

**THE STATE ROUTE 1 PROJECT:
TEST EXCAVATIONS AT
WOODBURY, TENNESSEE**



**Tennessee Department of Conservation
Division of Archaeology
Report of Investigations No. 2**

1986

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TENN. DIV. OF ARCHAEOLOGY

**THE STATE ROUTE 1 PROJECT:
TEST EXCAVATIONS AT WOODBURY, TENNESSEE**

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NOTE TO READERS

Subsequent to the investigations reported in this volume, Phase 3 excavations were carried out on site 40CN79 by the University of Tennessee. The main objective was to determine if an undisturbed Archaic horizon existed at the site. Block excavations expanded on Trenches L and M in the lower area. It was found that the possible occupation surface had been greatly disturbed by 19th century activities. A final report on these excavations will be issued by the University of Tennessee.

INTRODUCTION

In accordance with the results of Phase 1 survey along the proposed Department of Transportation State Route 1 Project near Woodbury, Tennessee, Phase 2 test excavations were conducted by the Tennessee Division of Archaeology at sites 40CN79, 40CN78, 40CN72 and 40CN60. These sites will be impacted by the construction of the proposed Alternate "D." Limited subsurface testing of these sites was conducted between September and December of 1985, except for 40CN72, where logistical problems delayed operations until 1986. An interim report summarizing the archaeological work and preliminary analysis of materials for 40CN79 has been submitted to the Department of Transportation in order to facilitate the initiation of Phase 3 data recovery excavations.

Contained herein are the results of test operations for all four sites including site descriptions, geomorphological setting, field methods, analysis of all artifactual materials recovered, cultural and temporal assignments, additional and more specific recommendations, and the rationale for Phase 3 excavations.

ENVIRONMENTAL SETTING

The sites discussed in this report are located within or adjacent to the valley of the East Fork Stones River. Two of the sites, 40CN60 and 40CN72, are located upon dissected ridge summits which flank the valley of the East Fork Stones River (Fig. 1). The other sites, 40CN78 and 40CN79, are located upon terraces at the bottom of the river valley (Fig. 2).

The East Fork Stones River is tributary to the Stones River and Cumberland River drainage systems. The valley of the river transects the outer portion of the Central Basin Physiographic Province and has its headwaters at the edge of the eastern segment of the Highland Rim Physiographic Province (Miller 1974).

The Central Basin is an area of reduced elevation which occurs in the geographical center of the state of Tennessee. It has an irregular, elongated shape extending approximately 168 kilometers along its north-south axis and 65 kilometers east-west at the latitude of the project area. This Central Basin is surrounded by the topographically higher Highland Rim Physiographic Province (Miller 1974).

Both the Central Basin and the Highland Rim have developed as the result of the sub-aerial weathering of a massive series of geologic strata deposited in shallow marine environments during the Paleozoic Era. Prior to the development of the Central Basin the same general sequence of limestone, shale, dolomite, siltstone, sandstone, and siliceous sedimentary units characterized both regions. However, with the development of a regional area of subsurficial uplifting referred to as the Nashville Dome, accelerated solution erosion of the landscape above the dome formed the region identified as the Central Basin.

The cause of this differential subaerial weathering and erosion is believed to be the deformation and fracturing of the sedimentary strata above the Nashville Dome. This fracturing allowed surface water to penetrate the Fort Payne Formation, a siliceous erosion-resistant stratum, and to reach less resistant strata. Once penetrated, erosion by solution in the area immediately above the Nashville Dome occurred at a much faster rate than areas away from the dome. In these areas the Fort Payne Formation remained as a structural control against erosion.

The Central Basin can be divided into two physiographic subprovinces: the Inner Basin and the Outer Basin. The Inner Basin is characterized by low relief and numerous cedar glades developed upon the outcropping Lebanon Limestone. The Outer Basin is characterized by steeper ridge and ravine topography and generally lacks cedar glades.

In the project area, the valley of the East Fork Stones River delineates the bottom of the escarpment between the Outer Basin and the edge of the topographically higher Highland Rim. The physiography of the landscape in the area may be described as maturely developed ridge and ravine topography. The dominant physiographic features of the landscape are the river valley and a series of large ridges (interfluvies) which extend off and away from the surface of the Highland Rim to surround the valley.

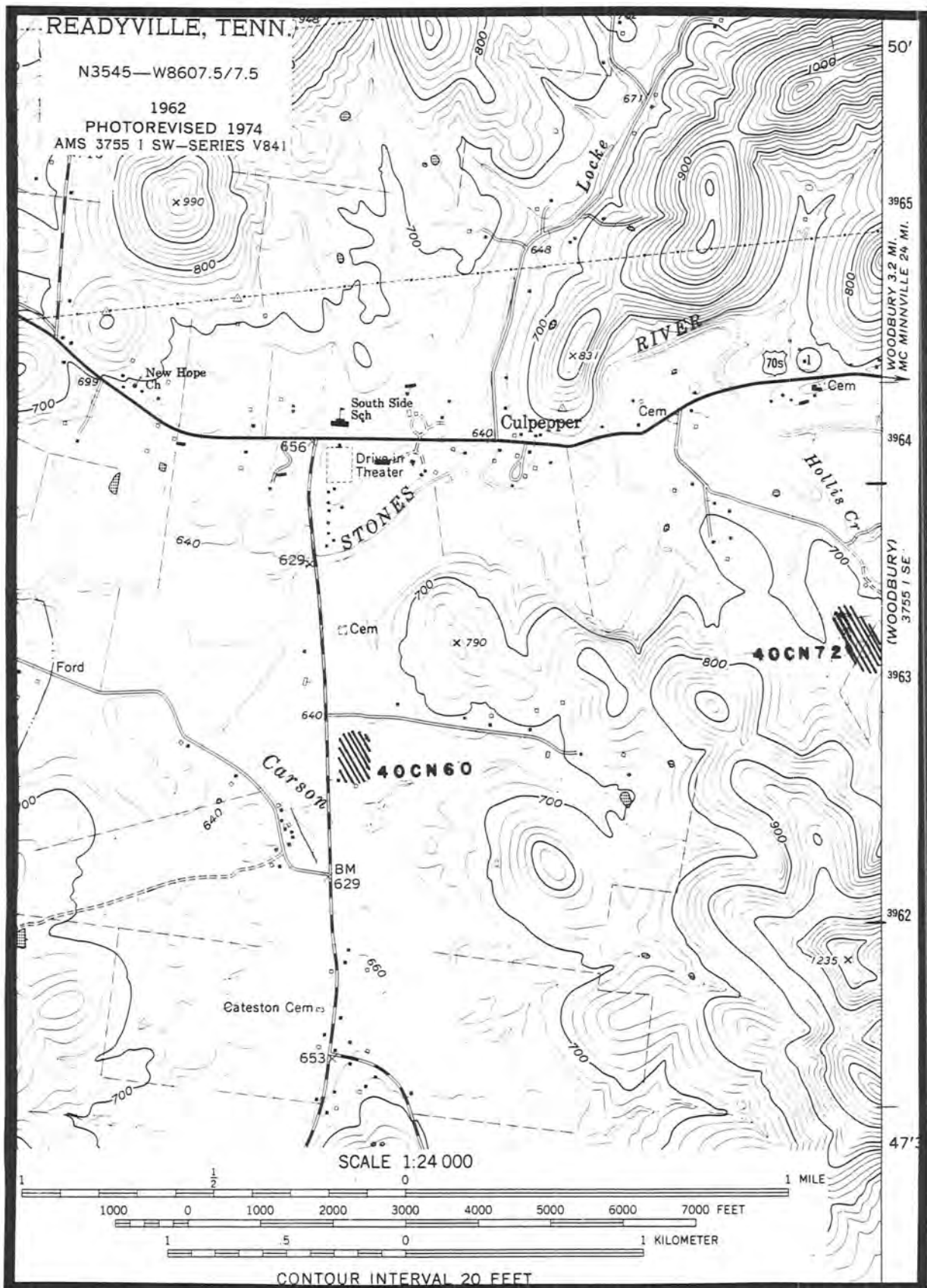


Figure 1. Portion of Readyville 7½ Minute Quadrangle Map Showing Location of Sites 40CN60 and 40CN72.

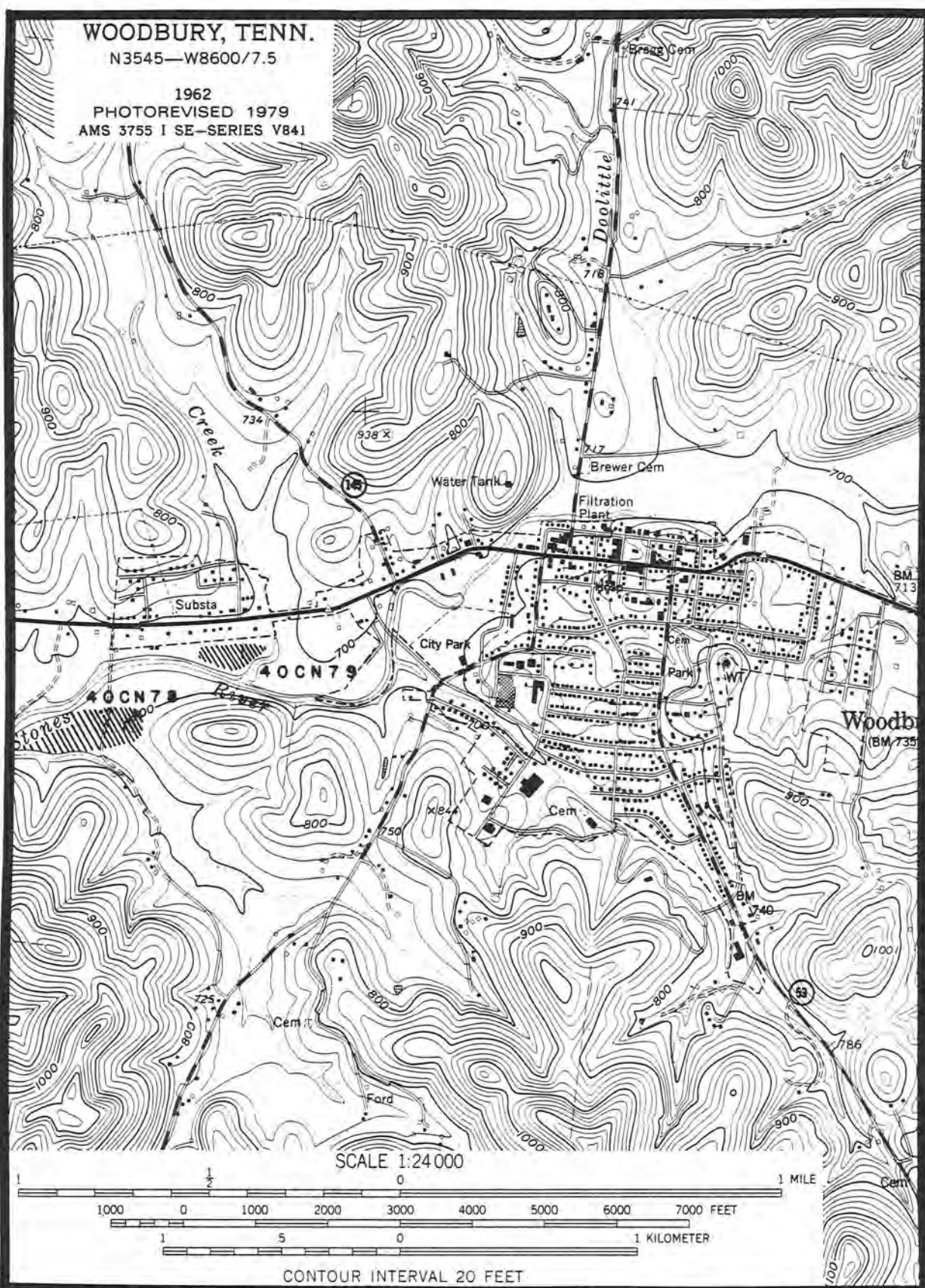


Figure 2. Portion of Woodbury 7½ Minute Quadrangle Map Showing Location of Sites 40CN78 and 40CN79.

These ridges and the deep V-shaped stream valleys which separate them constitute the drainage basin of the East Fork Stones River at the project area. The elevation of the summits of these ridges is structurally controlled by the presence of the erosion-resistant Fort Payne Formation. The elevations of the summits range from 305 to 366 meters (1000 to 1200 feet) above mean sea level where the Fort Payne Formation has not been eroded entirely away, to as low as 244 to 274 meters (800 to 900 feet) above mean sea level where it has been breached.

The sides of the ridges and the bottoms of the intervening stream valleys are developed upon the less erosion-resistant Ordovician limestones. The elevations of these features range from 305 meters (1000 feet) to less than 213 meters (700 feet) above mean sea level. All the stream valleys head at elevations above 305 meters (1000 feet) above mean sea level and, depending upon where they enter the valley of the East Fork Stones River, terminate at elevations between 244 meters (800 feet) and 198 meters (650 feet) above mean sea level.

Stream flow in these valleys is generally perennial at their mouths but may be ephemeral upstream. Numerous ephemerally flowing stream valleys extend off of the valleys, up the valley walls and, often, across the summits of the intervening ridges. As a result, the summits of the ridges have been severely dissected and characteristically have an irregular, dendritic or branched appearance.

The climate of the Central Basin may be characterized as Humid Mesothermal according to Thornthwaite's (1931) classification system. The mean annual temperature approximates 15° Celcius with mean lows approximating 5° Celcius and mean highs approximating 25° Celcius. The mean annual precipitation approximates 127 centimeters. The heaviest precipitation occurs as the product of west to east moving low pressure systems which occur most frequently in the late winter and early spring.

Braun (1950) has classified the present vegetation of the Central Basin as belonging to the Western Mesophytic Forest Region. DeSelm (1976) has divided the present vegetation of the Basin into five categories: Cedar Glade and Barren Complex; Wetlands; Oak Forests; Mixed Deciduous Forests; and Secondary Forests. With the exception of Secondary Forests, these vegetation categories also appear to have been present during the eighteenth and nineteenth centuries. However as Bridges et al. (1985) note, clearing of land for timber and grazing purposes has greatly modified the distribution of several of these categories. Indeed, no examples of the once extensive Mixed Deciduous Forest category presently exist.

A reconstruction of the native vegetation communities present in the project area during the eighteenth and nineteenth centuries may be constructed utilizing data from DeSelm (1976) and Bridges et al. (1985). The steep valley walls and ridge summits were probably vegetated by the Cedar Glade and Barrens Complex. Although open glades were probably not present in the area, barrens and cedar forests were probably widespread. "Barrens" refers to a vegetation community dominated by grasses and scattered small trees such as oaks, elms, red cedars, and shrubs.

The bottom of the valley of the East Fork Stones River and of the larger tributary stream valleys were probably occupied by some combination of DeSelm's (1976) Mixed Deciduous Forest, Oak Forests, and Wetlands vegetation categories. In addition, extensive cane breaks described by early settlers of the basin may have

occupied low lying areas not occupied by the present Wetlands category. Mixed Deciduous Forest and Oak Forest probably occupied the high bottom (Morphostratigraphic Unit B, described in the following section) while Wetlands probably occupied the low lying active floodplain/channel area (Morphostratigraphic Unit A). Wetlands communities in the project area probably included Justicia beds upon gravel bars, willow-sycamore-silver maple-cottonwood forest upon the levees of the river and streams, and elm-ash-pin oak forest upon the poorer drained areas of the floodplains. The distribution of any canebreaks which may have existed is unclear.

GEOMORPHOLOGICAL CONTEXT OF THE SITES

An investigation of the geomorphological context of each of the sites was conducted as part of the site testing and evaluation process. These investigations were conducted with the objectives of defining the geomorphological context of the artifacts and cultural features at the sites as well as the geomorphological context of the sites in the local alluvial environment. This section describes the results of these investigations.

Alluvial Morphology of the East Fork Stones River Valley

The surficial morphology of the valley is typical of similar sized valleys which have been investigated elsewhere in the Central Basin (Bianchi 1986). Like these valleys, the valley is characterized by a wide, relatively flat bottom which is developed upon Ordovician limestone. The present channel of the river crosses back and forth across the bottom of the valley in small, arcuate meanders. Here, as elsewhere, two distinct morphological components, Morphostratigraphic Units A and B, can be differentiated within these meanders (Fig. 3). A morphostratigraphic unit is a stratigraphic unit which can be identified upon the basis of its physical expression at the surface of the landscape (Willman and Frye 1970).

Morphostratigraphic Unit A occurs adjacent to the active channel of the river and is the functional floodplain. Characteristically, a low natural levee is present along the edge of the floodplain adjacent to and paralleling the channel. Behind the levee, the floodplain surface dips slightly to form a narrow strip of backswamp.

At site 40CN79 a series of exploratory trenches were excavated across the back half of Morphostratigraphic Unit A with a backhoe. The subsurface stratigraphy is interpreted as indicating that the unit aggraded episodically as the active river channel shifted laterally and abandoned channels filled with floodplain (overbank) and colluvial sediments. The earliest, i.e. initial, of these channels was situated adjacent to the scarp with the topographically higher Morphostratigraphic Unit B (Fig. 3). Based upon the interpretation of the relationship of the subsurface stratigraphy and the archaeological remains offered in this report, this channel appears to have been active prior to circa 10,000 years before present. At the Cumberland River near Nashville (Bianchi 1986), the same morphostratigraphic unit ceased to actively aggrade circa 750 years before present. The name Woodbury Terrace is proposed for this morphostratigraphic unit here and elsewhere throughout the Central Basin. Sites 40CN78 and 40CN79 are offered as strato-type localities.

Morphostratigraphic Unit B is present along the valley bottom where Morphostratigraphic Unit A is absent. Topographically higher than Morphostratigraphic Unit A, the unit may be present upon one or both sides of the river. Generally the unit is separated from the active river channel by Morphostratigraphic Unit A. Unlike Morphostratigraphic Unit A, this unit is not a terrace but a gently sloping erosional surface which is developed upon the truncated remains of one or more terraces overlain by a thick colluvial overburden. At the Cumberland River near Nashville (Bianchi 1986) the name Nashville Alluvium has been proposed for this unit. The name Briley Formation has been proposed for the

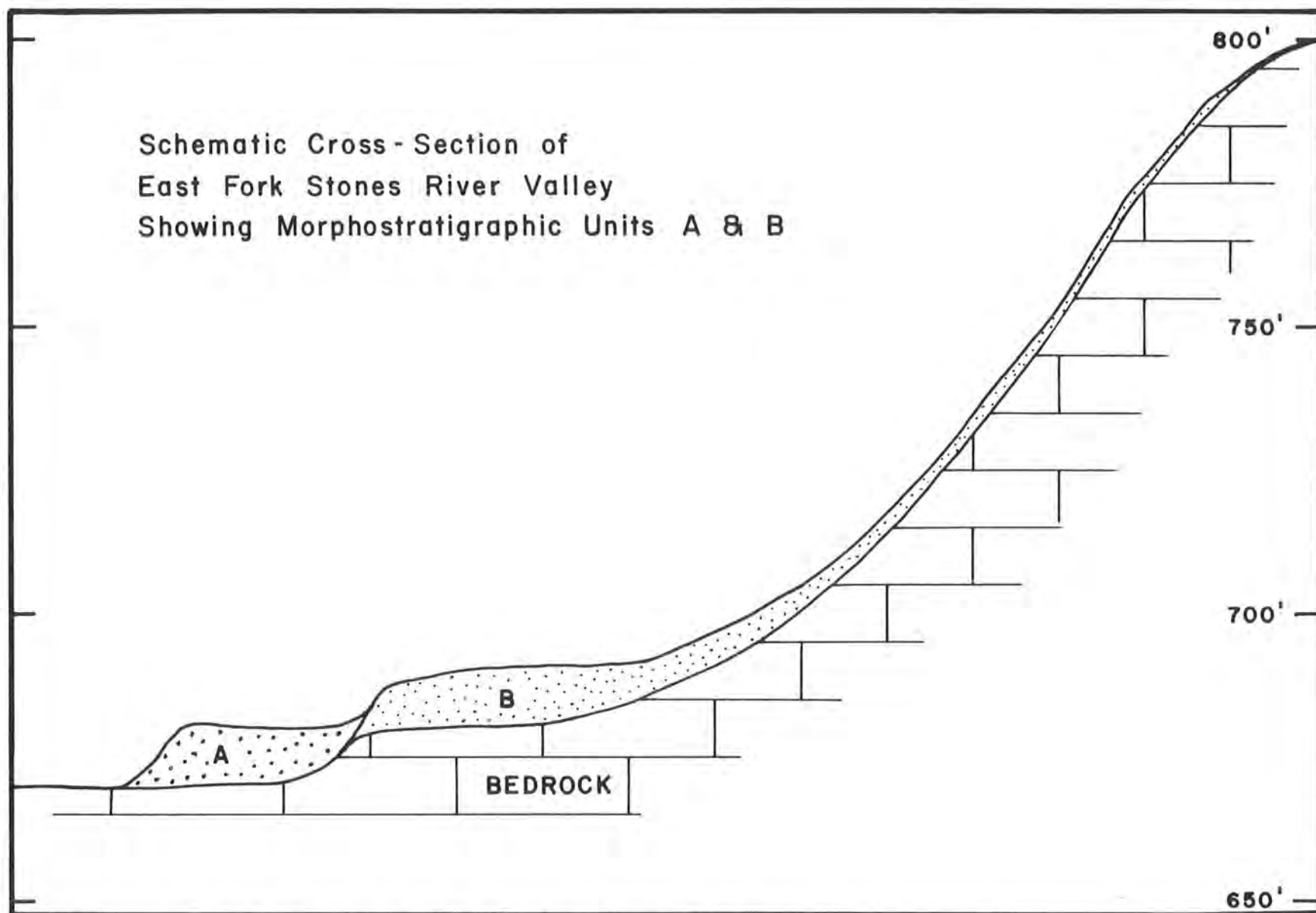


Figure 3. Schematic Cross-Section of East Fork Stones River Valley.

colluvial sediments at the top of the unit. A thermoluminescence age determination (Alpha Analytic-1915) obtained upon the colluvial sediments indicate that the colluvial sediments began accumulating 60,000 to 80,000 years before present and continued episodically until the beginning of the formation of Morphostratigraphic Unit A.

The valley walls make up the other main morphological component of the river valleys. Characteristically one wall is close or adjacent to the active channel and one is separated from the channel by Morphostratigraphic Units A and B. The wall nearer to the channel is generally steep or bluff-like in appearance with a thin soil cover. Often soil and vegetation are absent and limestone bedrock is exposed.

When the valley wall is separated from the active channel by Morphostratigraphic Units A and B, such as within the meanders, it generally has a less severe slope. Soils are thicker upon this wall and colluvial sediments identified as the Briley Formation are often present across the lower valley wall and extending down into Morphostratigraphic Unit B.

Stratigraphy

The sites investigated during this project are located within two distinctly different types of geomorphological environments, i.e., ridge summit and river bottom. The subsurface stratigraphy of each of these groups of sites reflects this difference in environment.

For descriptive purposes the subsurface stratigraphic units identified in this investigation have been differentiated into lithostratigraphic units and pedostratigraphic units (N.A.C.S.N. 1983). A lithostratigraphic unit is one which is defined upon the basis of its lithological or, as in this study, its sedimentary attributes. A pedostratigraphic unit is one which is defined upon the basis of its pedological attributes. A total of seven principal lithostratigraphic units and two pedostratigraphic units have been recognized in this report.

Lithostratigraphic Unit I consists of ancient alluvial sediments which underlie Morphostratigraphic Unit B and which often extend up the more sloping portions of the valley wall. The sediments have been truncated by erosion. This unit has a strong brown (7.5YR) color which is due to the presence of Pedostratigraphic Unit I. Lithostratigraphic Unit I is present at all four sites.

Lithostratigraphic Unit II consists of channel bar deposits situated at or just above the base of Morphostratigraphic Unit A. The unit is present along the base of the scarp between Morphostratigraphic Units A and B and was deposited by the original channels of the streams which now occupy the valley floor. The present archaeological evidence at 40CN79 suggests the channel there was abandoned circa 10,000 years before present.

Lithostratigraphic Unit III consists of colluvial mudflow deposits which are present along the scarp between Morphostratigraphic Units A and B at 40CN79 and at the base of Morphostratigraphic Unit A at 40CN78. The unit is composed of very poorly sorted, gravelly to pebbly silts and clays. The unit contains many angular, non-waterworn, chunks of limestone and chert.

Lithostratigraphic Unit IV consists of colluvial sediments along the scarp between Morphostratigraphic Units A and B, which grade to floodplain deposits along the inner edge of Morphostratigraphic Unit A. The colluvial sediments appear to be sheetwash deposits and are composed of very poorly sorted, pebbly to gravelly, very fine sand, and clayey silts. The floodplain sediments are composed of well sorted to poorly sorted fine sands, silts, and clays. Occasionally pebble to gravel-sized material is present. The floodplain sediments directly overlie Lithostratigraphic Unit II and appear to have been deposited after the initial channels were abandoned.

Lithostratigraphic Unit V consists of interbedded floodplain (overbank) and colluvial sheetwash deposits. The unit is present only at 40CN79 where it extends off the scarp between Morphostratigraphic Units A and B onto the inner edge of Morphostratigraphic Unit A. The unit is composed of well sorted clayey silts interbedded with very poorly sorted, gravelly, pebbly, clayey silts.

Lithostratigraphic Unit VI consists of colluvial sheetwash deposits which have accumulated along the scarp between Morphostratigraphic Units A and B and the inner edge of Morphostratigraphic Unit A. The unit is composed of very poorly sorted, slightly gravelly to pebbly, very fine sands, silts and clay. A B2 master soil horizon which has been designated Pedostratigraphic Unit II is developed within the unit. This horizon is argillic in origin and has a dark to strong brown (10YR4.5/3.5) color.

Lithostratigraphic Unit VII is the product of modern cultivation, i.e., the Ap master soil horizon. The unit is present at all sites as the uppermost unit in any stratigraphic profile. The composition of the unit varies according to the lithostratigraphic unit it overlies.

Pedostratigraphic Unit I is present across Morphostratigraphic Unit B, up the gentler sloping sections of the valley walls, and upon the ends of the interfluvial summits which flank the valley. The unit is a truncated soil sequum which may be composed of one or a number of superimposed B2 master soil horizons. The horizon(s) are characterized by the presence of argillic clay and a distinctive strong brown (7.5YR5/6-5/8) color. At Nashville and elsewhere throughout the Central Basin the name Cumberland Geosol has been proposed (Bianchi 1986). The absence of the unit upon Morphostratigraphic Unit A suggests the unit ceased to form prior to 10,000 years ago.

Pedostratigraphic Unit II is a truncated soil sequum which is developed continuously across the bottom and sides of the valley. In many places cultivation has been responsible for the erosion or redeposition of the unit. The original sequum was probably characterized by a sequence of A1, B1, and B2 master soil horizons. Due to cultivation the present sequum consists of a truncated B2 master soil horizon and overlying Ap horizon. The horizon is argillic in origin and characteristically dark yellow brown (10YR4/4-3/6) in color. The presence of the unit upon Morphostratigraphic Unit A indicates it is less than 10,000 years in age.

Raw Materials

Lithic raw materials in the Woodbury study area are plentiful and readily available. The Fort Payne Formation, ranging in thickness from 130 to 190 feet, contains bands, nodules, and masses of chert as thick as ten inches (Wilson and Barnes 1968). These are exposed most noticeably in streams where cobbles and

nodules of varying size, which have become detached from the parent bed by natural agents of weathering, may be removed from the stream and transported elsewhere to be modified.

Color variations in the Fort Payne Formation range from medium to dark gray, and from gray to brownish-black. Striking variations may be present in a single nodule, especially when a portion of it has been exposed to heat. A type collection was assembled by grouping the 119 pieces of the 40CN60 surface collection into categories according to color, texture, and the presence of bands, smudges, flecks, and inclusions (Appendix A). The type collection proved useful in the description of the lithic raw material from all sites.

SITE 40CN79

Location and Description

Site 40CN79 is located near the confluence of the East Fork Stones River and Rush Creek (Fig. 2). It is situated on the south facing slope of a first terrace parallel to the East Fork Stones River and is heavily vegetated in pasture grasses. The site measures approximately 140 meters east-west by 120 meters north-south. The stratified multi-component occupation ranges from Early Archaic to Early Woodland, and appears to have been most intensively occupied during the Archaic periods. Deposition of the buried cultural deposits varies from .25 to 1.25 meters.

Excavations

An area measuring 38 meters north-south by 61 meters east-west was plowed in order to assess the density and distribution of cultural materials. A site datum point was chosen and a metric grid system was established to facilitate the controlled surface collection and the placement of the excavated test units. Elevation readings were made for the production of a contour map of the site with one-meter contour intervals (Fig. 4). Surface artifacts were point located on the plan map and then collected (Fig. 5). A general surface collection was then made as surface visibility in the plowed area improved. A field specimen numbering system was employed for recording artifactual material and data. Field specimen numbers were subsequently assigned to artifacts from the surface collection, excavation units, and features. Soil samples and other collected materials were also assigned field specimen numbers. The field specimen system is on file at the Division of Archaeology, as are all field data and materials recovered from the surface collections and test excavations.

A backhoe, outfitted with a three foot wide toothless bucket, was utilized extensively and almost exclusively for subsurface testing. A total of fourteen backhoe trenches approximately one meter in width were excavated (Fig. 4). These units varied in length and depth according to their placement in the site stratigraphy and right-of-way boundaries. Trenches A, B, C, F and G were spaced at approximately ten to fifteen meter intervals along the top edge of the terrace, and oriented north-south. Trenches D and E were positioned so as to intersect the aforementioned units at approximate right angles. The deposit containing archaeological material in this area is very shallow and is represented only by a 25 to 35 centimeter thick plowzone. This lies directly over the yellow subsoil which in turn overlies bedrock. The subsoil is culturally sterile with the exception of intrusive cultural features and disturbances.

The slope area to the south of trenches A - G was investigated by the excavation of trenches H, I, J, L and M, also oriented north-south (Fig. 4). They were excavated in the slope face of the terrace and extended toward the river into the floodplain swale area. These units revealed the deeper and more complex stratigraphy of the site, resulting from both geological and cultural processes. The east profiles of the units were troweled, mapped and photographed (Figs. 6 through 9). In order to obtain a sample of artifactual materials and other information from a cultural horizon in Trenches I and L, several hand dug test units were excavated.

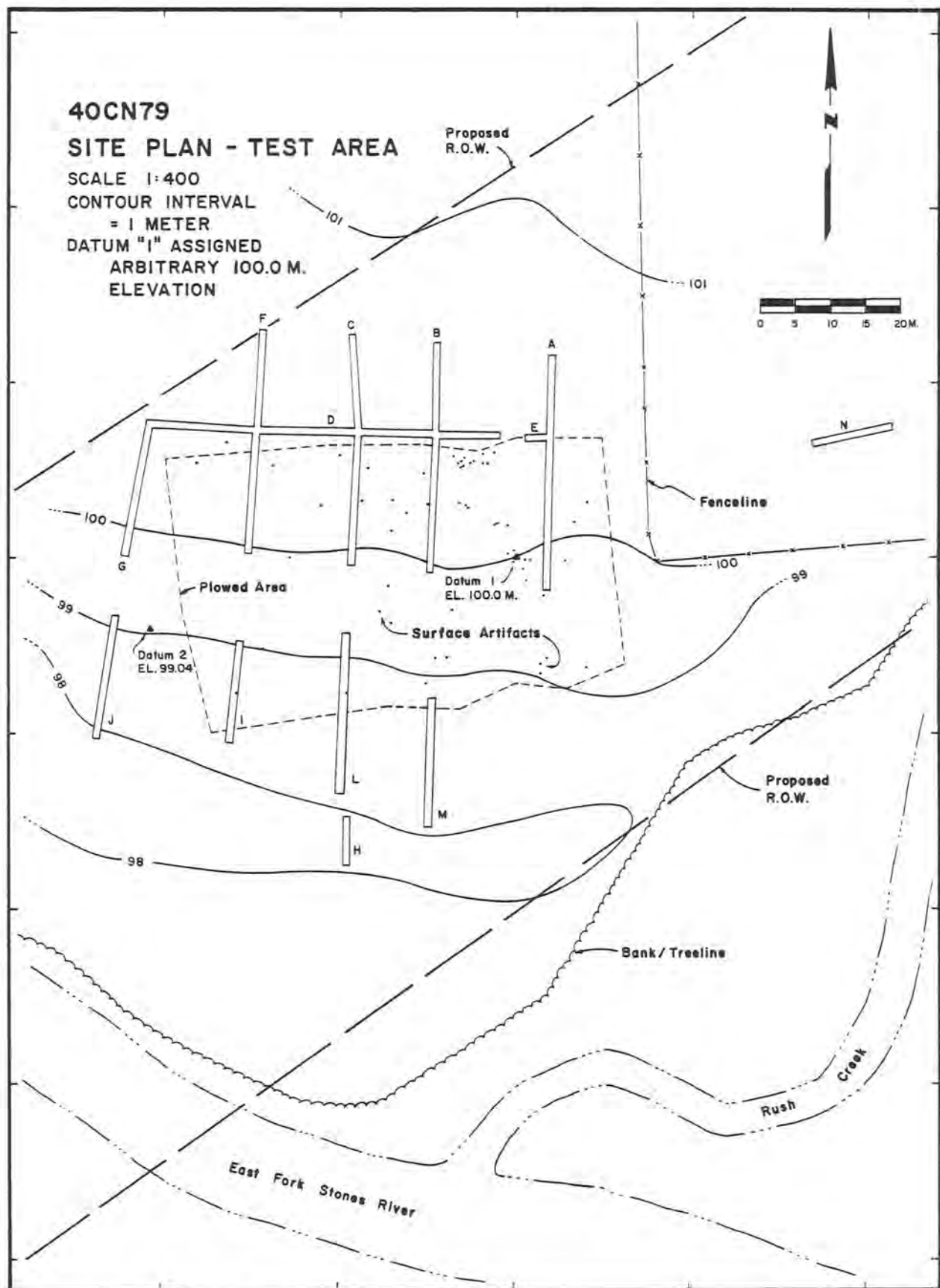


Figure 4. Site 40CN79 - Site Plan.

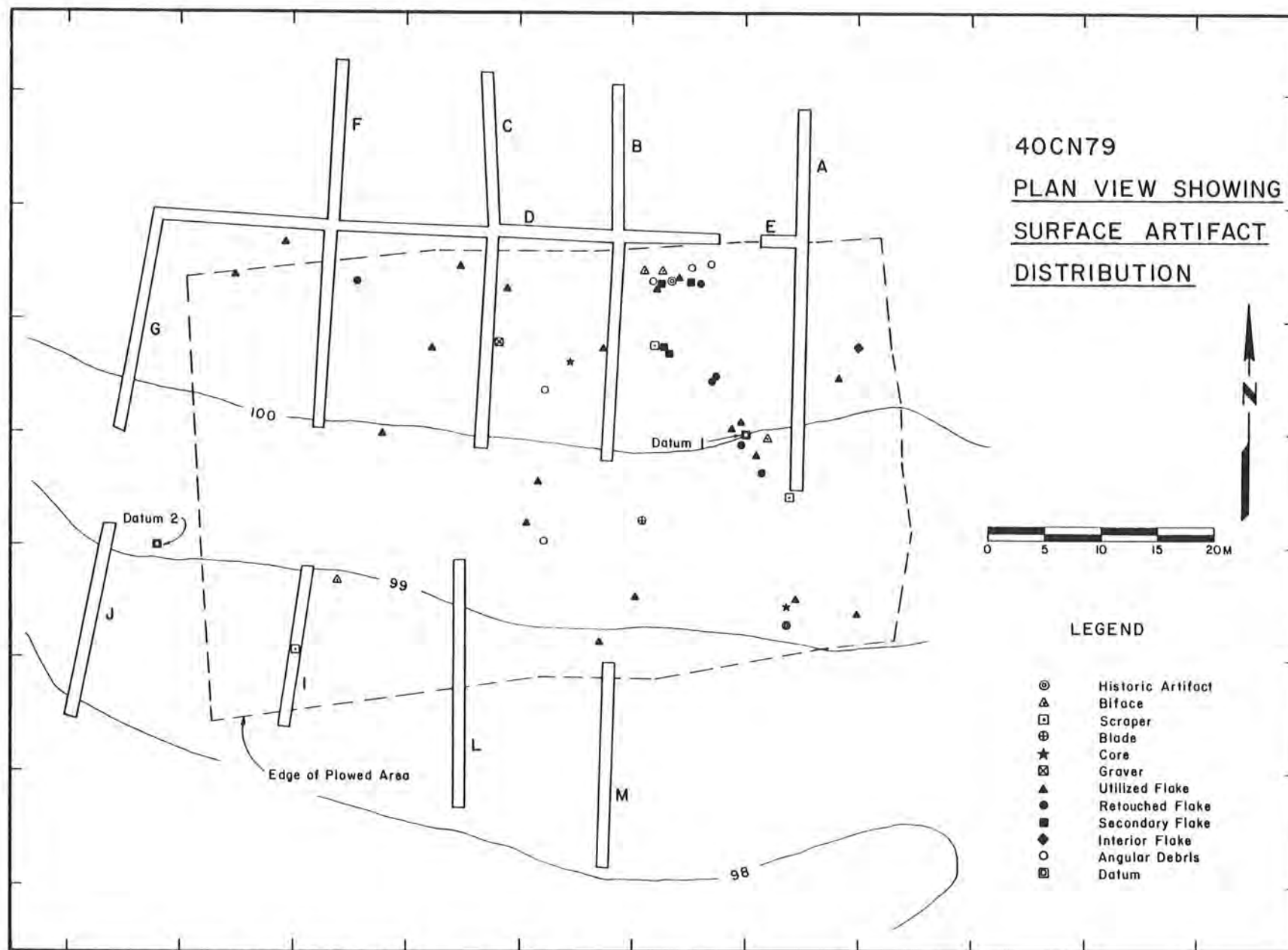


Figure 5. Plan View Showing Surface Artifact Distribution.

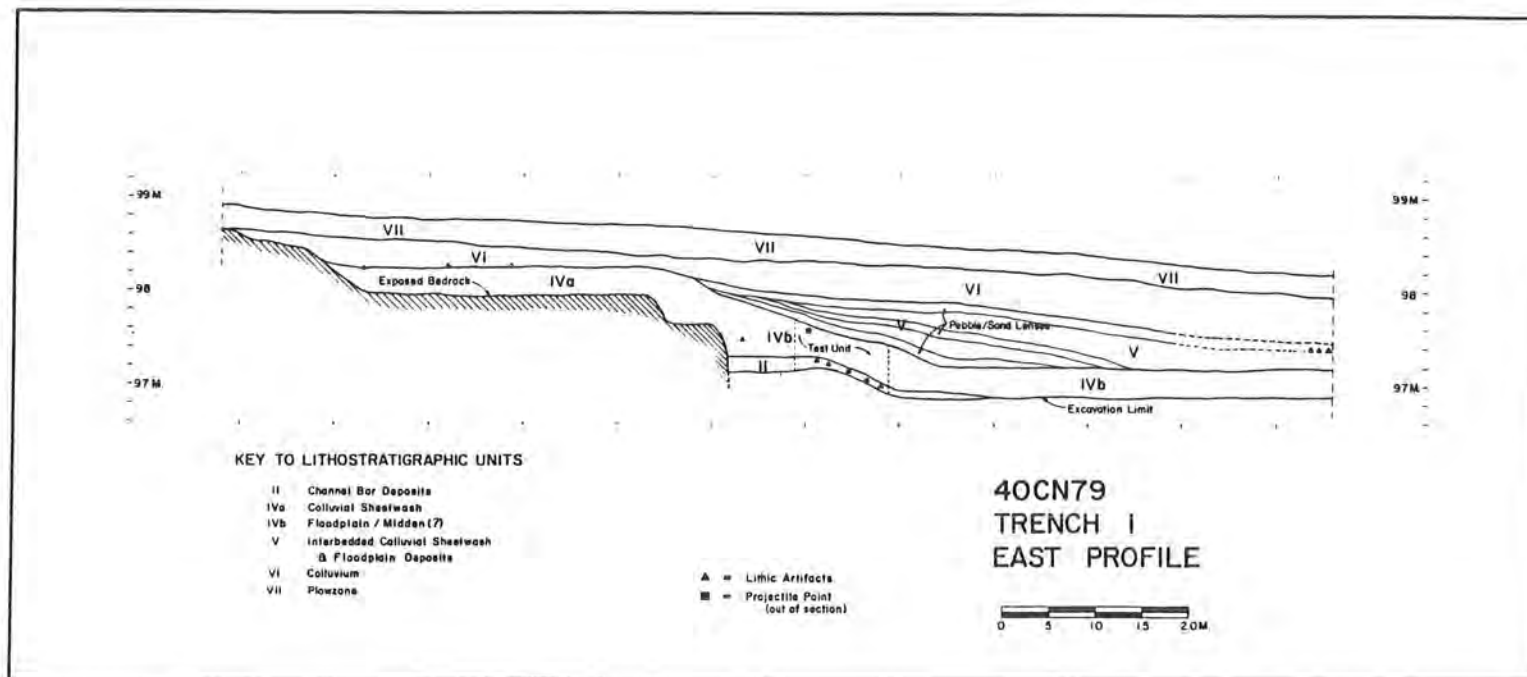


Figure 6. Profile of Trench I.

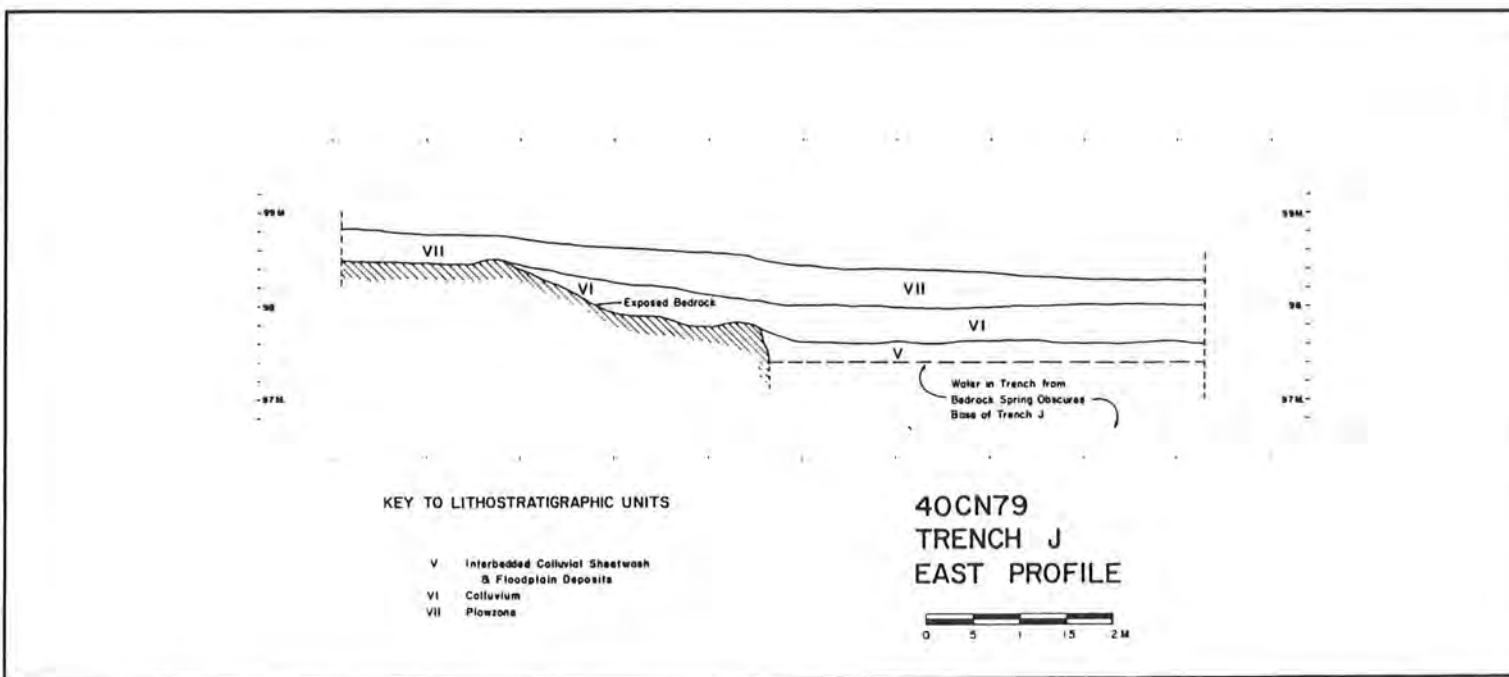


Figure 7. Profile of Trench J.

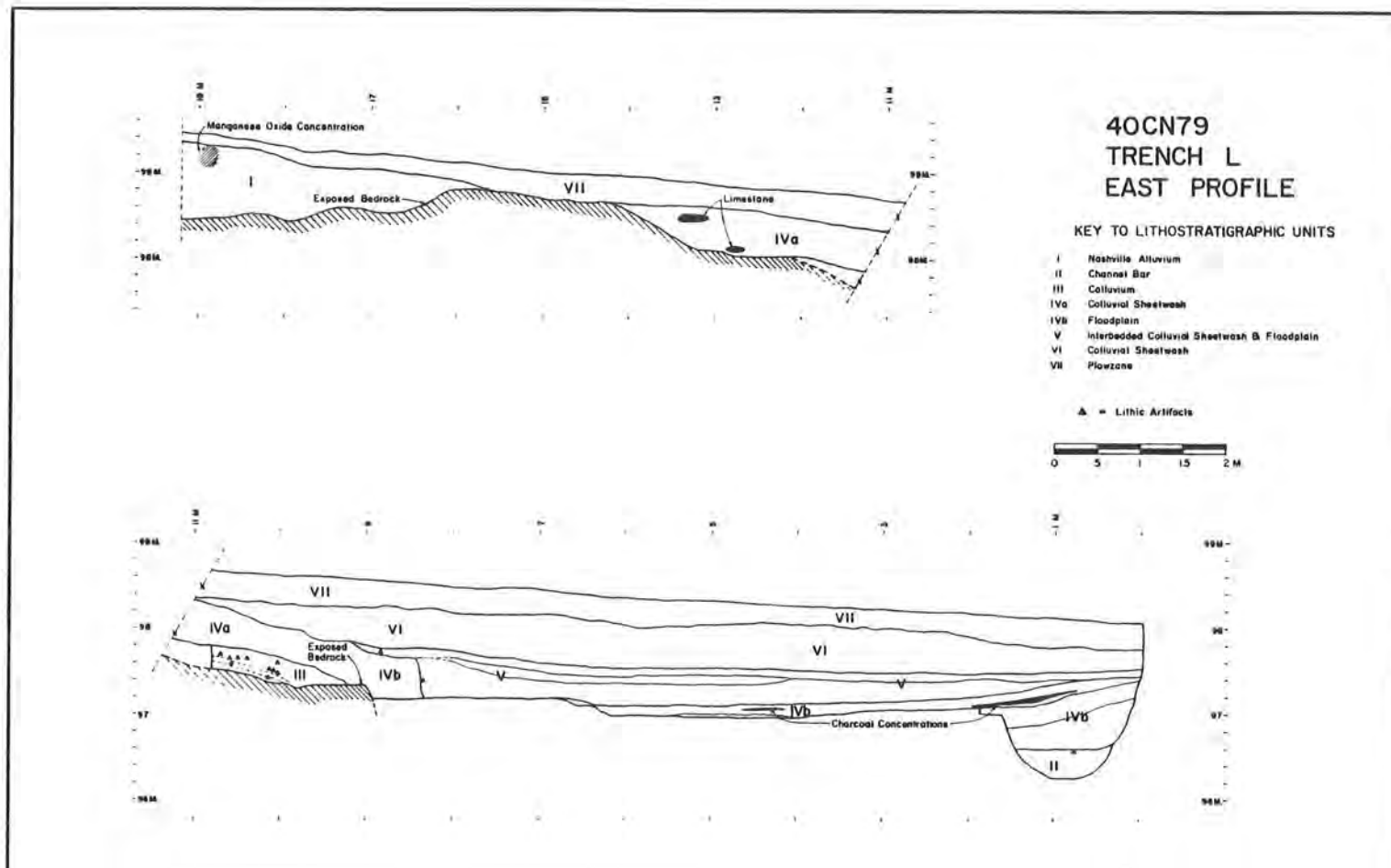


Figure 8. Profile of Trench L.

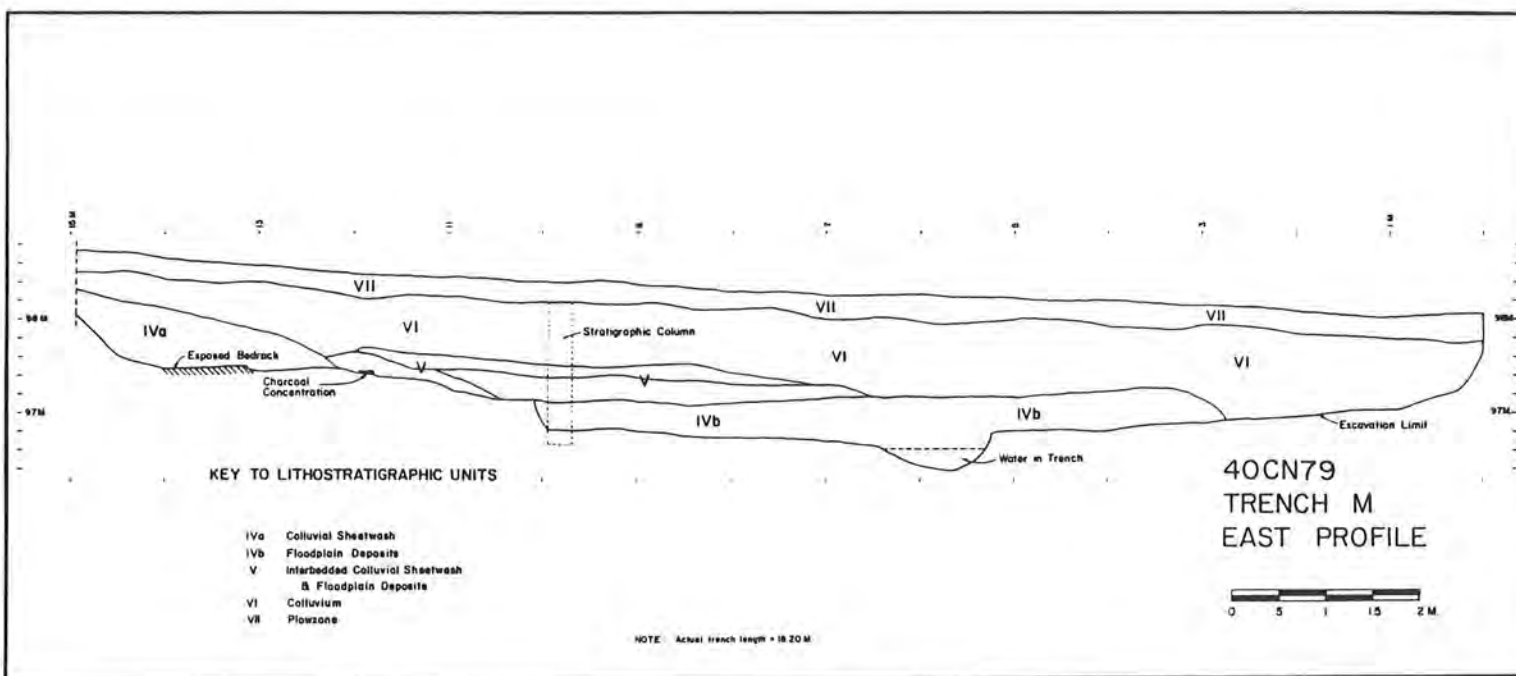


Figure 9. Profile of Trench M.

Test Unit 1 was a 1x1 meter square in the base of Trench I, which sampled Lithostratigraphic Units IVb and II (Fig. 6). Test Unit 2 was similar in size and was located in Trench L to sample Lithostratigraphic Unit IVb. All fill from these units was saved for water screening.

The lithostratigraphic units were defined and mapped for Trenches I, J, L and M. These are shown in Figures 6 - 9. Detailed descriptions of the lithostratigraphic units are presented in the following section entitled "Stratigraphy." Flotation samples of the various strata of Trench M were collected from a stratigraphic column measuring 135 centimeters in height by 15 centimeters in depth by 25 centimeters in width. The column was taken from the east profile at a location 8.25 - 8.50 meters south of the north end of Trench M (Fig. 9). A total of ten two-liter samples was taken from between the base of the plowzone and a point 15 centimeters below the bottom of the trench. Samples from the strata of Trench L were collected for sediment analysis to substantiate and verify nomenclature and descriptions assigned in the field.

Trench K (not shown on Fig. 4) was located to the southwest of the intensive area of investigation and excavated into the T-0 terrace to examine the recent geomorphological deposits adjacent to the river. Trench N was located to the east of the other trenches, in the sparsely vegetated feed lot where the site was initially identified, to determine whether subsurface features were present in that area. All excavation units were backfilled.

Stratigraphy

Lithostratigraphic Unit I consists of sand, gravel, pebble and cobble-sized, non-quartzitic limestone and chert grains overlain by clayey silts and fine sands. The silt and larger sized grains are cemented by clays of pedogenic origin and have a distinctive brown to strong brown hue and chroma of 7.5YR to 5YR.

Lithostratigraphic Unit II consists of sand, gravel, pebble and occasional cobble-sized, non-quartzitic limestone and chert grains. The grains are generally cemented together by clays of pedogenic origin and have a hue and chroma value of brown (10YR). The surface of the unit was exposed in Trenches J, I, and L, and was completely penetrated in Trench H where more than a meter of the unit overlies the bedrock sub-stratum.

The unit is entrenched into the T-1 terrace (Nashville Alluvium) and into the bedrock below. The unit appears to be thickest along the T-1/T-0 scarp and thins out with a step-like upper surface, laterally toward the present stream channel. The unit extends for more than forty meters along the T-1/T-0 scarp and appears to be more than ten meters wide.

Upon the basis of its structure and lithological composition, this unit is interpreted as an ancient channel bar, which formed near the junction of Rush Creek and the East Fork Stones River. The unit is the initial or oldest channel bar within the T-0 terrace and the earliest channel represented within the valley that post-dates the T-1 terrace (Nashville Alluvium).

Lithostratigraphic Unit III consists of very poorly sorted, pebbly, gravelly silt and clay. The pebble to gravel-sized sediment is non-quartzitic and partially composed of waterworn grains derived from the T-1 terrace and angular, non-

waterworn chunks of limestone derived from the bedrock below. Pebble lines which contain unweathered artifacts occur within the unit.

The unit was encountered in Trench L where it occurs upon the bedrock scarp separating the T-1 and T-0 terraces. Upon the basis of its position and its lithological composition it has been interpreted as a truncated set of colluvial mud flow or sheetwash deposits. The unit may have graded laterally to Lithostratigraphic Unit II prior to truncation.

The unit has distinctive 1x1 centimeter, blocky to angular peds developed within it. The peds are dark yellowish brown (10YR4/4) with clay linings of dark grayish brown (10YR4/2). This pedogenic development does not appear to be associated with the soil sequum which overlies the unit.

Lithostratigraphic Unit IV has been divided into two principle components which are laterally transitional to each other. Lithostratigraphic Unit IVa consists of very poorly sorted, gravelly, pebbly, clayey silts which are situated across the scarp separating the T-0 and T-1 terraces and on top of Lithostratigraphic Unit II along the inner one-half to one meter of the channel bar. At its streamward side the unit grades into Lithostratigraphic Unit IVb.

The unit is lenticular in cross-section, with a surface which generally parallels the slope of the bedrock scarp below. Unit thickness ranges from five centimeters to more than sixty centimeters. The sloping surface of the unit is an erosional surface marked by a pebble line, occasionally containing artifacts, and continuous with the pebble line and erosional surface on top of Lithostratigraphic Unit IVb. The unit lacks any internal structure with the exception of faint pebble lines and characteristically approximates strong brown (7.5YR4/6 to 5/6) in hue and chroma value.

The stratigraphic position of the unit, the lithological composition, the homogeneous structure with faint pebble lines, and the color of the unit indicate that it was derived as colluvial sheetwash from Lithostratigraphic Unit I.

Lithostratigraphic Unit IVb consists of well sorted fine sands, silts and clays. In Trenches J, I, and M the unit is homogeneous in structure with a chroma and hue value generally approximating yellowish brown (10YR5/6). In Trench L a number of lenticular sub-units can be distinguished upon the basis of differences in organic content or lithological composition. In addition, oxidized areas of apparent cultural origin occur upon the surfaces of several of these units. The unit was absent in Trench H.

The unit directly overlies Lithostratigraphic Unit II and has a stepped or sloped surface which generally parallels the unit below. The thickness of the unit appears to range generally between 20 and 40 centimeters. The unit has a sharp boundary contact with the unit which overlies it that is generally marked by a pebble line and appears to represent an erosional surface. In Trench I, cultural debris ranging from small chips to a cobble-sized hammerstone was recovered from a waterscreened sample of the unit. The position of the unit above channel bar sediments, the lenticular structures visible within Trench L, and the lithological composition of the unit indicate that the sediments are the result of overbank (i.e., floodplain) deposition upon the apparently abandoned channel bar represented by Lithostratigraphic Unit II.

Lithostratigraphic Unit V is composed of lenticular beds of well sorted fine sands, silts and clays identical to Lithostratigraphic Unit IVb, which are separated by thin beds of very poorly sorted gravelly, pebbly, clayey silts. In Trench J, these poorly sorted sediments can be seen to originate upon the erosional surface which is developed upon Lithostratigraphic Unit IVa and to slope downward across the better sorted sediment with which it is interbedded to the surface of Lithostratigraphic Unit IVb. Non-waterworn artifacts were recovered from the top-most of these beds in Trench J. The hue and chroma value of these units ranged from brown (10YR4/4) to strong brown (10YR5/6).

The internal structure of Lithostratigraphic Unit V, and the lithological composition of the alternating well sorted and poorly sorted beds of sediment indicate that this unit originated as interbedded overbank (floodplain) and colluvial sheetwash deposits. The unit is apparently present along the inner edge of the floodplain as a narrow wedge of sediment which does not extend out more than ten meters from the scarp between the T-0 and T-1 terraces.

Lithostratigraphic Unit VI is composed of very poorly sorted, slightly gravelly, pebbly, fine sandy silts and clays. The unit lacks internal sedimentary structure. A B2 master soil horizon is developed within the unit, and argillic clay deposition within the unit has a hue and chroma value of dark to strong brown (10YR4.5/3.5) with tiny specks of very dark gray (10YR3/1). Weakly developed sub-angular peds two to three centimeters in diameter are present. Occasional tiny manganese oxide concretions and flecks of carbonized wood are also present.

The unit is lenticular in cross-section extending off of and across the T-1/T-0 terrace scarp and Lithostratigraphic Units IVa and V. Like Lithostratigraphic Unit V, the unit appears to be restricted in its distribution within the T-0 terrace to the inner edge of Lithostratigraphic Unit IVb. The unit is present within all the trenches, generally ranging between 40 and 60 centimeters at its thickest part.

The situation of the unit, the lenticular shape of the unit, and the lithological composition of the unit are interpreted as indicating that the unit originated as colluvial sheetwash deposits.

Lithostratigraphic Unit VII is composed of very poorly sorted fine sands, silts, and clays with pebble, gravel and cobble-sized grains present. The unit extends continuously across the T-1 and T-0 terraces and the scarp separating them as the surficial-most unit. The product of modern cultivation, this is an Ap (anthropic) master soil horizon developed in the surface of the lithostratigraphic units which it overlies. The unit is characterized by a higher organic detritus content than the horizon below and a sharp, wavy to smooth lower horizon boundary. The unit lacks internal structure and generally approximates dark yellowish brown (10YR3.5/6) in color.

Pedostratigraphic Unit I is a truncated soil sequum which is developed within the T-1 terrace (Nashville Alluvium). The unit consists of superimposed B2 master soil horizons which extend through the Nashville Alluvium to bedrock. The horizons are characterized by a strong brown (7.5YR5/6 to 5/8) color and a relatively high argillic clay content. The color of the unit appears to be the result of intense oxidation of the soil sequum after its deposition.

Pedostratigraphic Unit II is a soil sequum which is developed both across the T-1 terrace and the T-0 terrace. Upon the T-1 terrace the unit is developed within

the uppermost horizon of truncated Pedostratigraphic Unit I. Originally, the sequum probably consisted of a sequence of A1, B1 and B2 master soil horizons. Modern cultivation has produced a plowzone which has truncated the A1 and B1 horizons.

Upon the T-0 terrace, the unit is much thicker and generally extends entirely through the sediments which make up the terrace. Along the stream banks the B2 master horizon extended through more than one and one-half meters of alluvial sediment to bedrock. An exception to this soil development appears to be along the scarp between the T-0 and T-1 terraces where Lithostratigraphic Units III through V appear to be unaffected by the development of the soil sequum above. On the T-0 terrace the unit is characterized by a dark brown to gray (10YR3/3 to 3/1) Ap horizon, and a dark yellowish brown (10YR4/4 to 3/6) B2 master horizon.

Cultural Features

Features 1 - 17 were defined in the base of the series of shallow backhoe trenches that were located on the crest of the terrace (Fig. 10). They appeared as faint stains, darker than the yellow subsoil into which they extended. After initial exposure, these features were troweled for more accurate horizontal definition. A hand auger was used to determine vertical extent. The description and measurement of each feature was then recorded. Point of feature detection was measured below present ground surface. None of the features were excavated. Based on the available information, these features may possibly be storage pits, burials, fire pits or trash-filled depressions. Table 1 presents a summary of the feature data.

On the south slope of the site the backhoe excavations revealed a complex stratigraphic situation. Important to this discussion was the presence of buried stratigraphic levels which contained lithic artifacts, faunal and floral remains, and features resulting from an Early Archaic occupation of at least a portion of the south slope area of the site. The presence of buried cultural materials in strata in Trenches I, J and L, and cultural features in Trench L demonstrates a prehistoric occupation extending a minimum of 40 meters parallel to the terrace. This occupation was not documented in Trench M. Specifically, cultural materials were present on the surface and upper several centimeters of Lithostratigraphic Unit II (channel bar deposits) in Trenches I, J and L. They were present in Lithostratigraphic Unit III (colluvium resting on bedrock) in Trench L. Lithostratigraphic Unit IV (floodplain and colluvial deposits) contained cultural materials in Trenches I, J and L, and features in the form of burned surfaces in Trench L. Other cultural materials relating to this buried occupational level came from Lithostratigraphic Unit V (interbedded colluvial sheetwash and alluvial deposits) in Trench I.

Features 18 through 21 were all located in Trench L and are shown in Figure 13. Backhoe and hand excavations in Trench L exposed four burned surfaces (Features 18 - 21) in the east profile and in the base of the trench. One cultural stratum (Units J and P on Fig. 11), definitely associated with Features 18 - 21, was also delineated.

The surface of Feature 20 was exposed by hand excavations in Test Unit 2. Stratum J, a deposition resulting from both cultural and natural processes, was directly superimposed over Feature 20. This burned surface was defined for a distance of just over two meters. The northern limit of this feature appears to be intact, but its southern extent may have been truncated by overbank water erosion.

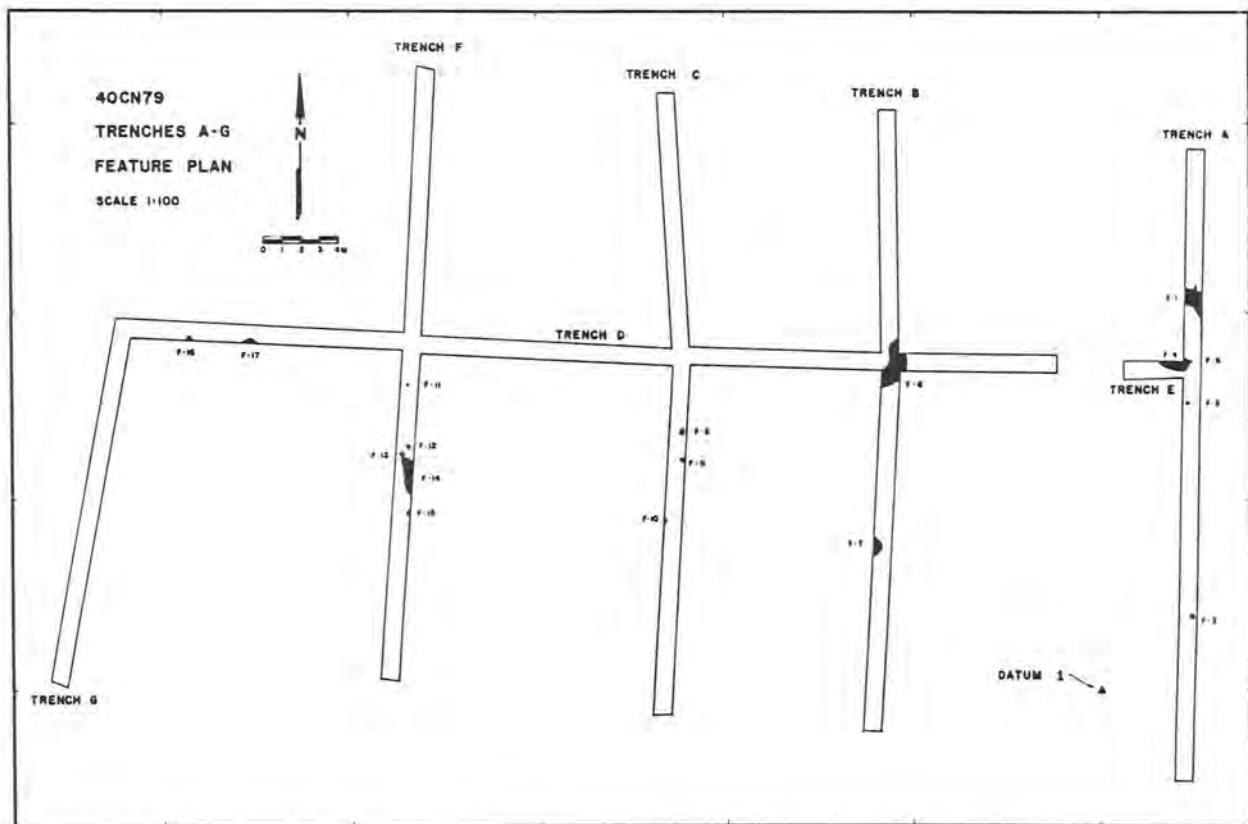


Figure 10. Plan View of Trenches A - G Showing Features.

TABLE 1

SUMMARY OF FEATURE DATA FOR SITE 40CN79

Feature Number	Feature Location	Description	Dimensions	Point of Detection	Depth	Fill	Cultural Contents
1	Trench A	Large amorphous pit	N-S 120 cm. E-W 95 cm.	45 cm. B.S. ¹	23 cm. B.P.D. ²	Medium brown loam	Flaked lithics
2	Trench A	Posthole	18 cm. dia.	30 cm. B.S.	45 cm. B.P.D.	Medium dark brown loam	Charcoal
3	Trench A	Posthole	15 cm. dia.	20 cm. B.S.	30 cm. B.P.D.	Medium brown loam	Charcoal
4	Trenches A & E	Large pit	N-S 60 cm. E-W 140 cm.	40 cm. B.S.	28 cm. B.P.D.	Medium brown loam	Flaked lithics
5	Trench A	Posthole	20 cm. dia.	40 cm. B.S.	34 cm. B.P.D.	Medium brown loam	None visible
6	Trench B	Large amorphous pit	N-S 200 cm. E-W 120 cm.	33 cm. B.S.	30 cm. B.P.D.	Medium brown loam	Charcoal & flaked lithics
7	Trench B	Basin	80 cm. dia.	33 cm. B.S.	90 cm. B.P.D.	Light medium brown loam	None visible

TABLE 1 (Continued)

Feature Number	Feature Location	Description	Dimensions	Point of Detection	Depth	Fill	Cultural Contents
8	Trench C	Posthole	N-S 28 cm. E-W 10 cm.	24 cm. B.S.	50 cm. B.P.D.	Medium brown loam	Charcoal
9	Trench C	Posthole	N-S 18 cm. E-W 12 cm.	30 cm. B.S.	18 cm. B.P.D.	Light medium brown loam	Charcoal
10	Trench C	Posthole	12 cm. dia.	27 cm. B.S.	25 cm. B.P.D.	Light medium brown loam	None visible
11	Trench F	Posthole	8 cm. dia.	28 cm. B.S.	15 cm. B.P.D.	Medium brown loam	Charcoal
12	Trench F	Small circular stain	10 cm. dia.	30 cm. B.S.	32 cm. B.P.D.	Light brown loam	None visible
13	Trench F	Irregular oval stain	N-S 20 cm. E-W 12 cm.	31 cm. B.S.	27 cm. B.P.D.		None visible
14	Trench F	Irregular basin	N-S 170 cm. E-W 50 cm.	34 cm. B.S.	29 cm. B.P.D.	Light medium brown loam	Charcoal
15	Trench F	Posthole	14 cm. dia.	29 cm. B.S.	16 cm. B.P.D.	Light medium brown loam	None visible
16	Trench F	Small oval basin	N-S 20 cm. E-W 18 cm.	38 cm. B.S.	19 cm. B.P.D.	Light medium brown loam	None visible

TABLE 1 (Continued)

Feature Number	Feature Location	Description	Dimensions	Point of Detection	Depth	Fill	Cultural Contents
17	Trench F	Circular basin	50 cm. dia.	31 cm. B.S.	17 cm. B.P.D.	Light medium brown loam	None visible
18	Trench L	Burnt surface & associated matrix, within a possible structure basin	N-S 158 cm.	80-104 cm. B.S.	2-4 cm	Natural & cultural post-occupational deposits	Carbonized wood, burnt clay
19	Trench L	Burnt basin, possibly associated with F-18.	N-S 20 cm. E-W 29 cm.	62-66 cm. B.S.		Medium brown loam	Line of oxidation and reduction
20	Trench L	Burnt surface & associated matrix within a possible structure basin	N-S 202 cm.	125-136 cm. B.S.	2-4 cm.	Natural & cultural post-occupational deposits	Flaked lithics & burned clay
21	Trench L	Burnt surface & associated matrix within a possible structure basin	N-S 95 cm	120-124 cm. B.S.	2-4 cm.	Natural & cultural post-occupational deposits	Carbonized wood, burnt clay

NOTES:

1

B.S. = Below Surface

2

B.P.D. = Below Point of Detection

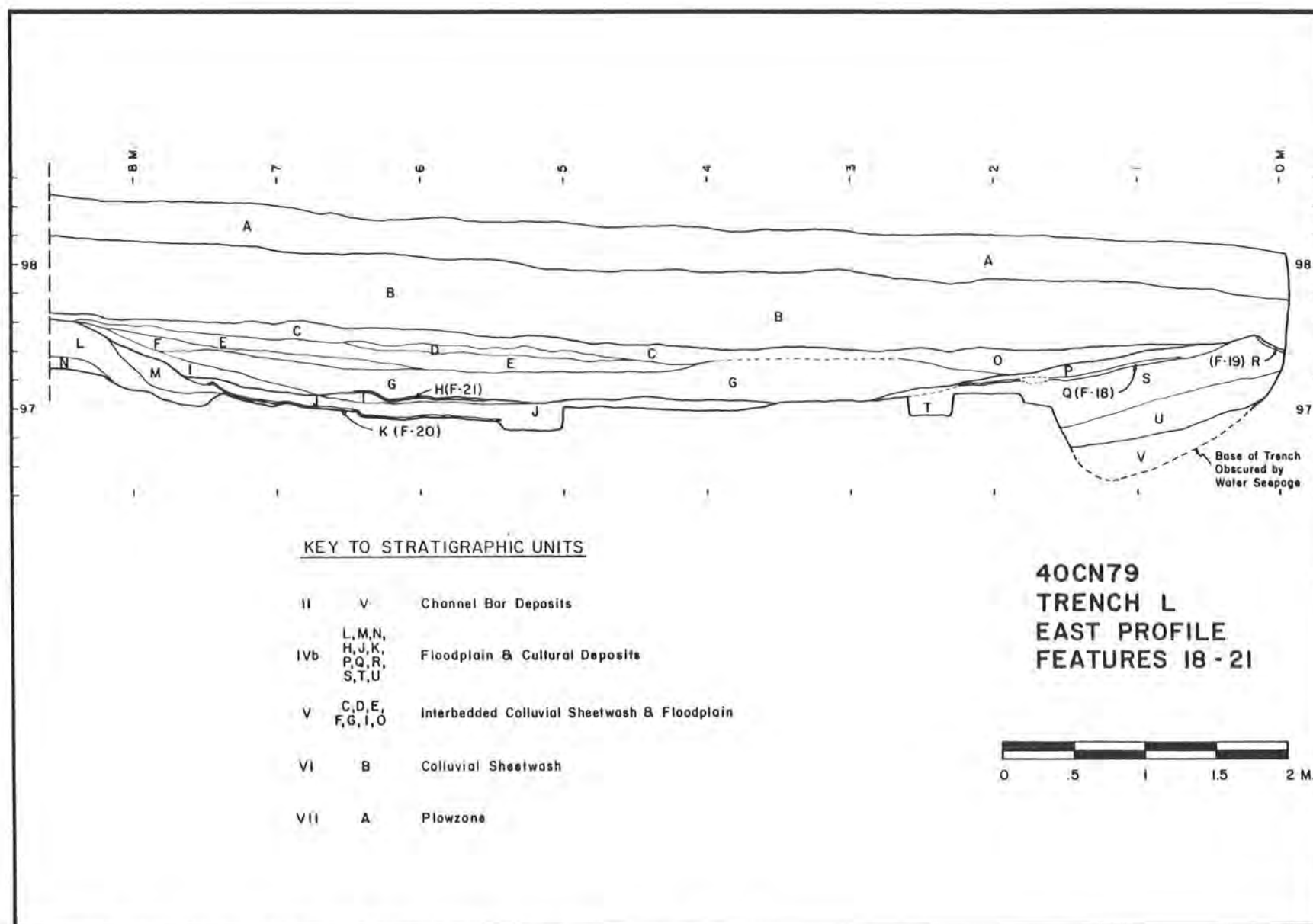


Figure 11. Detail Profile of Trench L Showing Features 18 - 21.

Feature 18 was also a burned surface near the southern end of Trench L. It was defined for a distance of approximately 1.5 meters in the eastern trench profile. This feature is on the upper surface of floodplain and colluvial deposits. Like Feature 20, it was superimposed by a culture bearing stratum (Stratum P) which is quite similar to Stratum J which overlay Feature 20. It is possible that Features 18 and 20 were originally on the same exposed surface, and contemporary.

Feature 19 is a portion of a basin or pit which was only partially exposed in the southeast corner of the trench appearing in the east and south profiles. The surface of the basin or pit is oxidized. There is no apparent use-compacted matrix present, and a post-occupational deposit similar to the one observed over Features 20 and 18 is absent.

Feature 21, another burned surface, appears in the east profile above Feature 20, resting on a silt deposit (Stratum I) which overlies Stratum J. Feature 21 is a thin (1 to 2 centimeter) band of oxidized and reduced coarse sand which varies from being very distinct to becoming diffuse along its margins. It appears that post-abandonment processes may have obscured portions of the feature. One artifact was collected from the feature surface exposed in the floor of the trench where some of the overlying post-occupational deposits were still intact.

Lithic Analysis

The initial surface collection totaled 46 lithic artifacts which were point located. Immediately following the completion of this stage of testing, backhoe trenches were dug, and artifacts were collected from the backdirt piles of each trench. Artifact proveniencing approximated the various strata and features revealed in the trenches. The cultural matrix from Test Units 1 and 2 was waterscreened, then size graded into 1/2", 1/4", 1/8", and less than 1/8".

It should be noted that these various techniques of collection cause a difference in the size of artifact material which will be obtained. Both surface collecting and backdirt pile collecting selects for larger artifacts which are easily visible. The more precise effort required by hand excavation facilitates the collection of artifacts of any size, while waterscreening with graded mesh promotes near-100% recovery.

Analysis of the lithic artifacts reflected the discrepancies inherent in the method of recovery (Table 2). The reduction material obtained from surface and trench backdirt collections represented 42.1% of the total, while the same category comprised 69.4% of the lithics recovered in the excavation process. The range for utilized and retouched flakes is much less; they represent 39.7% of the collections and 29.0% of the excavations. The inequality in the percentages of lithic tools is quite striking. Only 1.6% of the artifacts obtained in the excavations are tools, while for the collections, this category is 18.2% of the total. The extreme percentages are modified somewhat when the lithic assemblage from the site is considered as one entity. The reduction material is still dominant (60.9%), utilized and retouched flakes occupy a middle range (32.3%) and lithic tools present a stronger percentage (6.8%). The complementary methods of obtaining artifacts should promote a fair representation of lithics present at the site.

The high percentage of reduction material, much of it very fine in size, and the presence of a subsurface midden, habitation surfaces (Features 18, 20 and 21) and a storage or refuse basin (Feature 19), point strongly to the conclusion that

TABLE 2

DISTRIBUTION OF LITHIC ARTIFACTS AT 40CN79

	Surface & Trench Collections (n=1544)	Excavations (n=3408)	Total (n=4452)
Reduction Material ¹	42.1%	69.4%	60.9%
Utilized and Retouched Flakes	39.7%	29.0%	32.3%
Lithic Tools ²	18.2%	1.6%	6.8%
Total	100%	100%	100%

¹ Reduction material includes angular debris, primary, secondary, and interior flakes, and cores.

² Lithic tools include bifaces, scrapers, projectile points, knives, graters, notched flakes, composite tools, choppers, perforators, and hammerstones.

TABLE 3
SUMMARY OF LITHIC ANALYSIS FOR 40CN79

<u>Material</u>	<u>Type</u>	<u>Total</u>	<u>Percent</u>			
1		91	1.42			
2		60	.94			
3		1	.02			
4		62	.97			
5		258	4.03			
6		121	1.89			
7		97	1.51			
8		57	.89			
9		23	.36			
10		22	.34			
11		15	.23			
12		30	.47			
13		100	1.56			
14		11	.17			
15		18	.28			
16		107	1.67			
17		34	.53			
18		13	.20			
19		22	.34			
20		22	.34			
21		29	.45			
22		9	.14			
23		27	.42			
24		25	.39			
25		33	.52			
26		53	.83			
27		109	1.70			
28		2	.03			
29		11	.17			
30		5	.08			
31		4	.06			
32		71	1.11			
33		1214	18.96			
34		2155	33.65			
35		18	.28			
36		4	.06			
37		409	6.39			
38		9	.14			
39		1053	16.44			
40		0	0.00			
TOTAL		6404	99.98%			
				<u>Element</u>	<u>Total</u>	<u>Percent</u>
				Cobble Fragment	80	1.63
				Angular Debris	241	4.91
				Primary Flake	2254	45.94
				Secondary Flake	669	13.64
				Interior Flake	1172	23.89
				Core	33	.67
				Indeterminate	457	9.32
				TOTAL	4906	100.00%
				Other*	1498	
					6404	
				<u>Function</u>	<u>Total</u>	<u>Percent</u>
				Projectile Point	20	.41
				Biface	95	1.93
				Chopper	2	.04
				Scraper	21	.43
				Graver	84	1.71
				Perforator	39	.79
				Notched Flake	9	.18
				Composite Tool	37	.75
				Hammerstone	2	.04
				Groundstone	4	.08
				Retouched Flake	168	3.42
				Utilized Flake	1465	29.84
				Non-utilized Flake	2964	60.37
				TOTAL	4910	99.99%
				Other*	1494	
					6404	

* "Other" consists of burned limestone, sandstone, quartz crystal, geode, shale, and fossil raw material categories which may or may not be cultural in origin; these were not included when figuring percentages for the "Element" and "Function" tables.

40CN79 was occupied with some degree of intensiveness. The reduction activities which were occurring at the site were not hasty and preliminary, but deliberate and time-consuming, and more likely to have occurred in the stable environment of a settlement of some duration. Table 3 presents a summary of the lithic analysis for 40CN79.

Representative projectile points and formal tools from 40CN79 are shown in Figures 12 and 13. Projectile points possessing all the attributes and elements necessary for typological identification have been assigned to their respective time periods and cultural affiliations (Fig. 12). Of the twenty projectile points and fragments that were recovered, nine have been assigned to established types or type clusters. These assignments were based on similarities to other materials that have been previously typed and illustrated and described in the literature. These are based primarily on Chapman 1975a, Cambron and Hulse 1975, Faulkner and McCullough 1973 and Futato 1983. Temporal assignments of these points which are shown in Figure 12 range from Early Archaic through Early Woodland. On the upper portion of the site a range of occupation from Early Archaic to Late Archaic is represented by the points shown in Figure 12a to g. A possible Early Woodland occupation may be indicated by the two points illustrated in Figure 12h and i which are assignable to a Late Archaic/Early Woodland temporal span.

The projectile point (F.S. 60) shown in Figure 12e, and assigned to the Stanley Cluster (Chapman 1975a), was recovered from Test Unit 1 in Trench I. Specifically, this point was recovered from the upper portions of the floodplain deposits, or Lithostratigraphic Unit IVb (Fig. 6). In addition to this projectile point, three formal tools and numerous pieces of lithic waste were recovered from the test unit in Lithostratigraphic Unit IVb. This unit was also excavated into the upper portions of the underlying channel bar deposits (Lithostratigraphic Unit II). Lithic debris was recovered from the surface of this unit and embedded within the upper 2 or 3 centimeters of this unit.

Another projectile point (F.S. 64) shown in Figure 12b has been classified as a Decatur Point (ca. 7500 to 7000 B.C.) (Chapman 1975a). It was recovered from Lithostratigraphic Unit II or the interface between Lithostratigraphic Units II and IVb in Trench J.

A schematic plan of the excavations and selected trench profiles shows the horizontal and vertical distribution of diagnostic artifacts and their stratigraphic and chronologic placement (Fig. 14).

Flotation Analysis

A stratigraphic column measuring 135 centimeters high by 15 centimeters deep by 25 centimeters wide was located in Trench M in the east profile, 8.25 to 8.50 meters south of the north end of the trench. Trench M was chosen for controlled stratigraphic sampling because there were no observable cultural features present. At this locale the cultural layers are homogeneously blended into the natural geologic deposits. The samples from this column were taken at arbitrary 15 centimeter intervals without regard to stratigraphic boundaries. The column extends from a depth of 15 cm. below the trench floor (1.73 m. below surface) to the base of the plow zone (0.38 m. below surface). Measurements of depths below surface may be used to correlate with cultural levels in the other trenches where they are more distinct.

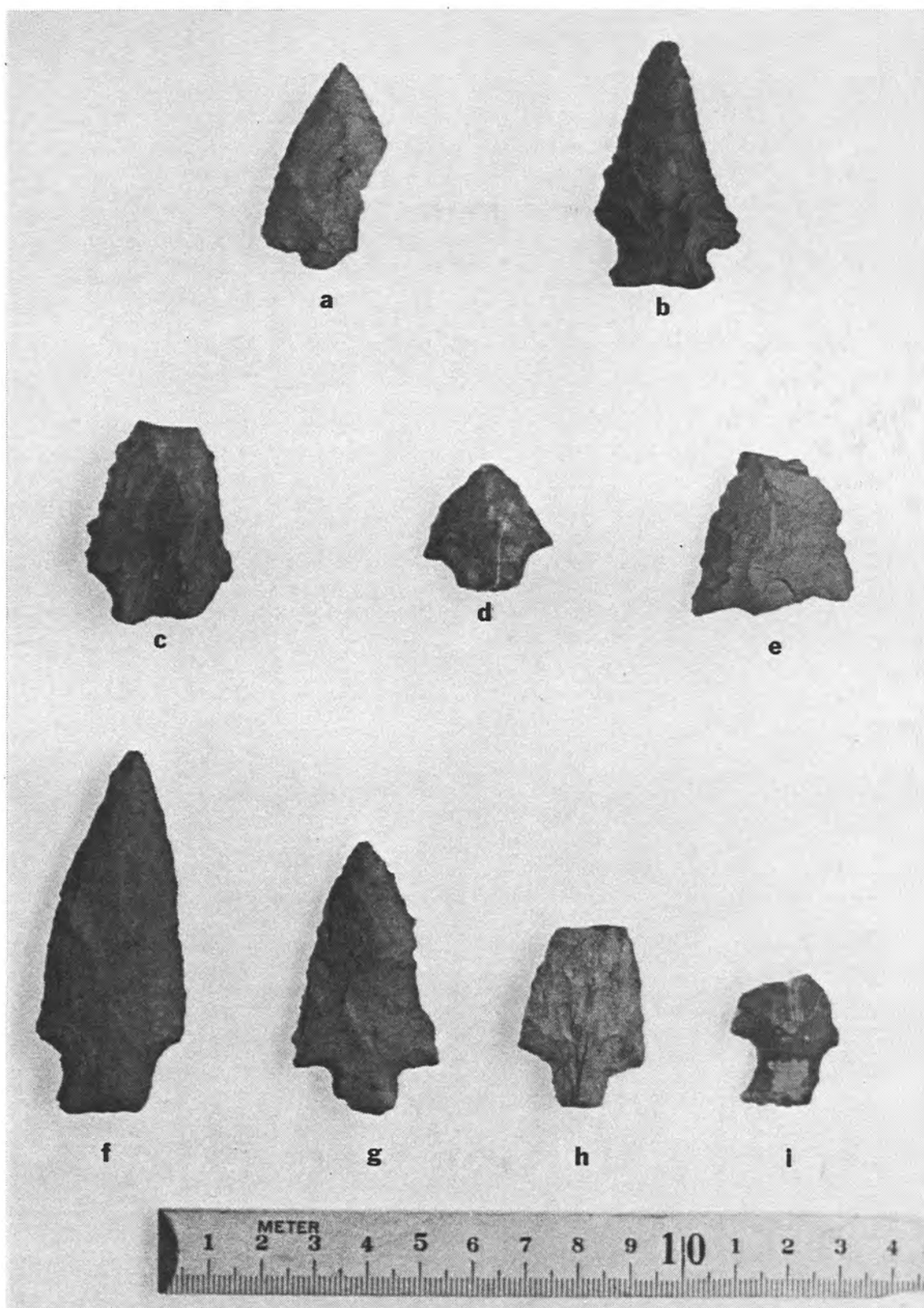


Figure 12. Projectile Points from 40CN79: (a) & (b) Early Archaic; (c) - (e) Middle Archaic; (f) & (g) Late Archaic; (h) & (i) Early Woodland.

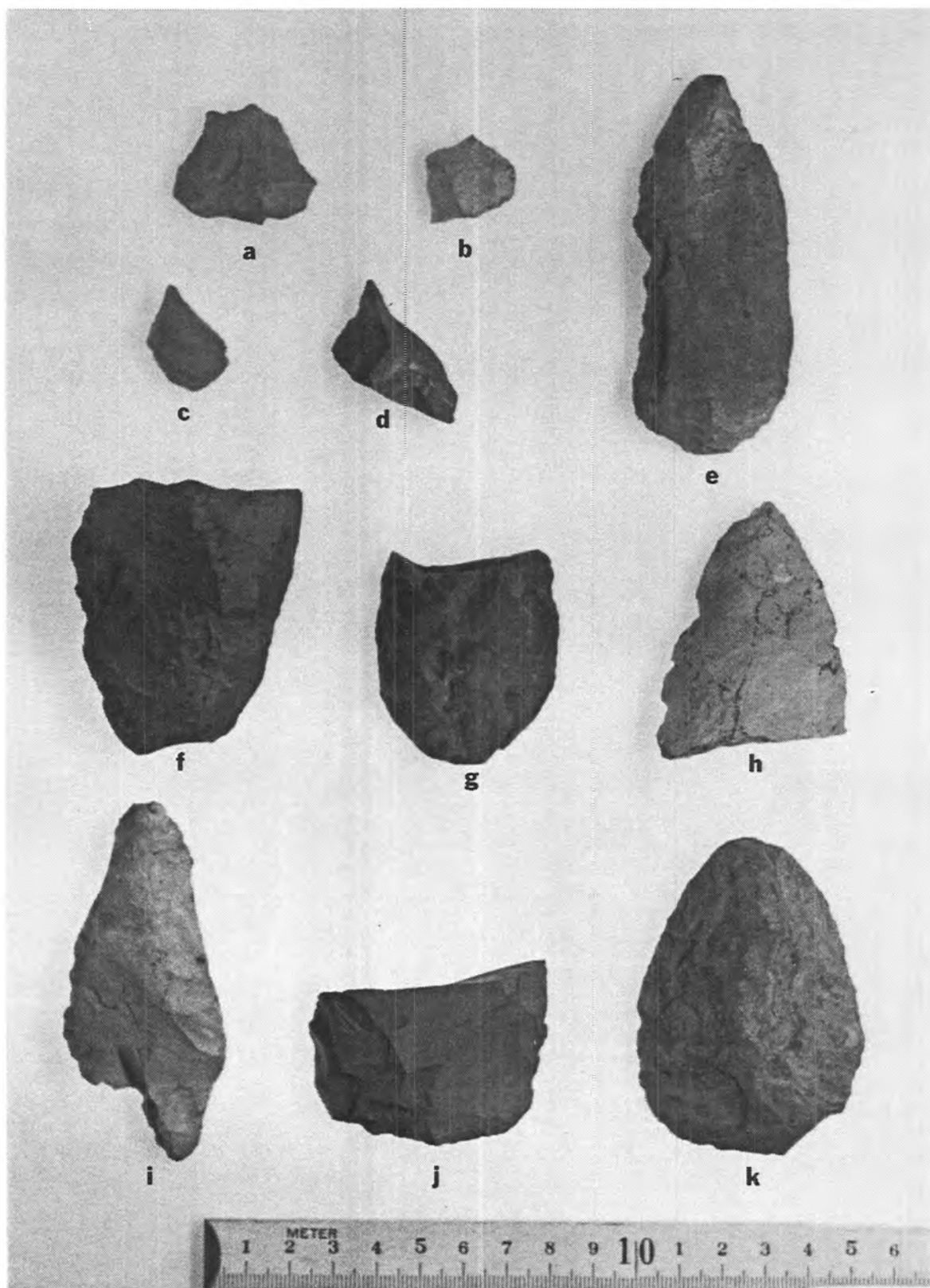
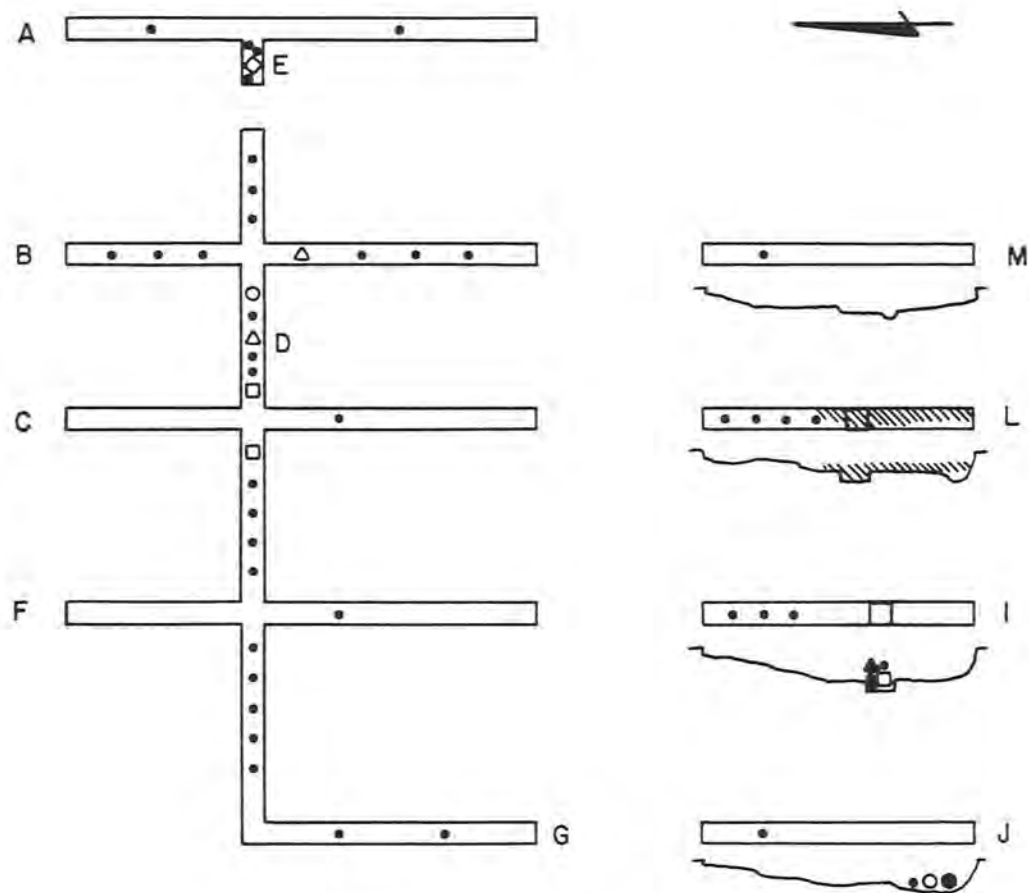


Figure 13. Representative artifacts from 40CN79: (a) & (b) graters; (c) & (d) perforators; (e) knife; (f) - (k) bifaces.



40CN79

LEGEND

- Formal Tool
- Projectile Points:
 - Early Archaic
 - Early - Middle Archaic
 - △ Middle - Late Archaic
 - ◇ Late Archaic - Early Woodland
- ▲ Deer Tooth
- Deer Bone
- /// Features 18 - 21
- Test Unit

SCHEMATIC OF TRENCHESSHOWING DIAGNOSTICARTIFACT DISTRIBUTION

NOTE: Symbols denote incidence of artifacts, not exact locations.

Figure 14. Schematic of Trenches showing Diagnostic Artifact Distribution.

Soil Sample #1 (1.73 - 1.58 m. b.s.) The dense clay content of this sample inhibited the flotation process. Charcoal was observed during flotation but it was too miniscule to warrant feasible recovery. Other cultural elements observed in the sample were microflakes of the various chert types represented elsewhere and more substantially on the site.

Soil Sample #2 (1.58 - 1.43 m. b.s.) Clay content remained dense but contained larger pieces of charcoal suitable for recovery. The charcoal fragments included fibrous woody plant remains as well as seeds and seed pods. These botanical specimens were not identified as to species and type but will remain available for such purposes. The main intent here is to acknowledge the presence of these botanical remains and the depth at which they are found in order to facilitate Phase 3 sampling.

Soil Sample #3 (1.43 - 1.28 m. b.s.) The number of flaked lithics continued to increase (n=194) and there were more quartz crystals and fossils in this sample. A tiny geode was also recovered. No bone occurred in this sample. A small amount of charcoal (far less than in Sample #2) was recovered.

Soil Sample #4 (1.28 - 1.13 m. b.s.) This sample contained a relatively low amount of cultural material. Flaked lithics, quartz crystals, and fossils are all less numerous than in Samples #2 and #3. The quantity of charcoal was comparable to that in Sample #3. Two very tiny and probably unidentifiable fragments of bone were recovered.

Soil Sample #5 (1.13 - 0.98 m. b.s.) The number of flaked lithics (n=288) increased dramatically, and quartz crystals and fossils were also more numerous. Two fragments of bone were recovered, one which may be a fragment of a very small cranium. The amount of charcoal in this sample has decreased from that in the preceding sample.

Soil Sample #6 (0.98 - 0.83 m. b.s.) This sample yielded the greatest number of flaked lithics (n=315), while quartz crystals and fossils have decreased from Sample #5. A shell fragment was recovered, and 2 tiny bone fragments, one of which may be a long bone fragment. A larger quantity of charcoal occurred in this sample than in Sample #5.

Soil Sample #7 (0.83 - 0.68 m. b.s.) The quantity of lithics decreases to slightly under half that of the preceding sample. Quartz crystals and fossils also occur in a lesser quantity. Two bone fragments were present; one may be a vertebra. The amount of charcoal recovered is approximately the same as with Sample #6.

Soil Sample #8 (0.68 - 0.53 m. b.s.) Although the flaked lithics, quartz crystals and fossils increased from that in Sample #7, there was a decrease in other categories. No bone is present, and the quantity of charcoal is about half that of Sample #7.

Soil Sample #9 (0.53 - 0.38 m. b.s.) Flaked lithics, quartz crystals, and fossils decreased slightly in number for this sample. A small piece of burned limestone was recovered. A tiny fragment, which may be bone, was found. Sample #9 contained slightly more charcoal, and a historic artifact (a fragment of clear glass) was discovered.

Soil Sample #10 (0.38 - 0.23 m. b.s.) The quantities of flaked lithics, quartz crystals and fossils decreased again in this sample. The two bone fragments recovered are very small and probably unidentifiable. This sample, like that from #9, contains one article of historic manufacture (a BB).

As can be seen in Table 4, each sample contained flaked lithics, even Sample #1, which was actually excavated 15 cm. below the trench floor. The majority of the flaked lithics were tiny reduction flakes, many of which had been utilized. Retouched flakes were not numerous, and a very small number of lithic tool fragments was recovered. Charcoal was likewise present in all the samples. Miniscule fragments of bone occurred in most samples; some may be identifiable. A tiny piece of shell was discovered in the material from Sample #6. Quartz crystals and fossils were found in all samples except Sample #1, while burned limestone and geodes, which may also be of cultural significance, were rare. A small amount of historic material was found, appropriately enough, in Samples #9 and #10, the top 30 cm. of the column which had been disturbed from plowing.

Miscellaneous Cultural Material

In addition to the lithic artifacts, several other categories of cultural materials are represented at 40CN79. Specimens are few in number and/or fragmentary, yet their presence at the site is noteworthy.

Four very small sherds of limestone-tempered ceramics were recovered from the surface of the site. The ceramic-bearing cultural zones have been disturbed by plowing as well as erosional and geologic activities. Furthermore, field conditions were not satisfactory for an accurate assessment of the extent and context of ceramic artifacts.

Several fragments of bone and shell were recovered from the proveniences which were waterscreened, yet most are so fragmentary that species identification would not be feasible. However, two specimens were recovered from the excavations which were suitable for identification and analysis. They are the distal end of a left humerus and a lower premolar tooth, both identified as white-tailed deer (*Odocoileus virginianus*). The humerus appears to have been intentionally broken and exhibits spiral fracturing, rodent gnawing, and possibly some butchering marks. It was recovered from the deep gravel deposit (Lithostratigraphic Unit II) in Trench J, and is calcified. The tooth was recovered from the lower cultural deposit (Lithostratigraphic Unit IVb) in Trench I and is heavily worn.

Charcoal samples were collected from the test segments of Trenches L and I; a few of the samples are suitable for radiocarbon dating should Phase 3 operations fail to produce better samples. These will be curated with the artifact collection. In addition, several grams of charcoal were recovered from the waterscreen and flotation processes, and are available for species identification and analysis.

Historic artifacts which occurred in or near the plowzone include a fragment of clear glass, a BB, a lead round ball, and shards of a dark green wine bottle which may date to the nineteenth century.

Significance

On the basis of the archaeological and geomorphological information that has been produced by the Phase 2 testing at 40CN79, limited Phase 3 (data recovery)

excavations are recommended. The importance of the site lies primarily in the buried Early Archaic horizon that was defined in Trenches I, J, L and M on the south slope of the site. It is believed that this culture-bearing stratum represents a relatively short-term single component occupation. Significantly, it is in a sealed context below culturally sterile colluvial sheetwash and floodplain deposits. This Archaic occupation of this area began initially on the surface of a channel bar deposit, and subsequent to that was present on the surfaces of a succession of alluvial and colluvial sheetwash deposits. After abandonment of the area for prehistoric occupation, these deposits containing features and artifactual materials were sealed by sterile alluvial and colluvial sheetwash deposits.

Given the presence of moderate quantities of artifactual materials in the culture-bearing zone, an adequate recovery of these materials in a Phase 3 excavation should provide information for the definition of the assemblage associated with this type of Archaic settlement. Additionally, the presence of carbonized botanical remains in the midden and the presence of preserved bone materials should be adequate to provide information on the subsistence base. Finally, the clearly defined alluvial and colluvial stratigraphy in this portion of the site can be further studied to determine the geological processes responsible for the formation of the geological deposits in the area of the site. Of particular interest is the presence of preserved wood in the alluvial gravels that underlay the culture-bearing stratum.

Recommendations

The following specific recommendations are suggested for conducting the Phase 3 (data recovery) excavations. On the upper portion of the site, all cultural materials are confined to the plowzone, except those materials which may be in subsurface features. Since the test excavations in this area show that there is a potential for the presence of subsurface features below the plowzone on the crest of the ridge, it is recommended that two ten-meter squares be excavated on the crest of the terrace. These two units should be centered about the intersections of Trenches A and E, and Trenches B and D (Fig. 12). This would allow for the clearing and excavation of already documented features, and provide for the definition and subsequent excavation of other features that may be clustered in those two areas. Both units would also be in the areas of the highest artifact concentrations. Because the plowzone materials are disturbed and are generally lacking any significant quantities of artifactual materials, the plowzone in these units should be removed with a toothless bucket backhoe. Defined features should be hand excavated and screened.

The purpose of this testing is to determine the nature and cultural affiliation of the features that were defined by the Phase 2 work. If they are, in fact, prehistoric cultural features, the work should be directed toward the excavation of a larger sample of those features. This work would provide an assessment of the cultural occupations of the crest of the ridge and a sample of materials to compare with that which is proposed to be recovered from the buried cultural horizon on the south slope of the site.

The emphasis of the excavations should be in the slope area of the site. It is recommended that at least two ten-meter squares be excavated in the area where the buried Archaic horizon has been documented. These should be placed over those portions of Trenches I and L which contained the buried deposits. A re-excavation of those two trenches would provide profiles with which to guide the removal of overburden and the excavation of the cultural strata. A backhoe

should be employed to remove the overburden to the top of the cultural strata. The cultural strata and any inclusive features should then be hand excavated. Efforts should be made to expose any burned surfaces or floors so as to determine their extent and the exact nature of those features. Given the proximity of East Fork Stones River, waterscreening of large samples of the excavated cultural deposits is suggested. Flotation samples should be taken from these deposits for the recovery of faunal and botanical materials for subsistence reconstruction. Several test units within the larger excavated areas should be extended into the underlying floodplain and channel bar deposits to determine the presence or absence of more deeply buried materials and to obtain wood or charcoal samples for the purpose of dating those deposits.

SITE 40CN78

Location and Description

Site 40CN78 is situated along an elongated rise or first terrace adjacent to the East Fork Stones River, at the western base of a large knoll (Fig. 2). The river is approximately 150 meters to the north. An intermittent tributary flows approximately 200 meters to the south, thus producing this isolated rise or terrace. The site is estimated to measure 150 meters north-south by 550 meters east-west and is heavily vegetated in pasture grasses in the vicinity of the right-of-way. Diagnostic artifacts collected during Phase I survey indicate a multi-component occupation, including Early, Middle, and Late Archaic, and an intensive Middle Woodland occupation (DuVall and Ward 1980).

Excavations

The dense grasses on the site made it impossible to make a valid surface collection. A site datum and grid system was established. Elevation readings were made for the production of a one-meter interval contour map (Fig. 15). A field specimen numbering system was employed with numbers subsequently assigned to excavation units, features, and artifacts.

A backhoe was utilized for subsurface testing. Trenches A1, A2, A3, A4, A5, and B were located perpendicular to the terrace on its south face. The segments of Trench A allowed for one long profile view. Trench A5 was expanded to the west in order to pursue a possible feature. East profiles of the trenches were troweled, mapped, and photographed. The lithostratigraphic units were defined and detailed and are presented in the following section. Trench C was positioned at the apex of and parallel to the terrace and was excavated with the backhoe to the base of the plowzone in order to locate any subsurface features. Features were excavated by hand. Fill from 5 of the 10 features was bagged for flotation analysis. All excavation units were backfilled.

Stratigraphy

Lithostratigraphic Unit I was exposed within Trenches A1, A2, A3, A4, and C. Trenches A1, A2, A3, and C are situated upon Morphostratigraphic Unit B. Trench A4 crosses the scarp between Morphostratigraphic Units B and A, as well as a portion of the inner edge of Morphostratigraphic Unit A (Fig. 16).

Two sub-units could be differentiated within Trench A4. Sub-unit Ia consisted of cobble, pebble, gravel, and fine sand to silt-sized grains cemented by clay of pedogenic origin. The gravel through cobble-sized material was composed principally of sub-rounded to sub-angular, waterworn cherts. Sub-unit Ib consisted of fine sandy, quartzitic silts cemented by clay of pedogenic origin.

The truncated soil sequum identified as Pedostratigraphic Unit I was present in every exposure of the unit. The color of the unit generally varied between 7.5YR5/6 and 7.5YR5/8 (strong brown) and was the result of pedogenic activity.

This unit was found not to contain cultural materials and was not investigated. Sub-unit Ia is typical in lithological composition to channel bar deposits exposed

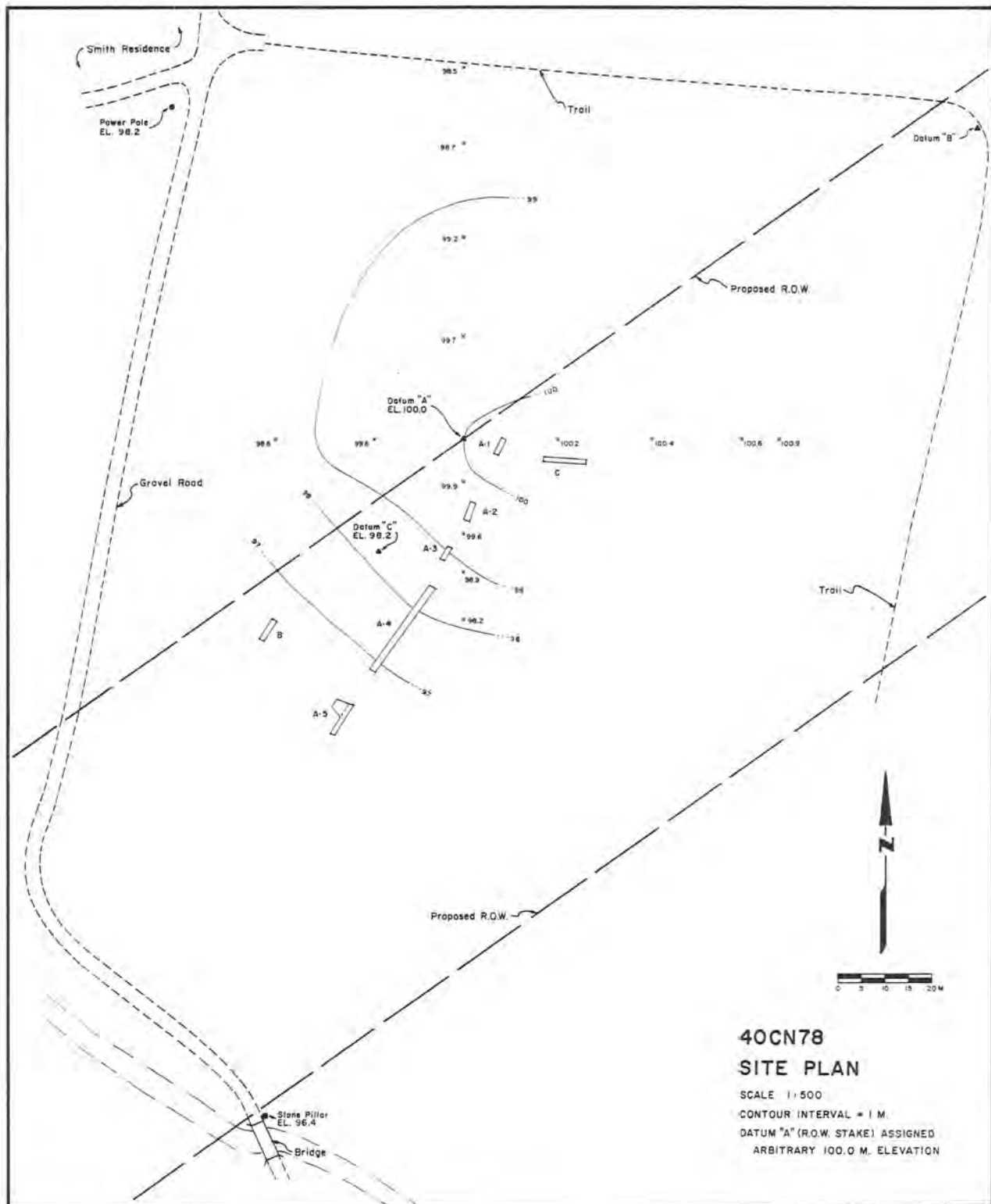


Figure 15. 40CN78 - Site Plan.

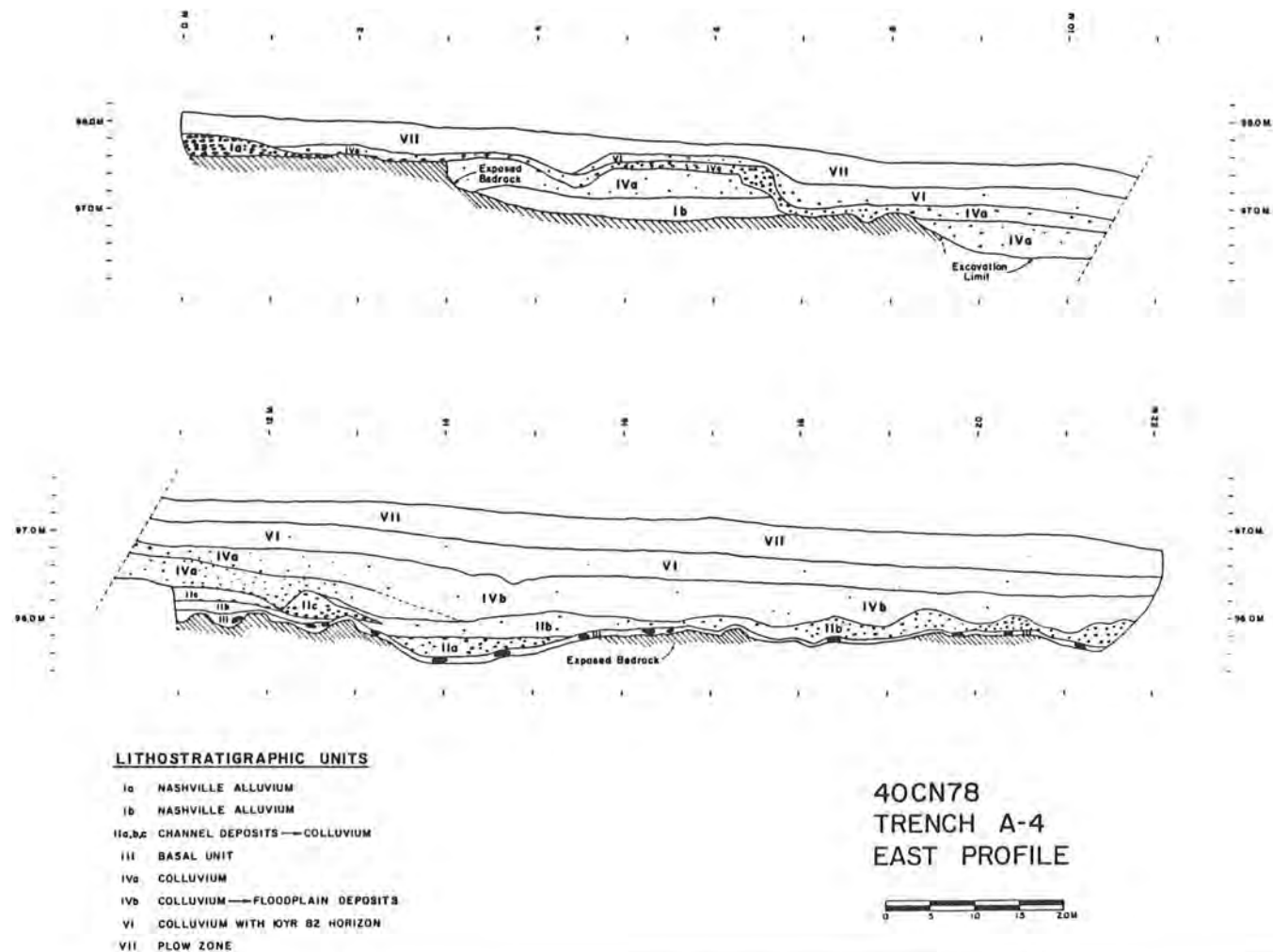


Figure 16. Profile of Trench A-4.

at 40CN79. Along with the situation of the sub-unit within the alluvial bottoms and its location adjacent to the active floodplain, these data are interpreted as indicating that this sub-unit originated as channel bar deposits. Sub-unit Ib is similar in composition to both colluvial deposits and floodplain deposits found here and at 40CN79.

Lithostratigraphic Unit II was exposed in Trenches A4 and A5. The unit was found to extend continuously across the cross-section of Morphostratigraphic Unit A created by Trenches A4 and A5 (Figs. 16 & 17). The inner edge of the unit appears to be situated at the scarp between Morphostratigraphic Units A and B.

Three sub-units were identified. Sub-unit IIb was the principal sub-unit and extended continuously across Trench A5 in one profile and across all of Trench A4. The sub-unit had a relatively flat, i.e., horizontally oriented, bottom which was separated from limestone bedrock by Lithostratigraphic Unit III. The sub-unit was uneven in thickness with a distinctive wavy horizon topography.

The lithological composition and internal structure of the sub-unit varied in conjunction with the alternating thin and thick segments of the sub-unit. The thick lenticular shaped sections were composed of approximately 50% gravel to pebble-sized, sub-rounded to sub-angular, water-worn, chert grains and 50% poorly sorted coarse sand to clay-sized grains. Internal structure in the form of pebble/gravel laminae paralleled the surface topography of the sub-unit at those points.

These thicker lenticular shaped segments graded laterally into thin tabular segments which were continuous with and separated from the thicker segments. The thin segments were composed principally of fine sand, silt, and clay-sized grains with occasional pebble/gravel-sized grains distributed discontinuously within the finer sediments.

Sub-units IIa and IIc are small lenticular shaped strata which could be differentiated from IIb but which also appeared to grade into the sub-unit. The sub-units were situated adjacent to the scarp between Morphostratigraphic Units A and B. They could be differentiated from the adjacent tabular portion of the sub-unit IIb because of a pebble/gravel content similar to that of the lenticular segments of IIb.

The color of all the sub-units approximated dark yellowish brown (10YR4/4) to dark grayish brown (10YR4/2) and is due to the accumulation of argillic clays and strong ped development. The finer sands and silts had a sticky and plastic consistency.

The situation of the unit at the base of the scarp between Morphostratigraphic Units A and B, the shape and internal structure of the unit, the textural composition of the unit, and the situation of the unit upon the active floodplain are all interpreted here as indicating that the unit originated as channel bar sediments which were deposited by the adjacent stream.

Lithostratigraphic Unit III was exposed within Trenches A4 and A5. The unit was present as the basal sedimentary unit in the portions of Trench A4 which transected Morphostratigraphic Unit A and along the entire extent of Trench A5.

The unit has a tabular to wavy shape which reflects its variable smooth and wavy lower and upper surfaces. Unit thickness is generally even approximating

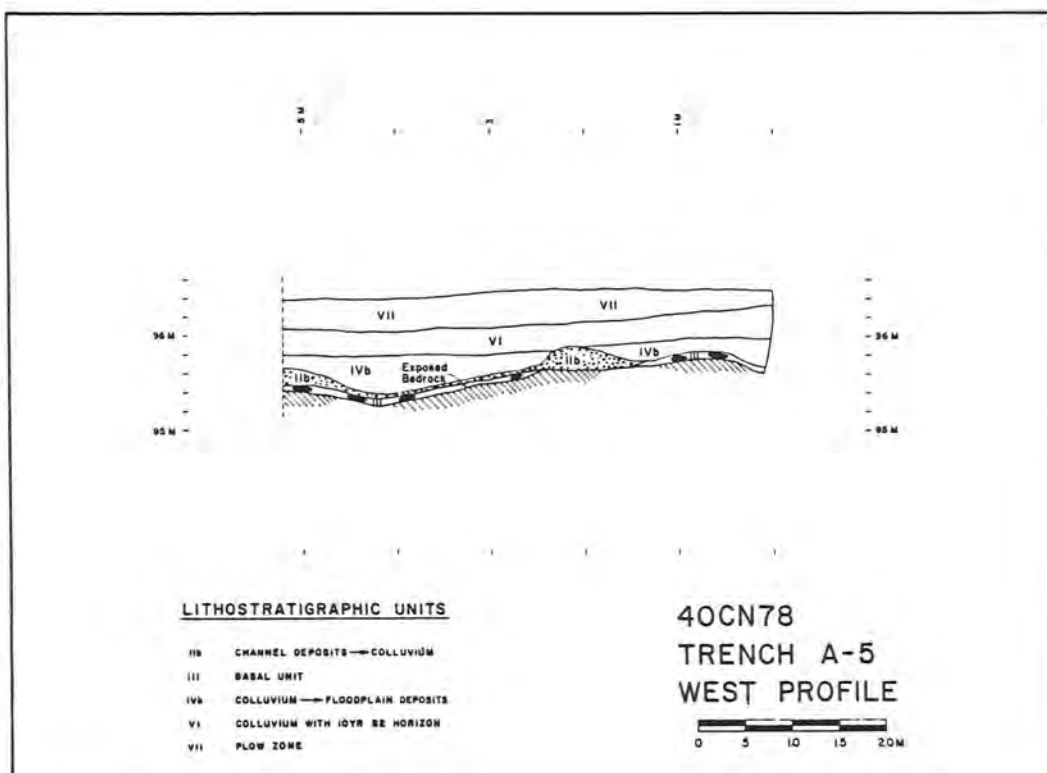


Figure 17. Profile of Trench A-5.

five to ten centimeters. Occasional patches where the unit is absent were observed beneath several of the lenticular shaped gravel bars present within Lithostratigraphic Unit II.

The unit is composed of very poorly sorted clayey, fine sandy, silts which contain occasional chunks of weathered limestone and unweathered, tabular chert. The clay content of the unit is high and appears to be argillic in origin. The unit has distinctive blocky to angular ped bodies approximating 1x1 centimeter developed within it. The peds are dark yellowish brown (10YR4/4) with clay linings of dark grayish brown (10YR4/2).

The origin of this unit is unclear. Based on the situation of the unit upon limestone bedrock, its tabular shape, and its textural composition, the unit is interpreted as originating partially in situ through the weathering of the limestone bedrock and partially as colluvial mud flow sediments.

Lithostratigraphic Unit IV was exposed within Trenches A4 and A5. The unit appears to be limited in distribution to the inner portion of Morphostratigraphic Unit A and the scarp between Morphostratigraphic Units A and B. Two principal components or facies, sub-units IVa and IVb, which were laterally continuous and transitional with each other, could be distinguished (Fig. 16).

Sub-unit IVa has an inner edge which is situated mid-way down the scarp and an outer edge which grades into sub-unit IVb along the edge of Morphostratigraphic Unit A. For most of its length across the scarp the sub-unit approximates ten centimeters in thickness and has a relatively horizontal orientation. As the sub-unit crosses the base of the scarp and drops down across bedrock steps, it thickens to approximately sixty centimeters. At this point, two indistinct strata within the sub-unit could be differentiated based upon the pebble/gravel content. Both sub-units are composed of very poorly sorted gravelly, pebbly, very fine sands, silts and clay.

Sub-unit IVb has an inner edge which grades imperceptibly into sub-unit IVa near the base of the scarp. The sub-unit is thickest along this edge and thins gradually as it extends laterally across the inner edge of Morphostratigraphic Unit A. The sub-unit is continuous, with a roughly horizontal orientation and lacks any internal structure. The surface of the sub-unit slowly dips as the sub-unit extends laterally away from the scarp. The surface topography of the sub-unit's upper boundary is smooth and the topography of its bottom is wavy. Thickness grades from approximately 60 centimeters to less than 10 centimeters. The sub-unit is composed of very poorly sorted very fine sands, silts, and clay with occasional pebble to gravel-sized grains. The consistency of the unit in the field may be characterized as plastic and sticky. The color of both sub-units approximates yellowish brown (10YR5/6) under field conditions.

Based upon the situation of sub-unit IVa along a sloping scarp, the shape of the sub-unit, and its textural composition, the sub-unit is interpreted as having originated as colluvial sheetwash sediment. The situation of sub-unit IVb on top of Lithostratigraphic Unit II which is interpreted as channel bar sediment, and its lithological composition, lead to an interpretation of this sub-unit as originating as floodplain sediment.

Lithostratigraphic Unit V was not present at 40CN78.

Lithostratigraphic Unit VI was exposed within Trenches A4 and A5. The unit is present across the scarp between Morphostratigraphic Units A and B and along the inner edge of Morphostratigraphic Unit A.

The unit appears to be lenticular in cross-section with one edge situated halfway up the scarp, the center situated just below the base of the scarp, and the lower end of the unit situated on the streamward side of Trench A5. At its thickest point the unit approximates 40 centimeters. Both the upper and lower surfaces of the unit may be characterized as smooth to wavy.

The unit is composed of very poorly sorted, slightly pebbly to gravelly, very fine sands, silts, and clay. The unit lacks any internal structure. Ped bodies approximating 5x5 centimeters and subangular to blocky in shape were visible when sediment was removed from the stratigraphic profile. Much of the clay in the sediment is apparently argillic in origin. The color of the unit is dark to very strong brown (10YR4.5/3.5).

Due to the situation of the unit along the scarp between Morphostratigraphic Units A and B and the inner edge of Morphostratigraphic Unit A, the textural composition and the lack of internal structure, the unit is interpreted as having originated as colluvial sheetwash sediments.

Lithostratigraphic Unit VII was present within Trenches A1, A2, A3, A4, A5, B, and C. The unit is the product of modern machine cultivation, i.e., the Ap horizon or plow zone, and was the surficial unit within each of the trenches. The unit is thickest upon Morphostratigraphic Unit B and the inner edge of Morphostratigraphic Unit A. The unit is thinnest across the scarp between the morphostratigraphic units.

The textural composition of the unit varies according to the underlying natural lithological units upon which it is situated. The unit contains a significant amount of gravel and pebble-sized grains derived from Lithostratigraphic Unit I along the upper half of the scarp. In general, the unit may be described as very poorly sorted, very gravelly to pebbly, fine sands, silts, and clay. The color of the unit is a homogeneous dark yellowish brown (10YR3.5/6).

Pedostratigraphic Unit I was exposed within Trenches A1, A2, A3, A4, and C. The unit was found to be limited in distribution to the surface of Morphostratigraphic Unit B and the scarp separating Morphostratigraphic Units B and A. The unit appears to be a truncated B2 master soil horizon. The horizon is characterized by significant amounts of argillic clay and a strong brown (7.5YR5/6-5/8) color. The texture of the horizon may be described as clay loam. The consistency may be described as hard, slightly plastic, and slightly sticky at the time of the field investigation.

Pedostratigraphic Unit II was exposed within Trenches A4 and A5. The unit appears to be present across both Morphostratigraphic Units A and B. Upon Morphostratigraphic Unit B the unit is developed within the truncated top of Pedostratigraphic Unit I. However, plowing has removed much of the unit, and it is absent or less than 10 centimeters thick. Upon Morphostratigraphic Unit A the unit is developed in the uppermost lithostratigraphic units which make up the morphostratigraphic unit. Here, the unit consisted of a truncated soil sequum

composed of a thick, argillie B2 master soil horizon overlain by a plow zone, i.e., Lithostratigraphic Unit VII. Typically, small, subangular to blocky ped bodies are developed within the B2 horizon. The color of the B2 master soil horizon generally approximates dark yellowish brown (10YR4/4 to 4/6).

Cultural Features

Figure 18 is a plan view of Trench C showing Features 3 - 10. Table 5 presents a summary of the feature data for site 40CN78. Features 1, 3, 4, 5, and 6 were excavated and the matrix was bagged for flotation analysis. Table 6 shows the quantities of cultural material from the excavated features.

Lithic Analysis

Artifactual materials were collected from the backdirt piles of seven backhoe trenches and from the excavation of five features within the trenches. The trench artifacts were a representative grab sample. The matrix of the features underwent flotation to maximize the recovery of smaller, more fragile data.

The trenches reveal a relatively stable distribution of lithic artifact categories. Reduction material is the most heavily represented category (39.8%), followed by utilized and retouched flakes (36.8%) and lithic tools (23.4%) (Table 7). Compare these figures with those for the features, which exhibit a striking percentage of both reduction material (84%) and lithic tools (0%). When the lithic artifacts of all proveniences of 40CN78 are considered together, reduction materials are still by far the most numerous (73.1%). Lithic tools occur in modest numbers (5.8%), while utilized and retouched flakes comprise 21.1% of the site's lithic assemblage.

As is the case at 40CN79, the presence and contents of subsurface features at 40CN78 lead one to postulate that the percentages of lithic categories reflect habitation of the site and a type of activity (the complex reduction required to manufacture lithic tools) which took place there.

Table 8 presents a summary of the lithic analysis for site 40CN78.

Photographs of representative projectile points and formal tools from site 40CN78 are shown in Figure 19.

Significance

Archaeological survey and testing of site 40CN78 have determined that the site is significant due to its potential for yielding pertinent archaeological data. The site is large and cultural materials are relatively dense at both the surface and subsurface. Diagnostic artifacts indicate that the site is multi-component, ranging from Early Archaic to at least Middle Woodland. The variety of lithic tools suggests a myriad of activities which, in turn, might be indicative of long-term occupations. The presence of subsurface features substantiates these presumptions. Furthermore, the proximity of 40CN78 to site 40CN79 offers the potential for substantive and comparative data subsequent to Phase 3 excavations at 40CN79.

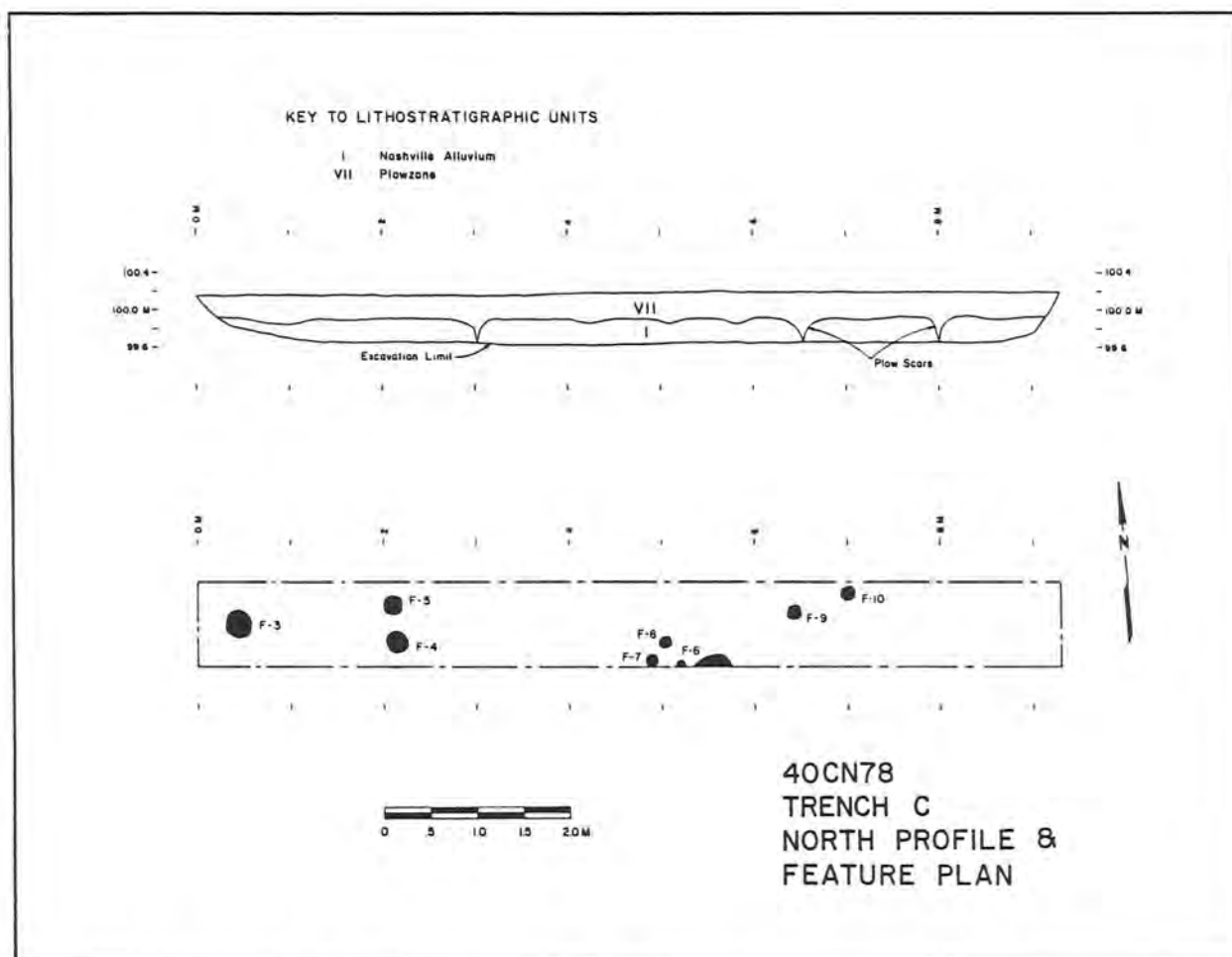


Figure 18. Profile and Feature Plan for Trench C.

TABLE 5
SUMMARY OF FEATURE DATA FOR SITE 40CN78

Feature	Location	Description	Dimensions	Point of Detection	Depth	Fill	Cultural Contents	Comments
1	A5	Posthole		96 cm. b.s.			Flaked lithics, quartz crystal, fossil, charcoal, bone.	
2	A5	Posthole		90 cm. b.s.				Unexcavated.
3	C	Pit	30 cm. dia.	50 cm. b.s.	15 cm.	10YR3/3	Flaked lithics, quartz crystal, fossil, charcoal, bone.	
4	C	Posthole	22 x 21 cm.	50 cm. b.s.	25 cm.	10YR3/1	Flaked lithics, quartz crystal, fossil, ceramics, charcoal, bone, shell.	
5	C	Animal Burrow	20 cm. dia.	50 cm. b.s.	N/A	10YR3/1	Flaked lithics, quartz crystal, fossil, charcoal, bone.	This feature proved to be an animal burrow; not totally excavated.
6	C	Pit		50 cm. b.s.	15 cm.	10YR3/1	Flaked lithics, quartz crystal, fossil, charcoal, shell.	F-6 was only partially in the trench; size could not be determined.
7	C	Posthole	12 x 10 cm.	50 cm. b.s.		10YR3/1		Unexcavated.
8	C	Posthole	10 x 12 cm.	50 cm. b.s.		10YR3/1		Unexcavated.
9	C	Posthole	14 x 10 cm.	50 cm. b.s.		10YR3/2		Unexcavated.
10	C	Posthole	10 x 13 cm.	50 cm. b.s.		10YR3/2		Unexcavated.

TABLE 6

DENSITIES OF CULTURAL MATERIALS FROM
FLOTATION ANALYSIS OF FEATURES 1 - 6, 40CN78

	FEATURE					
	#1	#3	#4	#5	#6	TOTAL
Flaked Lithics	87	221	386	68	62	824
Quartz Crystal	47	92	121	15	29	304
Fossil	36	49	75	11	3	174
Ceramics	0	0	3	0	0	3
Charcoal (grams)	0.6	2.7	9.5	0.3	3.2	16.3
Bone	1	3	4	1	0	9
Shell	0	0	2	0	1	3

TABLE 7

DISTRIBUTION OF LITHIC ARTIFACTS AT 40CN78

	Trench Collection	Feature Excavation	All Proveniences
Reduction Material ¹	39.8%	84.0%	73.1%
Utilized and Retouched Flakes	36.8%	16.0%	21.1%
Lithic Tools ²	23.4%	0.0%	5.8%

¹ Reduction material includes angular debris, primary, secondary, and interior flakes, and cores.

² Lithic tools include bifaces, scrapers, projectile points, knives, graters, notched flakes, composite tools, choppers, perforators, and hammerstones.

TABLE 8
SUMMARY OF LITHIC ANALYSIS FOR 40CN78

<u>Material Type</u>	<u>Total</u>	<u>Percent</u>			
1	24	1.53			
2	8	.51			
3	5	.32			
4	5	.32			
5	35	2.27			
6	35	2.27			
7	16	1.02			
8	0	0.00			
9	11	.70			
10	5	.32			
11	1	.06			
12	8	.51			
13	22	1.40			
14	4	.25			
15	2	.13			
16	6	.38			
17	14	.89			
18	1	.06			
19	11	.70			
20	3	.19			
21	9	.57			
22	2	.13			
23	2	.13			
24	3	.19			
25	3	.19			
26	7	.45			
27	7	.45			
28	0	0.00			
29	0	0.00			
30	0	0.00			
31	0	0.00			
32	18	1.15			
33	191	12.15			
34	630	40.08			
35	3	.19			
36	1	.06			
37	306	19.47			
38	0	0.00			
39	174	11.07			
40	0	0.00			
TOTAL	1572	100.5%			

<u>Element</u>	<u>Total</u>	<u>Percent</u>
Cobble Fragment	15	1.38
Angular Debris	74	6.80
Primary Flake	456	41.91
Secondary Flake	118	10.85
Interior Flake	419	38.51
Core	4	.37
Indeterminate	2	.18
TOTAL	1088	100.00%
Other*	484	
	1572	

<u>Function</u>	<u>Total</u>	<u>Percent</u>
Projectile Point	6	.55
Biface	21	1.93
Chopper	0	0.00
Scraper	2	.18
Graver	14	1.29
Perforator	14	1.29
Notched Flake	0	0.00
Composite Tool	6	.55
Hammerstone	0	0.00
Groundstone	1	.09
Retouched Flake	25	2.30
Utilized Flake	209	19.19
Non-utilized Flake	791	72.64
TOTAL	1089	100.01%
Other*	483	
	1572	

* "Other" consists of burned limestone, sandstone, quartz crystal, geode, shale, and fossil raw material categories which may or may not be cultural in origin; these were not included when figuring percentages for the "Element" and "Function" tables.

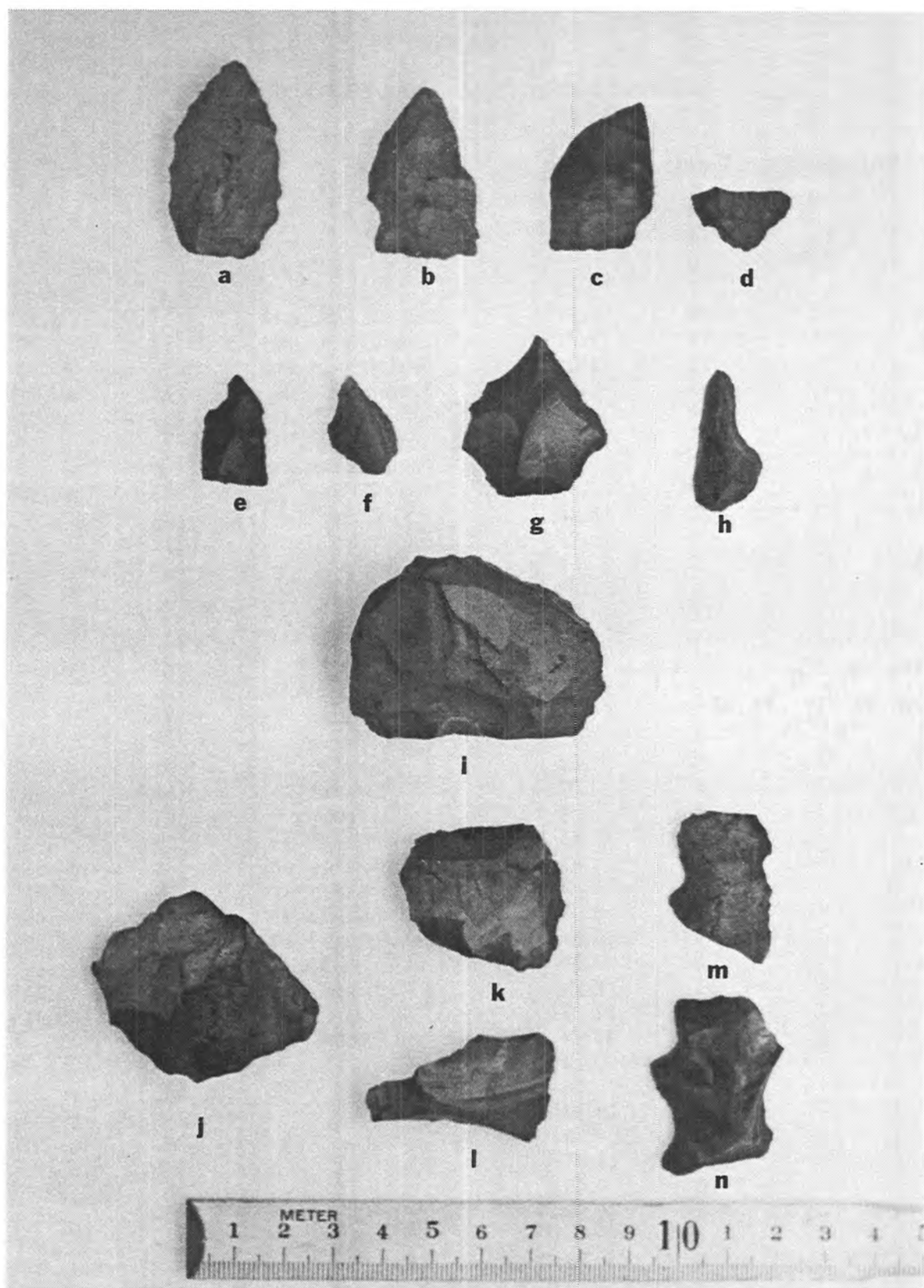


Figure 19. Representative artifacts from 40CN78: (a) - (d) indeterminate type projectile points; (e) - (h) perforators; (i) biface; (j) - (n) composite tools.

Recommendations

It appears that site 40CN78 will be minimally impacted by Alternate "D." Phase 2 test results indicate that the right-of-way will transect the eastern and southern edge of the site and that the major portion of the site will remain intact. In order to assure this condition, the following recommendations are suggested: (1) all construction activities, including equipment storage and heavy equipment parking, should be strictly confined to the right-of-way; and (2) borrow activity for the procurement of fill in the area of the site should be prohibited or at least confined to the extant right-of-way.

SITE 40CN72

Location and Description

Site 40CN72 is an upland site located approximately 300 meters south of Hollis Creek (Fig. 1). An intermittent tributary flows approximately 125 meters to the west and downslope from the site. Vegetation on the site consists of pasture grasses and two hackberry trees. The site area measures 150 meters east-west by 110 meters north-south and occupies the flattened top area of the ridge (Fig. 20). Deposition of cultural materials is shallow and stratification is obliterated. Projectile points from the surface collection represent the transitional Paleo period and at least the Late Archaic-Early Woodland time span. It appears that the occupations were of a temporary or seasonal nature.

Excavations

An area measuring 45 meters x 70 meters was plowed in order to assess the density and distribution of materials. A site datum and grid system was established. Within the plowed area, surface artifacts were flagged prior to collection. Areas A, B, and C (Fig. 20) were distinguished as being lithic concentrations and each was collected separately. In addition, a general surface collection of the entire site was made. All recognizable formal tools were point provenienced (Fig. 21). Area A was chosen to represent density of artifacts and their relative positions to each other within the area as well as the relative position of Area A to Areas B and C and the rest of the site. This was accomplished by point proveniencing all artifactual materials within Area A (Fig. 22).

A field specimen numbering system was employed with numbers subsequently assigned to designated areas, excavation units, features, and artifacts. Four test units were excavated by hand to sterile subsoil and subsequently backfilled. These units were positioned so as to investigate each of the designated areas where cultural materials seemed to be concentrated.

Stratigraphy

Lithostratigraphic Unit I was present in all four test units and was the only lithostratigraphic unit observed. It was defined to a depth of at least 1.15 meters below the present ground surface. The underlying unit was not accessible. The upper 20 to 25 centimeters of the unit have been completely redeposited by cultivation and forms an active Ap soil horizon. The unit is composed of poorly sorted, clayey, very fine sands and silts.

Pedostratigraphic Unit I was exposed in each of the test units. This unit is of an argillie nature and is truncated at its surface. The A1 and B1 master soil horizons which would have been present in the natural, undisturbed profile are absent.

Lithic Analysis

The artifact assemblage from 40CN72 was obtained by an intensive surface collection and the excavation of four test units. Lithic tools, utilized and retouched

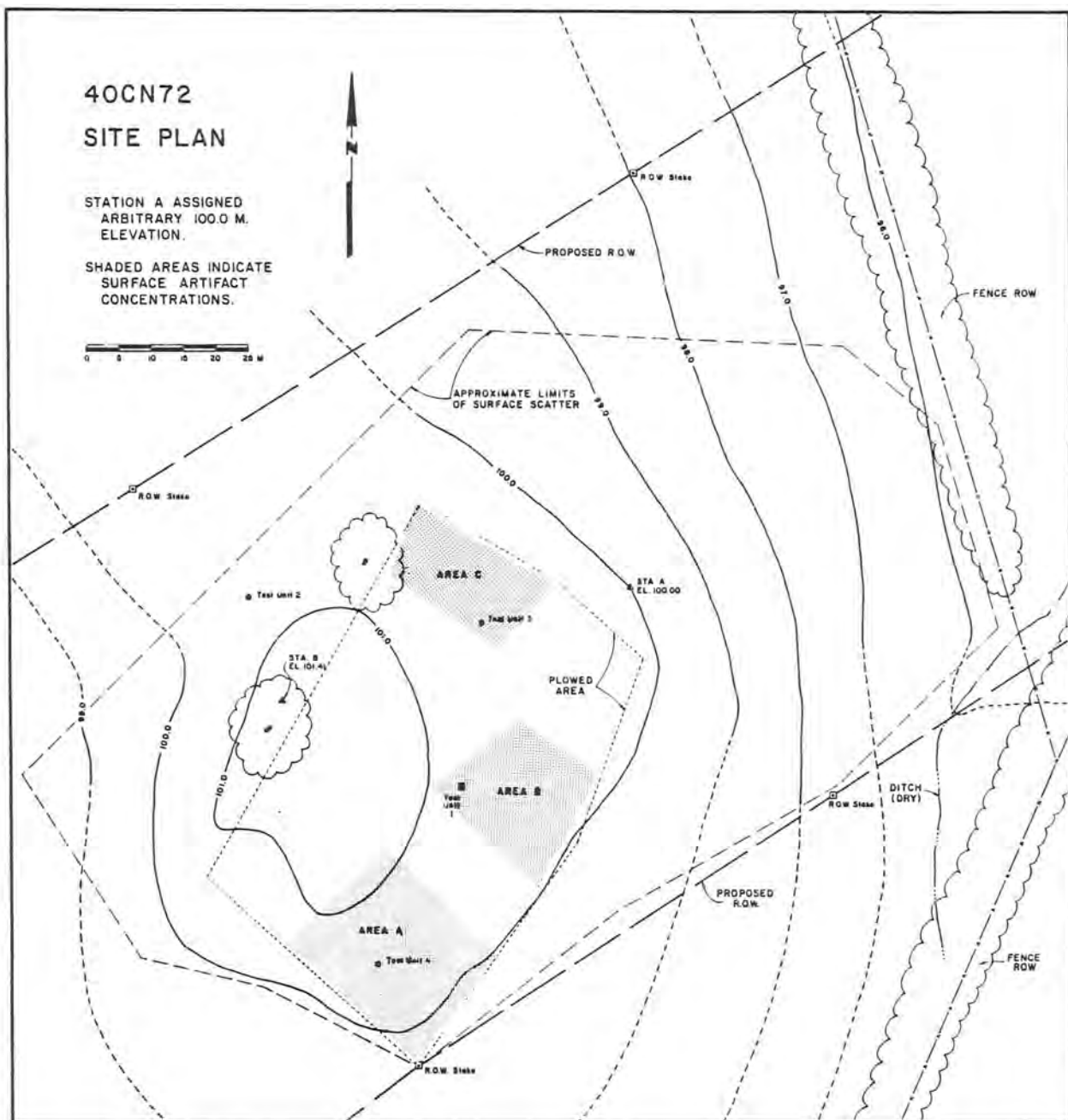


Figure 20. 40CN72 - Site Plan.

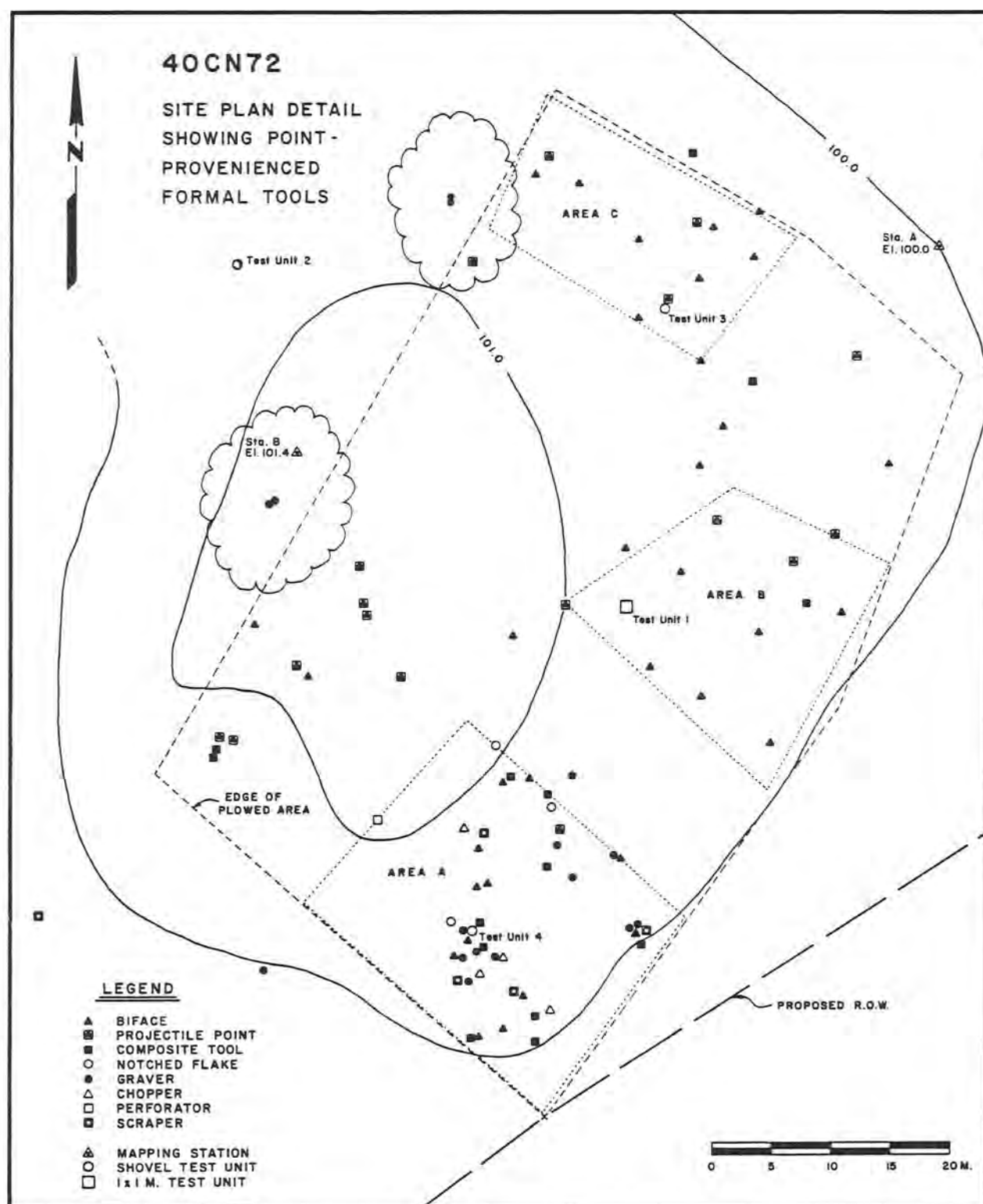


Figure 21. Point Provenienced Artifacts.

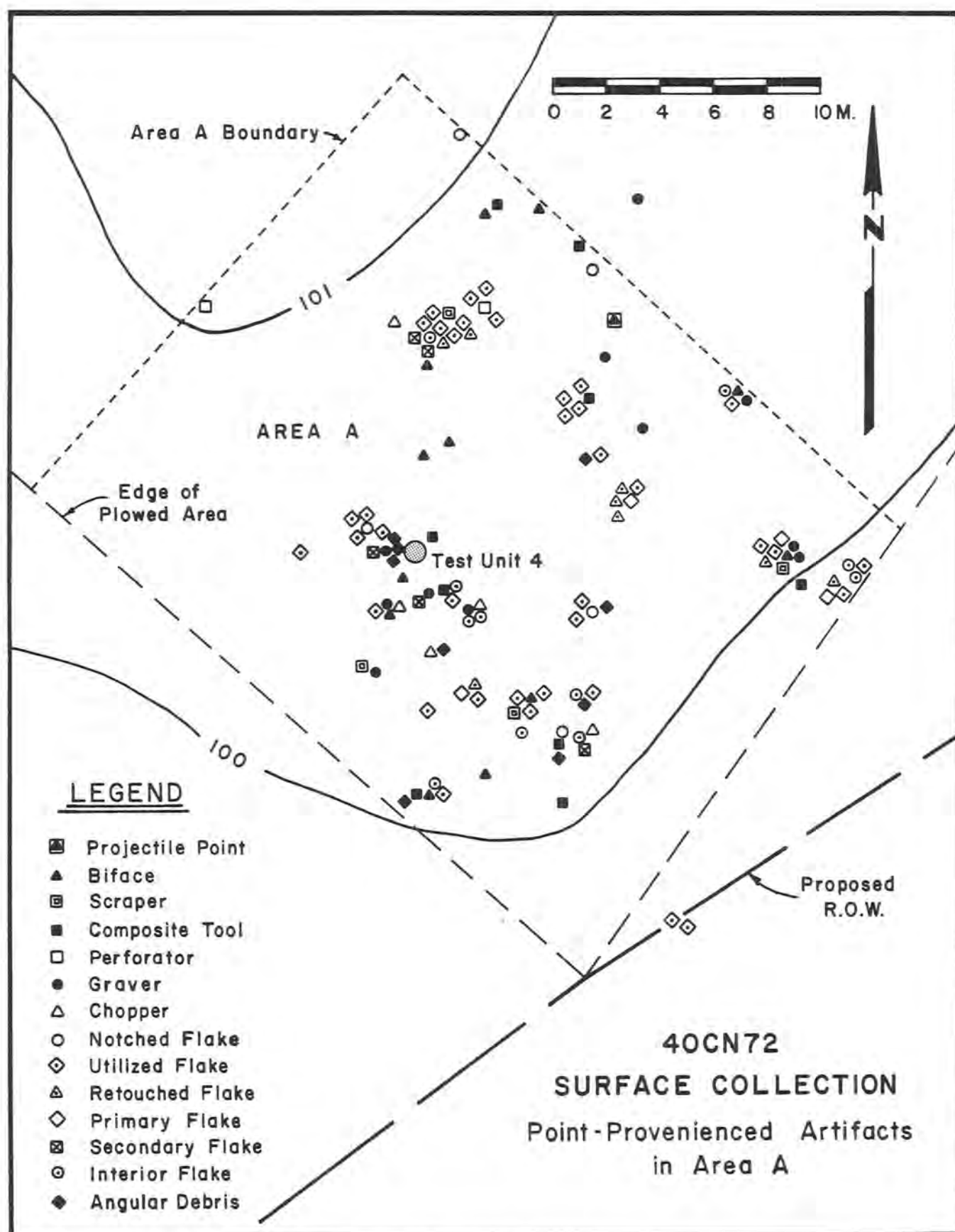


Figure 22. Point Provenienced Artifacts in Area A.

flakes, and reduction material occurred on the surface in abundant amounts (Table 9).

Table 9 shows that utilized and retouched flakes compose the largest percentage (43.52%) of the surface collection. Reduction material and lithic tools are present in smaller quantities (31.04% and 25.43% respectively), although the range of variation of the percentages is relatively low.

Reduction material and utilized and retouched flakes represent comparable amounts of the lithic assemblage from excavation, composing 41.94% and 48.39%, respectively. Only 9.68% of the lithic material from the excavated assemblage is lithic tools.

When the lithic material from the site is considered in totality, the percentages once again smooth out, returning to figures very close to those for the surface collection alone. Utilized and retouched flakes are once again dominant at 44.4%, reduction material composes 33.04% of the total assemblage, with lithic tools representing 22.55%.

The relatively even percentages for the three categories of lithic artifacts may be a product of several factors. Excavation of a larger number of test units would probably have raised the percentage for reduction material, as would more intensive processing of the matrix by waterscreening through graded mesh. As no subsurface features were encountered in excavation, and it was concluded that the cultural material had been indiscriminately mixed over the years by plowing, more intensive recovery procedures were not warranted.

The high percentage of lithic tools recovered from a site which yielded no evidence of intensive occupation leads one to suspect that 40CN72 may have been an activity area, where lithic material that had been roughed out elsewhere was fashioned into tools. The site's location on a ridge with a commanding view of the surrounding landscape may have made it a secure spot for working and detecting the presence of game in the area.

Table 10 presents a summary of the lithic analysis for site 40CN72.

Photographs of representative projectile points and formal tools from site 40CN72 are shown in Figures 23 and 24.

Significance

Phase 2 testing at 40CN72 has determined that the archaeological materials are contained and interspersed in the plow zone. There were no indications of cultural remains beneath this zone. It is probable that deflation due to erosion has produced the shallow superficial nature of the site. Plowing and erosion have largely disrupted the integrity of the site. Consequently, the site is deemed insignificant in terms of additional data recovery.

Recommendations

It is believed that Phase 2 operations have adequately recorded, sampled, and documented site 40CN72, therefore, there is no recommendation for further archaeological investigation.

TABLE 9
DISTRIBUTION OF LITHIC ARTIFACTS AT 40CN72

	Surface Collection	Test Pits	All Proveniences
Reduction Material ¹	31.04%	41.94%	33.04%
Utilized and Retouched Flakes	43.52%	48.39%	44.40%
Lithic Tools ²	25.43%	9.68%	22.55%

¹ Reduction material includes angular debris, primary, secondary, and interior flakes, and cores.

² Lithic tools include bifaces, scrapers, projectile points, knives, graters, notched flakes, composite tools, choppers, perforators, and hammerstones.

TABLE 10
SUMMARY OF LITHIC ANALYSIS FOR 40CN72

<u>Material Type</u>	<u>Total</u>	<u>Percent</u>			
1	50	2.70			
2	51	2.76			
3	7	.38			
4	18	.97			
5	332	17.98			
6	39	2.11			
7	2	.11			
8	70	3.79			
9	68	3.68			
10	19	1.03			
11	15	.81			
12	52	2.82			
13	26	1.41			
14	71	3.84			
15	28	1.52			
16	24	1.30			
17	33	1.79			
18	1	.05			
19	3	.16			
20	7	.38			
21	50	2.70			
22	6	.32			
23	57	3.09			
24	2	.11			
25	30	1.62			
26	27	1.46			
27	56	3.03			
28	0	0.00			
29	11	.60			
30	1	.05			
31	2	.11			
32	104	5.63			
33	300	16.24			
34	280	15.16			
35	0	0.00			
36	3	.16			
37	0	0.00			
38	0	0.00			
39	1	.05			
40	1	.05			
TOTAL	1847	99.97%			

<u>Element</u>	<u>Total</u>	<u>Percent</u>
Cobble Fragment	75	4.07
Angular Debris	168	9.11
Primary Flake	360	19.51
Secondary Flake	360	19.51
Interior Flake	555	30.08
Core	14	.76
Indeterminate	313	16.96
TOTAL	1845	100.00%
Other*	2	
	1847	

<u>Function</u>	<u>Total</u>	<u>Percent</u>
Projectile Point	17	.92
Biface	59	3.21
Chopper	5	.27
Scraper	39	2.12
Graver	145	7.88
Perforator	14	.76
Notched Flake	33	1.79
Composite Tool	103	5.60
Hammerstone	2	.11
Groundstone	0	0.00
Retouched Flake	109	5.92
Utilized Flake	722	39.24
Non-utilized Flake	592	32.17
TOTAL	1840	99.99%
Other*	2	
	1842	

* "Other" consists of burned limestone, sandstone, quartz crystal, geode, shale, or fossil raw material categories which may or may not be cultural in origin; these were not included when figuring percentages for the "Element" and "Function" tables.

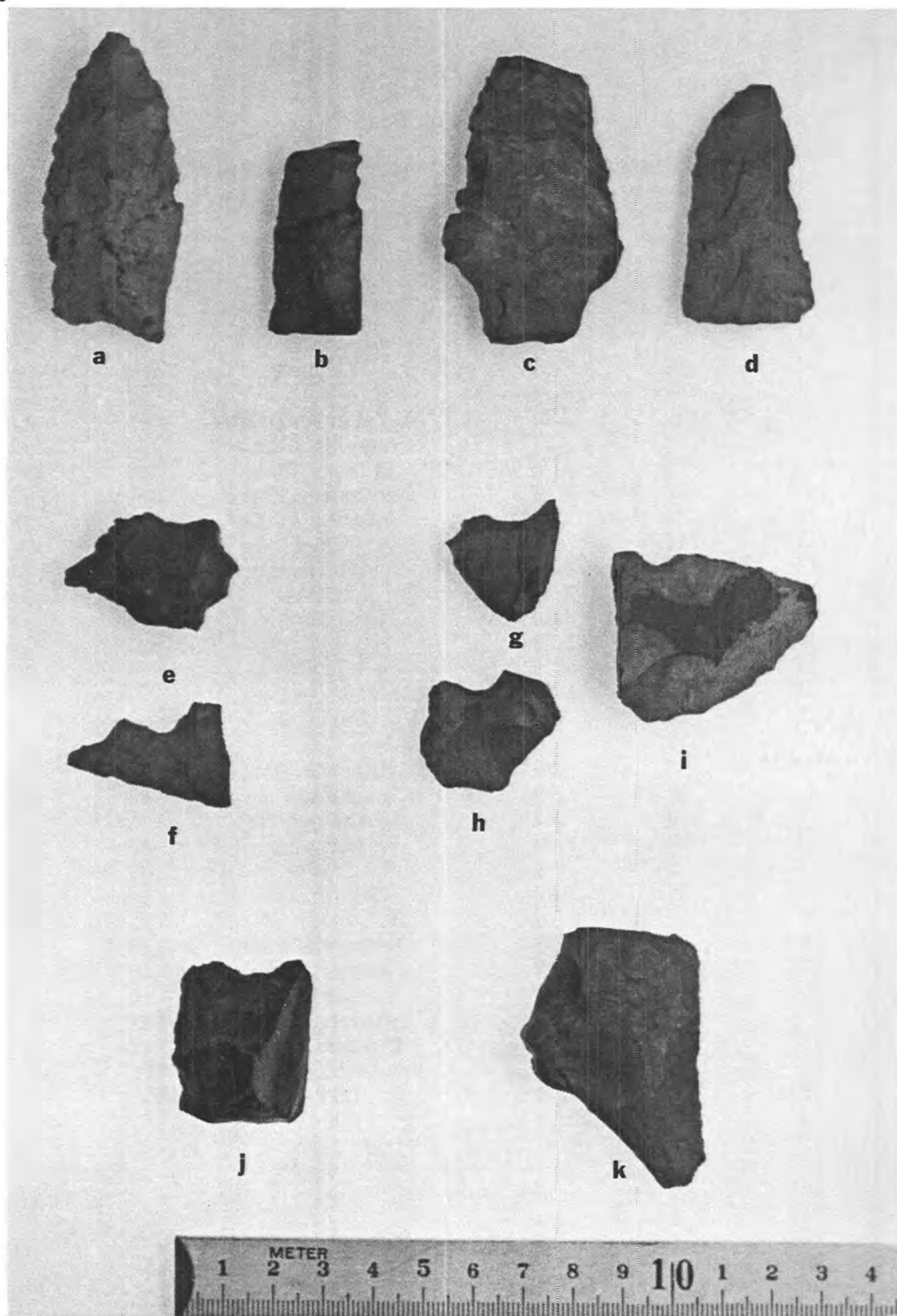


Figure 23. Representative artifacts from 40CN72: (a) & (b) Transitional Paleo-Indian projectile points; (c) Middle Archaic projectile point; (d) Late Archaic projectile point; (e) composite tool; (f) reworked projectile point; (g) - (i) notched flakes; (j) & (k) bifaces.

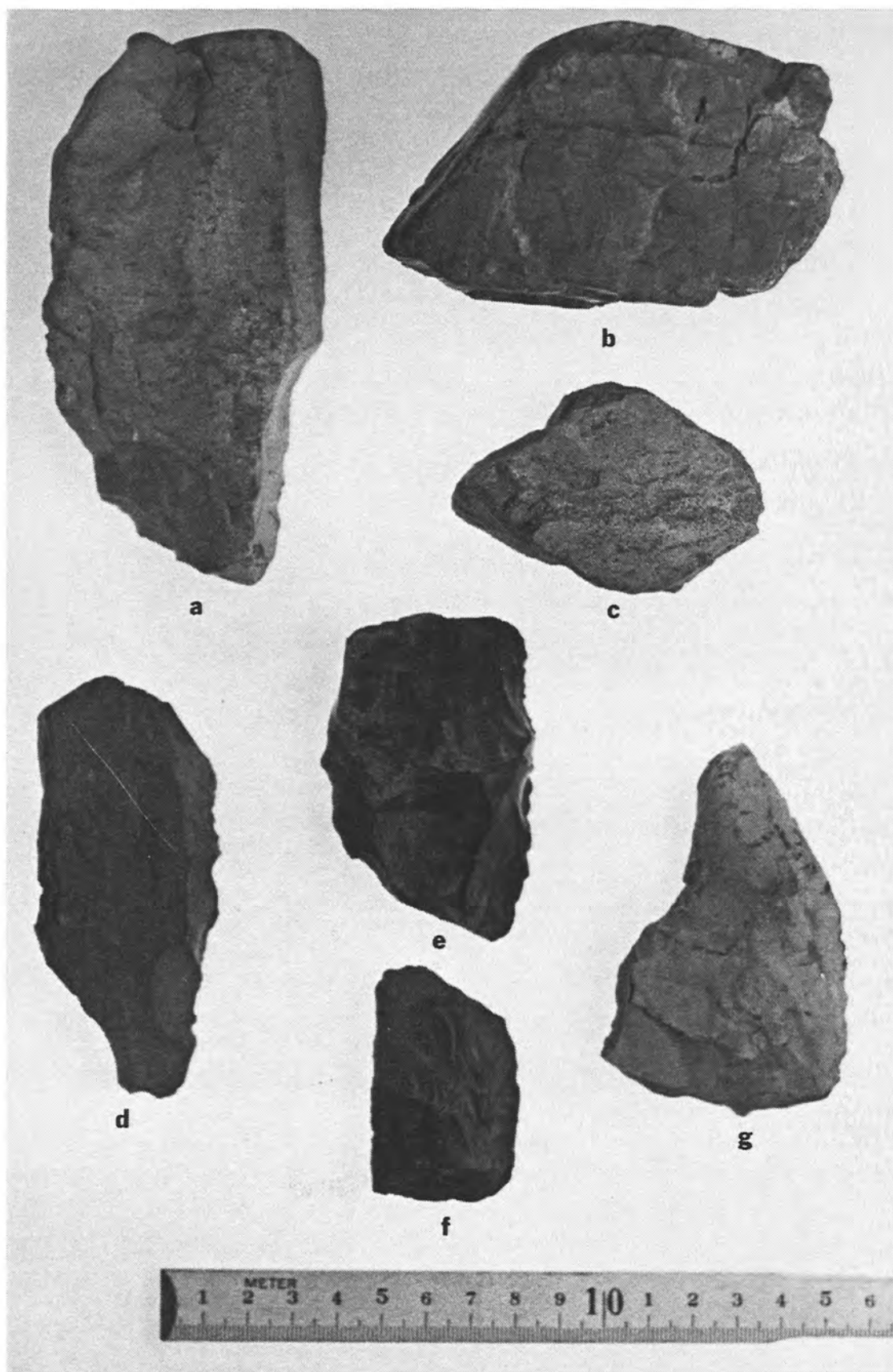


Figure 24. Representative artifacts from 40CN72: (a) - (c) choppers; (d) knife; (e) - (g) bifaces.

SITE 40CN60

Location and Description

Site 40CN60 is located on a high first terrace overlooking the Carson Creek floodplain (Fig. 1). It measures approximately 150 meters north-south by 150 meters east-west. The southern two-thirds of the site area is flat and begins a gradual slope up to a prominent rise on the northern one-third. Deposition of cultural materials is shallow and stratification is obliterated. Diagnostic artifacts indicate a Middle Archaic to Early Woodland occupation.

Excavations

An area measuring 50 meters x 60 meters was plowed. A site datum and grid system was established. Elevation readings were taken for the one-half meter interval contour map of the site (Fig. 25). A surface collection was made, with the artifacts point-provenienced (Fig. 26). Four 1x1 meter test units were excavated by hand to sterile subsoil and subsequently backfilled.

Stratigraphy

Lithostratigraphic Unit I was present in all four of the test units and was the only lithostratigraphic unit present. It appears to vary in thickness between twenty and forty centimeters across most of the site, but may be completely absent in some areas. The unit overlies limestone bedrock and contains many limestone pebble to boulder-sized chunks of limestone produced by machine cultivation. The upper twenty to thirty centimeters of the unit have been completely redeposited by cultivation and form an active Ap soil horizon. The unit is composed of very poorly sorted, clayey, very fine sands and silts.

Pedostratigraphic Unit I. The top of this unit was exposed within each of the test units. The unit consists of an argillic horizon which is resting directly upon the underlying bedrock and which is truncated at its surface. The A1 and B1 master soil horizons which would have been present in the natural, undisturbed profile are absent. Nearby stratigraphic exposures suggest that Pedostratigraphic Unit II consisting of an A1 and a B2 would have been developed within the truncated surface of Pedostratigraphic Unit I. The color of Pedostratigraphic Unit I is strong brown (7.5YR5/6-5/8). The color of the Ap horizon ranges from brown (10YR5/3) to yellowish brown (10YR5/4).

Lithic Analysis

A surface collection and four test pits yielded the lithic artifact assemblage of this site. No ceramic artifacts were recovered. Some percentages for the assemblage are given in Table 11.

The surface collection exhibits a high proportion of lithic tools (57.3%), compared to reduction material (25.6%) and utilized and retouched flakes (17.1%). The test pits display nearly equal percentages of reduction material (39.4%) and utilized and retouched flakes (40.9%), and a relatively low percentage (19.7%) of

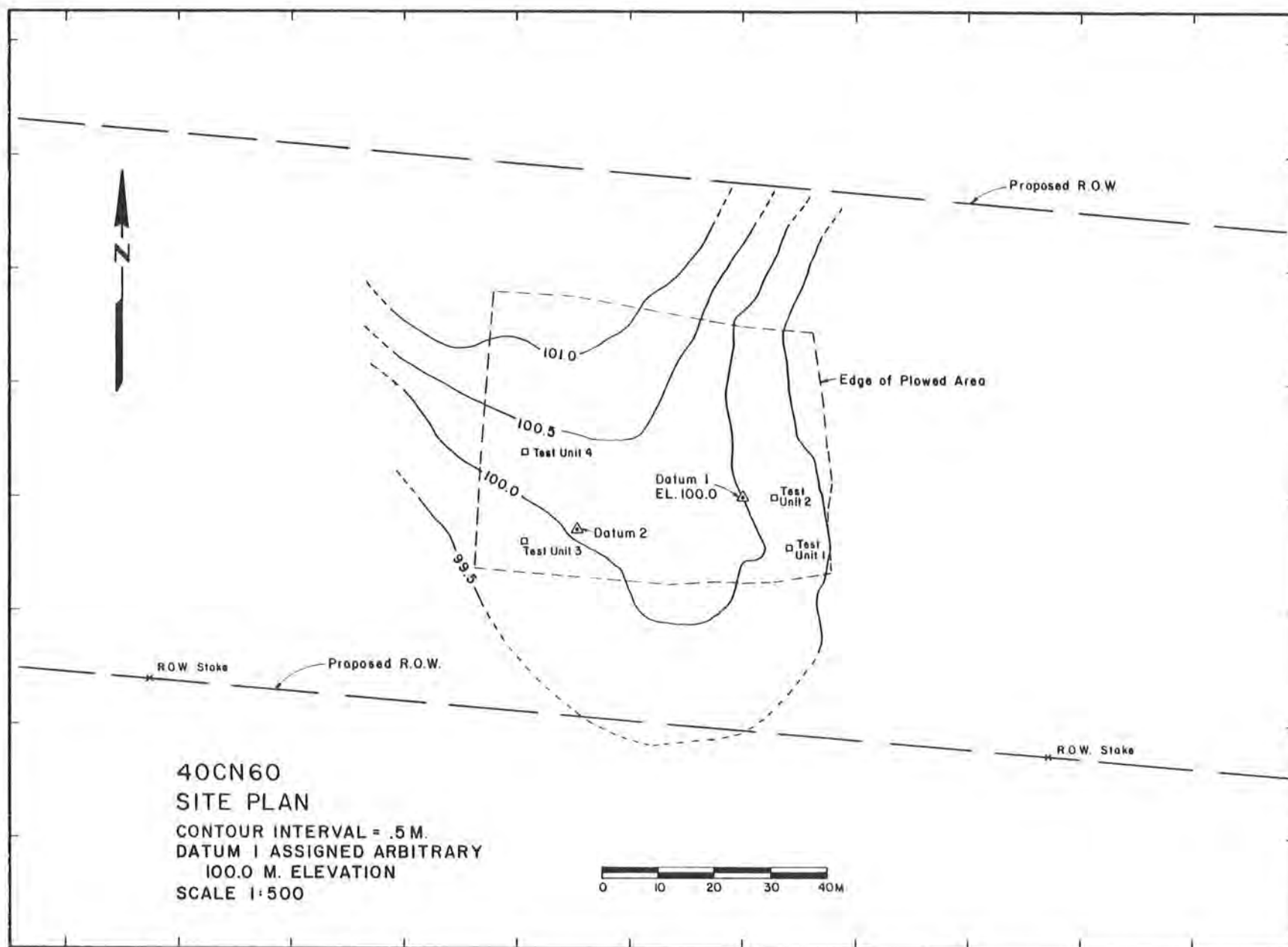


Figure 25. 40CN60 - Site Plan.

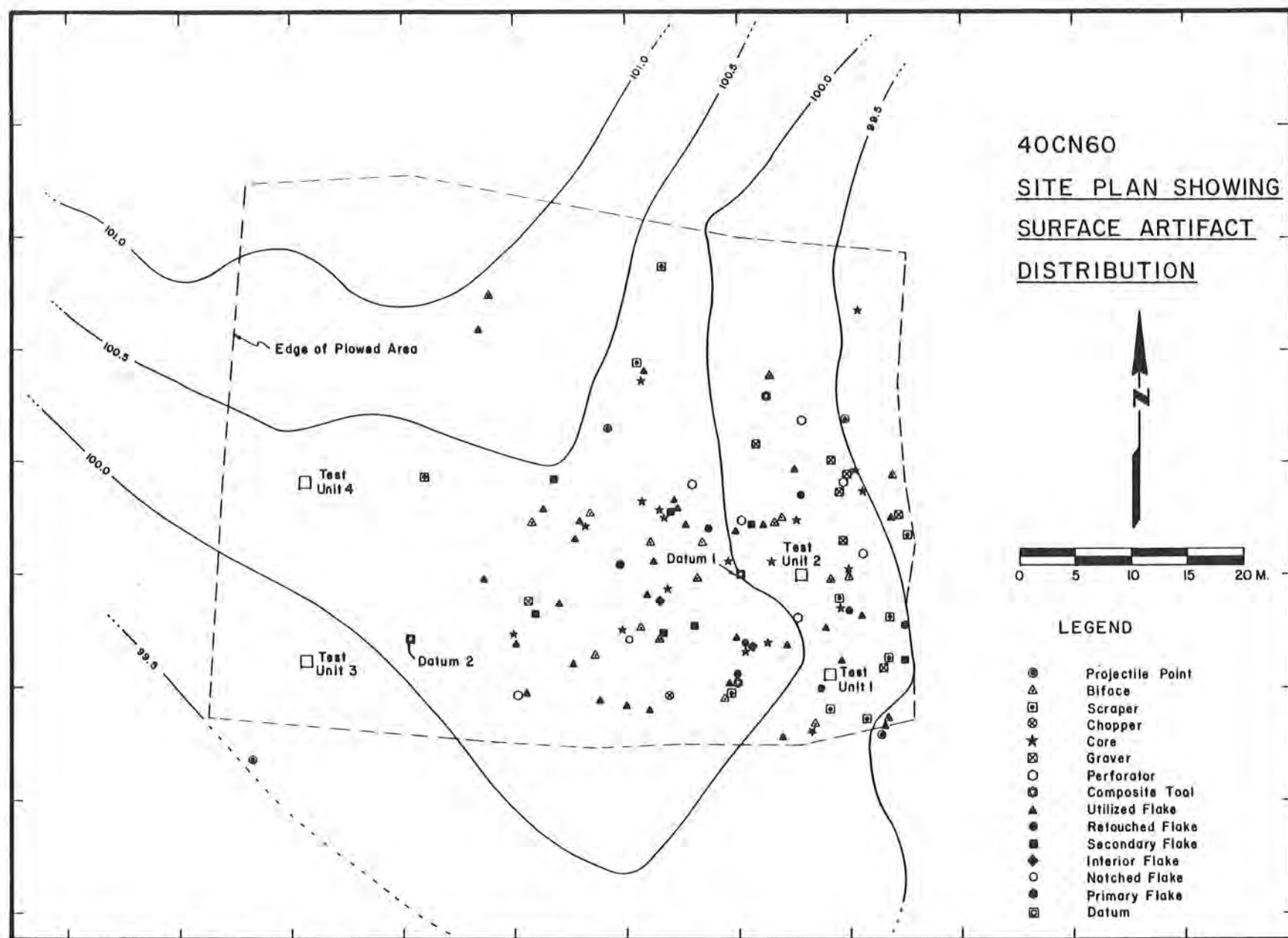


Figure 26. Site Plan Showing Surface Artifact Distribution.

TABLE 11

DISTRIBUTION OF LITHIC ARTIFACTS AT 40CN60

	Surface Collection	Test Pits	All Proveniences
Reduction Material ¹	25.6%	39.4%	34.5%
Utilized and Retouched Flakes	17.1%	40.9%	32.3%
Lithic Tools ²	57.3%	19.7%	33.2%

¹ Reduction material includes angular debris, primary, secondary, and interior flakes, and cores.

² Lithic tools include bifaces, scrapers, projectile points, knives, graters, notched flakes, composite tools, choppers, perforators, and hammerstones.

lithic tools. The discrepancy between the percentages of lithic tools revealed by the different data-gathering techniques may reflect several factors: (1) collector bias - large flakes and tools are more noticeable to those searching the ground surface; and (2) condition of the field - small lithic artifacts did not stand out as well as they might have if the field could have been collected following a hard rain. It may be noted that for the entire site assemblage, percentages of the three categories level out and no one category is strikingly dominant.

Finally, the high proportion of cores on the site should be noted. Cores compose almost one-fifth of the surface collection (18.9%). High visibility may account in part for the number of cores, but the proximity of the site to the river leads one to postulate that the site may have served, among other functions, as a primary reduction center. Nodules from the river may have been brought up and quickly reduced to yield flakes, which would have been much less awkward and lighter to carry away. The absence of subsurface features found at 40CN60 certainly argues for some such ephemeral site use.

Table 12 represents an attempt to concisely present relevant data on the lithic assemblage. This table consists of three sections. The first section shows the number and percentage of the assemblage that can be assigned to each raw material type. Categories 1 - 36 describe chert materials, and categories 37 - 41 are other raw materials found in much smaller quantities, not all of which are necessarily artifacts. The second section quantifies the lithic assemblage on the basis of the "element" from which the finished artifact was manufactured. The third section presents the lithic assemblage broken down into categories based on tool function.

Photographs of representative projectile points and formal tools from site 40CN60 are shown in Figure 27.

Significance

Phase 2 testing at 40CN60 has determined that the archaeological materials are of a sparse and shallow nature, and are contained only in the plow zone. There was no indication of cultural remains beneath this zone. Plowing and erosion have disrupted the integrity of the site, and bedrock appears to be very shallow over most of the site area. Therefore, the site is insignificant in terms of additional data recovery.

Recommendations

It is believed that Phase 2 operations have adequately recorded, sampled, and documented site 40CN60, therefore, there is no recommendation for further archaeological investigation.

TABLE 12
SUMMARY OF LITHIC ANALYSIS FOR 40CN60

<u>Material Type</u>	<u>Total</u>	<u>Percent</u>			
1	31	9.54			
2	15	4.62			
3	1	.31			
4	6	1.85			
5	33	10.15			
6	33	10.15			
7	24	7.38			
8	10	3.08			
9	11	3.38			
10	4	1.23			
11	8	2.46			
12	9	2.77			
13	9	2.77			
14	11	3.38			
15	5	1.54			
16	12	3.69			
17	18	5.54			
18	2	.62			
19	3	.92			
20	2	.62			
21	12	3.69			
22	10	3.08			
23	6	1.85			
24	7	2.15			
25	3	.92			
26	7	2.15			
27	8	2.46			
28	0	0.00			
29	0	0.00			
30	0	0.00			
31	0	0.00			
32	0	0.00			
33	25	7.69			
34	0	0.00			
35	0	0.00			
36	0	0.00			
37	0	0.00			
38	0	0.00			
39	0	0.00			
40	0	0.00			
TOTAL	325	99.99%			

<u>Element</u>	<u>Total</u>	<u>Percent</u>
Cobble Fragment	8	2.46
Angular Debris	8	2.46
Primary Flake	84	25.85
Secondary Flake	77	23.69
Interior Flake	110	33.85
Core	23	7.08
Indeterminate	15	4.62
TOTAL	325	100.01%

<u>Function</u>	<u>Total</u>	<u>Percent</u>
Projectile Point	7	2.15
Biface	22	6.77
Chopper	1	.31
Scraper	8	2.46
Graver	33	10.15
Perforator	13	4.00
Notched Flake	2	.62
Composite Tool	22	6.77
Hammerstone	0	0.00
Groundstone	0	0.00
Retouched Flake	18	5.54
Utilized Flake	110	33.85
Non-utilized Flake	89	27.38
TOTAL	325	100.00%

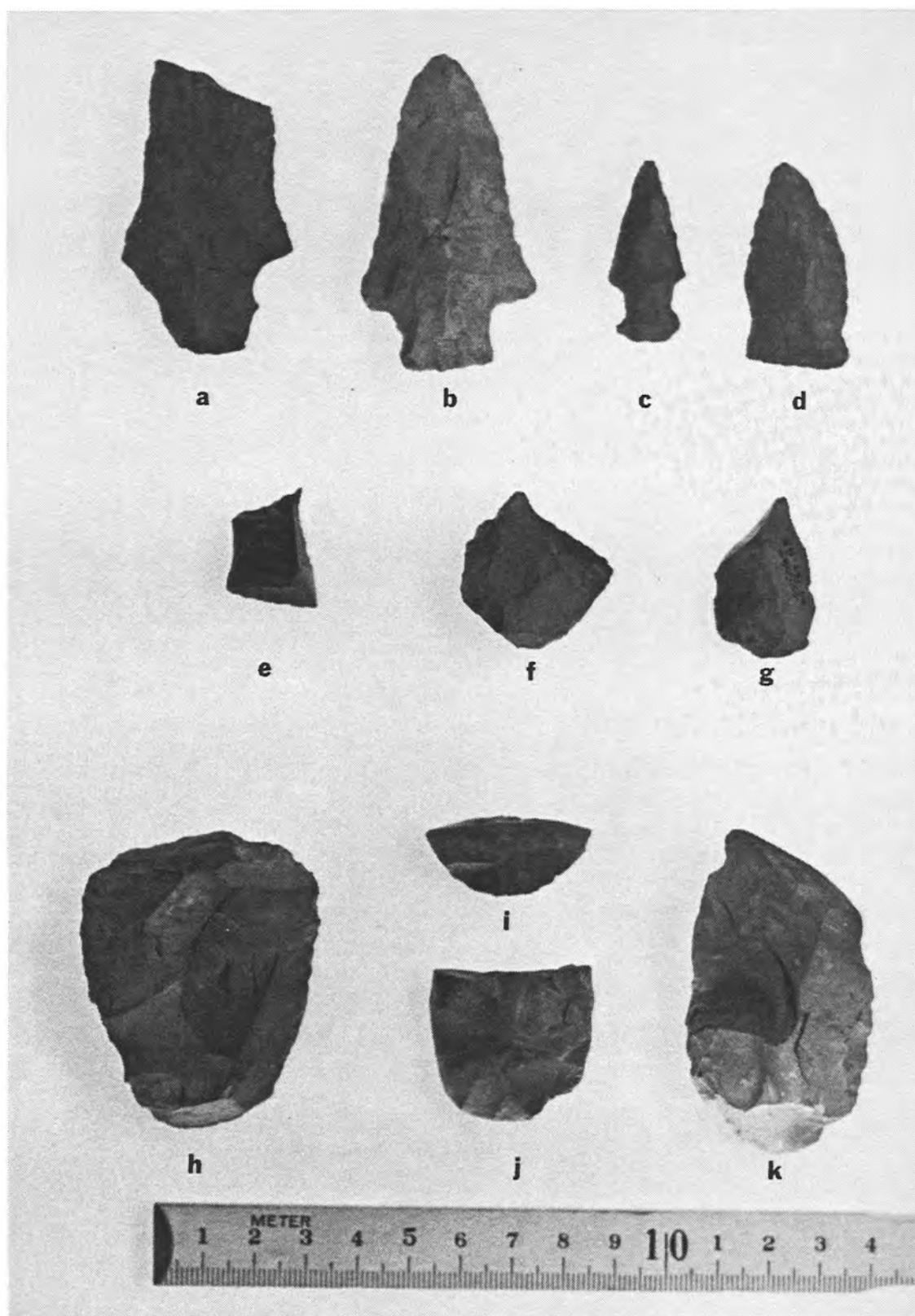


Figure 27. Representative artifacts from 40CN60: (a) & (b) Middle Archaic projectile points; (c) Late Archaic-Early Woodland projectile point; (d) Early Woodland projectile point; (e) - (g) perforators; (h) - (k) bifaces.

APPENDIX A

LITHIC ANALYSIS

Definitions of Lithic Tool Types

The following is a list of the categories employed in the lithic analysis and a description of each.

Angular Debris	Thick blocky lithic shatters which may be waste by-products of lithic reduction or may have resulted from natural processes.
Primary Flake	A product of the initial stage of lithic reduction. A primary flake will bear at least 10% cortex on its dorsal surface.
Secondary Flake	A flake removed in the chipping process, which bears less than 10% cortex on its dorsal surface.
Interior Flake	A flake which exhibits no trace of cortex, and which tends to be thin, rather than thick or wedgelike.
Utilized Flake	A flake exhibiting evidences of use (random scars, chips, damage, or "nibbling") along one or more edges. The wear on utilized flakes appears to be incidental rather than intentional.
Retouched Flake	A flake exhibiting intentional and minimal modification on one or more edges. Although some are undoubtedly fragments of formal tools, due to breakage in the archaeological past or during excavation, it is impossible to classify them morphologically with any confidence.
Core	A nodule of lithic raw material from which at least one flake has been purposely removed.
Scraper	A flake which shows continuous, regular, relatively steep retouch along the working edge. The working edge may be on a lateral margin, making the tool a side scraper, or on the distal end, which creates an end scraper, or the tool can be a combination of these two.
Biface	A lithic tool which exhibits flake removal on both faces. Bifaces tend to be relatively thick, and at some point, the distinction between bifaces and cores can be blurred. Those tools which are slightly thinner than cores, and which have assumed a purposeful form have been placed in the biface category, although they may not be that of the classic bifacial "hand axe."

Projectile Point	A bifacially modified lithic tool, which, in relation to a biface, is thin, with flaking which is symmetrical, highly regular, and complex. The edges are very sharp, and the tool exhibits the presence of hafting facility.
Graver	A flake on which regular, highly controlled retouch has isolated a small, sharp triangular projection.
Perforator	A tool featuring a relatively short, pointed projection, which has been refined by unifacial or bifacial retouch to the lateral edges.
Notched Flake	An elongated flake exhibiting a lateral indentation produced by the removal of either one or several flakes or the result of utilization.
Composite Tool	A flake which exhibits the morphological characteristics of more than one formal tool. In this collection, it is common for a composite tool to be a perforator/notched flake or a graver/notched flake, but also present are a perforator/graver, and a scraper/graver.
Chopper	A thick, chunky tool exhibiting a distal working edge, which can be fairly sharp to blunt and straight to slightly convex. The margin opposite the working edge exhibits backing.
Hammerstone	A lithic nodule or chunk which exhibits damage caused by battering.
Knife	A flake at least twice as long as its width, which exhibits bifacial retouch on at least one lateral margin. A knife represents a specialized type of lithic technology, involving preparation of the core.
Ground Stone	Lithic material (commonly sandstone) which has been smoothed and polished by abrasion, either to serve as a formal tool (celt, adze) or as a modifier of other tools (abrader).
Quartz Crystal, Geode, Burned Limestone, Fossil	Lithic material which may have been modified by humans, or may be a manuport.

Description of Lithic Raw Materials

Material Type Description

- 1 Medium to dark blue-gray chert, characterized by bands, mottles, and specks of smokey white, brown, blue and dark gray. It is fine-grained and lustrous, with a tendency for ferrous particles to bond to the material. The cortex is a thin golden brown.
- 2 Brown to gray chert, with dark gray streaks, and white and brown mottles and smudges. Fine-grained material with a slightly opaque finish. Cortex is thin brown.
- 3 Gray chert with milky spots and swirls, slightly grainy and opaque. The transitional zone between the outer cortex and the interior of the piece, the actual chert, is fawn brown with large white spots. The cortex itself is a rough, relatively thick brownish-white.
- 4 Medium gray chert with smokey white streaks, fine-grained, lustrous and opaque. Cortex a thin tan.
- 5 Slightly dull brownish-gray chert with subtle black streaks and some streaky inclusions of blue to bluish-white quartz. Fine to slightly grainy material. Cortex a thin, grainy brown; red on specimens exposed to heat.
- 6 Dark gray chert, with white spots, streaks, and smudges of white, small white quartz inclusions, some olive green banding, and rarely, a beige smudge. Material is fine-grained and glossy. The cortex is a thin brown; red on specimens exposed to heat.
- 7 Medium brownish-gray chert, with white and blue quartz veining. Fine-grained and opaque. Cortex thin and golden brown; red on specimens exposed to heat.
- 8 This specimen, a rectangular gray chert nodule, illustrates the color variation possible in only one piece. The color of the chert varies from an opaque dark gray intermingled with white specks, to a more nearly translucent dark gray to gray mingled with thin broken bands of white and black. The chert is faintly grainy, with a slightly pock-marked thin brown, bearing some light gray blotches.
- 9 Dark gray chert, with blue and white quartz streaks and inclusions, fine-grained and opaque. No cortex present.
- 10 Intermixed blue-gray and gray chert, opaque and fine-grained. No cortex present on specimens.
- 11 Greenish-gray chert, with small white quartz streaks and spots. Material slightly grainy and opaque; cortex a rough brownish-white.
- 12 Medium to dark gray chert, with some vari-colored (white to brownish-gray) laminations; material slightly grainy. Cortex rough and dirty-white; red on specimens exposed to heat.

<u>Material Type</u>	<u>Description</u>
13	Slightly porous, fine to medium grained chert. The single specimen for this material type has been altered slightly by heat, and displays a range of colors from pink to porcelaneous white. Cortex is a rough, grainy light-brown to pink.
14	Blue-gray chert with inclusions of ferrous particles, opaque and slightly grainy. Cortex a relatively thick, rough brown with black speckling; reddish-brown on a specimen exposed to heat.
15	Steel blue-gray chert, fine-grained and opaque. The single specimen has been exposed to heat and bears no cortex.
16	Light gray chert, with tan and white streaking and mottling, and ferrous particles which have bonded to the material, which is relatively dense and glossy. Cortex a thin golden-brown; red on the specimen exposed to heat.
17	Blue-green chert, exhibiting gray, smokey and olive-green banding. The material is fine-grained, waxy and opaque. Cortex a relatively thin, slightly grainy brown; red on specimen exposed to heat.
18	Light brownish-gray to gray chert, dense and opaque. Cortex a grainy light brown, with pink overtones on specimen exposed to heat.
19	Medium-gray chert, with minute white spots and small broken dark gray streaks, dense and opaque. Cortex a relatively thick, rough, dirty white.
20	Grayish-brown to brown chert, containing white, gray and dark brown streaks, smudges and spots; material is fine-grained; waxy and dull-surfaced. No cortex present on specimen.
21	Light brown chert with white spots, streaks and inclusions, fine-grained, waxy and opaque. Cortex a thin brown.
22	Light greenish-gray chert, containing white specks and wavy brown bands, and very small brown spots. Fine-grained and lustrous material. Cortex a smooth, slightly coarse golden brown.
23	Light to medium brownish-gray chert, with wavy white striations and mottling. Medium-grained in texture; dull and opaque. Cortex a thin, grainy light brown.
24	Brownish-gray chert, with greenish-gray streaks and smudges; material is medium-grained, waxy and opaque. No cortex present.
25	Flat, dark steel-colored chert, with small white spots and streaks. Fine-grained. No cortex present on the single specimen, which has been exposed to heat.

<u>Material Type</u>	<u>Description</u>
----------------------	--------------------

- | | |
|----|--|
| 26 | Dark gray chert with black spots and streaks. Fine-grained in texture; waxy and opaque. Cortex a thin, grainy, shiny red (both specimens exposed to heat). |
| 27 | Medium dark gray chert with large buff-colored smudges and with some ferrous particles bonded to it. Fine-grained and lustrous. Cortex grainy, uneven varicolored, ranging from very light to dark brown. |
| 28 | Dark gray, fine-grained, lustrous chert with thin loops and whorls of blue and white. No cortex present. |
| 29 | Smoky medium brownish-gray chert with sandstone inclusions. Chert is dense and waxy in texture. Cortex is rough brown to pinkish brown. |
| 30 | Black to very dark gray chert with brown streaks, fine-grained and shiny. Cortex is smooth dark reddish-brown. |
| 31 | Grainy gray-black chert with numerous inclusions, streaks, and spots of white and bluish quartz. Some specks of pink are present, but may be the result of exposure to heat. Material has a waxy surface. The small amount of cortex present is a thin dull dusty brown. |
| 32 | Brownish-gray to black tabular chert, with a dull finish and slightly grainy texture. Inclusions of quartz, fossiliferous or ferrous material may be present. Tabular chert tends to be flat and blocky, and fractures in a ragged, angular manner. Some utilized or retouched specimens are present, but it occurs as angular debris in most instances. |
| 33 | Flaked lithic material which has been exposed to heat and altered, either in color or by fire-spalling, to such an extent that it is impossible to assign to a material type with any confidence. |
| 34 | Unidentifiable flaked lithic material. This category contains specimens consisting predominantly of cortex, and specimens which are so small and/or thin that they were not identified. |

Non-Flaked Lithic Material:

- | | |
|----|-------------------------|
| 35 | Burned Limestone. |
| 36 | Sandstone. |
| 37 | Quartz, Quartz Crystal. |
| 38 | Geode. |
| 39 | Fossil. |
| 40 | Shale. |

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