CHAPTER 7

PUNCHEON RUN PREHISTORIC SITE [7K-C-51]

A. Previous Research

The entire Area B segment of the project corridor falls within a previously documented area of extensive prehistoric occupation (designated by the Delaware State Historic Preservation Office as site number 7K-C-51). The limits of this site, based on information in DSHPO files, extend west beyond the Area B segment along the north side of the Puncheon Run (beyond the project corridor limits), and east to include a small unnamed wooded island in the middle of the St. Jones River at the mouth of Puncheon Run (Figure 7.1).

Phase I and II archaeological survey investigations were carried out on the north side of Puncheon Run in the project vicinity by Wapora, Inc. in 1976. In these investigations, two sub-areas (I and II) of the Puncheon Run Prehistoric Site [7K-C-51] were identified. Both were subjected to systematic surface inspection and collection of cultural materials, and the subsurface conditions within Sub-Area I were also tested via four two-meter-square excavation units. Diagnostic artifacts from the Woodland I period were recovered from both sub-areas (Wapora 1976). Heite Consulting has also conducted archaeological investigations for DelDOT at the southern end of the Puncheon Run Connector alignment in the vicinity of Coopers Corner, the crossroads hamlet that grew up at the intersection of State Street and U.S. Route 13 (Heite and Heite 1986). The current survey investigations along the Puncheon Run Connector alignment on the west side of the St. Jones River have built on the work performed in these earlier studies and have involved extensive study of those segments of the corridor not covered by the Wapora and Heite investigations.

B. Archaeological Field Survey

Initially, a preliminary surface inspection was conducted for the entire length of Area B. It was originally thought that this area might next be surveyed by plowing the former agricultural fields and conducting a controlled surface collection. However, this strategy was adjusted following the preliminary inspection, since several locations showed signs of deflation from wind and water erosion. Plowing was also considered likely to have had a destructive effect on subsurface features lying just below the plowzone. A program of systematic shovel testing was therefore adopted in place of further surface collection to meet the project's Phase I survey requirements and to establish the presence or absence of buried archaeological remains in this area.

The Phase I field survey involved excavation of 312 shovel tests (ST#s 1-312) and resulted in the recovery of a total of 634 artifacts. As a result of these Phase I field investigations, four prehistoric loci and one historic site (contained within Locus 1 [see below, Chapter 12B]) were defined within the boundaries of 7K-C-51. One other historic resource, the Nixon Mill Site [7K-C-413], was noted immediately to the south of Area B, just outside the Puncheon Run Connector project limits (see below, Chapter 11).

Phase II testing was chiefly concentrated around the four prehistoric activity loci noted in the Phase I studies and involved the excavation of a total of 185 shovel tests (ST#s 313-499) and 56 excavation units (EU#s 1-56). These additional tests were deployed both inside and outside the project limits in an effort to delimit the Puncheon Run Prehistoric Site and its constituent loci in the immediate project vicinity and to fully assess the cultural stratigraphic sequence, integrity and significance of this complex and extensive resource. A total of 6,564 artifacts were recovered during the Phase II studies. The remainder of this section of this chapter summarizes the findings at each of the four prehistoric activity loci delineated within the Puncheon Run Site within Area B of the project corridor.

1. Locus 1 (Puncheon Run Bluff):

Locus 1 is located on a fallow grassy knoll overlooking Puncheon Run, immediately north of the Nixon Mill Site [7K-C-413] (Figure 7.2). This location was identified as Sub-Area II in the cultural resource survey carried out in 1976 by Wapora. As a result of the current survey investigations, Locus 1 can be described as a two-acre area bounded approximately as follows: on the west by a line running perpendicular to Puncheon Run at station 360+00; on the east by a line running perpendicular to Puncheon Run at station 370+25; on the north by a line running parallel 200 feet out from Puncheon Run; and on the south by a line running parallel 60 feet out from Puncheon Run and 140 feet south of the northern border. The western third of this area lies entirely within the site of a proposed water quality detention basin. A total of 66 shovel tests (ST#s 26, 28, 29, 35-38, 45, 46, 53-58, 60-64, 70-74, 77-82, 88, 94, 100, 101, 309, 314-323 and 325-342) and 10 one-meter-square excavation units (EU#s 2-11) were excavated within the boundaries of this locus.

This area has apparently been under intermittent cultivation for over a century, and wind erosion has caused severe deflation of the soil profile, reducing the B-horizon throughout the locus. Excavation units were located in areas of both high and low artifact density. Four subsoil pit features were identified and appear to be at least partly cultural in origin. These features, observed in Excavation Units 8-11, are consistent with others identified within the project corridor and elsewhere in the region as possible Woodland period "pit houses" (small, semi-subterranean dwellings) (Figure 7.3; Plate 7.1).

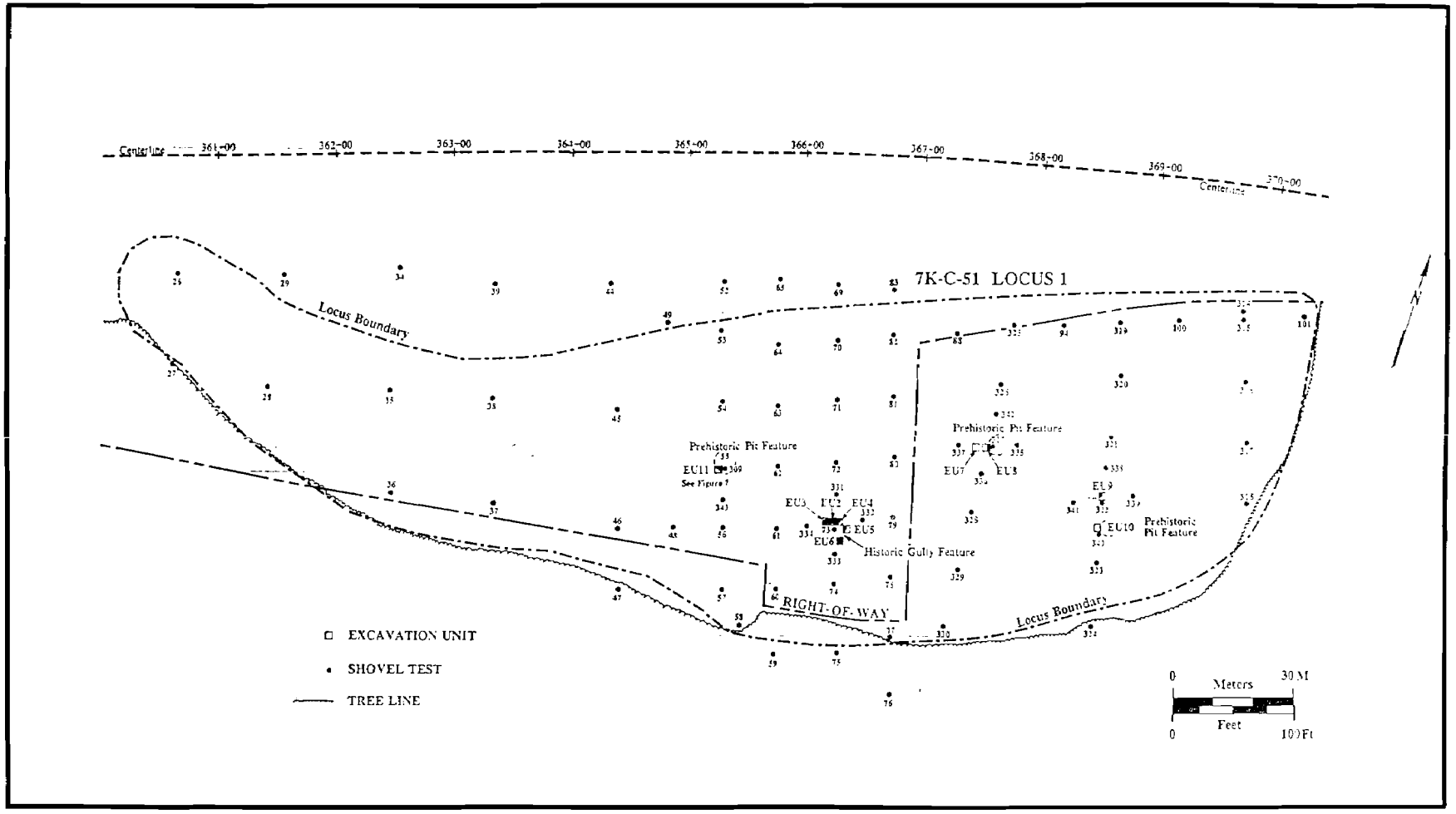


Figure 7.2. Puncheon Run Site, Locus 1 (Puncheon Run Bluff) - Site Plan Showing Locations of Subsurface Tests.

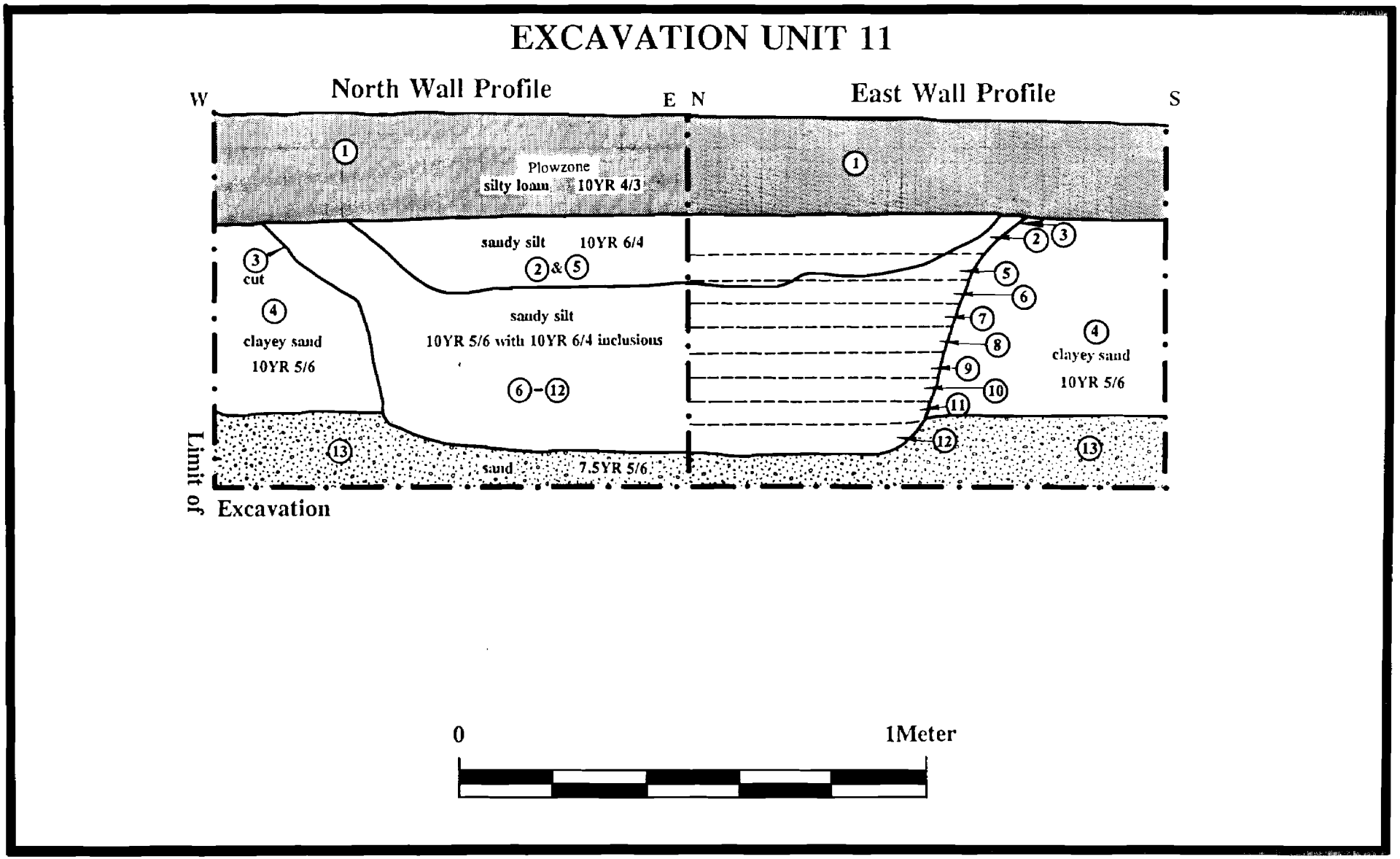


Figure 7.3. Puncheon Run Site, Locus 1 (Puncheon Run Bluff) - Excavation Unit 11, North and East Profiles, Showing a Partial Pit Feature.

Plate 7.1. Area B - Puncheon Run Site [7K-C-51], Locus 1, Excavation Unit 10: view of east wall profile showing part of a pit feature (Photographer: Adam Cerny, March 1995) [HRI Neg. 95015/7-30].

TABLE 7.1

AREA B, LOCUS 1
FREQUENCY OF LITHIC ARTIFACTS BY RAW MATERIAL TYPE

RAW MATERIAL	ARTIFACT TYPE									TOTAL
	Biface	Unifacial Tool	Utilized Flake	Debitage/Edge Damage	Tested Cobble	Core	Raw Material	Debitage	Thermally Altered Rock	
Local material										
Jasper	-	-	1	5	6	1	-	51	17	**81**
Chert	-	1	-	-	2	-	-	7	2	**12**
Chalcedony	-	-	-	1	-	-	-	2	-	**3**
Quartz	-	-	-	-	1	-	-	15	38	**54**
Quartzite	-	-	-	-	-	-	-	4	50	**54**
Mica	-	-	-	-	-	-	6	-	-	**6**
Ironstone	-	-	-	-	-	-	2	2	34	**38**
Non-local material										
Agillite	1	-	-	-	-	1	-	-	-	**2**
Rhyolite	-	-	-	1	-	-	-	2	-	**3**
Jasper, Iron Hill	-	-	-	-	-	-	-	4	-	**4**
TOTAL	**1**	**1**	**1**	7	**9**	**2**	**8**	**87**	**141**	**257**

TABLE 7.2

AREA B, LOCUS 1
RAW MATERIAL AND CORTEX ON LITHIC DEBITAGE

RAW MATERIAL	CORTEX			SIZE CLASS				TOTAL
	Fully cortical	Partially cortical	Non-cortical	1 cm	2 cm	3 cm	4 cm	
Local material								
Jasper	10	39	7	13	21	10	12	**56**
Chert	-	7	-	2	-	5	-	**7**
Chalcedony	-	1	2	-	3	-	-	**3**
Quartz	-	8	7	8	3	4	-	**15**
Quartzite	-	2	2	1	2	1	-	**4**
Ironstone	-	2	-	1	1	-	-	**2**
Non-local material								
Rhyolite	-	-	3	2	-	1	-	**3**
Jasper, Iron Hill	-	3	1	-	4	-	-	**4**
TOTAL	**10**	**59**	**18**	**25**	**30**	**20**	**12**	**87**

A total of 257 prehistoric and 1,115 historic artifacts were recovered from the Phase I and II field investigations at Locus 1. Prehistoric artifacts include tested cobble cores, thermally-altered rocks and lithic debitage (Table 7.1). The lithic assemblage is generally consistent with that of the Woodland I and II periods for this region. Raw materials are mainly of local origin, dominated by jasper, quartz and quartzite. Non-local lithics are represented by small quantities of rhyolite and Iron Hill jasper. The full range of flake sizes and types (fully cortical to non-cortical) among the locally-derived lithic materials implies on-site lithic reduction of cobbles and pebbles to produce tools (Table 7.2). The lack of fully cortical debitage and the small size of the rhyolite and jasper flakes suggest that non-local lithics were initially reduced off-site and then curated on-site to rejuvenate the working edges. A few non-diagnostic ceramic sherds were also recovered during the Phase II excavations supporting a Woodland period date for occupation of this locus. The historic artifacts recovered from Locus 1 are discussed below in Chapter 12B.

2. Locus 2 (Relict Stream):

Locus 2 centers on the confluence of two relict streams which formerly ran from northwest to southeast and northeast to southwest, crossing the project corridor at station 375+00 (Figure 7.4). The area was identified as Sub-Area I in the cultural resource survey carried out in 1976 by Wapora. As a result of the current survey investigations, Locus 2 can be described as a five-acre area bounded approximately as follows: on the west by a line running perpendicular to the project corridor at station 371+85; on the east by a line running perpendicular to the project corridor at station 378+00; on the north by the edge of an apartment complex; and on the south by a dirt access road located mid-slope along the bluff on the north side of Puncheon Run. The eastern boundary of Locus 2 is also the western boundary for Locus 3.

A total of 91 shovel tests (ST#s 109-112, 114-135, 137-168, 452-455, 458-476, 481 and 482) and 11 one-meter-square excavation units (EU#s 42-51 and 55) were excavated within the boundaries of Locus 2. Full evaluation of Locus 2 was not possible as access to the property west of station 374+75 was denied by the landowners (Outten Brothers). Excavation Units 47, 48 and 50, all located in this zone, were backfilled before contexts containing meaningful information were excavated. Excavation Unit 50 was located at Shovel Test 115, a shovel test thought to contain a possible pit feature.

The area around the upper portions of the two relict streams has been subject to deep build-up of topsoil, while the area downslope at their confluence has been eroded by water run-off, apparently exacerbated by the installation of a drainage ditch which bisects the locus and empties onto the Puncheon Run floodplain near the site of an 18th-century landing. Excavation units were located in areas of both high and low artifact density throughout Locus 2. Two pit features were identified and appear to be at least partially cultural in origin. These features, observed in Excavation Units 9, 49, 51 and 55, are consistent with others identified as possible "pit houses" within Locus 1 and elsewhere along the project corridor (Figure 7.5a-b; Plates 7.2 and 7.3).

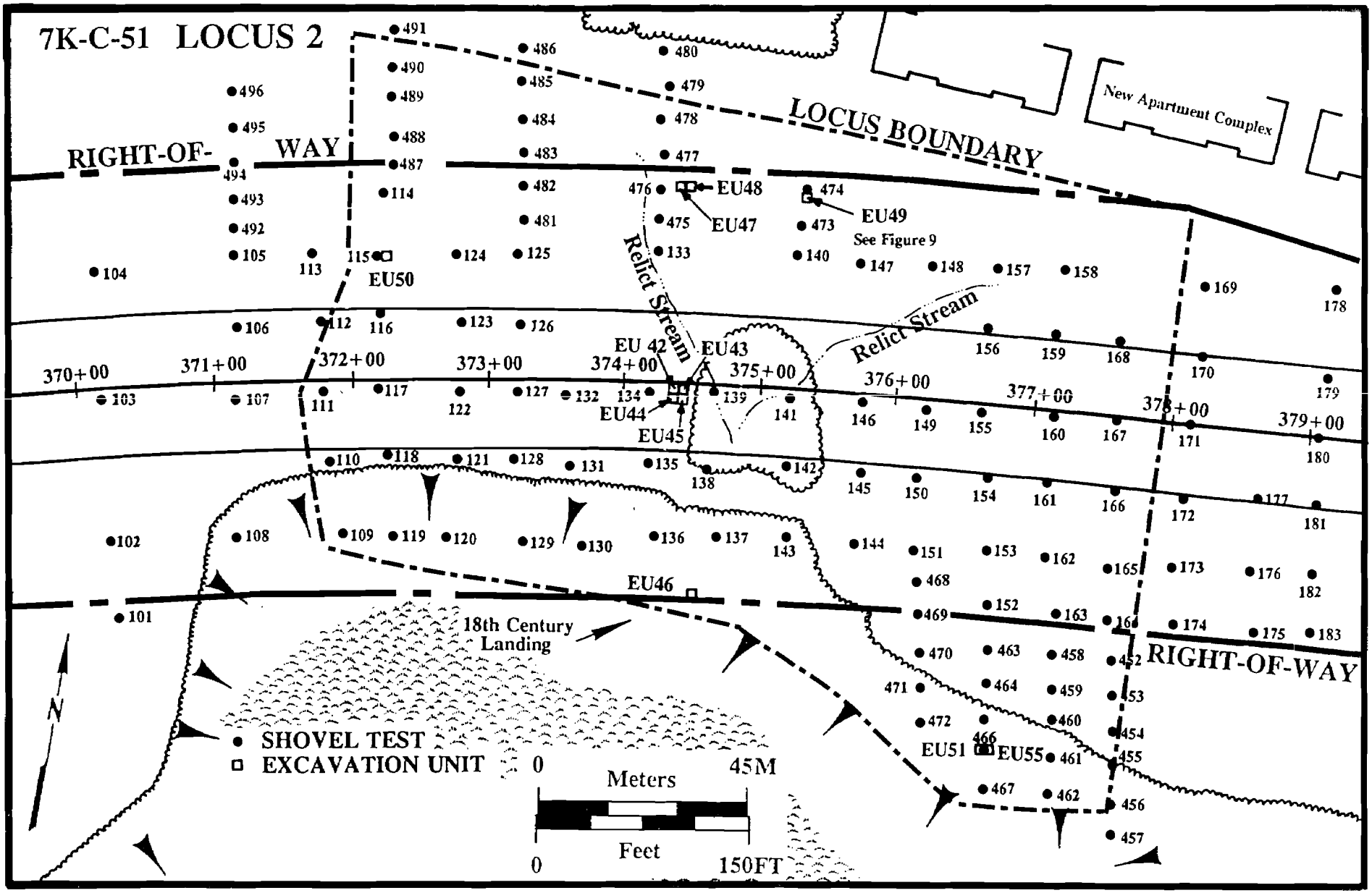
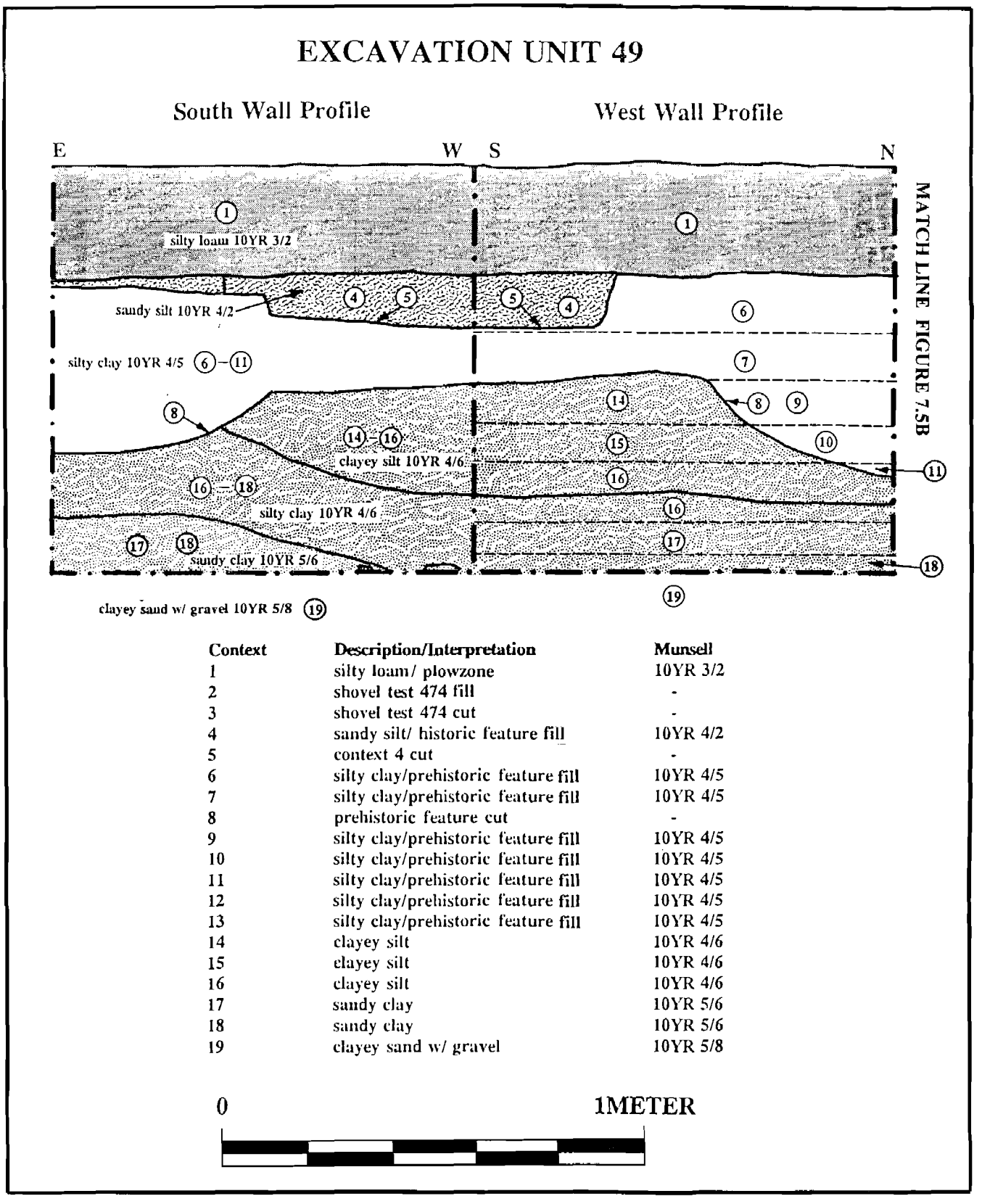


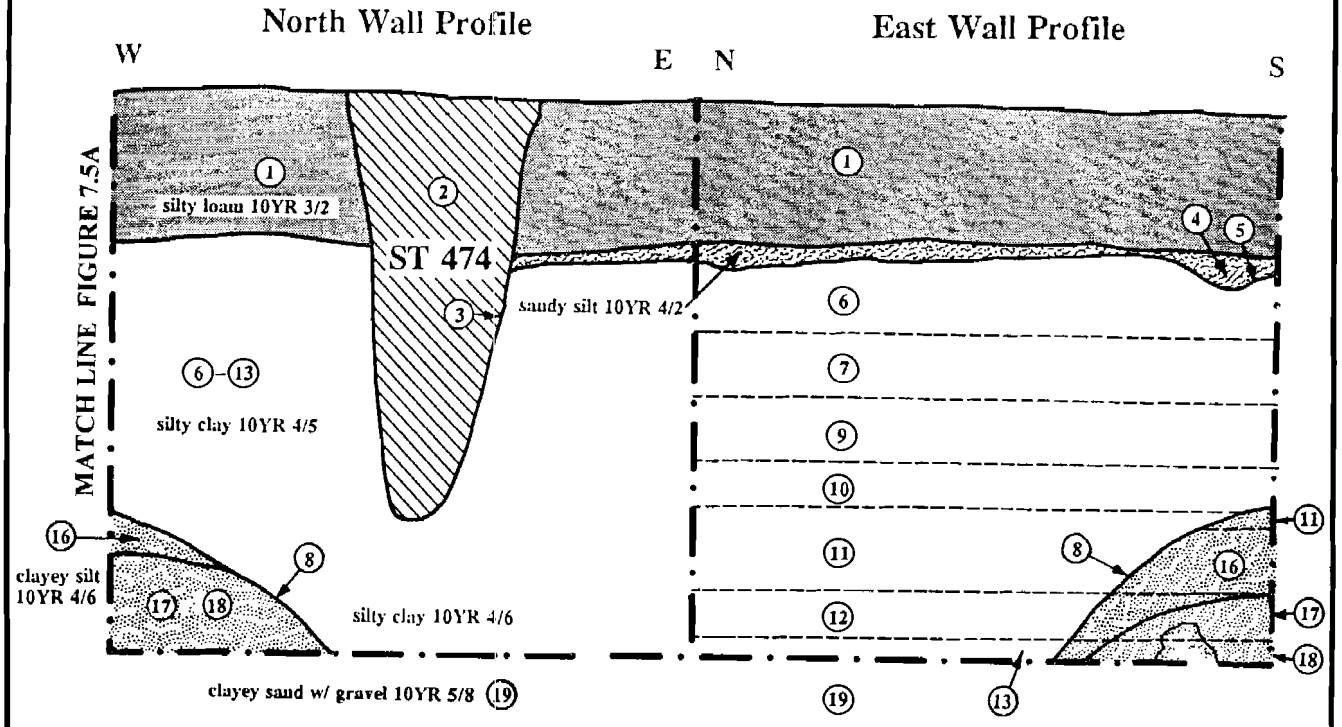
Figure 7.4. Puncheon Run Site, Locus 2 (Relict Stream) - Site Plan Showing Locations of Subsurface Tests.



Context	Description/Interpretation	Munsell
1	silty loam/ plowzone	10YR 3/2
2	shovel test 474 fill	-
3	shovel test 474 cut	-
4	sandy silt/ historic feature fill	10YR 4/2
5	context 4 cut	-
6	silty clay/prehistoric feature fill	10YR 4/5
7	silty clay/prehistoric feature fill	10YR 4/5
8	prehistoric feature cut	-
9	silty clay/prehistoric feature fill	10YR 4/5
10	silty clay/prehistoric feature fill	10YR 4/5
11	silty clay/prehistoric feature fill	10YR 4/5
12	silty clay/prehistoric feature fill	10YR 4/5
13	silty clay/prehistoric feature fill	10YR 4/5
14	clayey silt	10YR 4/6
15	clayey silt	10YR 4/6
16	clayey silt	10YR 4/6
17	sandy clay	10YR 5/6
18	sandy clay	10YR 5/6
19	clayey sand w/ gravel	10YR 5/8

Figure 7.5a. Puncheon Run Site, Locus 2 (Relict Stream) - Excavation Unit 49, South/West Profile Showing a Partial Pit Feature.

EXCAVATION UNIT 49



Context	Description/Interpretation	Munsell
1	silty loam/ plowzone	10YR 3/2
2	shovel test 474 fill	-
3	shovel test 474 cut	-
4	sandy silt/ historic feature fill	10YR 4/2
5	context 4 cut	-
6	silty clay/prehistoric feature fill	10YR 4/5
7	silty clay/prehistoric feature fill	10YR 4/5
8	prehistoric feature cut	-
9	silty clay/prehistoric feature fill	10YR 4/5
10	silty clay/prehistoric feature fill	10YR 4/5
11	silty clay/prehistoric feature fill	10YR 4/5
12	silty clay/prehistoric feature fill	10YR 4/5
13	silty clay/prehistoric feature fill	10YR 4/5
14	clayey silt	10YR 4/6
15	clayey silt	10YR 4/6
16	clayey silt	10YR 4/6
17	sandy clay	10YR 5/6
18	sandy clay	10YR 5/6
19	clayey sand w/ gravel	10YR 5/8

Figure 7.5b. Puncheon Run Site, Locus 2 (Relict Stream) - Excavation Unit 49, North/East Profile Showing a Partial Pit Feature.

Plate 7.2. Area B - Puncheon Run Site [7K-C-51], Locus 2, Excavation Units 42 and 44: view of north wall profile showing a disturbed soil sequence along a former landing/gully (Photographer: Adam Cerny, April 1995) [HRI Neg. 95015/17-5].

Plate 7.3. Area B - Puncheon Run Site [7K-C-51], Locus 2, Excavation Unit 51: view of east wall profile showing part of a pit feature (Photographer: Adam Cerny, May 1995) [HRI Neg. 95015/19-18].

TABLE 7.3

AREA B, LOCUS 2
FREQUENCY OF LITHIC ARTIFACTS BY RAW MATERIAL TYPE

RAW MATERIAL	ARTIFACT TYPE									TOTAL
	Projectile Point	Biface	Utilized Flake	Debitage/Edge Damage	Hammerstone	Core, Pebble	Raw Material	Debitage	Thermally Altered Rock	
Local material										
Jasper	1	2	1	5	-	4	-	198	7	218
Chert	-	-	-	-	-	4	-	24	1	29
Chalcedony	-	-	-	-	-	-	-	3	-	3
Quartz	-	-	-	-	-	2	-	35	124	161
Quartzite	-	-	-	-	1	-	-	16	138	155
Ironstone	-	-	-	-	-	-	2	2	1	5
Non-local material										
Argillite	-	-	-	-	-	-	-	2	-	2
Rhyolite	-	-	-	-	-	-	-	4	-	4
Jasper, Iron Hill	-	-	-	-	-	-	-	2	-	2
TOTAL	1	2	1	5	1	10	2	286	271	579

TABLE 7.4

AREA B, LOCUS 2
RAW MATERIAL AND CORTEX ON LITHIC DEBITAGE

RAW MATERIAL	CORTEX			SIZE CLASS				TOTAL
	Fully cortical	Partially cortical	Non-cortical	1 cm	2 cm	3 cm	4 cm	
Local material								
Jasper	15	107	76	63	112	21	2	**198**
Chert	1	12	11	5	14	5	-	**24**
Chalcedony	-	1	2	2	1	-	-	**3**
Quartz	2	8	25	12	19	4	-	**35**
Quartzite	-	5	11	4	9	3	-	**16**
Ironstone	-	-	2	1	1	-	-	**2**
Non-local material								
Argillite	-	-	2	1	1	-	-	**2**
Rhyolite	-	-	4	1	2	1	-	**4**
Jasper, Iron Hill	-	2	-	-	2	-	-	**2**
TOTAL	**18**	**135**	**133**	**89**	**161**	**34**	**2**	**286**

A total of 579 prehistoric artifacts were recovered from the Phase I and II field investigations at Locus 2. Diagnostic artifacts recovered from this locus comprise a narrow-bladed, jasper contracting stem projectile point, six small, crushed quartz and mica-tempered ceramic sherds of Hell Island ware dating from *circa* A.D. 600-1000 during the Woodland II period (Custer 1989:176; Griffith 1982:56). Other artifacts recovered from this locus include a hammerstone, tested pebbles, bifacial tool fragments and lithic debitage (Table 7.3). As in Locus 1, the raw materials used in the manufacture of these tools are mainly of local origin and dominated by jasper, quartz and quartzite. Non-local lithics are represented by rhyolite, argillite and Iron Hill jasper. The full range of flake sizes and types (fully cortical to non-cortical) within the locally-derived lithic materials again implies on-site lithic reduction and production of tools, while the lack of fully cortical debitage and small size of the flakes from non-local materials suggest again that these latter specimens were initially reduced off-site and then curated on-site to rejuvenate the working edges (Table 7.4). The presence of Iron Hill jasper (from northern Delaware) and rhyolite (from Maryland) suggest extended procurement zones. The presence of argillite found in northeastern Pennsylvania and northern New Jersey most likely suggests either long-distance lithic raw material procurement or trade.

3. Locus 3 (Peninsula):

Locus 3 encompasses the eastern tip of the peninsula that juts out into the St. Jones River on the north side of Puncheon Run, extending between stations 378+00 and 391+00 (Figure 7.6a-b). Formerly cultivated, most of the peninsula is now a fallow grassy field, except for the perimeter portions which have been reclaimed by successional woodland. This area has been extensively collected by local avocational archaeologists over the past 30 years. As a result of the current survey investigations, Locus 3 can be described as a 12.5-acre area bounded approximately as follows: on the west by a line running perpendicular to the project corridor at station 378+00; on the east by the St. Jones River; on the north by the edge of an apartment complex; and on the south by the rim of the bluff overlooking Puncheon Run. The western boundary of Locus 3 is also the eastern boundary of Locus 2. A total of 244 shovel tests (ST#s 169,170, 175-310 and 344-451) and 33 one-meter-square excavation units (EU#s 1, 12-41, 54 and 56) were excavated within the limits of Locus 3.

A brief geoarchaeological inspection of the Puncheon Run Site was undertaken by the project geomorphologist (Dr. Joseph Schuldenrein, Geoarcheology Research Associates) on May 10-11, 1995. The general objectives were to identify the principal site landforms, to outline the overall stratigraphy of the setting, and to assess the preservation context of the archeological deposits. Subsurface geomorphological explorations concentrated on the suspected "pit house" features and potential mechanisms for their construction and degradation.

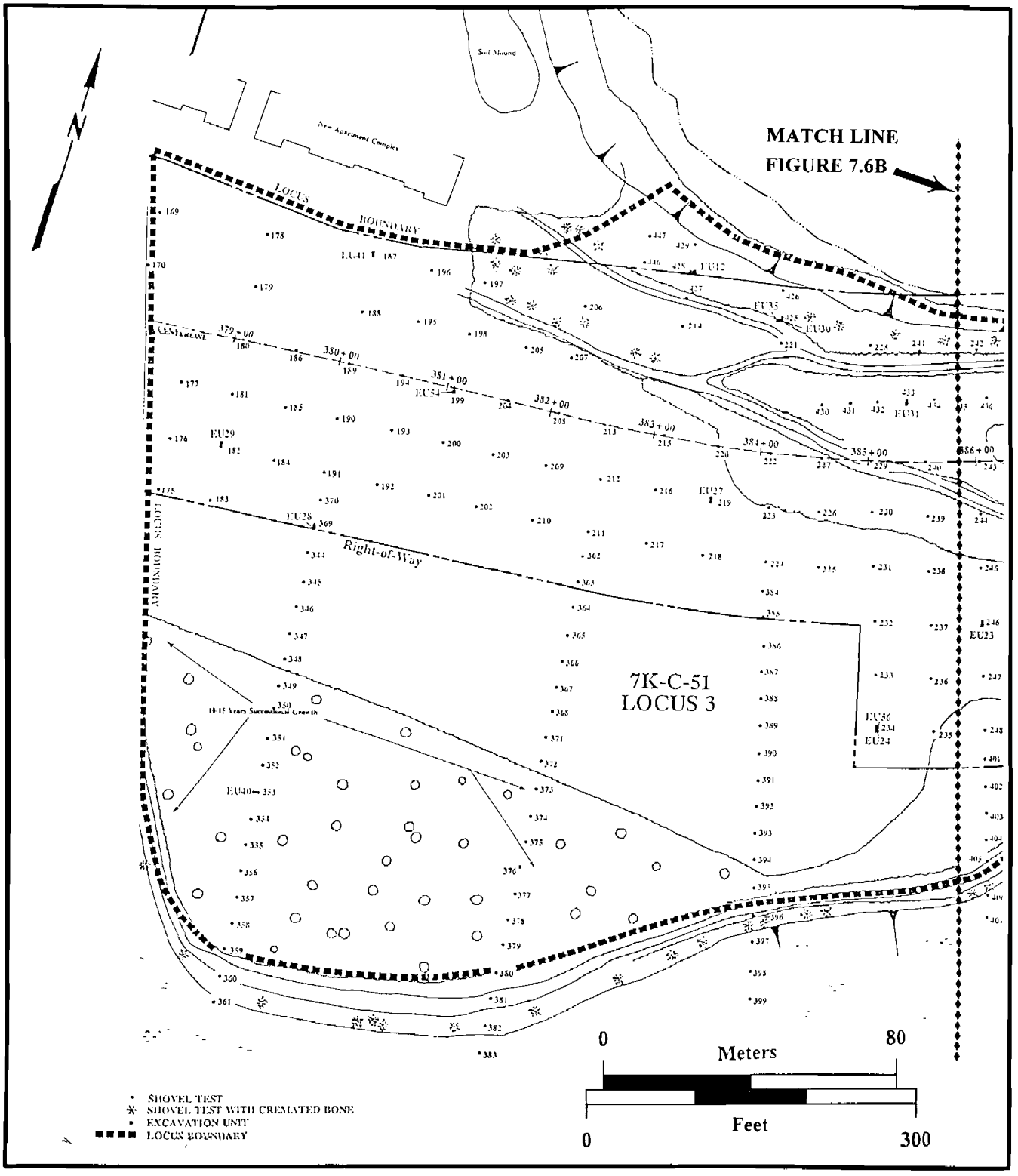


Figure 7.6a. Puncheon Run Site, Locus 3 (Peninsula) - Site Plan Showing Locations of Subsurface Tests.

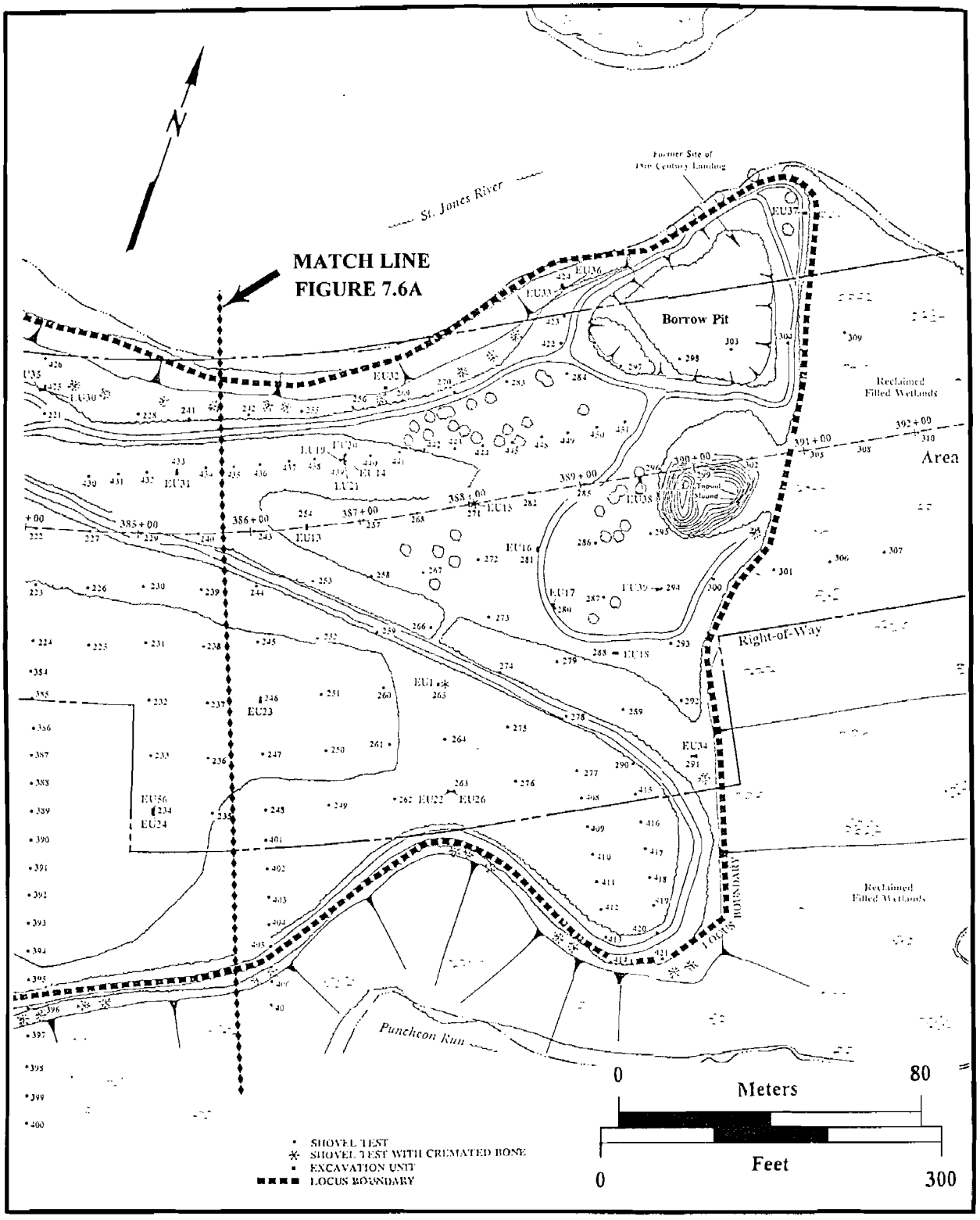


Figure 7.6b. Puncheon Run Site, Locus 3 (Peninsula) - Site Plan Showing Locations of Subsurface Tests.

The Puncheon Run Site spans an extensive undulating aeolian plain flanking the west side of the St. Jones River. The site overlooks a channel cut-off, or ox-bow, formed during an earlier -- probably mid-Holocene -- phase of channel migration. The regional landform on which the site is perched has been mapped as a late Pleistocene terrace, ranging between seven and ten meters above the mean water level of the channel. The St. Jones River itself is a tidal stream. Upstream drainage flows northwest-southeast into the Delaware Bay. The stream gradient throughout is subdued, especially downstream, where the trunk artery emerges into a palustrine and subsequently estuarine environment at the Delaware Bay outlet.

Field evidence suggests that the deposits capping the terrace are similar to those identified directly across the St. Jones River at the Hickory Bluff Prehistoric Site [7K-C-411] (see below, Chapter 8). However, in the portions of the landscape examined, prehistoric alteration of the uppermost one to two meters of sediment was more extensive at the Puncheon Run Site. The origin of the sediment cover is aeolian. These observations were confirmed by inspection of the few exposures not subject to anthropogenic modification. Typical aeolian mantles consist of well sorted fine sands underlain by an unconsolidated and massively structured substrate. However, most of the landscape is capped by a prominent plowzone ("Ap" horizon) underlain either by a buried cultural surface ("2Ab") or by an eluvial ("E") horizon. In all exposures examined, the uppermost solum was developed in aeolian sediments (Plate 7.4).

The geomorphological field investigations included inspections of a series of exposed archaeological excavation units, eleven of which were open to depths of around 0.5 to 1.2 meters. The distribution of these excavation units was concentrated along the inner and central portions of the Pleistocene terrace identified as Locus 3. Stratigraphic variability between units was considerable and reflects the subtle sedimentation promoted by episodic and localized human activity, surface degradation and complex weathering within anthropogenic and deeper Pleistocene/early Holocene sediments. It was clear that minor deflation had differentially stripped the surface, alternately exposing and concealing the occupations.

Variability in feature morphology may be attributable to the function and architecture of the features provisionally interpreted as pit houses. This interpretation awaits more detailed stratigraphic resolution. However, inspection of the features evidenced extensive and heterogeneous subsurface disturbance. Modification to the substrate included excavation of parabolic pits (locally referred to as "sub-basements" to depths >0.5 cm) and removal and/or overprinting of eluvial horizons by laterally extensive house floors. The features are intrusive into soil horizons that otherwise register podsolization, the dominant weathering processes in the aboriginal forest. Some excavation units preserved infilling microstructures; these may have been associated with reburial of basins, since they consisted of poorly sorted admixtures of formerly intact soil.

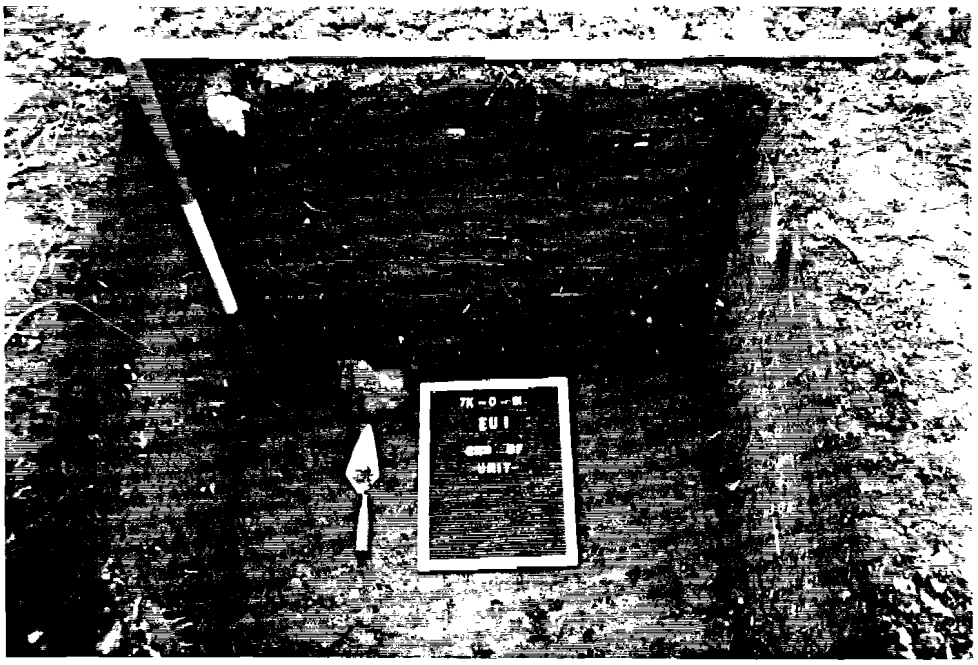


Plate 7.4. Area B - Puncheon Run Site [7K-C-51], Locus 3, Excavation Unit 1: view of north wall profile showing a typical soil profile; the upper strata contained the cremated remains of a various small mammals possibly associated with a feature (Photographer: Frank Dunsmore, December 1994) [HRI Neg. 94015/34-6].

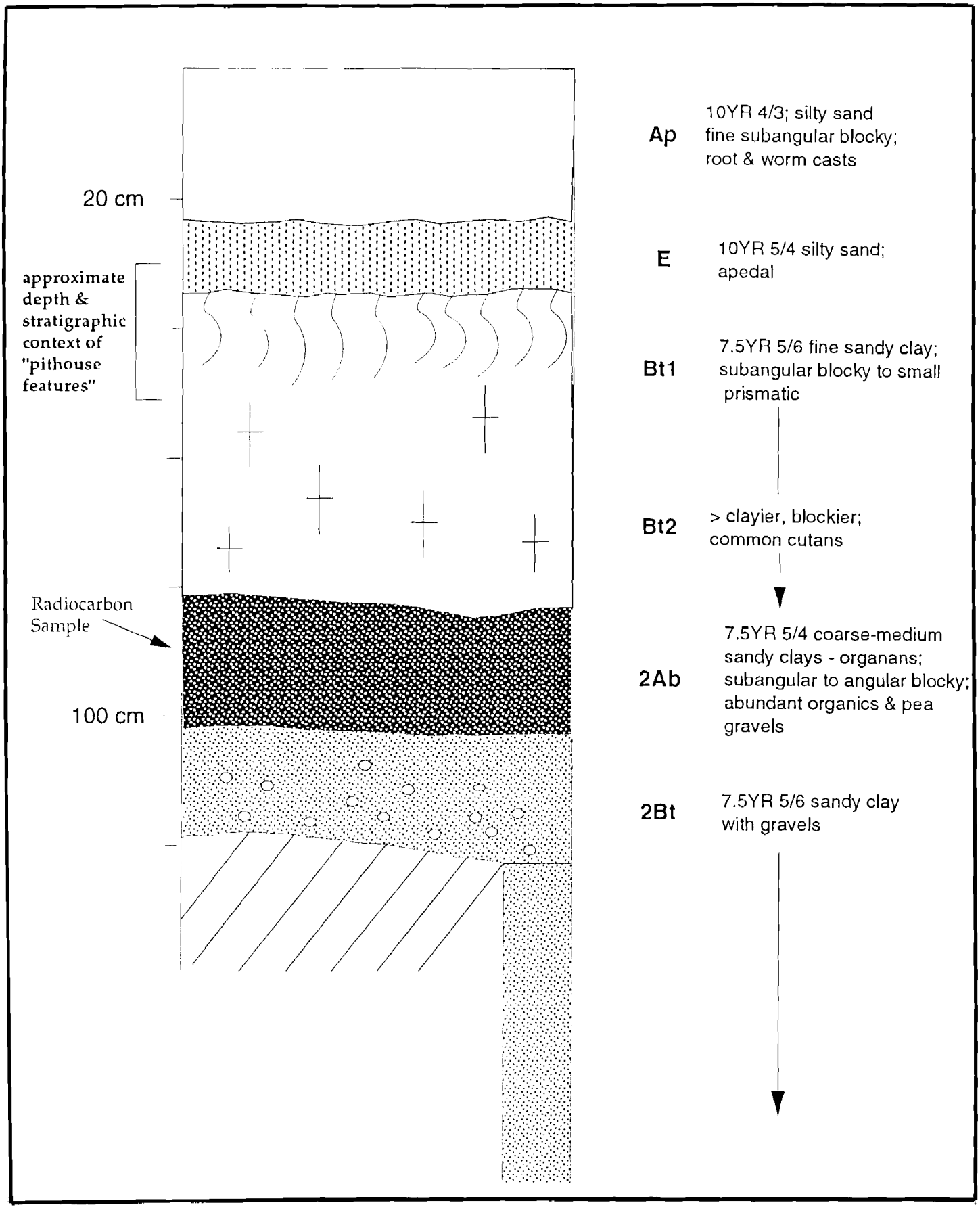


Figure 7.7. Puncheon Run Site, Locus 3 (Peninsula) - Excavation Unit 28, Semi-schematic Stratigraphy and Pedogenic Profile.

A baseline soil stratigraphy was reconstructed from more detailed inspection of Excavation Unit 28 near the western limit of the test excavation grid in Area B (Figure 7.7). The profile disclosed complex podsol weathering regime; regional soils have been mapped as Ultisols (Matthews and Ireland 1971). The profile preserves an "A-E-Bt1-Bt2-2AB-2Bt" solum to a depth of 1.4 meters. Two generations of soil formation are preserved, with the lowermost possibly registering the Pleistocene-Holocene transition. A radiocarbon specimen was taken from horizon "2AB" and should furnish critical chrono-stratigraphic control (dates have not been obtained from this sample). If a Holocene date is obtained, the incorporation of a differentiated argillic ("Bt1-Bt2") pedon in the upper profile would underscore intensive weathering during the mid-Holocene, a pattern not widely recognized along coastal reaches of the Mid-Atlantic uplands. The soil profile is consistent with the interdigitation of the "pit feature fill" matrices within the "E" or "Bt" horizons of the upper solum across the site. Figure 7.7 projects the stratigraphic position of the feature matrices, as disclosed in several exposures. General site stratigraphy would place the period of soil formation and occupation to the interval 3,000 to 4,000 B.P.

The pit features and related cultural features and deposits are typically preserved at the interface of the weathering zone (Plates 7.5 and 7.6). Artifact clusters are densest in the "E-EB-Bt" horizons. This context does not necessarily mean that the occupations were contemporaneous with the "Bt," but may suggest that the entire profile is "upbuilding" or rising as additional sediment was accumulated through wind activity. The association of artifacts within the "Bt" may signify either post-depositional, ongoing, or discontinuous weathering after the site was abandoned by prehistoric inhabitants. However, lateral and vertical variability, as well as site formation mechanisms, would need to be investigated in greater detail to establish more comprehensive site evolutionary models. It is noteworthy, however, that analogous geoarchaeological contexts have been widely reported at archeological sites in the Middle Atlantic. They offer unique possibilities for dating periods of soil formation and linking them to the environments of occupation, since they are indexed to specific periods of prehistoric habitation.

The aeolian context of the site and its overprinted weathering profile is a more complex variant of the artifact and soil preservation conditions at the Hickory Bluff Prehistoric Site on the eastern side of the St. Jones River (see below, Chapters 8 and 9). It is cautioned, however, that the preservation contexts of the sites are numerous, complex, and demonstrate several inexplicable vertical and lateral patterns. To understand the chronology and pattern of events, site-specific observations must be tied to the paleoenvironmental sequence of the region. Collectively, these contexts are best addressed through studies of the St. Jones River alluvial and palustrine environments. Such intensive studies of site depositional loci across the landforms underlying the Puncheon Run and Hickory Bluff sites are pivotal to synthetic archaeological interpretations.

Excavation units were located in areas of both high and low artifact density across Locus 3. As noted above, most of the summit of the peninsula landform containing Locus 3 has been plowed over the past century. An aerial photograph of 1937, for example, clearly shows open field where successional growth is in the process of being reclaimed by light woods. As a result, a plowzone

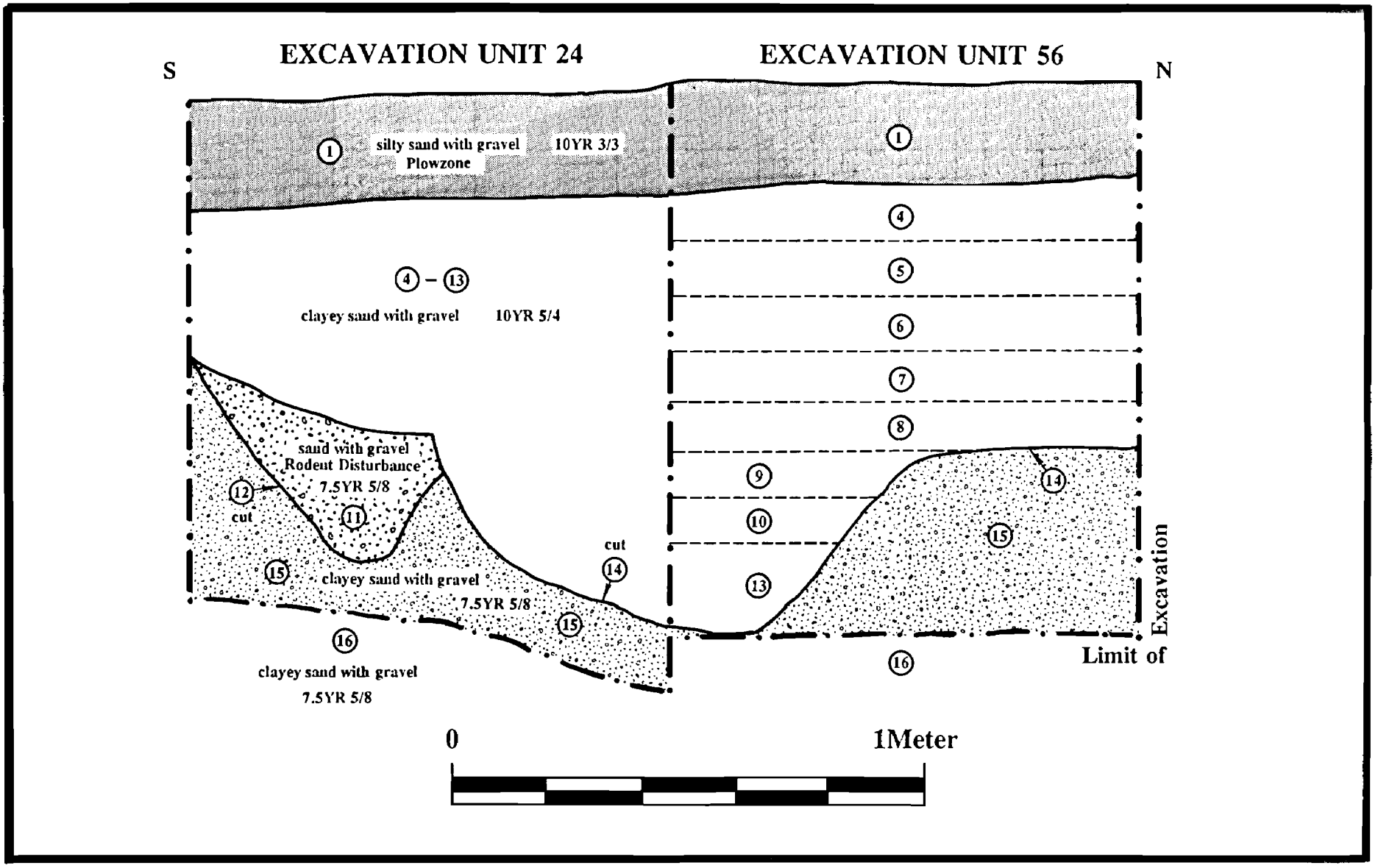


Figure 7.8. Puncheon Run Site, Locus 3 (Peninsula) - Excavation Units 24 and 56, West Profile, Showing a Partial Pit Feature.

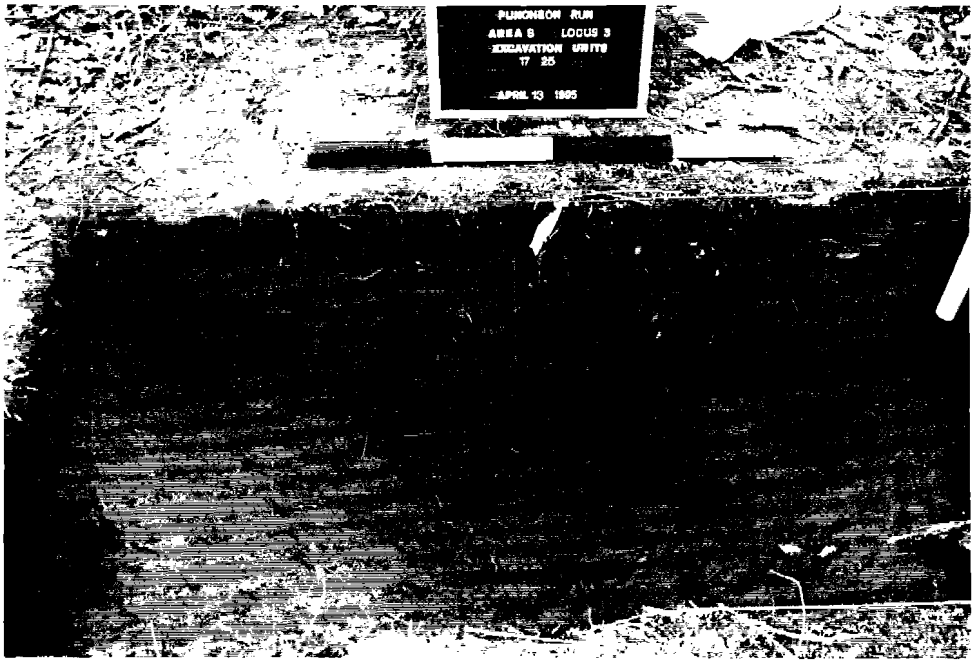


Plate 7.5. Area B - Puncheon Run Site [7K-C-51], Locus 3, Excavation Units 17 and 25: view of south wall profile showing part of a pit feature (Photographer: Adam Cerny, April 1995) [HRI Neg. 95015/11-35].

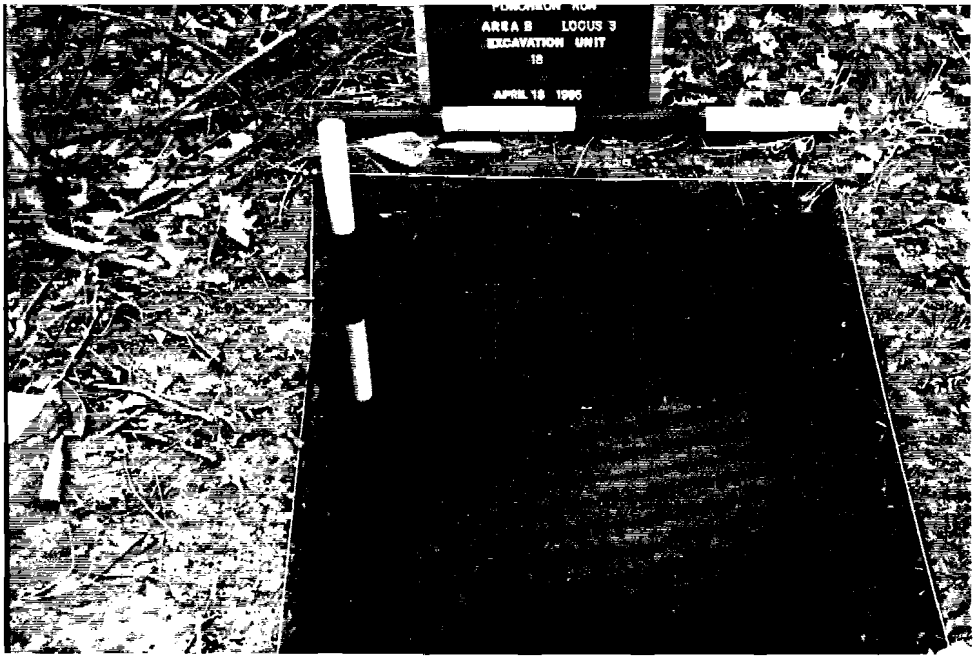


Plate 7.6. Area B - Puncheon Run Site [7K-C-51], Locus 3, Excavation Unit 18: view of east wall profile showing part of a pit feature (Photographer: Adam Cerny, April 1995) [HRI Neg. 95015/13-12].

is present in all excavation units except for those located near the tip of the peninsula where the topsoil has been mechanically stripped off and heaped into mounds. The removal of the plowzone has not greatly affected the underlying subsoil, as several pit features and a thermally-fractured rock cluster were identified in the underlying subsoil. The pit features identified in Excavation Units 1, 12-14, 17-21, 24, 25, 27, 30, 34, 35, 40 and 56 are broadly consistent with others identified within Loci 1 and 2 to the west and at the Hickory Bluff Prehistoric Site [7K-C-411]; some can be tentatively interpreted as "pit houses" (Figure 7.8; Plates 7.5 and 7.6).

A total of 2,651 prehistoric artifacts were recovered from Locus 3 during the Phase I and II field investigations. The diagnostic projectile points recovered from this locus are narrow-bladed, stemmed, corner-notched and Fox Creek types, all of which can be dated to the Woodland I period. Other lithic artifacts recovered from this locus include staged unifacial and bifacial tools, debitage, steatite and thermally-fractured rocks (Figure 7.9; Table 7.5). As was the case with lithic artifacts recovered from Loci 1 and 2, the raw materials used in the manufacture of these tools are mainly of local origin, dominated by jasper, quartz and quartzite. Non-local lithics are represented by moderate amounts of rhyolite, steatite, argillite, Iron Hill jasper, and Cohansey and cuesta quartzite. The full range of flake sizes and types (fully cortical to non-cortical) is evident among the locally-derived lithic materials and suggestive of on-site lithic reduction and production of tools (Table 7.6). The lack of fully cortical debitage and small size of flakes derived from non-local lithics implies that tools made from these materials were reduced off-site and then curated on-site to rejuvenate the working edges. The presence of Iron Hill jasper and Cohansey and cuesta quartzite (from northern Delaware), and rhyolite and steatite (from northern Maryland) suggests extended procurement zones; the presence of argillite found in outcrops in northeastern Pennsylvania and northern New Jersey suggests either long-distance lithic procurement and/or trade.

Fifty-nine prehistoric ceramic sherds were also recovered from Locus 3. Diagnostic types represented among this assemblage are Wolfe Neck (2 sherds), Willgus (1), Mockley (6) and Hell Island (10) from the Woodland I period; Townsend (7) and Killens (2) from the Woodland II period; and a single terra-cotta smoking pipe stem fragment from the Contact period (mid- to late 17th century) (Custer 1989; Griffith 1982; Deetz 1993).

A few very small pieces of burnt bone were also found in two locations. Shovel Test 265 produced 18 small fragments of calcined bone, while Excavation Unit 1 yielded 106 small fragments of calcined bone (Plate 7.4); virtually all of these specimens were too small for positive species identification. A provisional interpretation of these remains is that they are from small to medium mammal species, such as rabbit and squirrel.

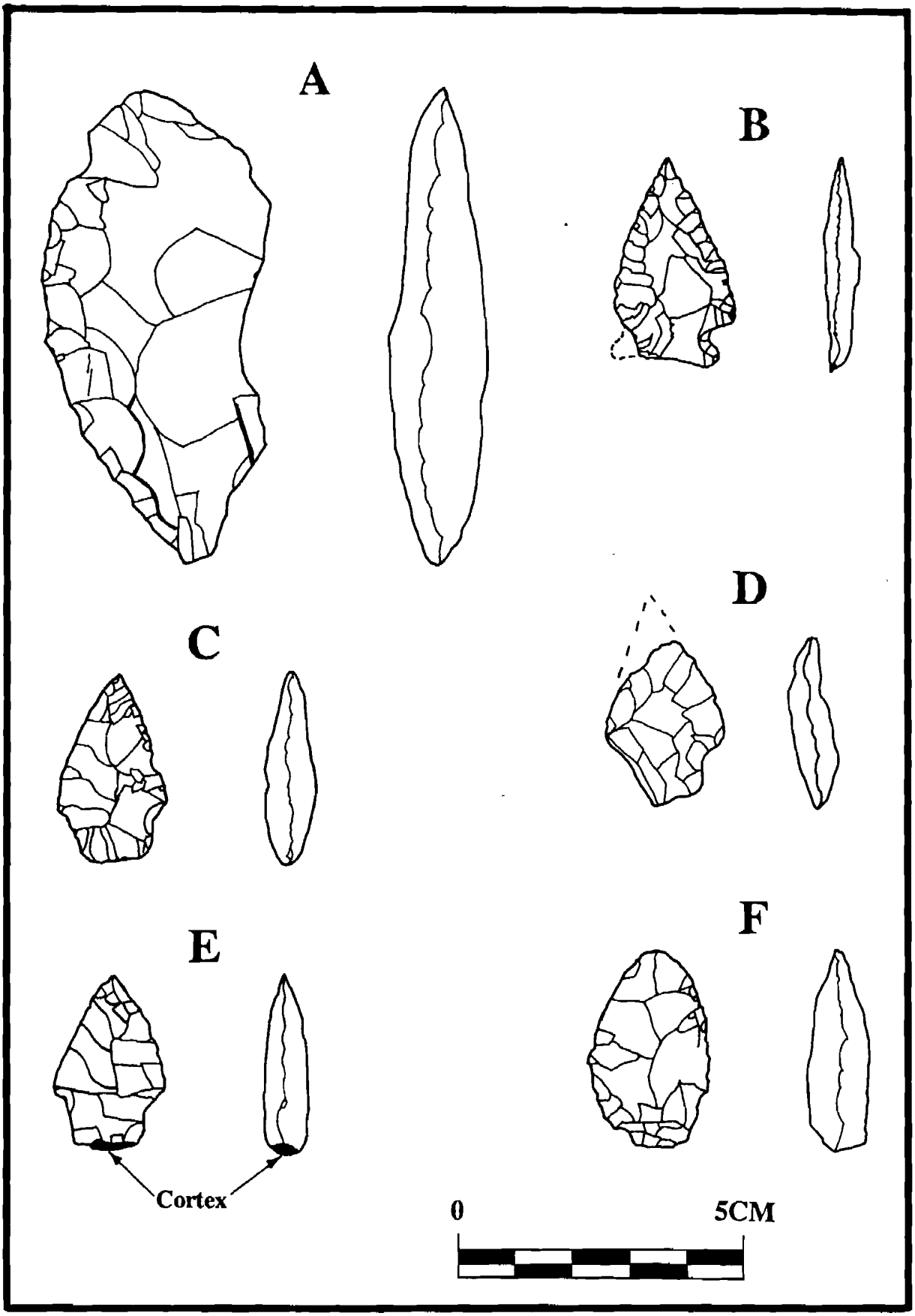


Figure 7.9. Selected Woodland I Diagnostics from the Puncheon Run Site: A. Iron Hill jasper knife, EU 14 context 4; B. Yellow-brown jasper Brewerton-like side notched projectile point, Surface near Shovel Test 269; C. Brown jasper small stemmed projectile point, EU 38 context 4; D. Quartz small stemmed projectile point, Shovel Test 208 context 1; E. Yellow-brown jasper small stemmed projectile point, EU 34 context 1; F. Reddish brown jasper late stage biface, Shovel Test 421 context 1. See Appendix B for more details.

TABLE 7.5

AREA B, LOCUS 3
FREQUENCY OF LITHIC ARTIFACTS BY RAW MATERIAL TYPE

RAW MATERIAL	ARTIFACT TYPE													TOTAL
	Projectile Point	Biface	Knife	Bifacial Tool	Unifacial Tool	Utilized Flake	Debitage/ Edge Damage	Hammerstone	Anvil, Bipolar	Core	Raw Material	Debitage	Thermally Altered Rock	
Local material														
Jasper	6	3	-	-	2	2	25	-	-	23	-	767	73	901
Chert	1	1	-	-	1	-	3	-	-	10	-	184	9	209
Chalcedony	-	-	-	--	-	-	1	-	-	-	-	17	-	18
Quartz	1	2	-	1	-	-	2	-	-	6	-	126	603	741
Quartzite	-	1	-	-	-	-	-	1	1	1	-	21	470	495
Sandstone	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Ironstone	-	-	-	-	-	-	-	-	-	-	-	10	106	116
Non-local material														
Argillite	1	2	-	-	-	-	2	-	-	-	-	12	-	17
Rhyolite	-	-	-	-	-	-	-	-	-	1	-	40	-	41
Jasper, Iron Hill	-	2	1	-	-	-	-	-	-	1	-	8	-	12
Quartzite, Cohansey	-	-	-	-	-	-	-	-	-	-	-	32	1	33
Quartzite, Cuesta	-	-	-	-	-	-	-	-	-	-	-	4	-	4
Steatite	-	-	-	-	-	-	-	-	-	-	3	-	-	3
TOTAL	9	11	1	1	3	2	33	1	1	42	3	1221	1263	2591

TABLE 7.6

AREA B, LOCUS 3
RAW MATERIAL AND CORTEX ON LITHIC DEBITAGE

RAW MATERIAL	CORTEX			SIZE CLASS					TOTAL
	Fully cortical	Partially cortical	Non-cortical	1 cm	2 cm	3 cm	4 cm	5 cm	
Local material									
Jasper	72	422	298	312	332	116	29	3	**792**
Chert	17	56	114	87	68	21	9	2	**187**
Chalcedony	-	5	13	7	10	1	-	-	**18**
Quartz	6	37	85	63	53	12	-	-	**128**
Quartzite	2	4	15	13	6	-	-	2	**21**
Ironstone	-	3	7	6	3	1	-	-	**10**
Non-local material									
Argillite	-	-	14	4	6	3	1	-	**14**
Rhyolite	-	4	36	20	18	2	-	-	**40**
Jasper, Iron Hill	1	4	3	-	5	2	1	-	**8**
Quartzite, Cohansey	-	8	24	20	10	2	-	-	**32**
Quartzite, Cuesta	-	2	2	-	-	2	2	-	**4**
TOTAL	**98**	**545**	**611**	**532**	**511**	**162**	**42**	**7**	**1254**

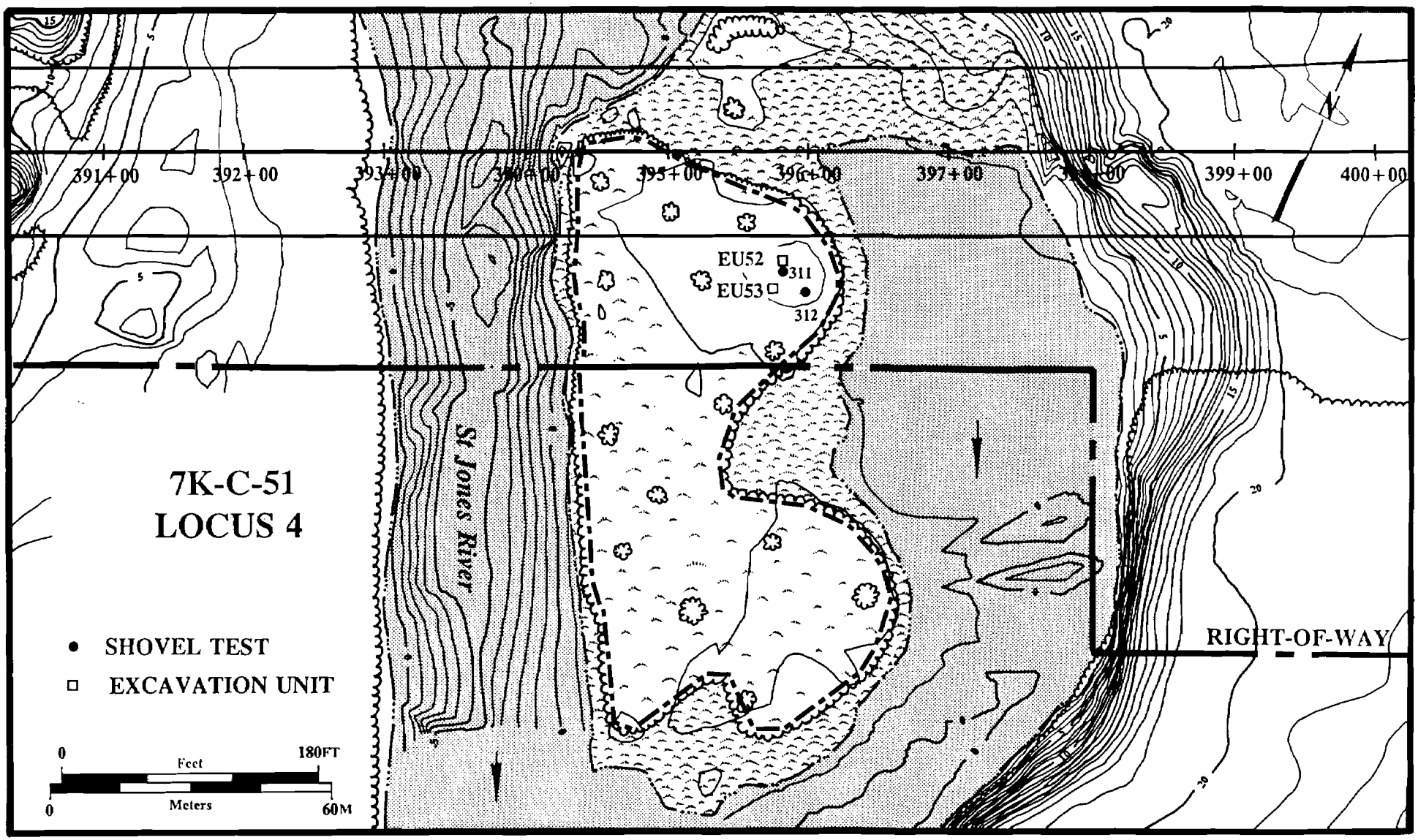


Figure 7.10. Puncheon Run Site, Locus 4 (Island) - Site Plan Showing Locations of Subsurface Tests.

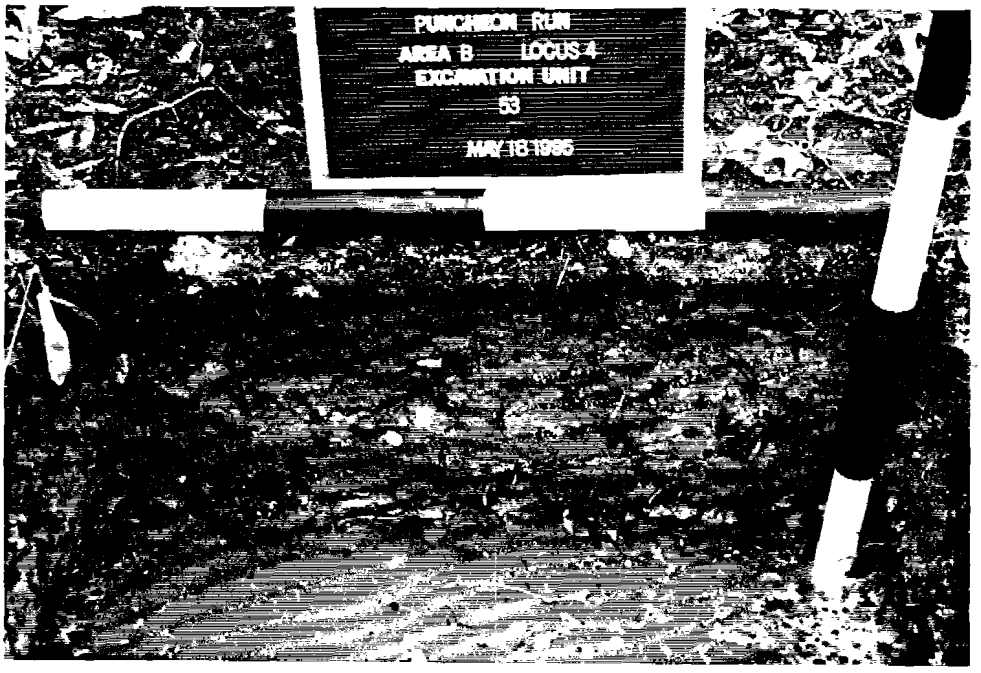
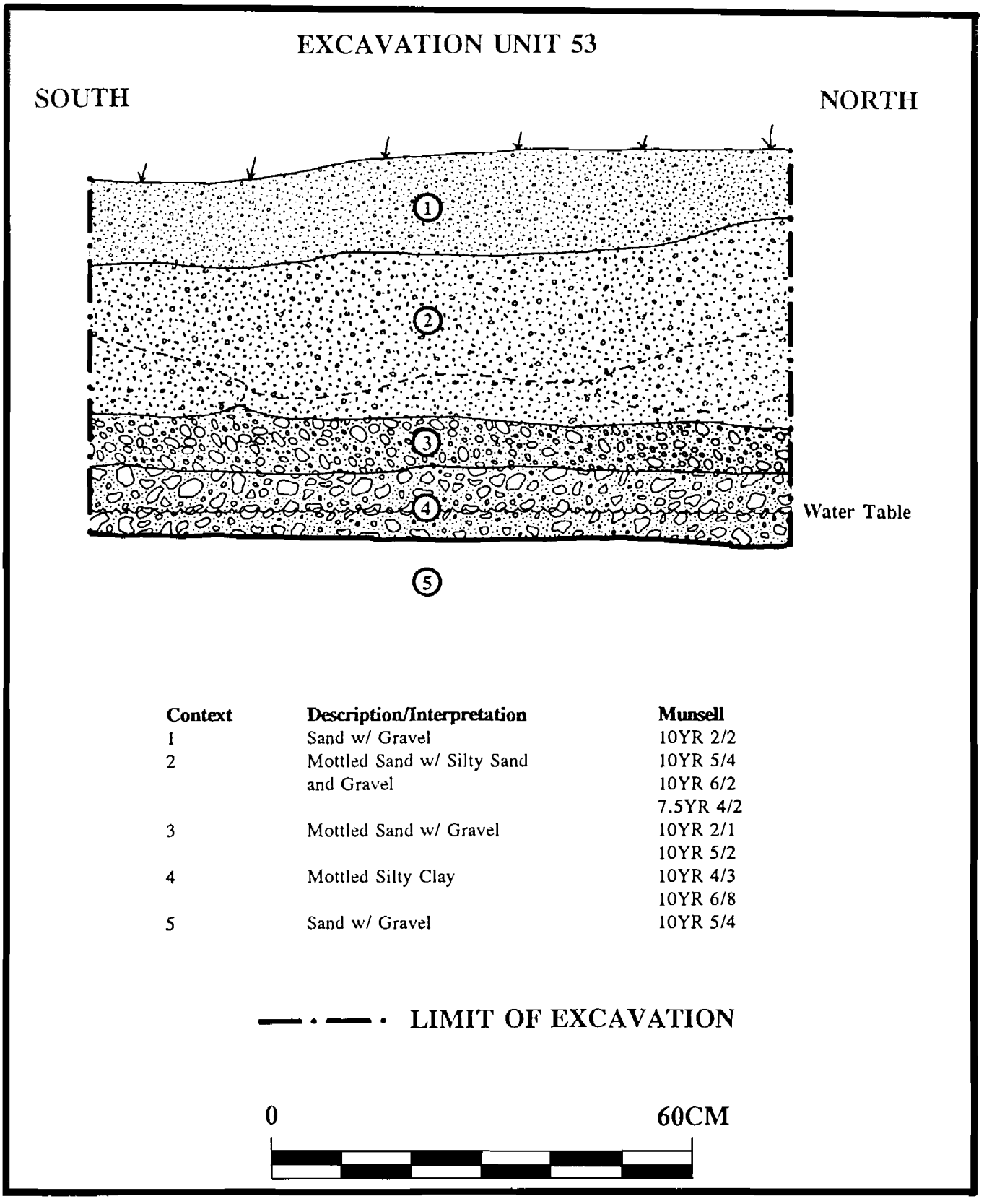


Plate 7.7. Area B - Puncheon Run Site [7K-C-51], Locus 4, Excavation Unit 53: view of west wall profile; note the perched water table present in the bottom of the unit (Photographer: Adam Cerny, May 1995) [HRI Neg. 95015/19-34].



Context	Description/Interpretation	Munsell
1	Sand w/ Gravel	10YR 2/2
2	Mottled Sand w/ Silty Sand and Gravel	10YR 5/4 10YR 6/2 7.5YR 4/2
3	Mottled Sand w/ Gravel	10YR 2/1 10YR 5/2
4	Mottled Silty Clay	10YR 4/3 10YR 6/8
5	Sand w/ Gravel	10YR 5/4

Figure 7.11. Puncheon Run Site, Locus 4 (Island) - Excavation Unit 53, West Profile, Showing Fluvial Deposits.

4. Locus 4 (Island):

Locus 4 is located on a small, lightly wooded island in the middle of the St. Jones River between stations 394+25 and 396+50 (Figure 7.10). Most of the island has either been subjected to riverine erosion or is covered with silt and muck deposits. The limits of the activity area, as defined by archaeological field testing and current land constraints, broadly coincide with the limits of the upland portion of the island.

During the Phase I field investigations, two shovel tests (ST#s 311 and 312) produced a number of thermally-fractured rock fragments and two tested cobbles for use in lithic reduction. A small hearth feature partially visible on the surface was recorded and left *in situ*. The Phase II field investigations involved the excavation of two one-meter-square excavation units (EU#s 52 and 53), which were located within the site limits. Excavation Unit 53 was placed over the exposed hearth (Plate 7.7). Modern historic artifacts were immediately recovered indicating a recent association and short term occupation of the area, probably a camp fire. Further excavations demonstrated that the depositional layers of sediments are alluvial and are subjected to constant riverine erosion (Figure 7.11).

A total of 81 artifacts were recovered from this Locus 4. Artifacts from these deposits may have been transported, both horizontally and vertically to this location by natural means and therefore retain little or no archaeological integrity. Fractured cobbles recovered during the Phase I field investigations could conceivably have been broken by river action during times of rapid flow. The individual layers are well sorted, thus demonstrating differences in the rate of velocity of flow.

C. Evaluation Of Significance

On the basis of the Phase I and II archaeological field investigations and preliminary geomorphological analysis conducted to date, the Puncheon Run Site [7K-C-51] is considered eligible for inclusion in the National Register of Historic Places under Criterion D as an archaeological resource that has the potential to yield information important in local and regional prehistory. The site is characterized by a cultural stratigraphic sequence which appears to be contained within a well-preserved and potentially informative soil profile. The archaeological record has so far shown evidence of occupation as seen in the multiple pit features (which are tentatively interpreted as "pit houses") and an abundance of lithic and ceramic artifacts. This occupation appears to have occurred predominantly in the Woodland I period (*circa* 3,000 B.C. to 1000 A.D.) and is dominated by artifacts from the Barker's Landing (*circa* 3,000 B.C. to 500 B.C.) and Delmarva Adena (*circa* 500 B.C. to 0 A.D.) complexes. There are also traces of both earlier Archaic and later Woodland II period activity.

In the broader regional context, the Puncheon Run Site is one of a series of expansive Woodland I sites ranged along the St. Jones River and adjoining drainages, a number of which -- the Island Farm Site, the Carey Farm Site, the Pollack Site and the Leipsic Site -- have been the subject of large-scale excavations. Detailed consideration of the soils and botanical evidence at the Puncheon Run Site may also permit reconstruction of the environment within which ancient Native American communities lived in this part of Delaware. Taken together with the Hickory Bluff Site, Puncheon Run is seen as a significant archaeological resource within a regional context and is capable of shedding further light on Native American settlement and subsistence patterns in the Delmarva peninsula.

D. Assessment of Impact

The Puncheon Run Site [7K-C-51] covers the entire area of the proposed project corridor from the unnamed island in the middle of the St. Jones River west to South State Street. Displaced archaeological materials lie within the plowzone throughout this area, while intact resources, including features, are preserved below this level in four specific loci within the broader site limits. Project plans show that construction of the current route of the Puncheon Run Connector and related drainage facilities will pass directly through the middle of the Puncheon Run Site. This action will constitute an adverse effect on parts of this significant archaeological resource, notably within the four delineated loci. Related construction activity (e.g., movement of equipment, deposition of fill) may also pose a threat to other portions of the site adjoining the project corridor to the north and south.

E. Recommendations

Since the Puncheon Run Site [7K-C-51] is a significant archaeological resource lying directly within the path of the proposed Puncheon Run Connector alignment, and planning for this highway link is at an advanced stage, avoidance of this resource through relaignment of the highway is unlikely to be a practical option. In view of the widespread archaeological evidence of dense prehistoric occupation within the project corridor and the immediately surrounding area, almost any route is likely to impact other significant resources. The planned road alignment is strongly constrained by topography; any alignment adjustments could only be minor and would in any case probably continue to affect the site. Engineering solutions, such as raising the elevation of the road on piers rather than building it at grade, could perhaps be considered, but are likely to considerably increase the cost of construction and would still have an effect on archaeological resources. In this instance, a program of archaeological data recovery through excavation would appear to be the most appropriate means of mitigating the effects of the proposed highway construction.