Chapter 1
INTRODUCTION

This report documents archaeological data recovery investigations by the Research Laboratories of Archaeology (RLA), The University of North Carolina at Chapel Hill, at site 38YK533, also known as the Ashe Ferry site, located on the Catawba River in southern York County, South Carolina. Investigations at Ashe Ferry by the RLA, along with additional investigations at a nearby archaeological site, 38YK534 or the Ayers Town site, were conducted under contract with Mulkey Engineers & Consultants to provide for mitigation of adverse effect to these archaeological resources by planned South Carolina Department of Transportation replacement of the SC Highway 5 bridges across the Catawba River and Twelvemile Creek (Figures 1.1, 1.2, 1.3, 1.4). Both archaeological sites had previously been determined eligible for inclusion in the National Register of Historic Places by reference to register Criterion D, which assigns significance to cultural resources that have the quality and capacity to "yield … information important to history or prehistory." In addition, the South Carolina Department of Transportation, in consultation with the South Carolina State Historic Preservation Office and the Catawba Indian Nation Tribal Historic Preservation Officer, determined that mitigation of adverse effects to these register eligible resources by the proposed bridge construction undertaking would consist of recovery and documentation of archaeological evidence to actualize the "information important to history or prehistory" judged to be present within these sites.

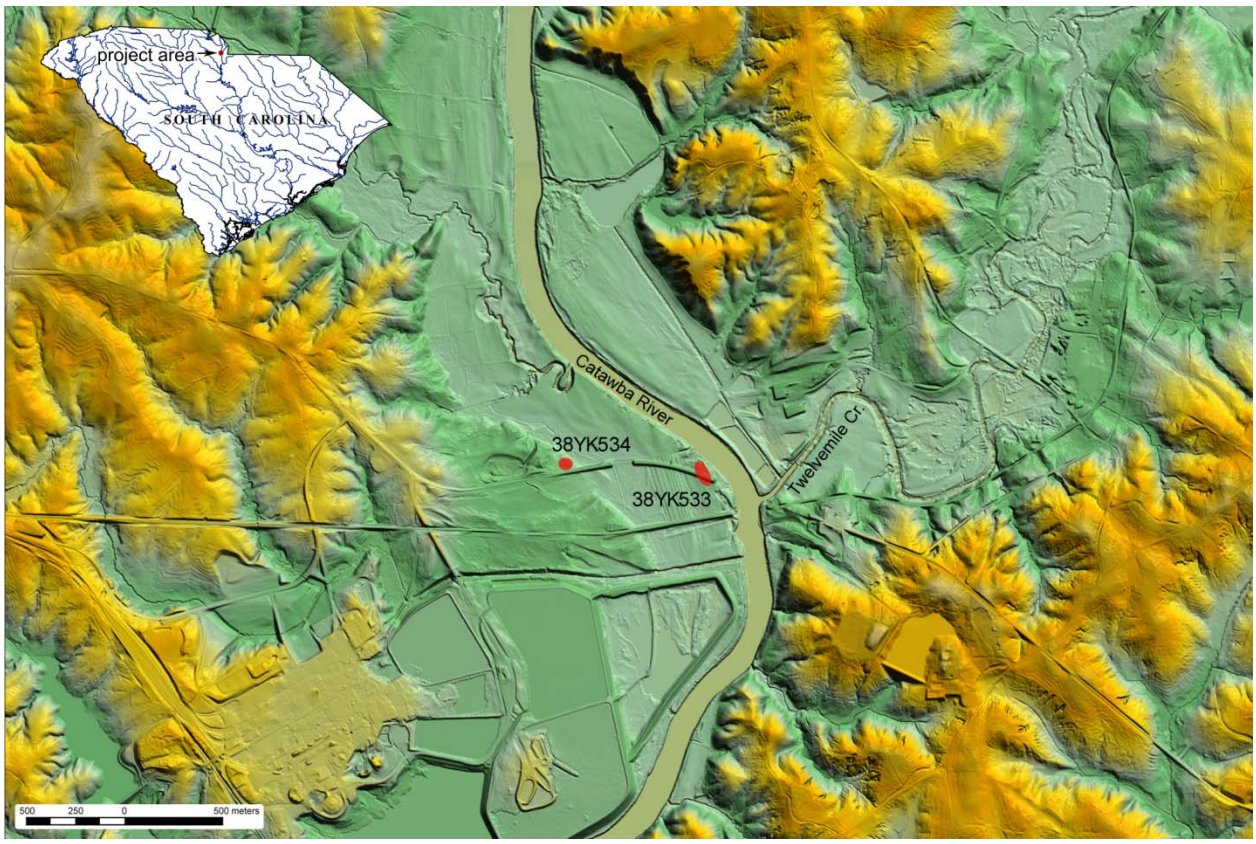

Figure 1.1. LiDAR-based relief map of the Catawba River valley showing the topographic setting of the Ashe Ferry (38YK533) and Ayers Town (38YK534) sites opposite the mouth of Twelvemile Creek. Inset schematic of South Carolina indicates the location of the project area.

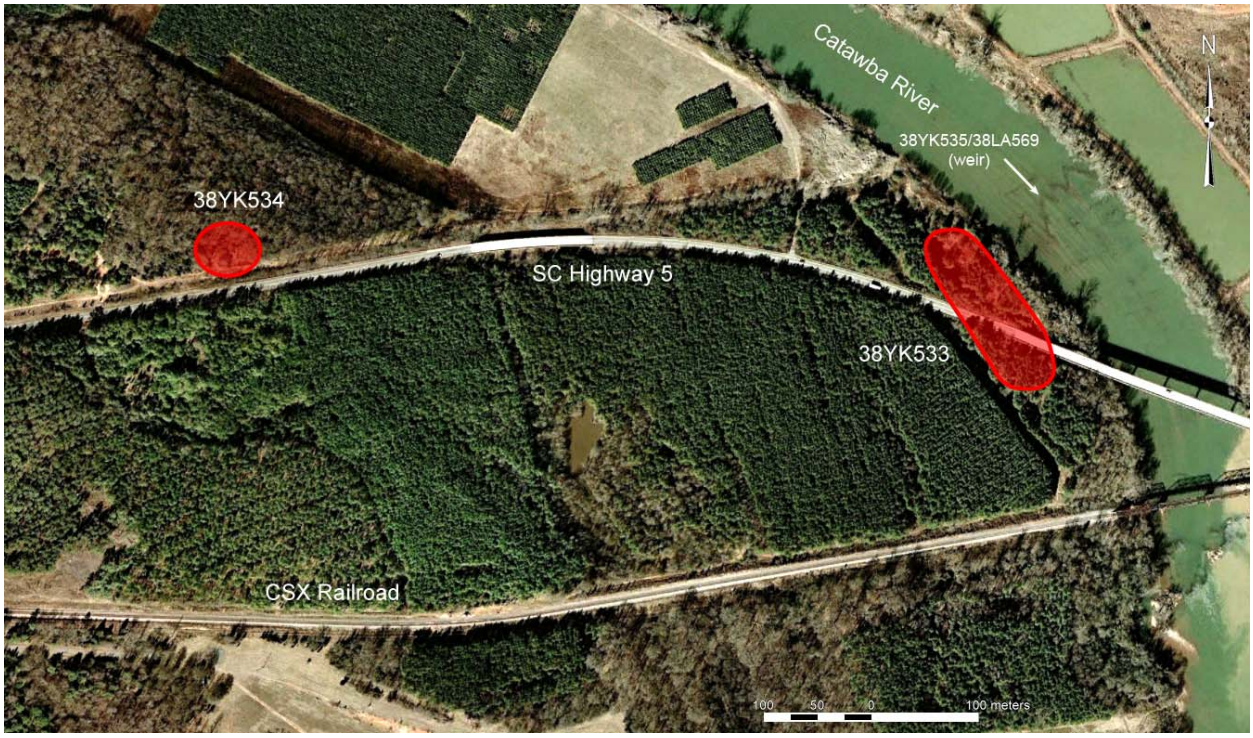

Figure 1.2. Aerial photograph taken March 30, 2004 of the project area, showing the locations of archaeological sites 38YK533 and 38YK534 in relation to SC Highway 5. Note the prehistoric fish weir (38YK535/ 38LA569) at the shoals in the river immediately northeast of 38YK533. Photo from Google Earth (© 2012 Orbis, Inc.).

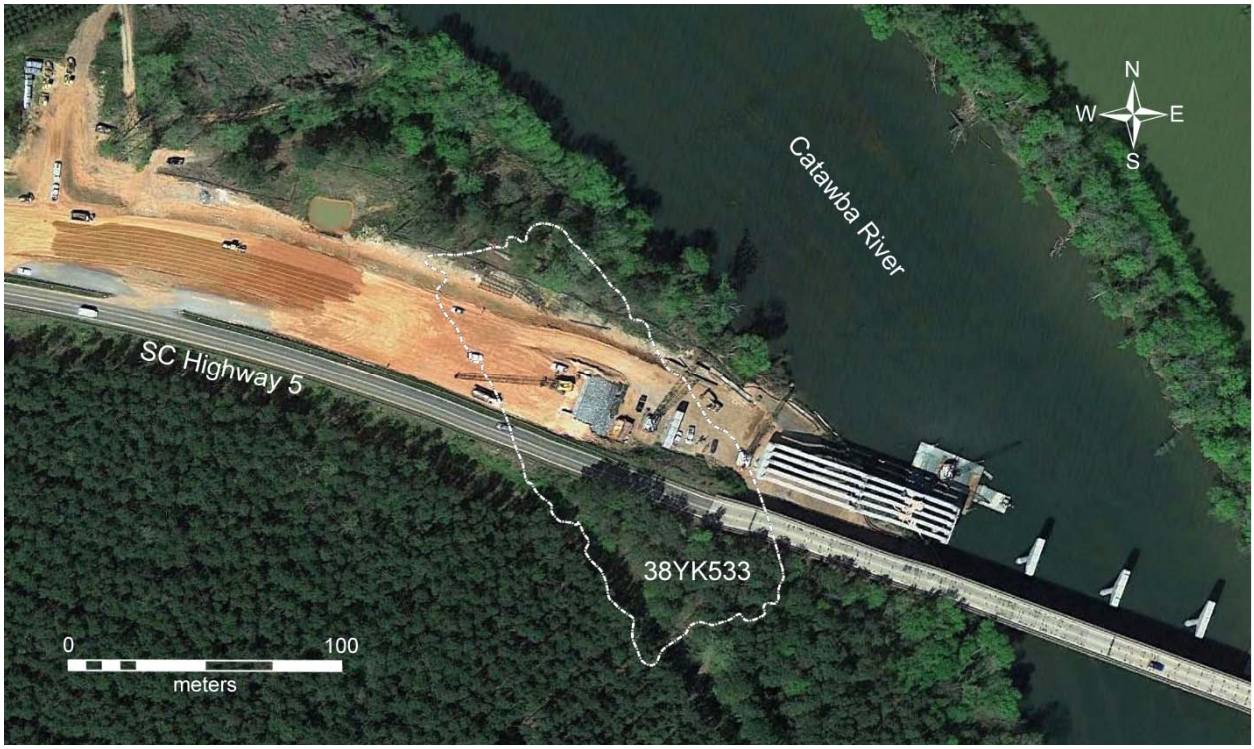

Figure 1.3. Aerial photograph taken March 26, 2012 of the project area, showing the locations of archaeological sites 38YK533 relative to new highway and bridge construction along SC Highway 5. Photo from Google Earth (© 2012 Orbis, Inc.).

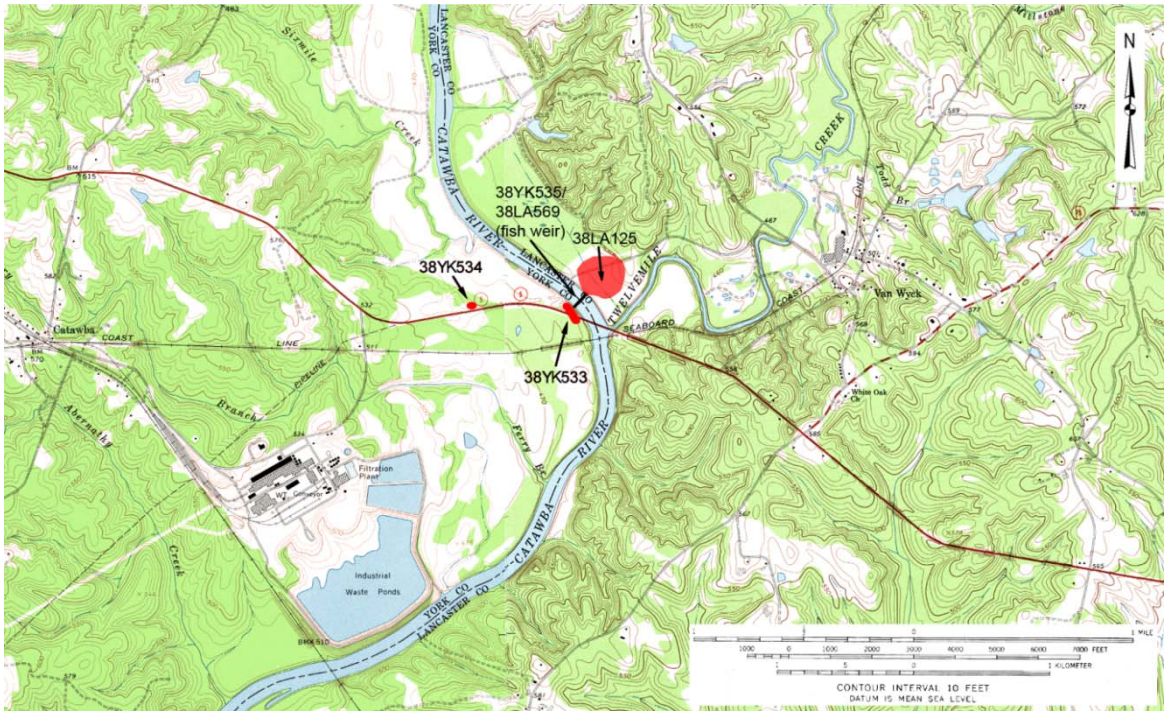

Figure 1.4. Sections of the Catawba, S.C. and Van Wyck, S.C. 7.5-minute series USGS topographic maps showing the towns, roads, and railroads located in the vicinity of the Ashe Ferry (38YK533) and Ayers Town (38YK534) sites in 1968. Note 38LA125 (now obliterated) and 38YK535/38LA569.

The Ashe Ferry site (38YK533) is located on the west bank of the Catawba River, approximately 3.8 km east of the present-day community of Catawba, South Carolina. The site name derives from the ferry that operated adjacent to the site from 1921 until 1959. The site occupies approximately 1.05 ha (2.6 ac) of the levee crest and first terrace formation, and is diagonally crosscut by the elevated causeway of SC Highway 5, which obscures more than half of the probable site area. Legacy Research Associates archaeologists originally delineated a 270 m x 85 m site area as defined by the incidence of ceramic sherds and lithic artifacts in deposits that ranged up to 140 cm in depth (Legacy Research Associates 2009). The 2009 Legacy Research Associates final report notes that:

> 38YK533 is recommended as being eligible for the NRHP under Criterion D for its information potential.… The site is significant primarily because of the buried Archaic period component and the ca. 1700 Catawba component. The Archaic period component at 38YK533 has the potential to yield significant information about stone tool morphology, intrasite distributions of artifacts, and the regional use of raw materials.… The ca. 1700 Catawba component at 38YK533 is significant primarily because of its rarity.… Catawba archaeological sites from the early-eighteenth century are sparsely distributed along the west side of the Catawba River.… Ceramics from 38YK533 appear to represent the earlier time period (ca. 1700) before a change was made around 1750–1760 in ceramic manufacturing. In addition, it is possible that cultural features associated with the ca. 1700 Catawba component are present at the site. Feature types could vary from storage pits, cob-filled pits, burial pits, and postholes. The Catawba component at 38YK533 is significant because of its information potential and not for its rarity [sic]. [Legacy Research Associates 2009:70]

Re-examination of materials recovered by the Phase I investigations, together with materials recovered in the initial stages of the 2010 testing program, determined that primary site occupations at Ashe Ferry occurred during the terminal Late Woodland and early Middle

Misssippian periods. Protohistoric or early historic era Catawba components, the original basis for the Phase I recommendations concerning site significance, are not represented by the site collections. Nevertheless, it was determined that the probable Late Woodland and Mississippian period components at 38YK533 were equally significant in presenting an opportunity to better define and explore hitherto poorly documented late prehistoric era native occupations in the lower Catawba River valley. The 2010 data recovery investigations at 38YK533 focused on the ceramic-bearing components rather than expending efforts to expose diffuse, deeply buried Archaic period deposits, much of which would remain undisturbed by bridge construction activities.

Prior to the 2010 investigations at Ashe Ferry, Late Woodland period and early Middle Mississippian period occupations in the central Piedmont region of South Carolina were not well-known, nor even clearly defined (e.g., see Anderson et al. 1996, Benson 2006, Prentice and Nettles 2003, Trinkley 1990). Consequently, archaeological inquiry at the Ashe Ferry site focused on development of basic temporal and descriptive frameworks, prerequisites to future interrogation of late prehistoric economies, settlement/subsistence systems, and political evolution in the region. Toward these ends, the 2010 investigations sought to address the following basic research questions:

a. What are the temporal positions and spans of Late Woodland and Mississippian period site components at Ashe Ferry? How do these components relate temporally, and do they present evidence of the Woodland-Mississippian cultural transition?
b. What are the formal characteristics of Late Woodland and Mississippian period ceramic types and assemblages at Ashe Ferry? Do these assemblages evince stylistic and technofunctional continuity?
c. What are the spatial extents and functional natures of Late Woodland and Mississippian period site components? How do the community structures of these components compare and contrast?
d. How do the subsistence systems represented by the Late Woodland and Mississippian period site components compare and contrast?

This suite of research issues is particularly informed by ongoing discussions concerning Mississippian emergence, and its relationship to antecedent Woodland cultural patterns, in the Catawba-Wateree-Santee river basin (e.g., Anderson et al. 1982; Anderson et al. 1996; Cable 2000, 2007; Cable et al. 1999, 2013, DePratter and Judge 1990, Vanier 2010, 2013; Wagner 2008, 20013). The programs of field recovery and laboratory analysis that operationalize these inquiries are detailed in the following discussions of field procedures (Chapter 3), archaeological contexts and site structure (Chapter 4), ceramic artifact assemblages (Chapter 5), and subsistence remains (Chapter 7).

Site Setting

The Ashe Ferry site (UTM Zone 17, 511938E, 3856942N) is located on the west bank of the Catawba River, within the central Piedmont physiographic province in southeastern York County, South Carolina (Figure 1.1). The area surrounding the site is characterized by low, gently rolling uplands with relatively broad, flat interstitial ridges that are marginally dissected by dendritic, incised stream drainages, a physiography typical of the lower portions of the Carolina Terrane in the South Carolina portion of the Carolina Slate Belt. The edges of the uplands can be somewhat steep, but are moderated by low, narrow colluvial flanks that adjoin the alluvial terrace systems along the Catawba River. The site itself is positioned at the eastern edge of an extensive (5 km x 1.7 km) complex of river terraces, and spans the proximal

(riverside) half of a Holocene-age T-1 terrace (approximately 9,800m²), with concentrations of archaeological contexts positioned 40–80 m southwest of the river channel. The northeastern site boundary is defined by the front of the terrace scarp. Site elevation ranges from 470–475 ft (144.5 m) AMSL, approximately 25 ft (7.62 m) above the normal river elevation. Because the site occupies a particularly elevated levee atop the T-1 terrace, it is not normally subject to periodic flooding; however, the site was certainly submerged by the infamous July 1916 flood. During this epic event, a 54 ft (16.5 m) high railroad trestle across Catawba River, located about 3.5 km downriver, was floated off its piers by floodwaters (Southern Railway Company 1917:102).

The T-1 terrace slopes gently from 38YK533 southwestward 300m to a Pleistocene paleochannel backswamp that drains into Ferry Branch. Beyond this backswamp, the original topography of older terraces is obliterated by settling ponds and other facilities of the Abitibi-Bowater paper mill. Nearby uplands rise up to 580 ft AMSL and generally present a gently rolling aspect, with more localized highly dissected areas.

The Catawba River is the dominant feature of the local environment and the principal natural factor affecting site location. The river, which heads in the North Carolina Blue Ridge, is the upper segment of the Catawba-Wateree-Santee river basin, a 540-mile-long drainage. The Ashe Ferry site is positioned at Catawba River Mile 122.9 (mileage above the Congaree River confluence), approximately 270 miles from the source and 266 river miles from the Atlantic Ocean. The mean river streamflow at 38YK533 is approximately 4850 cfs, with dramatic variations prior to regulation by a series of upstream impoundments. The river volume is substantially augmented by the confluence of Twelvemile Creek directly opposite the site. River shoals formed on bedrock dikes just above the mouth of Twelvemile Creek create a natural crossing point at 38YK533, and eighteenth-century accounts and maps indicate periodic, if not regular, use of this ford. These shoals also presented a suitable setting for construction of a multi-lobed stone fish weir (38YK535/38LA569) situated adjacent to the site, approximately 300 m upstream from the mouth of Twelvemile Creek.

Geology

The underlying geology of the site area is somewhat complex. Ashe Ferry sits on the Gold Hill-Silver Hill shear zone (Lawrence 2008) at the interface of the Carolina Slate Belt and the Charlotte Belt, within the Carolina Terrane (Dennis and Wright 1997; Secor et al. 1998) of the central Piedmont. Butler (1965) describes this area as:

> A narrow extension of the Carolina slate belt underlies part of the Lancaster County-Panhandle and southeastern York County. The major rock types are phyllite and argillite. The phyllite has a prominent cleavage that is nearly vertical and trends northeast. The phyllite is probably formed from felsic to intermediate volcanic rocks and, in some cases, sedimentary rocks. Bedding in the argillite defines north-east trending folds. Mineral assemblages near the center of the belt are typical of lower green schist facies and metamorphic rank rises toward each flank. Transitional rocks occurring between the belts are so mapped because they have characteristics of both belts and probably mark a metamorphic gradient. The transitional zone between the Charlotte belt and Carolina slate belt contains foliated granitic rocks, biotite gneiss, phyllite, and fine-grained amphibolite interlayered in a complex manner.

In the immediate environs of 38YK533, Butler (1965) observed that:

> Biotite gneiss crops out in [Catawba] River S[outh] of [SC Highway 5] bridge. Road cuts on E side of the bridge are in saprolite of foliated granite, biotite schist, and minor amphibolite…. Clay pit of Ashe Brick Co, of Van Wyck, S.C. Removal of material over several acres has exposed green to light gray slate and phyllite formed by regional metamorphism of laminated argillite and subordinate beds of coarser clastic rocks. Slaty cleavage is strongly developed and is nearly vertical with a strike of about N 60° E. Folds observed in the pit at various stages of excavation range in wave length from a few feet to less than an

> inch and generally plunge ENE at about 35°. Cleavage seems to parallel axial planes of the folds. Two Triassic (?) diabase dikes trend NW through the pit and show effects of thermal metamorphism on the surrounding rocks. The larger dike is about 50 feet thick. A thin section from the center of the dike has about 12% olivine. [Butler 1965:2]

This bedrock geology controls multiple conditions important to human occupation of the area, including development of the surface terrain, upland soils formation, groundwater distribution, and the configurations of the biotic environment. The position of the site near the interface of the Carolina Slate Belt and Charlotte Belt complexes likely presented inhabitants of 38YK533 access to more diverse local environments.

Soils and Site Stratigraphy

The bedrock geology at 38YK533 is buried by more than nine meters of Holocene alluvium deposited by the Catawba River. The surficial alluvial sediments at Ashe Ferry are broadly characterized as Congaree fine sandy loam (0 to 2 percent slopes), a well-to-excessively drained alluvial soil that occurs on younger terraces of the Catawba River floodplain (Camp 1965). Parent material for Congaree soils include weathered granite, gneiss, schist, and basic rocks. Congaree association alluvial terraces probably once supported levee and bottomland forests of oak, hickory, elm, beech, gum, ash, and cottonwood trees with an understory of vines, canes, briers, and native grasses (Camp 1965:18). The majority of these terraces are now cleared for agricultural use.

Camp (1965:34) describes the typical profile for Congaree fine sandy loam as: "0-7 inches, dark grayish-brown, very friable fine sandy loam; 7 to 33 inches, yellowish-brown, very friable fine sandy loam [with] weak granular structure; 33 to 44 inches +, loamy fine sand mottled with dark brown, yellowish brown, and grayish brown." Testing at 38YK533 revealed a 15–25cm overburden mantle of slightly silty, fine undifferentiated quartz sand with mica flecks. This overburden, which yielded very low artifact frequencies, is interpreted as redeposited alluvium swept in by the 1916 flood. This deposit appears to have been slightly plow disturbed, although agricultural activity at the site may have ceased shortly after the sterile sand flood deposits capped the productive Congaree soils. Desultory plowing after the 1916 event incorporated artifacts from pre-1916 deposits into this overburden.

Site sediments beneath this twentieth-century deposit more closely conform to Camp's description of Congaree fine sandy loam, with a pre-1916 plowzone (Ap or Apb horizon) consisting of 10–20cm of brown (10YR4/3–10YR3/3), organic, sandy loam which contained relatively high densities of archaeological materials referable to the past 2,000 years of occupation. This stratum appears to represent a once-stable, developed A-horizon that was largely truncated and homogenized by low intensity historic era plowing. Materials within this deposit include large (≥5 cm diameter) ceramic sherds, artifacts that are typically highly fragmented by twentieth-century agricultural practice. Thin, undisturbed patches of intact A-horizon (Ab) deposits were evident at the base of plowzone in some areas; these were characterized by eluviated (rather than abrupt) contacts with underlying deposits. Beneath this historic plowzone and A-horizon remnants are more than two meters of eluviated sand or silty sand with *in situ* lamellae development below 60 cm (below surface) defining Bw horizons. The uppermost of these eluviated deposits (at 35–55cm below the current surface) included Late Archaic period lithic materials; deep testing during the Phase I survey identified Archaic period materials at depths of 1.5–1.6m below present ground surface (Legacy Research Associates 2009:48). The incidence of these more deeply buried materials indicates sustained terrace aggradation through the mid-Holocene into the late Holocene, with stabilization over the past 2,000 years.

Climate

The site area has a humid subtropical climate, with warm, humid summers and mild winters, and average annual precipitation (mostly rainfall) of 46.1 inches (Landers 1974; South Carolina State Climatology Office 2012). Daytime temperatures during midsummer are typically near 90°F; the record high temperature is 106°F. Winter daytime temperatures are usually above 40°F; a record low winter temperature of -4°F is reported. The average growing season between seasonal frosts is 220 days. These present-day conditions probably approximate the climatic regime established after abatement of the Holocene Climate Optimum (ca. 5000 B.P.), and likely reflect prevalent conditions during the major span of occupation represented at 38YK533. The primary Late Woodland/emergent Mississippian occupations at Ashe Ferry coincide with the Medieval Warm Period (ca. A.D. 950–1250), a warm episode with annual temperatures comparable to the late twentieth century (Mann et al. 2009) but possibly having greater variation in precipitation (Stahle and Cleaveland 1994). The Little Ice Age climatic episode (ca. A.D. 1450–1850), defined by marked cooling and drying trends, postdates the major site occupations but coincides with protohistoric and historic-era Waxhaw, Catawba, and European occupations of the surrounding area (Stahle and Cleaveland 1994).

Biotic Environment

The Ashe Ferry site is situated in a historically rich biotic environment, with proximate access to a wide range of riverine and terrestrial resources important to human economies. The site is positioned within the greater Piedmont Level III ecoregion (Omernik 1995), a zone broadly dominated in the late Holocene by variations of the oak-hickory community or oak-hickory pine community (Braun 1950; Skeen et al. 1993). Notable terrestrial habitats defined in the north-central South Carolina piedmont include oak-hickory forest, basic (i.e., alkaline) forest, bottomland hardwood forest, cove forest, levee, shoal and stream bar, mesic mixed hardwood, montmorillonite forest, piedmont seepage forest, small stream forest, and upland depression swamp forest (Nelson 1986), as well as piedmont savannah (Barden 1997; Davis et al. 2002; Juras 1997; Schmidt and Barnwell 2002).

Most of these stable/climax habitats are now reduced to vestigial tracts scattered through a mosaic-developed landscape, and the original distribution of these habitats must be inferred by reference to existing local physiography. The 38YK533 locality is within the Carolina Slate Belt Level IV ecoregion of the piedmont, where felsic substrates in the uplands probably dictate a climax Piedmont Dry-Mesic Oak-Hickory Forest subtype (Grossman et al. 1998) characterized by a white oak/red oak/mockernut hickory/pignut hickory dominated canopy with subcanopy species including sourwood, red maple, black gum, dogwood, redbud, and American holly. The understory is often dominated by hillside or dryland blueberry, with climbing vines such as muscadine grape and poison ivy. Herbaceous plants and grasses are sparse but omnipresent. Slightly more mesic settings in ravines or on lower slopes with northerly aspects probably presented mesic mixed hardwood forest, with canopies dominated by white oak, southern red oak, tulip poplar, red maple, and American beech, and understory including dogwood, American holly, and heaths (Nelson 1986). The precontact extent of prairie/savannah habitats in the north-central piedmont uplands and alluvial plains is widely conjectured (e.g., Barden 1997; Juras 1997) but undocumented. Davis et al. (2002) suggest the former existence of patchy prairie mosaics across the region; such open, grassy environments may have been readily accessible to the inhabitants of 38YK533.

The sandy alluvial levee at 38YK533 probably supported a mixed community with stands of river cane interspersed with sycamore, river birch, box elder, black willow, red maple, tulip

poplar, green ash, sweet gum, and elm. The extensive terrace complex adjacent to the site likely hosted a mix of piedmont bottomland forests that included canopy species such as swamp chestnut oak, water oak, willow oak, loblolly pine, sycamore, green ash, box elder, red maple, tulip poplar, sweet gum, elm, red maple, hackberry, cottonwood, and American holly. Older, more elevated terraces were probably covered with either mesic mixed hardwood or mesic oak-hickory forests.

Ethnobotanical remains recovered from archaeological contexts at 38YK533 reflect focused use of upland plant resources from the upper terrace/upland oak-hickory forests, with strong representation of acorns and hickory nuts, and incidence of chestnut, black walnut, blueberry, persimmon, grape, and holly. Other species are more representative of disturbed ground and open or edge habitats, including amaranth, goosefoot, spurge, geranium, little barley, morning glory, evening primrose, maypop, maygrass, pokeweed, knotweed, purslane, plum, brambles, and bearsfoot. Sedge and flatsedge represented in the 38YK533 samples probably derive from marshy habitats associated with the backswale that separates the first and second terraces.

Diverse terrestrial fauna populated habitats surrounding site 38YK533 prior to widespread historic-era disruptions, and comprise species typical of the oak-hickory zone of the Southern Temperate Deciduous Forest Biome (Shelford 1963:57). Contemporary mammalian fauna of the north-central piedmont region of South Carolina (Fields 2007) include white-tailed deer, black bear, gray squirrel, fox squirrel, southern flying squirrel, opossum, eastern cottontail rabbit, chipmunks, woodchucks, beaver, muskrat, gray fox, raccoon, long-tailed weasel, mink, river otter, striped skunk, bobcat, and a wide variety of small rodents (e.g., rice rat, harvest mouse, white-footed mouse, woodrat, pine vole), bats (e.g., red bat, hoary bat, big brown bat, evening bat), shrews (southeastern, short-tailed, least), and the eastern mole. Extirpated species include cougar, elk, gray wolf, and possibly bison and red wolf. Zooarchaeological records from 38YK533 (see Whyte, this volume) and nearby archaeological contexts (Thomas R. Whyte, personal communication 2012) document white-tailed deer, black bear, fox squirrel, gray squirrel, cottontail, gray fox, raccoon, opossum, skunk, and beaver as mammalian species most important to human economies.

The varied habitats of the central piedmont once hosted a profusion of resident and migratory birds. Loomis (1891) reports records of 202 species in nearby Chester County. Recent annual bird counts conducted in York County have documented 126 species present in midwinter, with as many as 80 species present in a single year. Archaeological contexts at 38YK533 and nearby sites have yielded remains of turkey, mourning dove, mallard, sparrow, blue jay, mimic thrush, pileated woodpecker, and common flicker. Conspicuously absent from the archaeological record at 38YK533 and the historic-era Catawba village samples are grassland/edge habitat species such as bobwhite and meadow lark, as well as passenger pigeon, which Lawson (1709) reports in vast abundance in the central piedmont region.

Terrestrial and aquatic habitats around the Ashe Ferry site also abound in reptiles and amphibians, including diverse colubrid (e.g., eastern garter snake, scarlet snake, black racer, corn snake, rat snake, eastern hognose snake, eastern kingsnake, northern water snake, rough green snake, queen snake) and croatalid (i.e., copperhead, timber rattlesnake, pygmy rattlesnake) snakes (Thompson 1982; Wilson 1995). Native lizards include the green anole, eastern fence lizard, six-lined racerunner, coal skink, five-lined skink, southeastern five-lined skink, broadhead skink, mole skink, ground skink, and eastern glass lizard. Turtles common to the area include the box turtle, common snapping turtle, painted turtle, river cooter, slider turtle, eastern mud turtle, common musk turtle, and spiny softshell. Amphipians documented in southern York County

include Fowler's toad, eastern spadefoot toad, eastern narrowmouth toad, northern cricket frog, green treefrog, pine woods treefrog, barking treefrog, spring peeper, upland chorus frog, bullfrog, green frog, pickerel frog, and southern leopard frog, along with spotted salamander, marbled, spotted dusky salamander, southern two-lined salamander, three-lined salamander, spring salamander, four-toed salamander, slimy salamander, mud salamander, red salamander, and red-spotted newt.

Zooarchaeological samples from the area indicate only limited use of reptiles and amphibians by local native communities. Contexts at 38YK533 and nearby sites (i.e., 38YK534 [Ayers Town], SoC632/635 [New Town] and SoC634 [Old Town]) yielded only sparse remains of frog (*Rana* sp.), toad (*Bufo* sp.), eastern box turtle, musk turtle, slider/cooter, stinkpot turtle, and both colubrid and croatalid snakes.

The documentary (i.e., Jones 1815; Lawson 1709) and zooarchaeological records indicate that fish were particularly important to human economies in the Catawba River basin. DeWitt (1998) documents 37 native fish species currently resident in the lower Catawba River, including warmouth, bluegill, redbreast sunfish, redear sunfish, green sunfish, pumpkinseed, black crappie, largemouth bass, brassy jumprock, white sucker, quillback, shorthead redhorse, v-lip redhorse, striped jumprock, gizzard shad, threadfin shad, yellow perch, white bass, striped bass, bowfin, longnose gar, mosquitofish, bluehead chub, white catfish, flat bullhead, snail bullhead, and channel catfish. Mills (1826) also indicates limited runs of anadromous and diadromous fish (e.g., shad, eels) that ascended above the Great Falls of the Catawba prior to major river impoundments. Archaeological sites near 38YK533 have yielded remains of chain pickerel, largemouth bass, redbreast sunfish, warmouth sunfish, white catfish, brown bullhead, snail bullhead, flat bullhead, bluehead chub, quillback carpsucker, Carolina redhorse, notchlip redhorse, robust redhorse, and sturgeon (Thomas R. Whyte, personal communication 2012).

Aquatic habitats near the site also supported molluscan and crustacean fauna useful to the human inhabitants of 38YK533. Bogan et al. (2008) identify a broad suite of bivalves as having been historically present in the lower Catawba basin, including multiple species of *Alasmidonta*, *Elliptio*, *Lampsillis*, and *Villosa*. Archaeological contexts in the area have yielded specimens of *Elliptio* sp.; most of these appear to have been valves used as potter's tools (Whyte, this volume). Crayfish, particularly *Cambarus* sp. and *Procambarus* sp. (Eversole and Jones 2004), were also widely available to the inhabitants of 38YK533, but no archaeological record of these crustaceans is documented in the area.

To summarize, the local environments surrounding the Ashe Ferry site are typical of central Piedmont riverine settings, where linear corridors of riverine, palustrine, and bottomland habitats border minimally differentiated swaths of oak-hickory forested uplands. Local variations in upland environments were largely products of slope and aspect along the borders of drainages; there are no higher elevation ridges in the immediate area to provide elevational gradations. More open, thinly forested, or unforested environments in the area were likely the products of human activity, and were probably subject to rapid succession without continued human intervention. The central piedmont biota was relatively rich in pre-modern times, and certainly adequate to support substantial human populations of foragers, hunters, and gatherers within small territories before the advent of large-scale food production. Although the eventual spread of horticultural food production into the central piedmont region may have spurred higher human population densities by broadening the subsistence basis, wild plant and animal resources certainly remained critically important to piedmont native societies well into the nineteenth century.