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THE LATE ARCHAIC COMPONENT OF THE MILES SITE, CLARK COUNTY, INDIANA

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ABSTRACT. The Miles site (12-Cl-158) was defined as a large lithic scatter on a terrace of the Ohio River in Clark County, Indiana. Excavations conducted in advance of sand and gravel mining operations resulted in the documentation of a variety of cultural features and the collection of numerous hafted bifaces and cores dating to the Late Archaic period (*ca.* 5000–3000 ybp). The truncated remains of earth ovens, small storage/refuse pits, and mortuary features indicate a variety of activities took place at the site. Together with the lithic and feature data, the overall structure of the site suggests that repeated, intermittent occupations by small groups produced the bulk of the deposits and materials. The scale and scope of the McWhinney component suggests an intermediate level of site use that does not fit comfortably into a dichotomous "base camp/extractive site" model of Late Archaic settlement in the middle Ohio Valley.

Keywords: Late Archaic, hunter-gatherer settlement, McWhinney Heavy Stemmed, Ohio Valley archaeology

The Miles site (12-Cl-158) was defined on the surface as a large (*ca.* 7.5 ha) lithic scatter extending approximately 450 m along the scarp and margin of the Wisconsin (late Pleistocene) terrace in the Bethlehem Bottom, Clark County, Indiana (Fig. 1). The Bethlehem Bottom is situated on an inside bend of the Ohio River between Ohio River Miles 574 and 578, approximately 50 km upriver from the Falls of the Ohio at Louisville, Kentucky. Ongoing sand and gravel mining activities have been the impetus for several archaeological efforts in the bottom during the last several decades (Brinker et al. 1980; Granger et al. 1973; Mocas 1995; Mocas & Smith 1994, 1996; Munson 1976; Richardson 1982; Smith 1995; Smith et al. 1999; Smith & Mocas 1996; Waters et al. 2001; White 1999, 2002). Although diagnostic hafted bifaces suggest the most intensive use of the bottoms occurred during the Early Archaic, Late Archaic, and Middle Woodland periods, all prehistoric periods are represented (White 1999).

The Miles site was the largest and densest scatter identified in the surveyed portions of the bottoms. Together with the immediately adjacent sites, the lithic scatter on this portion of the terrace encompassed approximately 11.8 ha. Munson (1976) considered the materials at the site to be reflective of a major habitation, as did Mocas & Smith (1996). Late Archaic hafted bifaces dominated the diagnostic surface assemblages reported by both Munson (1976) and Mocas & Smith (1996).

Excavations were undertaken at the Miles site in 1998 and 1999 by Indiana University-Purdue University Fort Wayne (Smith et al. 1999; White 2002). Excavations focused on extensive mechanical stripping of plowzone (approximately 14,577 m^2) and resulted in the documentation of 35 subplowzone anomalies. Twenty-two of these anomalies were hand excavated and determined to be of definite or probable cultural origin (Fig. 2). Flotation samples from ten features were analyzed by Bush (2002). Many of these features had been significantly truncated by plowing, and there was no evidence of intact, nondiscrete deposits such as midden. Following excavations, the Miles site was completely destroyed by sand and gravel mining.

LITHICS

Excavations resulted in the collection of over 9,500 prehistoric artifacts, including 93 hafted bifaces, 210 bifaces/biface fragments, 16 formal/semiformal unifaces, 183 cores, and 15 groundstone tools. Classified hafted bifaces from the site include types dating to the Paleoindian through Early Woodland periods (Table 1). Late Archaic types are the most numerous.

Late Archaic hafted bifaces.—A total of

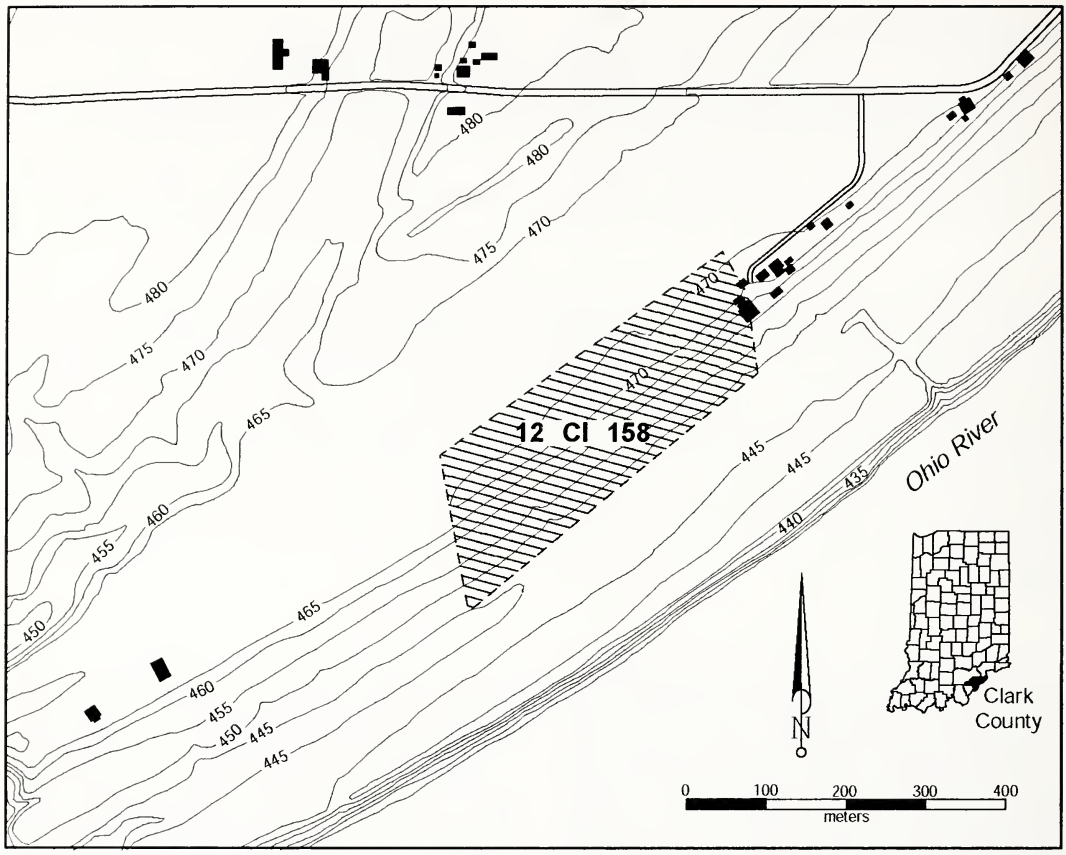

Figure 1.—Location of the Miles site (12-Cl-158).

72 hafted bifaces, hafted biface fragments, and preforms were confidently or tentatively attributed to the Late Archaic period. Although the typed assemblage includes Matanzas (n = 1), Table Rock (n = 1), and Motley (n = 1) hafted bifaces, Late Archaic Stemmed forms (n = 63) are the most common (Table 1, Fig. 3). Late Archaic Stemmed points were collected from both feature (n = 11) and nonfeature (n = 52) contexts.

As defined by Justice (1987), the Late Archaic Stemmed cluster includes the Karnak Unstemmed, Karnak Stemmed, and McWhinney Heavy Stemmed types. McWhinney Heavy Stemmed forms (n = 55) dominate the Miles excavation assemblage and surface collections from the site (Mocas & Smith 1996). The assemblage includes 12 McWhinney points that have been reworked into endscrapers.

McWhinney and cognate hafted biface forms (see Justice 1987) have been studied in varying detail by Mocas (1976), Justice (1987), and Vickery (1972). Generally, these points are relatively thick forms with haft elements that vary from lanceolate (Karnak Unstemmed) to expanding stemmed and side-notched (McWhinney Heavy Stemmed).

In terms of overall size and morphology, the excavated McWhinney assemblage is consistent with the description provided by Justice (1987). While the sample includes points with a variety of haft configurations, the overall dimensions of the hafts are fairly consistent, suggesting that some of the haft variation may be random, temporal, functional, or stylistic, rather than technological, in nature (White 2002).

Cores.—Given the predominance of Late Archaic hafted bifaces at the Miles site, it is likely that many of the cores (n = 183) are associated with Late Archaic use of the site (Fig. 3). Most of the cores are "casual" or amorphous forms (where flake detachment

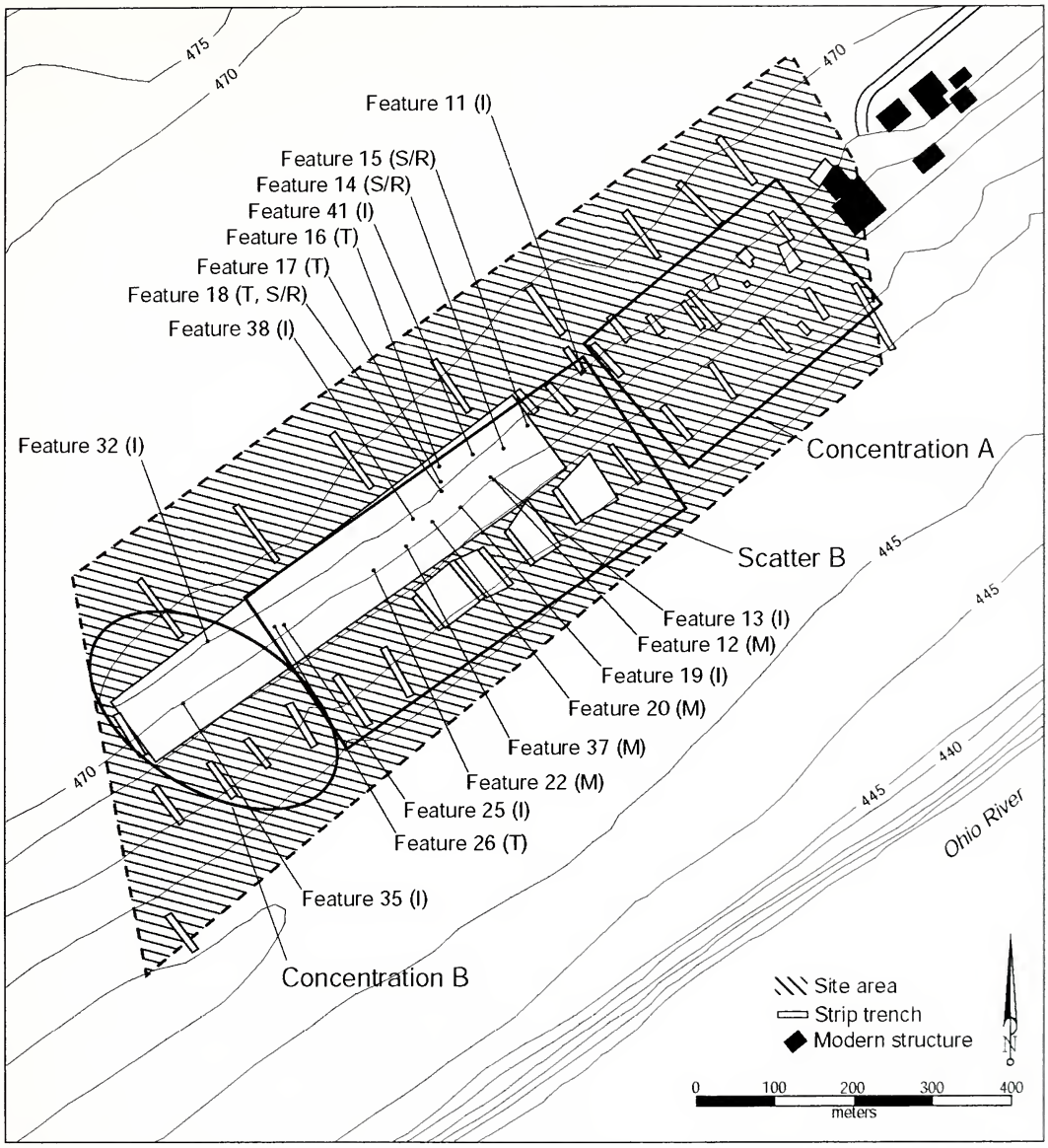

Figure 2.—Location of surface artifact concentrations (as defined by Mocas & Smith [1996]), excavations, and cultural features at the Miles site. Feature designations are: T = thermal feature; M = mortuary feature; S/R = storage refuse feature; I = indeterminate feature.

was neither intensive nor directed enough to produce a conical, discoidal, or spherical shape) made of locally available Laurel/Marble Hill cherts. Cores were likely produced both during the production of flakes (for use in cutting and scraping tasks) and during bifacial reduction. Casual cores similar to those from the Miles site have been associated with Late Archaic components in similar settings (e.g., White 2001).

CULTURAL FEATURES

Cultural features from the Miles site include thermal/cooking features (n = 5), possible storage/refuse pits (n = 3), mortuary features (n = 4), and features of indeterminate class (n = 10) (Table 2). Features were hand-excavated using standard techniques. Most excavated sediment was dry screened through ¼" (≅ 5 mm) mesh. Botanical remains from flotation samples were analyzed by Bush

Table 1.—Hafted bifaces collected from the Miles site during excavations. Hafted bifaces recovered from features and denoted with an asterisk. Cluster terminology and age follow Justice (1987).

Period	Cluster	*n*	Provenience
Paleoindian	Unidentified	1	Trench
Early Archaic	Kirk Corner Notched	3	Trench
Early Archaic*	Kirk Corner Notched	1	Feature 37
Early/Middle Archaic	Large Side Notched	2	Trench
Late Archaic	Matanzas	1	Trench
Late Archaic	Table Rock	1	Surface
Late Archaic	Late Archaic Stemmed	52	Surface/trench
Late Archaic*	Late Archaic Stemmed	2	Feature 12
Late Archaic*	Late Archaic Stemmed	2	Feature 20
Late Archaic*	Late Archaic Stemmed	2	Feature 22
Late Archaic*	Late Archaic Stemmed	2	Feature 37
Late Archaic*	Late Archaic Stemmed	2	Feature 38
Late Archaic*	Late Archaic Stemmed	1	Feature 41
Late Archaic?	Unidentified	4	Trench
Late Archaic/Early Woodland	Motley	1	Surface
Late Archaic/Early Woodland?	Unidentified	2	Surface/trench
Early Woodland	Dickson	1	Trench
Unidentified	Unidentified	12	Surface/trench
Unidentified*	Unidentified	1	Feature 3

(2002), and carbon samples from four of the features were assayed (Table 3). Three of the radiocarbon dates (from Features 12, 17, and 37) are Late Archaic in age, while the fourth (from Feature 21) is more recent.

Thermal features.—Features 16, 17, 18A, 21, and 26 were thermal/cooking features (Fig. 4). These features showed evidence of *in situ* heating, and probably functioned as hearths, earth ovens, or roasting pits. No di-

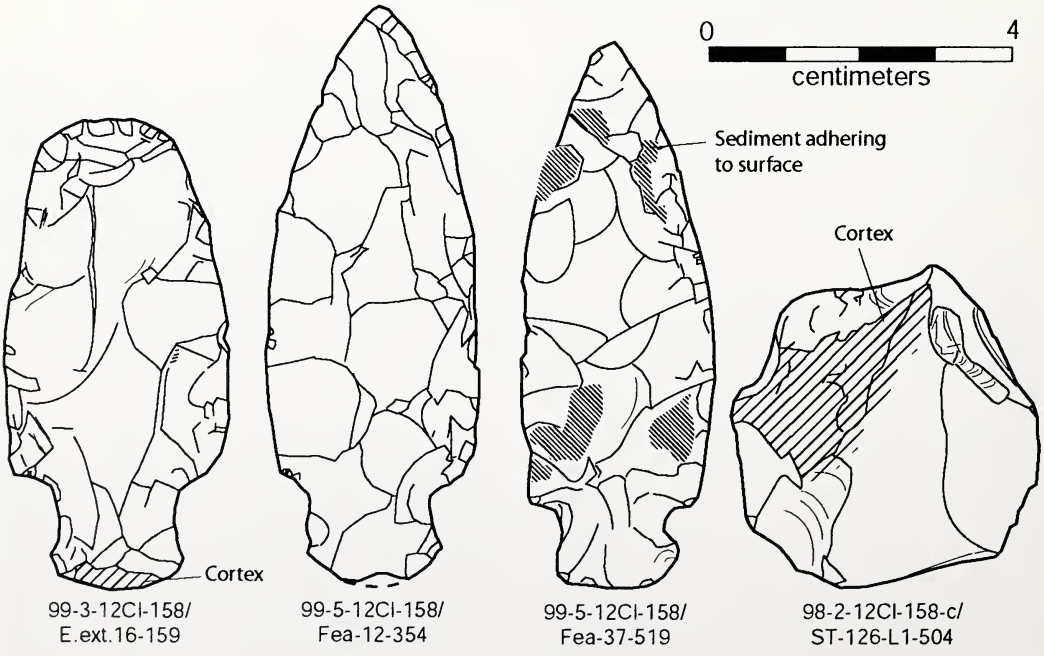

Figure 3.—Examples of McWhinney Heavy Stemmed hafted bifaces and a casual core from the Miles site.

Table 2.—Size, shape, and function of cultural features documented at the Miles site. Dimensions are in plan (cm).

Feature	Class	Dimensions	Description
2	Indeterminate	90 × 96	Shallow, amorphous stain; non-oxidized fill
3	Indeterminate	80 × ?	Shallow stain of unknown dimensions; non-oxidized fill
11	Indeterminate	53 × 47	Shallow, circular/elliptical pit/basin; non-oxidized fill
12	Mortuary	84 × 102	Elongated basin with rounded bottom and sloping sides; oxidized fill
13	Indeterminate	20 × 42	Elongated stain; oxidized fill
14	Storage/refuse	60 × 65	Circular pit with steep sides and rounded bottom; non-oxidized fill
15	Storage/refuse	20 × 21	Circular pit with steep sides and rounded bottom; non-oxidized fill
16	Thermal	71 × 71	Circular basin with steep sides, flat bottom; oxidation ring
17	Thermal	58 × 58	Circular basin with gently rounded bottom; oxidation ring
18A	Thermal	90 × 103	Conical pit; oxidized zone
18B	Storage/refuse	35 × ?	Circular pit with rounded bottom; lightly oxidized fill
19	Indeterminate	29 × 27	Shallow, circular stain; oxidized fill
20	Mortuary	80 × 103	Elongated basin with sloping sides and bottom; partly oxidized fill
21	Thermal	130 × 98	Circular/oval basin with flat bottom and sloping sides; oxidized ring and charcoal zone
22	Mortuary?	20 × ?	Shallow, oxidized stain
25	Indeterminate	75 × 60	Shallow basin with gently rounded bottom; oxidized fill
26	Thermal	95 × ?	Circular/oval pit/basin with conical profile; oxidized fill
32	Indeterminate	60 × 50	Oval basin with oxidized fill
35	Indeterminate	80 × 70	Shallow pit/basin with rounded/conical base; oxidized fill
37	Mortuary	120 × 45	Elongated basin with gently rounded bottom; oxidized fill
38	Indeterminate	unknown	"Cache" of two hafted bifaces; no pit discerned
41	Indeterminate	unknown	Oxidized deposit of unknown size and shape

agnostic artifacts were recovered from these features. A possible Late Archaic Stemmed cluster hafted biface fragment was recovered from Feature 21. Charcoal from this feature returned a Middle Woodland date, however (Table 3).

Features 16 and 17 were circular basins with steep sides and flat bottoms. Their structural characteristics suggest that they were earth ovens (White 2002). Feature 16 appears to have been cleaned out and used as a refuse or storage pit after its last use as a cooking pit. Feature 17 contained a remnant of the last rock "charge" that was used to heat the items placed in the pit. The stratigraphy of Feature 17 suggests an order of construction and use similar to that discussed by Dering (1999). A flotation sample from Feature 17 contained more nutshell by both count (n = 63) and weight than all the other analyzed flotation

Table 3.—Radiocarbon dates from Features 12, 17, 21, 37. Samples were analyzed by Beta Analytic. The dates from Features 12 and 37 are AMS dates from charcoal recovered from flotation samples. The Feature 17 date is from charcoal originating in the charcoal lens and the southwest quadrant of the feature. The Feature 21 date is from a large piece of charcoal from the charcoal zone.

Sample ID	Provenience	Conventional radiocarbon age (ybp)	2 Sigma range uncalibrated (ybp)	13C/12C ratio
Beta-164348	Feature 12	4150 ± 40	4230–4070	−24.3 ‰
Beta-164349	Feature 17	3130 ± 70	3270–2990	−25.5 ‰
Beta-164350	Feature 21	1650 ± 60	1770–1530	−26.1 ‰
Beta-164351	Feature 37	4140 ± 40	4220–4060	−23.6 ‰

samples combined (Bush 2002). Given the intact structure of the feature, the concentration of nutshell appears to be a result of primary deposition.

Feature 18A was a large, conical pit filled with both oxidized and non-oxidized sediments. Portions of the base and sides of the feature were bounded by a thin zone of oxidized sediment overlain by discontinuous charcoal deposits. The analyzed flotation samples contained no nutshell or other charred botanical remains (Bush 2002). The thin layer of charcoal and oxidized clay bounding the feature suggests *in situ* burning of low intensity or short duration.

Feature 26 was a circular/oval pit with sloping sides and a pointed bottom. Feature 26 appears to have been similar to Feature 18A.

Possible storage/refuse pits.—Features 14, 15, and 18B are interpreted as possible storage or refuse pits. These features are small pits with no evidence of *in situ* heating or burning. A storage and/or waste disposal function is inferred based on the lack of evidence for use in any other capacity. No diagnostic artifacts were recovered from these features.

Mortuary features.—Based upon their size, shape, structure, and associated artifacts, Features 12, 20, and 37 are mortuary features. These features are deposits of oxidized sediment that differ from the Late Archaic thermal features in terms of their size (lengths over 1 m), shape (elongated in plan view rather than circular), and structure (no evidence of heating other than the oxidation of the fill). Human remains from these features are limited to a single navicular from Feature 37. This navicular bone was the only bone recovered from the site during excavations.

Features 12, 20, and 37 were elongated, basin-shaped deposits of oxidized, clayey sediment (Fig. 4). A small cluster of lithic artifacts was present in the central portion of Feature 12. This cluster included conjoining fragments of two bifaces, one of which is an incomplete (missing the stem and base) McWhinney Heavy Stemmed. Another McWhinney was present in the western portion of the feature, and three beads (two disc-shaped cannel coal beads and one tubular sandstone bead) were present in the eastern portion of the deposit.

One complete McWhinney and a distal fragment of a probable Late Archaic Stemmed point were recovered from Feature 20. The complete point was in the central portion of the feature. Three hafted bifaces were recovered from Feature 37: one complete McWhinney, one incomplete McWhinney (missing the stem and base), and one Kirk Corner Notched. The complete McWhinney and the Kirk were in close proximity in the central portion of the feature.

Most of Feature 22 was removed during mechanical stripping. What remained of the feature suggested a shallow deposit of oxidized sediment. Two McWhinney Heavy Stemmed hafted bifaces (one complete and one incomplete) were recovered from the disturbed portions of the feature. The size, shape, and fill characteristics of this feature, coupled with the presence of the two hafted bifaces, point to a possible functional similarity to Features 12, 20, and 37.

It is not clear exactly what kind of mortuary behaviors produced the features at the Miles site. Although the sediments in the feature fill have been heated, an *in situ* "cremation pit" interpretation is difficult to reconcile with the presence of unheated lithic artifacts and the near absence of bone and charcoal in the oxidized fill (Smith et al. 1999; White 2002). The navicular from Feature 37 was not calcined. The fill of Feature 37 was not homogeneously oxidized, suggesting the possibility that oxidized sediment may have been placed in the pit rather than heated *in situ*. In all, the characteristics of these features are inconsistent with the high, sustained temperatures necessary for cremation (see Bellomo 1993; Buikstra & Swegle 1989; Goffer 1980; White 2002).

It is possible that oxidized sediments were used as burial pit fill because of their color. The use of red pigments in mortuary ritual has a long history in the Eastern Woodlands and has been documented in Late Archaic contexts within the Ohio Valley region and elsewhere (e.g., Boisvert 1986; Bowen 1977; Erlandson et al. 1999; Lewis & Kneberg 1959; Lewis & Lewis 1961; Mocas 1976; Pleger 2000; Ritchie 1945; Webb 1946; Winters 1969). A cursory review of the literature did not produce any examples of oxidized sediment being used as pit fill, however, or any good examples of burials being placed in fired pits and covered with oxidized sediment.

The elongated shapes of the intact portions of the Miles mortuary features contrast with

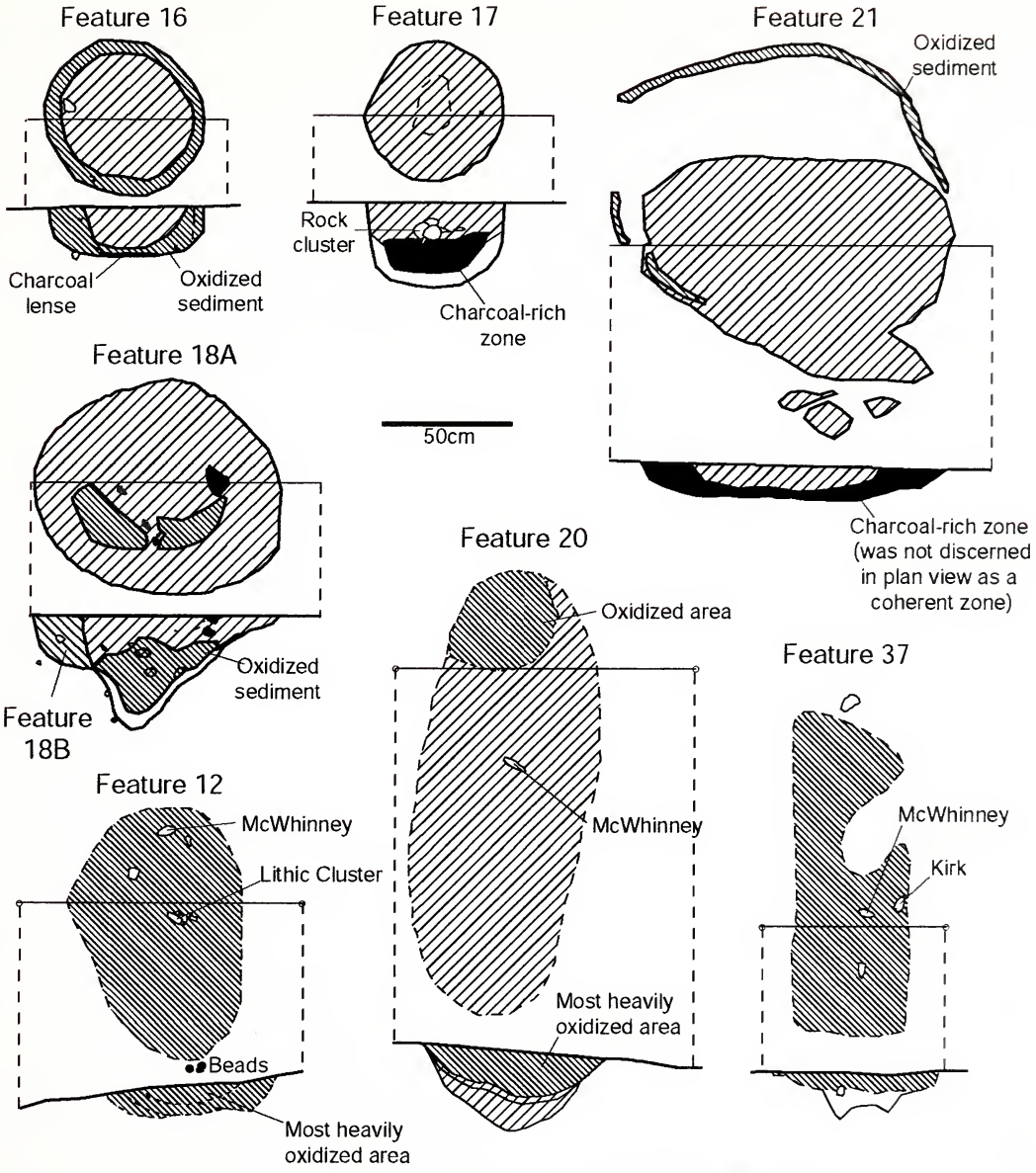

Figure 4.—Thermal and mortuary features from the Miles site.

the circular burial pits described at a number of Ohio Valley sites, for example Glacken (15-Be-272) (Boisvert 1986), Rosenberger (15-Jf-18) (Driskell 1979), and Patriot 2 (12-Sw-99) (Boisvert 1986; GAI 1984) sites where burials were also associated with McWhinney or McWhinney-like materials. Feature 56 at the Late Archaic-occupied Arrowhead Farm site (15-Jf-237), which was apparently a burial, was also roughly circular (Mocas 1976).

The size of the mortuary features at the Miles site is consistent with flesh burials, perhaps interred in semi-flexed or extended positions. The presence of the navicular is also consistent with a flesh burial rather than a secondary burial of disarticulated remains. While the dearth of bone in the features might sug-

gest that human remains may have been removed subsequent to burial (cf. Munson & Cook 2001), the lack of bone from the site as a whole indicates that poor preservation may be a more likely explanation.

Indeterminate.—Features 2, 3, 11, 13, 19, 25, 32, 35, 38, and 41 are features of indeterminate origin or function. Features 2 and 3 may not have been of cultural origin and are not shown in Fig. 2. Feature 11 was a pit/basin with non-oxidized fill. Features 13, 19, 25, 32, 35, and 41 were deposits of oxidized sediment that could be the remains of either mortuary or nonmortuary features. The low frequency of oxidized deposits at sites of a similar age, such as Patriot 2 (GAI 1984), suggests that some of the oxidized deposits at the Miles site lacking evidence of *in situ* burning might be mortuary related. Given the apparent extent of plow disturbance at the Miles site, it seems unlikely that most of these deposits are the shallow remains of surface fires. Feature 38 was represented only by a pair of McWhinney hafted bifaces encountered below plowzone with no discernable pit associated. It may have been the basal remnant of a mortuary feature.

SPATIAL, TEMPORAL, AND FUNCTIONAL DIMENSIONS OF THE MILES SITE

Spatial dimensions of site structure.—Mocas & Smith (1996) discerned three areas of varying artifact density during surface survey of the Miles site (Fig. 2). The highest densities of cultural material were observed at the eastern and western ends of the site (Concentrations A and B). Lighter densities of cultural material were observed extending approximately 200 m along the margin and slope of the terrace in the central portion of the site.

Intact features were documented within a relatively narrow (approximately 25 m wide) zone extending across the central and western portions of the site. There were only two instances where features seemed to be superimposed. Most of the intact features (18 of 21, including all of the larger thermal features and the definite mortuary features) were located in the area with the lightest surface artifact densities.

It is not clear whether the spatial disjunction between the surface artifact concentrations and the intact features is due to the effects of modern agriculture (i.e., plowing and erosion) or is reflective of original elements of site structure. If many of the surface artifacts were originally in feature contexts, plowzone artifact density would be expected to be higher in those portions of the site where all artifacts have been incorporated into the plowzone (i.e., instead of remaining in subplowzone features). Conversely, areas of greater or lesser surface artifact density may have been used differently during the site's occupations. Areas of higher artifact density may have been midden areas, "throw zones," or specialized activity and refuse abandonment/discard areas, for example, while lower density areas may have been habitation areas that were kept relatively clean of debris. It is difficult to choose between these possibilities given the available data. It is worth noting, however, that the numbers of lithic artifacts present in the intact portions of features were not great, and it is difficult to imagine that the hundreds of broken McWhinney points and cores from the site originated from discrete subsurface deposits. It seems more likely that all or portions of the site were originally covered by thin sheet midden deposits that developed as cultural debris accumulated on the site surface during use. These deposits may have been of varying thickness, discreteness, and artifact content. While no such deposits were identified during excavations, they would not be expected to have survived the deflation and mixing of surface and near-surface sediments that took place as a result of plowing and erosion.

Temporal dimensions of site use.—Botanical remains, diagnostic artifacts, and three of the four radiocarbon dates from the Miles site are consistent with a predominantly Late Archaic use. In all, the data suggest most intensive use of the site during the period 4230–2990 ybp.

The 2 sigma ranges of the radiocarbon dates from Features 12 and 37 are statistically contemporary and suggest creation of these features during the period 4230–4060 ybp. The mortuary features are associated with McWhinney point forms, and the radiocarbon dates are consistent with previously reported dates for McWhinney Heavy Stemmed and cognate point forms (Boisvert 1986; Brooks et al. 1979; GAI 1984; Maslowski et al. 1995; Mocas 1976; Mocas & Smith 1986; Robinson

& Smith 1979; Turnbow et al. 1983, cited by Jefferies 1988; Vickery 1976).

The date from the earth oven (Feature 17) does not overlap the two mortuary feature dates at its 2 sigma range (3270–2990 ybp) and suggests an occupation some 800–1200 yr later. This date range is often associated with Merom hafted bifaces in the Ohio Valley and elsewhere (e.g., Duerksen & Doershuck 1998; Ledbetter & O'Steen 1992; Vickery 1976).

Site function.—Inferences about site function can be based on information from the cultural features and materials documented at the Miles site. Questions about the function of individual sites during the Late Archaic period are particularly relevant given the expectations of several different models of settlement and subsistence during this period.

The presence of mortuary features at the Miles site is consistent with a number of possible functions, as such features occur at Late Archaic sites of varying size and setting. The distinctive mortuary features at the Miles site are broadly contemporary with those at other McWhinney-related sites in Indiana, Kentucky, and Ohio.

The circular, thermal features were presumably constructed for food processing/preparation activities. The botanical remains from the features offer few specific clues regarding the plant and animal species that may have been consumed at the site. No faunal remains were recovered.

Botanical remains are largely limited to wood charcoal and charred nutshell. Many researchers feel that nuts were of central importance to Middle/Late Archaic (*ca.* 7000–3000 ybp) subsistence economies in the Ohio Valley and elsewhere (e.g., Munson 1986; Stafford 1991). Charred nutshell is often present in substantial quantities at both habitation sites and specialized nut processing camps (e.g., Stafford 1991), and available evidence suggests that nuts (especially hickory) were procured and processed in bulk as part of a logistical foraging strategy.

While the quantity of nutshell at the Miles site is not great, the largest amounts were in flotation samples from Features 16 and 17 (see Bush 2002). Both hickory and walnut shell was present. The relatively large amount of burned nutshell that was present in the flotation samples from Feature 17 suggests that nutshell either was being used as a fuel or that nuts were being processed in the oven. Nutshell was completely absent from the two flotation samples taken specifically from the charcoal lens in Feature 17, arguing against incorporation of the nutshell as fuel. The presence of *both* walnut and hickory nutshell in these features is curious, however, given that the most efficient processing "trajectories" of these two varieties of nuts were quite different (see Munson 1984). It is possible that the feature contents do not represent a single firing event or that burned nutshell from outside the feature was incidentally introduced into the fill.

The quantity and distribution of nutshell does suggest, however, that nuts were processed to some degree at the Miles site. There was no evidence of bulk storage features at the site, and primary nut shelling tools such as pitted stones were almost completely absent (only one specimen was recovered during excavations). Pestles ($n = 4$) were recovered in greater numbers. Although no grinding slabs were collected during excavations, Munson (1976) collected two grinding slabs during her survey. Munson (1976) also reported that pitted stones and pestles were recovered from several of the surrounding sites. It is possible that nuts were either processed in small quantities or were brought to the site having already been shelled elsewhere.

The heavy scatter of burned/broken rock at the Miles site may be a product of earth oven firing and/or stone boiling. Based on experimental data, Dering (1999) concluded that "because multiple earth-oven firings generate an abundance of refuse, the archaeological signature is inordinately greater than the food-calorie yield." In other words, the large amount of fire-cracked rock that is generated during the use of earth ovens may give an inaccurate picture of the importance of the plant/animal resources that were being processed. The small number of earth ovens and the small amounts of charred nutshell from the Miles site suggest that primary/bulk nut processing may have played a rather small role in activities at the site. Likewise, the diverse chipped stone tool inventory contrasts with those documented at the specialized nut processing camps described by Stafford (1991).

The chipped stone tool assemblage is dominated by McWhinney Heavy Stemmed hafted

bifaces, many of which were snapped across the blade. The large number of distal McWhinney fragments in the assemblage suggests that points were broken during use at the site rather than away from the site. The functions of these tools are not well understood. Vickery (1972) inferred a projectile point (spear point) function based on the high frequency of impact fractures and the low frequency of cutting/scraping wear he observed. Mocas & Smith (1996) speculate that this breakage pattern was consistent with use of these tools as implements of prying. Microwear analysis of one complete McWhinney point and two probable McWhinney blade fragments from the Webster site in Switzerland County, Indiana, suggested knife/projectile functions (Melody Pope analysis in White 2001). The breakage, reworking, and discard patterns of McWhinney points from the Miles site are unlike those at Webster, however. A detailed functional analysis of the McWhinney assemblage from the Miles site would be helpful in determining what specific kinds of activities were carried out at the site.

Most core and biface flaking on site was done with locally available Laurel/Marble Hill cherts. The large number of broken McWhinney Heavy Stemmed hafted bifaces suggests that these tools were being used (and "used up") regularly. Presumably, then, replacement tools were being manufactured on site. Manufacture of these tools would have produced a large amount of debitage. A substantial percentage of the debitage at the Miles site may also be attributable to core reduction activities. The large number of casual cores suggests that flakes were also being produced specifically for use as tools.

In all, the Late Archaic lithic and feature assemblages suggest an occupation that does not appear to have been overly specialized. Given the complexities of site occupation patterns that are possible within a semi-sedentary hunter-gatherer settlement system (Binford 1980, 1982, 1983, 2001), however, it is important not to assume that all the debris and deposits at Miles were the product of a single "kind" of occupation. The site may have functioned in different capacities at different times within a single settlement system. Site activities minimally included: stone tool production, use, and discard; the production of flakes for expedient use; burial of individuals; and the processing of nuts and/or possibly other plant resources. Animal resources were presumably processed at the site, although the extremely poor bone preservation makes this difficult to demonstrate directly. Neither is it possible to demonstrate the strict contemporaneity or noncontemporaneity of these activities.

Given the concentration of Late Archaic remains at the Miles site and the apparent scarcity of Late Archaic remains in much of the rest of the Bethlehem Bottom (White 1999), it seems likely that the site was occupied in order to exploit the surrounding bottoms. A 10 km daily travel radius (either for foraging trips or daily collecting trips) extends across the bottoms and into the uplands, both in Indiana and Kentucky.

THE MILES SITE IN CONTEXT

Current understanding of the temporal and social dimensions of Late Archaic cultures in the middle Ohio Valley is, in several important respects, relatively limited. Many aspects of the Middle/Late Archaic phase definitions that have been offered for this region (i.e., French Lick, Old Clarksville, Lone Hill, Maple Creek) have not been well-defined, and several relevant models of Late Archaic subsistence and settlement (e.g., Boisvert 1986; Janzen 1977; Winters 1969) have yet to be sufficiently tested. The temporal relationships of the many distinctive hafted biface types dating to the Middle and Late Archaic periods (e.g., Matanzas, Merom, Lamoka, Karnak, McWhinney) are not clear, making it difficult to precisely place partial assemblages that are not associated with radiocarbon dates. In addition, as noted by Munson & Cook (1980), the Middle and Late Archaic periods share many artifact types and styles.

Variables of land use and mobility are of central importance in the study of all hunter-gatherer systems, and are fundamental considerations in models of Late Archaic settlement in the Ohio Valley. Many researchers view Late Archaic Ohio Valley peoples as semi-sedentary, logistically organized collectors (see Binford 1980) whose settlement systems were centered around seasonal moves between large, semi-permanent "base camp" sites. The degree of seasonal mobility that is hypothesized, as well as the role of group fission/fusion events in the seasonal cycle, is variable.

Fission/fusion plays a central role in Granger's (1988) conception of Falls settlement, for example, whereas Boisvert (1986) suggests that smaller, more mobile groups could have subsisted without a complex, seasonal schedule of fission/fusion events.

The Miles site, like many other Late Archaic sites in the region, does not fit neatly into a simple "base camp/extractive site" dichotomy. Based on surface collections, both Munson (1976) and Mocas & Smith (1996) described the Miles site as a "base camp." Following completion of the excavations considered here, Smith et al. (1999) concluded that "the limited variety of feature types remaining is somewhat inconsistent with interpretation of the site as a 'base camp.'" The cultural deposits documented at the Miles site are clearly not of the same magnitude as those at previously documented Middle/Late Archaic "base camp" sites in the Ohio Valley. Sites such as Black Earth (11-Sa-87) (Jefferies & Butler 1982), Clark's Point (12-Cl-3)(Guernsey 1938, 1942), Patriot 2 (GAI 1984), and Maple Creek (33-Ct-52) (Vickery 1976) contain deep middens and numerous intact features. There is a good deal of variability even among these "base camp" sites, however. At least some of this variability may be related to site topography and the use of space over time (see Boisvert 1986; White 2001).

Given that seasonal mobility and site reoccupation are key variables in most models of Late Archaic settlement in the Ohio Valley, understanding the roles that individual sites played in these hunter-gatherer systems is of central importance. Wandsnider (1992) offers a framework for assessing the "*tempo of locale use*, or the frequency and syncopation with which a specific area . . . is occupied." Elements of spatial structure at a site may reflect the interplay between the interval of site reoccupation and the use-life and permanence of the facilities (such as habitation structures or food processing features) constructed on a site (Wandsnider 1992). Logic and ethnographic data suggest that decisions about reusing, rebuilding, or ignoring previously built facilities during a reoccupation of a site are generally based on a number of simple "rules" (Dewar & McBride 1992; Wandsnider 1992).

There is little evidence of long-term reuse of features or specific areas at the Miles site (i.e., there are few examples of superimposed features), suggesting a low degree of spatial congruence between successive occupations on an intra-site level. Given the plow truncation of the deposits at the site, however, it is impossible to directly assess the degree of reuse of shallow processing features (such as stone boiling pits) or structural remains that may have been present. Assuming such features were present and were associated with the McWhinney component of the site, the large size of the lithic scatter suggests successive occupations were not highly congruent. Using Wandsnider's (1992) observations as a guide, the small number and variety of Late Archaic features documented at the Miles site, coupled with the wide areal extent of the artifact scatter and the lack of evidence for feature reuse or refurbishment, suggests limited, repeated, intermittent occupations by small groups.

Thus it seems most likely that the habitation deposits at the Miles site were formed by repeated occupations of the terrace edge without deliberate reuse of a single, particular location. While the terrace edge was the desired *general* habitation location, the *exact* location may have shifted for each occupation. Such shifts may have occurred if no specific facilities were present or required, or if previously inhabited portions of the terrace were not suitable for reuse, perhaps for hygienic reasons or because bulky resources, such as firewood, had been exhausted (see Wandsnider 1992). Dewar and McBride (1992) refer to this as a "localized sequence of moderate congruence." Vickery (1976) hypothesized that similar "floating site" behavior may have been responsible for the size and configuration of the deposits at the Maple Creek site.

Clearly, however, the occupations responsible for the large scatter at the Miles site were of substantial duration or group size and/or repeated often enough to produce significant quantities of burned/broken rock and lithic debris. The McWhinney mortuary features and the large number of broken and reworked McWhinney points suggest an occupation of some permanence: the site functioned as more than a temporary campsite. The absence of large storage features is inconsistent with use of the site as a collector "base camp," however; and the lack of deep midden deposits indicates that large quantities of waste did not

accumulate, either through primary or secondary deposition. The possibility that human remains interred at the site were subsequently removed for reburial elsewhere also suggests an intermediate level of site use.

The "later" Late Archaic occupations may have been less intensive than and functionally different from the earlier McWhinney occupations. It is possible that both earth ovens are of similar age and are the remnants of one or more small occupations such as that documented upriver at the Houpt site, where Merom cluster hafted bifaces are associated (Duerksen & Doershuk 1998). Although Merom points have not been reported in great numbers from the Bethlehem Bottom, it is notable that six of the eight listed by White (1999) were from the vicinity of the Miles site. Considering the usable size of the Miles terrace area in comparison to that at Houpt, as well as the apparent similarity in features and debris, use of the two sites may have been similar.

Taken together, the data suggest that repeated, intermittent (seasonal?) occupations by small groups during the late third millennium BC produced the majority of the deposits and debris at the Miles site. The scale and scope of the McWhinney occupation suggests an intermediate level of site use that does not fit comfortably in the "base camp/extractive site" dichotomy. The mortuary features are distinctive, implying a degree of local group autonomy that seems inconsistent with models positing large, complex, centrally organized and integrated groups. Evaluation and refinement of models of Late Archaic settlement and subsistence will require data from more sites like Miles, as well as information from a variety of other sites positioned across the landscape.

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