other parts of the Eastern Woodlands.
- Identify stylistic patterns of decorative motifs on ceramics and other items.

- Address the symbolic implications of decorative motifs, burial patterns, site structure, and other cultural elements.
- Identify socioeconomic factors related to ideological trends.
- Identify enduring and discontinuous ideological elements within the Woodland period, and assess the possible relationships of these to Archaic and Fort Ancient ideological elements.
- Examine the potential time depth of historically recorded native ideological themes with respect to Woodland period icons and symbols.

Context Statement: Fort Ancient Period (A.D. 1000 – 1750)

By A.D. 800-900, changes in settlement and subsistence soon changed the character of the Late Woodland archaeological record (Sharp 1990). Soon after A.D. 1000, the local Native American inhabitants of northern Kentucky practiced maize agriculture, used the bow and arrow, and tempered their pottery with shell instead of grit or limestone. Social and political changes may have also accompanied the technological changes. Called the Fort Ancient people by archaeologists, they developed a village based farming society that developed out of regional Late Woodland cultures (Pollack and Henderson 2000).

Within the Fort Ancient period, permanently occupied villages have been documented along most of the major streams and rivers and ridgetops in northern Kentucky. Divided into three time frames by many researchers, the Fort Ancient period saw changes in pottery styles and village layout/plans through the more than 600 year period (Cowan 1986; Essenpreis 1982; Griffin 1943; Henderson 1992; Pollack and Henderson 2000). Archaeologists believe the Early Fort Ancient period lasted from approximately A.D. 1000 to 1200. The Middle Fort Ancient period also spans about a 200 year period until A.D. 1400. The Late Fort Ancient reaches into the historic period and is generally assigned a date range of A.D. 1400 to 1750 (Pollack and Henderson 2000).

Northern Kentucky has numerous Fort Ancient period village sites, including documented sites in Boone, Kenton, and Campbell Counties. The sites are concentrated along the Ohio River Valley and major streams such as Gunpowder Creek, Big Bone Creek, and Mud Lick Creek. Northern Kentucky Fort Ancient period sites include Cleek-McCabe (15Be8, 15Be22, and 15Be23) located along Mud Lick Creek. The site is situated on a similar broad terrace system as the Big Bone Valley. The site includes two burial mounds and a village midden (Sharp 1990). Excavated by the WPA through the University of Kentucky in 1939, recent research has re-examined the artifact assemblage and excavation data from the site. The Cleek-McCabe sites appear to date to the early to middle Fort Ancient period and strengthen the hypothesis that Fort Ancient developed from local Woodland culture (Sharp 1990). Mud Lick Creek flows into Big Bone Creek below Big Bone Lick State Park. The Cleek-McCabe sites are located within 8 km of the park. Although the site appears larger than the Fort Ancient period sites as documented within the Big bone Lick State Park (Boundary Expansion), the material provides an excellent point of comparison for local and regional analysis.

Other local sites in Boone County include Arrasmith (15Be36) and Petersburg (15Be5). Arrasmith actually has two Fort Ancient village sites situated on the same terrace of Gunpowder Creek. The site is located within 16 km of Big Bone Lick State Park. One village is similar to the Cleek village site in producing Anderson phase pottery and early to middle Fort Ancient materials. The site also contains a Late Woodland component. The Petersburg Site and the other Arrasmith village are later in the Fort Ancient period possible dating post A.D. 1400. In addition to the late Fort Ancient component, Petersburg also contains a middle Fort Ancient component (Pollack and Henderson 2000; Sharp 1990).

Nine archaeological sites within the Big Bone Lick State Park (boundary expansion) have produced Fort Ancient period artifacts: Site 15Be18, Site 15Be265, Sites15Be266-269, Site 15Be271, Glacken, Site 15Be273, Buffalo Rise, Upside Down, and Site 15Be452. However, little detailed investigation has been conducted on the Fort Ancient components within the Big Bone Lick State Park (Boundary Expansion) except for limited testing conducted by Stokes and Lowthert (1998) at the Upside Down Site. Their methodology included shovel testing, nonintrusive examination with an EM-86 Earth Conductivity Meter, and the hand excavation of 5.5 m^2 (Lowthert 1998). Their study identified an early to middle Fort Ancient component that included subsurface midden deposits.

Many of the sites in northern Kentucky consist of large circular villages including houses and in some cases stockade walls. The center of the village was a plaza, or open-space area, used for ceremonies and other community activities. The sites at Big Bone that contain Fort Ancient materials appear to be smaller in scale, perhaps salt making or other specialized camps. None of the Fort Ancient sites at Big Bone have been systematically excavated and future research may provide significant information about the utilization of the Big Bone region during this time period.

The Fort Ancient chronology is not well understood in northern Kentucky. Although Fort Ancient period sites are known, few have been professionally excavated. Data on the distribution of smaller villages, seasonal and specialty sites is lacking for the northern Kentucky region (Sharp 1990). Sites such as those protected in the Big Bone Lick State Park (boundary expansion) provide an important resource for future archaeological research. The Kentucky State Plan (Pollack 1990) outlines research objectives related to the Fort Ancient period in Kentucky. The Fort Ancient period sites located within the proposed Big Bone Lick State Park (Boundary Expansion) provide a unique opportunity to protect a variety of site types dating to this period. Future investigation at these sites has the potential to answer research objectives outlined in the State Plan, including at least the following:

- Investigate the changing nature of resource exploitation at Big Bone Lick through time. Fort Ancient period sites are more visible archaeologically at Big Bone than during the preceding Woodland period. What changed environmentally or culturally that increased their presence in the Big Bone Valley?
- Salt pans are only found on late Fort Ancient sites. Determine if salt pans are indicative of increased salt production by late Fort Ancient populations. Are salt pans found at site in the Big Bone Valley? Lowthert (1998) does not identify any specifically. Why not? Should they not be expected in the immediate vicinity of the springs? Ceramic vessels identified as salt pans have been recovered from northern Kentucky sites such as

Bintz in Campbell County (Sharp 1990). This site is over 56 km from Big Bone Lick. Why would the salt pans be located at the home village but not at the actual spring?

- Investigate functional ceramic attributes and assess their potential for inter- and intrasite studies.
- Determine if the increase in Fort Ancient ceramic vessel diversity through time is correlated with changes in cooking or processing patterns.
- Identify the total range of plant and animal resources exploited.
- Identify differences in terrestrial animal and aquatic resource procurement patterns between physiographic zones.
- Document evidence of regional and temporal variation in Fort Ancient social organization.
- Document male/female activity areas. At Big Bone Lick, was salt processing a male or female activity?

Context Statement: Science/Paleontology and Early Exploration

Big Bone Lick historically has been a prominent vertebrate fossil collecting locality and has been referred to as the birthplace of vertebrate paleontology in North America (Kluessendorf 2001). The site was first visited by European colonists in 1739, when French soldiers traveled from Fort Niagara in Canada through this region. Captain Charles Lemoyne de Longueil was in charge of this contingent (Cooper 1831; Jillson 1936:3). Longueil's and other early reports spurred an intense interest in the mysterious fossilized bones being brought to the eastern United States. By 1778, the area was known as Big Bone Lick, named by a cartographer (Jillson 1936). A summary of the historic period utilization of the Big Bone Valley is included in Section 7. Table 2 presents the known chronology of European visits to the Big Bone Valley. If known, the purpose of these visits is indicated in the table. Many of the trips made down the Ohio River to Big Bone were made for one specific purpose: to collect specimens of the fossilized mammal bones found there in abundance in the eighteenth century and early nineteenth century. So many collecting expeditions had been made that Constantine Rafinesque noted that the property owner was refusing to grant permission to collectors and stopping them from excavating by 1821 (Rafinesque 1832). After 1821, only four other major digging expeditions are known, Cooper and Bullock, both in 1828, Finnell in 1831, and Shaler in 1868 (Collins 1847; Cooper 1831; Jillson 1936) (Table 2).

A quote from Humphrey Marshall expresses the intense curiosity and speculation by eighteenth century naturalists and explorers' about the large bones being unearthed at Big Bone Lick. Marshall states that James Douglass stopped off to see the large bones "of which fame had said so much, the learned risked so many conjectures, and everybody knew so little" (Marshall 1812). The exportation of bones from Big Bone to France and Britain greatly increased knowledge of these extinct creatures. Many at the time, including Thomas Jefferson, believed the *American incognitum* (early name for the Mammoth) to be a ferocious carnivore (Semonin 2000). They used their knowledge of the bones to secure America's place in paleontology and science in general.

In 1799, George Turner studied the fossil beds at Big Bone Lick and stated that the dense fossil beds were the remains of the meals of the *mastodont*, which he believed to be carnivorous. The massive numbers of animals killed

by the *mastodont* were, Turner hypothesized, a primary cause of the extinction of these animals (Grayson 1984:20; Semonin 2000). Although this theory was proven incorrect, the fact that it was based on fossil evidence from Big Bone Lick illustrates the site's importance in the development of the science of paleontology. Semonin (2000) believes that the Big Bone fossils played a very important role in the development of scientific thought, especially regarding the idea of extinction, the relationship of geology/paleontology and Christian thought, and the idea of American superiority in many fields including science.

Sir Charles Lyell and other European geologists were influenced by the discoveries at Big Bone Lick. Lyell visited the valley in 1841 during a visit with the Kentucky State Geologist, David Dale Owen (Jillson 1935). In his report of his travels in America, Lyell referred to Big Bone Lick as "a place of great geological celebrity" (Jillson 1936:106). Georges Cuvier identified the *American incognitum* as a separate species of extinct elephant in 1808, different from the Siberian Mammoth, largely based on fossils recovered from Big Bone Lick. He also identified the American Mastodon (Semonin 2000). Cuvier stated "it is only with the help of anatomy that geology can establish in a sure manner several of the facts that serve as its foundations" (Cuvier 1796 in Semonin 2000:302). This was written just as 'geology' was becoming a new field of study. His study of anatomy in conjunction with geology would become the field of paleontology.

From Shaler's visit in 1868, it would be nearly a century before paleontologists and geologists returned to Big Bone. In the 1960s, the University of Nebraska, the U. S. Geological Survey, the Behringer-Crawford Museum of Covington, Kentucky, the Big Bone Lick Historical Society, and the Kentucky State Department of Parks conducted a six-year excavation program that primarily recovered bones to be used in taxonomic studies, similarly to the studies conducted in the eighteenth and nineteenth centuries (Otte 2000). They excavated from 1961 through 1965, recovering large quantities of faunal material now housed at the University of Nebraska.

> "Big Bone Lick is a world-famous Ice Age and post-Ice Age vertebrate fossil depository, containing bones from a wide variety of mammalian species preserved in sediments that were apparently associated with salt water springs found in Big Bone Valley. However, the overall prehistoric cultural, ecological, geological, and paleontological environment of Big Bone Lick is still poorly understood; having been used primarily as a source of fossils to conduct taxonomic studies on mammalian giants such as mammoths, mastodons, musk ox, giant moose-like deer, bison, and sloths" (Otte 2000).

Even though large quantities of faunal material have been removed from the Big Bone Valley, the Big Bone Lick State Park (boundary expansion) retains sufficient integrity regarding the paleontological context to be eligible for the National Register.

Large tracts of land within the Big Bone Lick State Park (Boundary Expansion) have not been excavated and contain intact subsurface deposits relating to the Pleistocene period (Lee Otte and Kenneth Tankersley, personal communication 2001). In addition, information regarding the early investigations and visits may also be present

as archaeological sites themselves. Ongoing archaeological work at Site 15Be452 has recovered small fragments of fossilized bones in association with very early nineteenth century artifacts (see below). The site may be associated with collecting visits or an early property owner. The Big Bone Lick State Park (boundary expansion) holds immense value to the scientific world as a repository of Pleistocene mega fauna. It has the capacity to provide significant information about paleo-environmental questions and recreation through excavation of that period. Information is also present archaeologically regarding the early historical investigations conducted in the valley.

Site 15Be269, Site 15Be270, and Buffalo Rise include known excavation locations from the 1960s. Other parts of these sites probably contain intact Pleistocene deposits below the archaeological contexts. Site 15Be452 may contain cultural materials associated with the early visits and expeditions to the valley. The Behringer-Crawford Museum and Big Bone Lick State Park conducted an archaeological field school at Site 15Be452 during June and July 2001 (Kreinbrink 2001). The field school found early nineteenth century ceramics, brick, many small limestone fragments, chinking mortar, and other artifacts in association with a possible chimney fall of brick. In the test units directly associated with the brick feature, the students recovered small fragments of fossilized bone that appeared to be broken or chipped from larger bones or bone fragments. Site 15Be452 may represent an early historic period structure associated with fossil collecting at the site.

The association of Big Bone Lick State Park (boundary expansion) with the development and practice of American Paleontology represents a unique chapter in Kentucky and national history. The Historical Archaeology section of the Kentucky State Plan (McBride and McBride 1990) does not address the topic of scientific research as it is a unique research opportunity and little was known at that time of the potential resources located in the Big Bone Valley. Research at the many Native American archaeological sites located within the District may contribute information related to the nature of resource exploitation in the Big Bone Valley, including the salt and mineral springs. Research objectives related to Science/Paleontology and Early Exploration of the Big Bone Valley include the following:

- Determine the locations and nature of early paleontological explorations through time. Sites such as Site 15Be452 may represent evidence of these early visits.
- What information can these sites provide on the nature and methodology associated with early American paleontological expeditions? The archaeological sites associated with paleontological deposits may also include evidence such as in-filled excavation pits, discarded materials, and other remains associated with the many expeditions conducted in the late eighteenth and early nineteenth centuries.
- What was the relationship among early property owners and the paleontological expeditions? Did these investigations have an economic, social, or cultural impact on the local residents? Several individuals including Finnel, Goforth, and others were local residents who conducted collecting expeditions in the vicinity of sites such as 15Be269, 15Be270, Buffalo Rise, and 15Be452.
- In addition to conducting collecting expeditions, local residents attempted salt making and resort hotel businesses within and in the vicinity of the Big Bone Lick State Park (Boundary Expansion). How do the sites within this area relate to the overall use of the Big Bone Valley and to other salt/mineral springs in Kentucky?

Context Statement: Historic Settlement and Occupation

In 1809, a man by the name of Colquohon purchased at least part of the Big Bone property with the thought of selling the salt produced there (Yealey n.d.). Although Fort Ancient people may have manufactured salt at the lick, this was the first recorded commercial venture. Due to the relatively low salinity of the springs (500 to 600 gallons of water were required to produce a single bushel of salt), Colquohon planned to reduce cost by investing in two large furnaces with mounted kettles. By 1812 the venture had failed. The location of the furnaces has yet to be determined, although the University of Nebraska's excavations at Site 15Be269 encountered the remains of what was interpreted as a pioneer period salt processing facility.

For the remainder of the nineteenth and the first half of the twentieth century, Big Bone Lick was home to farms and a number of nineteenth century homesteads remained occupied until purchase by the state in the 1960s. Boone County was occupied soon after the end of the Revolutionary War, primarily by veterans receiving land grants, or by those who had purchased such patents. It appears that for a time, the Big Bone Valley was 'open season' for the bone collectors. However, Rafinesque reports that by the early 1820s at least one unnamed property owner was restricting the digging of fossils in the park vicinity (Rafinesque 1832). Little is known about the farmers who occupied the Big Bone Valley for much of the nineteenth century. The farmstead sites, including 15Be441, 15Be444, 15Be445, 15Be449, 15Be450, and 15Be451, represent an excellent comparative research opportunity for a number of research questions related to rural archaeology, agriculture, and other topics that are enumerated below.

Site 15Be445 consists of existing portions of a homestead site dating to the nineteenth century. Associated with Historic Settlement and Occupation, the stone root cellar at Site 15Be445 is an excellent example of local vernacular architecture. Site 15Be444 in the Big Bone Lick State Park (Boundary Expansion) has a smaller root cellar of similar construction. Several others are known from the southern Boone County region, however, the root cellar at Site 15Be445 is by far the largest and most impressive. Investigation of the root cellar architecture and comparison with other local vernacular constructions would provide significant information regarding the historic settlement and occupation of northern Kentucky. Questions regarding subsistence, the diversity of home production, examination of rural architecture, food storage practices, access to local markets (consumer related research), and others (McBride and McBride 1990) can be addressed at archaeological sites within the Big Bone Lick State Park (Boundary Expansion).

The historic period at Big Bone Lick is represented by Sites 15Be268, 15Be269, 15Be270, 15Be444, 15Be445, 15Be449, 15Be450, 15Be451, and 15Be452. Site 15Be269 appears to be associated with the early attempts at salt making in the valley. Site 15Be452's function is still ambiguous but will provide significant information on the early nineteenth century occupation and utilization of the valley. The site may be an early homestead, it may be a camp/house for early collecting expeditions, or it may be a bathhouse connected with the early hotel/spa industry. The function of the historic component of Site 15Be270 is unknown at this time, but based on its description (see Section 7), its function may be related to Site 15Be452. Both are located near the stream and springs and include early nineteenth century artifacts and structural materials. The remaining historic period sites appear to clearly represent farmstead sites and include Sites 15Be441, 15Be444, 15Be445, 15Be449, 15Be450, and 15Be451. All

of these sites are likely to contain significant information on the historic utilization and occupation of the Big Bone Valley.

McBride and McBride (1990) identify temporal units and historical research/development topics for historical archaeology in Kentucky. Relevant units for the Big Bone Lick State Park (boundary expansion) include the Post Revolutionary period, the Demographic and Economic Development period, the Antebellum period, the Postbellum period, and the Industrial and Commercial Consolidation period. Cross temporal topics include settlement patterns, subsistence, archaeology of the household, farmstead archaeology, and possibly industrial/commercial archaeology. The paleontological/scientific research topic as discussed above is also a valid research topic for Big Bone.

Except for the Civil War temporal unit in McBride and McBride (1990), few research objectives are explicitly enumerated within the historical section of the State Plan. A careful review of the relevant temporal/topical units reveals the following research objectives.

Post Revolutionary Period 1783-1800 (McBride and McBride 1990)

- Can ethnic identity/cultural origin be identified for the early historical occupants of the Big Bone Valley?
- Were the early landowners slave holders?
- Did the early farmers participate in the paleontological collecting, facilitate it, and/or profit from it? Besides agriculture, the valley may have provided an additional economic stimulus for purchase and settlement.
- Information is needed on the nature of the local settlement system and how it compares to the frontier settlement models of Lewis (1977a and 1984), Hudson (1969), and Price and Price (1981) and McBride and McBride (1990:590). What environmental factors influenced the selection of a settlement's location?
- Archaeological research at early settlement sites has the potential to provide information on the material conditions of the settlers. What access did they have to regional/international market goods?
- Archaeological investigation of early industrial or craft sites can provide information on the scale, structure, and technology of these types of sites, including small salt works such as known historically at Big Bone Lick and found at Site 15Be269.

Demographic and Economic Developments 1800-1820 (McBride and McBride 1990)

- Variation in types of farms by landform and soil type within each cultural unit should be investigated.
- Information is needed on architectural characteristics of residences and farm buildings, outbuildings, farm size and layout, socioeconomic variation, and access to and consumption of material goods.
- Salt making efforts were conducted in the Big Bone Valley until approximately 1812. Why did they fail? Environmental reasons such as low salinity and cultural or economic reasons involving competition and access to markets should be examined.

Antebellum 1820-1861(McBride and McBride 1990)

- How did the regional social, cultural and economic systems change from the early settlement period into the Antebellum period?
- During this period, Kentuckians became more involved in the "World System" and moved out of the frontier system (McBride and McBride 1990:599). These changes reached to the individual farmstead and brought changes such as access to new material goods, and technological advances in tools and farming methods.
- The farmstead sites at the Big Bone Valley represent a good comparative database to investigate how northern Kentucky sites compare to sites from similar socioeconomic levels in the rest of Kentucky and to the larger regional area.
- Information is needed on the relationship of farms to transportation systems, other farms, the Ohio River transportation route, environmental issues such as setting and topography. The sites in Big Bone Lick State Park (boundary expansion) may provide a good collective database.
- Were the landowners in the Big Bone Valley slave holders? What information can be provided in a comparison of slave holding farms with non-slave holding farms? More research is needed on the culture, lifestyle, and treatment of slaves in Kentucky, especially on smaller farmsteads.
- Classes of sites associated with salt and mineral springs in Kentucky include specialty sites such as resorts, including bathing pavilions, hotels, and other associated structures. At least two separate resort operations existed in the Big Bone Valley in the nineteenth century. Which sites within the Big Bone Lick State Park (boundary expansion) are related to this industry?

Postbellum: Readjustment and Industrialization, 1865-1914

The Postbellum period in Kentucky saw many changes to both rural and urban settings. Old social and economic systems became obsolete and new ones were introduced (McBride and McBride 1990:615). Research objectives from this period that are relevant to Big Bone Lick State Park (boundary expansion) are enumerated below.

- Did the farmstead sites in the Big Bone Valley participate in the larger, increasingly commercial market system in the central Ohio River Valley? Did farms with better access to transportation networks contain a wider range of purchased goods? This may suggest more commercialized agriculture. Is there evidence of greater social stratification?
- Research is needed to determine if differences in wealth can be identified in the archaeological record, whether tenant farms are archaeologically distinct from owner operated farms, and if there are differences in the organization of different types of tenant farms. Northern Kentucky included tenant farms, although it is unknown whether any of the site at Big Bone Lick were tenant sites, the number of sites within the Big Bone Lick State Park (Boundary Expansion) makes it an excellent comparative database for this type of research.

Industrial and Commercial Consolidation: 1915-1945

Trends through this period in Kentucky include mechanization of agriculture, general decline of farming as a way of life, prohibition/still use as a cottage industry, increase in access to consumer goods, the Depression and World War II. Relevant research objectives identified in McBride and McBride (1990) include the following:

- How did the general decline in agriculture affect the families living in the Big Bone Valley?
- Research on the nature of farm subdivision is needed to determine if there was in increase in subdivision of farms to multiple heirs or other family members. What impact did this trend have on farm size and ability to sustain the property as a working farm?
- Research is needed to determine if the Depression resulted in an increased rate of farm failure and abandonment, the consolidation of small farms, and greater socio-economic stratification.
- Research is needed to determine how mechanization affected farm life.
- Information is needed on the distribution of stills in Kentucky, if the distribution changed over time, impacts on the local economy, and if they became more important during prohibition. Site 15Be444 includes a large quantity of glass canning jar fragments that date to the early twentieth century among the artifact assemblage. The site may have included a still set-up in the twentieth century.

Conclusion

The Big Bone Lick State Park (boundary expansion) qualifies for listing in the National Register of Historic Places under criteria A and D. The area is associated with events that have made a significant contribution to the broad patterns of our history by playing an important role in the exploration and settlement of the Central Ohio Valley, and by proving influential in the development of the science of paleontology. Big Bone Lick lay along a major transportation route between the Ohio River and the interior of Kentucky. This transportation route followed trails created by bison travelling to and from the mineral springs at Big Bone Lick. The location served as a landmark and as a source of salt for early explorers and settlers. It was also the location of Mary Ingles' famous escape from her Shawnee captors. Mrs. Ingles is reported to have been the first white woman in Kentucky and became a folk hero after she published the story of her captivity and escape. The involvement of Thomas Jefferson, Charles Lyell, and George Cuvier in the study of fossils from the site attests to its importance to the science of paleontology.

The Big Bone Lick State Park (boundary expansion) has yielded, and is likely to continue to yield, information important to history and prehistory. Over sixty of the research objectives outlined in the Kentucky State preservation plan could be addressed by past and future work at the Big Bone Lick State Park (boundary expansion). Perhaps the most unique feature of the district is that it represents the use of a specific resource, the mineral springs at Big Bone Lick, for the entire course of human history in the Ohio Valley region, from Paleoindian hunting of megafauna to the present use of the site as a state park.

Table 2. Chronology of major early European and Euro-American visits to the Big Bone Valley.

YEAR	PERSON/S	PURPOSE	REFERENCE
1739	Captain Charles Lemoyne de Longueil	Traveling through the area, visited, unknown whether he removed bone. Reported on visit	Jillson 1936:3; Cooper 1831
1751	Robert Smith employees	Collected bones and gave them to Christopher Gist	Gist 1893
1755	Mary Draper Ingles	Taken as captive of Shawnee Indians to collect salt. She noted that Frenchmen were present at the time	Collins 1882; Vannersdahl Schroeder 2000
1765	Colonel George Croghan	Large scale collection of bones	Cooper 1831; Yealey 1960
1766	Colonel George Croghan and Captain Harry Gordon	Large scale collection of bones	Kindle 1931:199-200
1773	James Douglass	Visit to view and collect bones	Collins 1847
1778	No visit	Named "Big Bone" by cartographer	Jillson 1935
1795	William Henry Harrison	Large scale collection of bones	Cooper 1831; Jillson 1935
1795	General Collaud (French)	Large scale collection of bones	Cooper 1831
1804	Dr. William Goforth	Large scale collection of bones	Jillson 1935, 1936 and many others
1807	William Clark	Large scale collection of bones, at request of Thomas Jefferson	Jillson 1936
1800-1828	Many incidental visitors including Meriwether Lewis (1803), Constantine Rafinesque (1821)	Apparently many small scale collections	Jillson 1936

1819	Western Museum Society	Large scale collection of bones	Collins 1847
1828	William Cooper and I. Cozzens. William Bullock, same year	Large scale collection of bones	Cooper 1831
1831	Finnell (local Boone County resident)	Large scale collection of bones	Collins 1847
1841	Sir Charles Lyell and Kentucky State Geologist David Dale Owen	Visit to Big Bone Valley, review of previously collected material	Jillson 1936
1868	Nathanial Southgate Shaler	Large scale collection of bones	Jillson 1935; Kindle 1931

References Cited

Bergman, Chrisftopher A, Donald A. Miller, John F. Doershuk, Ken Duerksen, and Teresa W. Tune
1998 Early Woodland Occupation of the Northern Bluegrass: The West Runway Site (5BE391), Boone County, Kentucky *North American Archaeologis* 19(1) 13-33.

Boisvert, Richard
1982a 1982 Archaeological Investigations at Big Bone Lick State Park, Preliminary Report. University of Kentucky Department of Anthropology. Submitted to Kentucky Department of Parks. Ms, on file, Office of State Archaeology, University of Kentucky, Lexington, Kentucky.

1982b Late Archaic occupations at Big Bone Lick Kentucky: Evidence for a focal subsistence? Paper presented at the 39th Annual Meeting of the Southeastern Archaeological Conference, Memphis, Tennessee.

Boisvert, Richard, and Steven Cordiviola
1982 A Distributional Analysis of Kentucky Salines. Paper presented at the Kentucky Academy of Sciences Annual Meeting, Ashland, Kentucky.

Callender, Charles.
1962 *Social Organization of the Central Algonkian Indians.* Publications in Anthropology No. 7. Milwaukee Public Museum, Milwaukee

Chapman, Frank and Martha P. Otto
1976 An Archaeological Reconnaissance of Caesar Creek Lake. Prepared by the Ohio Historical Society. Submitted to the Louisville District, Army Corps of Engineers.

Chinn, George Morgan
1975 *Kentucky: Settlement and Statehood, 1750-1800.* The Kentucky Historical Society, Frankfort.

Collins, Lewis.
1847 *Historical Sketches of Kentucky.* Maysville, Kentucky. 1st Ed., 1847. 2nd Ed., Maysville and Cincinnati, 1847; 3rd Ed., 1848; 4th Ed., Maysville and Cincinnati, Ohio. 1850. Kentucky Historical Society, Frankfort, Kentucky.

Collins, Richard H.
1882 *History of Kentucky.* Collins & Co., Covington, Kentucky.

Connelley, William Elsey and E. M. Coulter
1922 *History of Kentucky*. The American Historical Society, Chicago.

Conrad, William
1987 Yesterdays: An Enriching Adventure in Boone County's Past. Boone County Schools, Florence, Kentucky.

Cooper, William
1831 Notices of Big Bone Lick. *Monthly American Journal of Geology* 1:158-174, 205-216.

Cowan C. Wesley
1986 Fort Ancient Chronology and Settlement Evaluation in the Great Miami Valley, Volume II: Excavations and Chronology. On file, Ohio Historic Preservation Office, Columbus.

Cowan, C.Wesley, H. Edwin Jackson, Katherine Moore, Andrew Nickelhoff, and Tristine L. Smart
1981 The Cloudsplitter Rockshelter, Menifee County, Kentucky: A Preliminary Report. *Southeastern Archaeological Conference Bulletin* 24:60-76.

Davis, Richard A.
1981 Big Bone! Kentucky's Original Stick-In-The-Mud. *Rocks and Minerals* 56(3):114- 118.

Dragoo, Don W.
1976 Some Aspects of Eastern North American Prehistory: A Review 1975. *American Antiquity* 41:3-27.

Driskell, Boyce N.
1979 The Rosenberger Site. In *Excavations at Four Archaic Sites in The Lower Ohio Valley, Jefferson County, Kentucky* edited by Michael B. Collins, pp. 697-799. Occasional Papers in Anthropology, No. 1. University of Kentucky Department of Anthropology, Lexington.

Drooker, Penelope, B.
1997 *The View from Madisonville Protohistoric Western Fort Ancient Interaction Patterns.* Memoirs of the Museum of Anthropology Number 31. University of Michigan, Ann Arbor.

Ellis, Christopher J. and D.Brian Deller
1988 Some Distinctive Paleo-Indian Tool Types from the Lower Great Lakes Region. *Midcontinental Journal of Archaeology* 13:111-158.

Essenpreis, Patricia S.
1982 *The Anderson Village Site: Redefining the Anderson Phase of the Fort Ancient Tradition of the Middle Ohio Valley.* Unpublished Ph.D. dissertation, Department of Anthropology, Harvard University, Cambridge.

Farnsworth, Kenneth B. and Thomas E. Emerson (editors)
1986 *Early Woodland Archaeology.* Center for American Archaeology Press, Kampsville, Illinois.

Fitzgerald, William.
n.d. History of Big Bone Lick State Park. Unpublished manuscript on file at the Boone County Public Library, Florence, Kentucky.

French, Michael W., A. Gwynn Henderson, and David Schatz
2001 *An Inventory and Assessment of Prehistoric Mounds and Earthworks in Boone County, Kentucky.* Report No. 382. Program for Archaeological Research, Department of Anthropology, University of Kentucky, Lexington.

Frison, George C.
1991 The Clovis Cultural Complex: New Data from Caches of Flaked Stone and Worked Bone Artifacts. In *Raw Material Economies Among Prehistoric Hunter-Gatherers*, edited by Anita Montet-White and Steven Holen, pp. 321-334. University of Kansas Press, Lawrence.

Genheimer, Robert G.
1994 *An Archaeological Assessment of the Cleves and North Bend Portion of the Proposed Aston-Oaks Development in Hamilton County, Ohio.* R.A.G. Archaeological Services, Cincinnati.

Grayson, Donald K.
1984 Nineteenth Century Explanations of Pleistocene Extinctions: A Review and Analysis. In *Quaternary Extinctions: A Prehistoric Revolution*, edited by Paul S. Martin and Richard G. Klein, pp. 5-9. The University of Arizona Press, Tucson.

Griffin, James B.
1943 *The Fort Ancient Aspect.* University of Michigan Press, Ann Arbor.

1978 Late Prehistory of the Ohio Valley. In *Handbook of North American Indians: Northeast Vol. 15,* edited by Bruce G. Trigger, pp. 547-559. Smithsonian Institution Press, Washington D.C.

Haag, William.G.
1938 Site Survey of Big Bone Lick. Survey Card, Museum of Anthropology, University of Kentucky, Lexington.

Henderson, A. Gwynn (editor)
1992 *Fort Ancient Cultural Dynamics in the Middle Ohio Valley.* Monographs in World Archaeology No. 8. Prehistory Press, Madison, Wisconsin.

Henderson, A. Gwynn, Cynthia E. Jobe, and Christopher E. Turnbow
1986 Indian Occupation and Use in Northern and Eastern Kentucky During the Contact Period (1540-1795). Ms on file, Kentucky Heritage Council, Frankfort.

Hopgood, James.F.
1975 Northern Kentucky Archaeological Survey Site Sheet, Northern Kentucky Archaeological Survey, Department of Sociology and Anthropology. Northern Kentucky University, Highland Heights.

Hunter, William A.
1978 History of the Ohio Valley. In *Handbook of North American Indians: Northeast Vol. 15,* edited by Bruce G. Trigger, pp. 588-593. Smithsonian Institution Press, Washington D.C.

Jefferies, Richard W.
1990 Chapter 4: Archaic Period. In *The Archaeology of Kentucky: Past Accomplishments and Future Directions, Volume 1*, edited by David Pollack, pp. 143-246. State Historic Preservation Comprehensive Plan Report No. 1. Kentucky Heritage Council, Frankfort.

Jillson, Willard Rouse
1936 *Big Bone Lick: An Outline of Its History, Geology, and Peleontology.* Standard Printing Co., Louisville, Kentucky. Reprinted 1998 by the Rabbit Hash Historical Society.

1968 *The Extinct Vertebrata of the Pleistocene in Kentucky.* Roberts Printing Company, Frankfort, Kentucky.

Justice, Noel
1987 *Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States.* Indiana University Press, Bloomington, Indiana.

Kluessendorf, Joanne
2001 Email communication to Matt Becher. Dr. Kluessendorf is a professor of geology at the University of Illinois and is preparing a National Historic Landmark Nomination for Big Bone Lick State Park.

Kozarek, Susan
1987 *A Hopewellian Homestead in the Ohio River Valley.* Unpublished Master's thesis, University of Cincinnati, Cincinnati.

Kreinbrink, Jeannine
1992 The Rogers Site Complex in Boone County, Kentucky. In *Current Archaeological Research in Kentucky: Volume 2,* edited by David Pollack and A.Gwynn Henderson, pp. 79-102. Kentucky Heritage Council, Frankfort.

2001a Summary Report Junior Curator Program in Archaeology, Year 2000 Field School at the Baker Site (15Be444), Big Bone Lick State Park, Boone County, Kentucky. On file, Kentucky Department of Parks, Frankfort, and Office of State Archaeology, University of Kentucky, Lexington.

2001b Summary Report Junior Curator Program in Archaeology, Year 2001 Field School at site 15Be452, Big Bone Lick State Park, Boone County, Kentucky. In progress. Will be filed, Kentucky Department of Parks, Frankfort, and Office of State Archaeology, University of Kentucky, Lexington.

Lowthert, William Hughes IV
1998 *Resource Use and Settlement Patterning Around the Saline Springs and Salt Licks in Big Bone Lick State Park, Boone County, Kentucky.* Master's Thesis. Department of Anthropology, University of Kentucky, Lexington.

MacDonald, G.F.
1968 *Debert: A Paleo-Indian Site in Central Nova Scotia.* Anthropology Papers No. 16. National Museum of Canada, Ottawa.

Marshall, Humphrey
1812 *The History of Kentucky, Including an Account of the Discovery, Settlement, Progressive Improvement, Political and Military Events, and Present State of the Country, Volume 1.* Printed by Henry Gore, Frankfort, Kentucky.

McBride, W. Steven, and Kim A. McBride
1991 Part Two: Historic Context. In *The Archaeology of Kentucky: Past Accomplishments and Future Directions, Volume 2,* edited by David Pollack, pp. 559-582. State Historic Preservation Comprehensive Plan Report No. 1. Kentucky Heritage Council, Frankfort.

Miller, Donald A., and Ken Duerksen
1995 Excavation of a Prehistoric Feature at Big Bone Lick, Boone County, Kentucky. *In Current Archaeological Research in Kentucky: Volume Three,* edited by J.F. Doershuk, C.A. Bergman, and D. Pollack, pp. 137-160. Kentucky Heritage Council, Frankfort.

Otte, Lee J.
2000 Proposal for preparation of Summary Document and Development of Comprehensive Investigative Program for Big Bone Lick State Park, Boone County, Kentucky. Submitted to the Boone County Fiscal Court by the Friends of Big Bone. On file, Boone County Fiscal Court, Burlington, Kentucky.

Pacheco, Paul, J.
1996 Ohio Hopewell Regional Settlement Patterns. In *A View from the Core: A Synthesis of Ohio Hopewell Archaeology,* edited by P.J. Pacheco, pp. 16-35. Ohio Archaeological Council, Inc. Columbus, Ohio.

Pollack, David
1983 National Register of Historic Places Inventory – Nomination Form: 15Be33, 15Be34, 15Be35 (Rogers Site). On file, Office of State Archaeology, University of Kentucky, Lexington.

Pollack, David (editor)
1990 *The Archaeology of Kentucky: Past Accomplishments and Future Directions.* State Historic Preservation Comprehensive Plan Report No. 1. Kentucky Heritage Council. Frankfort.

Pollack, David, and A. Gwynn Henderson
2000 Insights into Fort Ancient Culture Change: A View from South of the Ohio River. In *Cultures Before Contact: The Late Prehistory of Ohio and Surrounding Regions,* edited by Robert A. Genheimer, pp. 194-227. Ohio Archaeological Council, Inc. Columbus, Ohio.

Rafinesque, Constantine S.
1832 Visit to Big Bone Lick in 1821. In *Monthly American Journal of Geology and Natural Science* 1(8):355-358.

Railey, Jimmy A.
1990 Chapter 5: Woodland Period. In *The Archaeology of Kentucky: Past Accomplishments and Future Directions,* edited by David Pollack, pp. 247-374. State Historic Preservation Comprehensive Plan Report No. 1. Kentucky Heritage Council, Frankfort.

Sanders, Thomas N, Marcia K. Weinland, and Frederick T. Wilson
1976 *An Archaeological Reconnaissance of Big Bone Lick State Park, Union, Kentucky.* Kentucky Heritage Commission, Frankfort.

Schultz, C. Bertrand, Frank C. Whitmore, Jr., and Ellis C. Crawford
1967 Big Bone Lick, Kentucky: A Pictorial Story of the Paleontological Excavations at this Famous Fossil Locality from 1962 to 1966. In *Museum Notes*, No. 33, University of Nebraska.

Seeman, Mark F.
1981 A Taxonomic Review of Southern Ohio Late Woodland. Paper presented at the 52nd Annual Meeting of the Midwest Archaeological Conference, Evanston, Illinois.

Seeman, Mark F. G. Summers, E. Dowd, and L. Morris
1994 Fluted Point Characteristics at Three Large Sites: The Implications for Modeling Early Paleoindian Settlement Patterns in Ohio. In *The First Discovery of America Archaeological Evidence of the Early Inhabitants of the Ohio Area*, edited by William S. Dancey, pp. 77-93. The Ohio Archaeological Council, Inc., Columbus.

Semonin, Paul
2000 *American Monster How the Nations First Prehistoric Creature became a Symbol of National Identity.* New York University Press, New York and London.

Sharp, William E.
1990 Chapter 7: Fort Ancient Period. In *The Archaeology of Kentucky: Past Accomplishments and Future Directions,* edited by David Pollack, pp. 467-558. State Historic Preservation Comprehensive Plan Report No. 1. Kentucky Heritage Council, Frankfort.

Stokes, B. Jo and William H. Lowthert IV
1998 Phase I Archaeological Survey of Big Bone Lick State Park, Boone County, Kentucky. In Preparation. Kentucky Archaeological Survey Report, Lexington.

Tankersley, Kenneth
1981 Field notes from field work conducted in 1981 at Big Bone Lick State Park. On file with Dr. Tankersley.

1982 The Clovis Potential and Geoarchaeology of Big Bone Lick, Kentucky, A paper presented at the 58th Annual Meeting of the Central States Anthropological Society, Lexington, Kentucky.

1986 Bison Exploitation by Late Fort Ancient Peoples in the Central Ohio River Valley. *North American Archaeologist* 7(4):289-303.

1990 Chapter 3: Peleoindian Period. In *The Archaeology of Kentucky: Past Accomplishments and Future Directions,* edited by David Pollack, pp. 73-142. State Historic Preservation Comprehensive Plan Report No. 1. Kentucky Heritage Council, Frankfort, Kentucky.

Vannorsdall, Joan Schroeder
1999 An Extraordinary Woman, and Equal to any Emergency; Mary Draper Ingles' Return to Virginia's New River Valley. In *Blue Ridge Country*, an online magazine published by Leisure Publishing Company, Roanoke, Virginia. Available at http://www.blueridgecountry.com/ingles.

Vickery, Kent D.
1980 Preliminary Definition of Archaic 'Study Units' in Southwestern Ohio. Paper prepared for the State Archaeological Preservation Meeting, Columbus, Ohio.

Webb, William and William D. Funkhouser
1932 *An Archaeological Survey of Kentucky.* Reports in Archaeology and Anthropology, Vol. 2. Department of Anthropology, University of Kentucky, Lexington.

Weisenberger, B.C., C.W. Dowell, T.R. Leathers, H.B. Odor, and A.J. Richardson
1973 Soil survey of Boone, Campbell, and Kenton Counties, Kentucky. U.S. Department of Agriculture Soil Conservation Service in cooperation with Kentucky Agricultural Experimentation Station, U.S. Government Printing Office, Washington.

Winters, Howard D.
1969 *The Riverton Culture: A Second Millennium Occupation in the Central Wabash Valley.* Reports of Investigation 13, Illinois State Museum, Springfield.

Wymer, Dee Ann
1992 Trends and Disparities: The Woodland Paleoethnobotanical Record of the Mid-Ohio Valley. In *Cultural Variability in Context Woodland Settlements of the Mid-Ohio Valley,* edited by Mark F. Seeman, pp. 42-47. Midcontinental Journal of Archaeology Special Paper No. 7. The Kent State University Press, Kent, Ohio.

Yealey, A.M.
n.d. Big Bone Lick. Unpublished manuscript reprinted from the Boone County Recorder and the Big Bone Lick Historical Association. On file, Boone County Public Library, Florence, Kentucky.

UTM References (continued)

	Zone	Easting	Northing		Zone	Easting	Northing
1	16	696200	4306300	7	16	695960	4305200
2	16	696090	4305490	8	16	694530	4305540
3	16	695870	4305520	9	16	694620	4306500
4	16	695810	4305360	10	16	695160	4306620
5	16	695480	4305730	11	16	695440	4306890
6	16	695350	4305210	12	16	695420	4306660

Verbal Boundary Description

The boundaries of the Big Bone Lick Archaeological District correspond roughly to the boundaries of Big Bone Lick State Park. The boundary line is indicated on the attached USGS quadrangle maps and plan map of the district.

Boundary Justification

The area contained within the boundaries of the Big Bone Lick Archaeological District represents areas related to the continuous use over time of the mineral springs located at Big Bone Lick. The boundaries of the district have been determined by the extent of the areas around the lick which have been subjected to archeological survey. The Big Bone Lick Archaeological District represents the core of known human activity related to the mineral springs.