ARCHEOLOGICAL INVESTIGATION AT THE VAUGHN SITE (33CU65)

CUYAHOGA VALLEY NATIONAL RECREATION AREA

by

James M. Zalesky

Midwest Archeological Center
Occasional Studies in Anthropology
No. 18

Series Editor

F. A. Calabrese

United States Department of the Interior
National Park Service
Midwest Archeological Center
Lincoln, Nebraska

1986

TABLE OF CONTENTS

Abstract iii

Acknowledgements iv

List of Figures v

List of Tables vii

Introduction 1

Land Use 1

Environmental Background 9

Geology 9

Soils 9

Climate 10

Vegetation 10

Fauna 11

Cultural Background 12

Prior Investigations 15

Project Objectives 18

Field Methods 20

Laboratory Methods 24

Prehistoric Artifacts 24

Lithic Materials 24

Ceramic Materials 24

Historic Artifacts 24

Results 29

Site Stratigraphy 29

Features 34
Material Culture 48
Historic Materials 48
Faunal Remains 48
Floral Remains 51
Prehistoric Materials 52
Lithic Materials 52
Ceramic Materials 62
Dating Results 70
Discussion of Dates 72
Discussion and Conclusions 76
Summary, Recommendations and Evaluation 80
Project Redesign and Site Protection 80
Recommendations 80
Site Significance 80
References Cited 82
Appendix A. Faunal Remains Recovered from 33CU65 by Susan Monk 87
Appendix B. Analysis of Paleoethnobotanical Remains from the Jaite Sewer Site (33CU65) by Eric E. Voigt 90

ABSTRACT

Archeological testing was conducted at Cuyahoga Valley National Recreation Area in November 1983 in conjunction with a proposed sewage leachfield near park headquarters. A multi-component Archaic to Late Woodland archeological site (33Cu65) was located in the proposed construction area. Despite disturbance from recent historic land use practices, the site exhibits considerable contextural integrity. Subsurface testing exposed 10 distinct prehistoric features and an extensive midden deposit. Lithic and ceramic artifacts and floral and faunal remains were also recovered. The site's material culture, age and significance are discussed in this report, and recommendations for site management are outlined.

ACKNOWLEDGEMENTS

Several individuals contributed to the successful completion of this project.

Personnel participating in the field work portion of this project included Herb Beamer, Julie Guda, Jeffrey Richner, Colleen Vaughn and James Zalesky. Assistance during laboratory analysis was provided by Randall Farmer, William Hunt, Chris Riddle, and Chris Schoen. Expertise in the analysis of the faunal and floral remains was provided by Susan Monk (fauna) and Eric Voigt (flora).

The support and assistance of Superintendent Lewis Albert and the entire Cuyahoga Valley National Recreation Area staff are appreciated. Of special mention are staff members Steve Elkington - landscape architect, Chet Hamilton - historian, Bob Martin - assistant superintendent, Kevin Cann - head of maintenance and John R. Rhodes - backhoe operator whose special assistance allowed the project to proceed with minimal delay.

Consultation with Dr. David Brose and Stephanie Belovich of the Cleveland Museum of Natural History provided insights into the local prehistory. Joseph Jesensky provided maps and information about prior work at the site.

The drafted figures were prepared by Nancy Hartman and Debra McBride. Photographic plates were prepared by Debra McBride. Thanks go to Dr. Mark Lynott and the entire staff of the Midwest Archeological Center for providing the necessary support during all phases of this study.

Special thanks go to Jeffrey Richner for his editorial oversight and numerous suggestions which guided the project to its completion. Any shortcomings in the report are the responsibility of the author.

LIST OF FIGURES

1. Cuyahoga Valley National Recreation Area with location of sites discussed in text 2

2. Cuyahoga Valley National Recreation Area Park Headquarters 3

3. Sketch map of 33CU65 by Joseph Jesensky, ca. 1953 . . 4

4. 1951 Aerial photograph of the Vaughn Farm and the Vaughn Site prior to ground disturbance 5

5. Enlargement of Northfield, Ohio, 1965 Quad Map 6

6. 1981 Aerial photograph of the Jaite area, showing dump trucks at the site 7

7. Prehistoric site locations in the Jaite area 16

8. Drawing of Welling photo showing extent of soil stripping. View to southwest from east side of knoll. Cut bank profile 9.5 feet in height 17

9. Initial and revised location of leachfield 19

10. Excavation units and backhoe trenches at 33CU65 . . . 21

11. Excavation units, backhoe trenches and shovel test units 23

12. South wall profile of Excavation Unit 1 30

13. South wall profile of Excavation Unit 4 31

14. East wall profile of Excavation Unit 1 32

15a. Profile of Backhoe Trench A 35

15b. Profile of Backhoe Trench A (continued) 36

15c. Profile of Backhoe Trench A (continued) 37

15d. Profile of Backhoe Trench A (continued) 38

16. Profile Backhoe Trench B 39

17. East wall profile of Feature 1 40

18. Floor plan of Excavation Units 5 and 6 at level 3, showing relationship of Features 1, 1B 42

19. Profile of Feature 5 44

20. Plan View of Backhoe Trench B, showing soil bulk and Features 4 and 5B 45

21. Feature 8, Backhoe Trench A 47

22. Distribution of flake lengths at 33CU65, Cuyahoga Valley National Recreation Area 57

23. Lithic artifacts from 33CU65 58

24. Lithic artifacts from 33CU65 61

25. Prehistoric ceramic vessels from 33CU65 63

26. Prehistoric ceramic vessels from 33CU65 66

27. Prehistoric ceramic vessels from 33CU65 68

28. Location of dating samples and excavation units in Feature 1 71

29. Location of thermoluminescence sample taken from Feature 4 73

30. Dating results from the Vaughn Site (33CU65) Cuyahoga Valley National Recreation Area, November 1983 75

31. Radiocarbon and thermoluminescence dates from the Vaughn Site (33CU65) and other nearby sites. Cuyahoga Valley National Recreation Area, Ohio . . . 77

List of Tables

1. Revised chronological phases within the Whittlesey Focus (Brose 1976, 1980, 2984, 1984a) 14

2. Lithic attributes and definitions 25

3. Prehistoric ceramic terminology and attributes 27

4. Soil chemistry from samples collected at the Vaughn Site (33CU65), Cuyahoga Valley National Recreation Area, November 1983 33

5. Particle size analysis of soil samples collected at the Vaughn Site (33CU65), Cuyahoga Valley National Recreation Area, November 1983 33

6. Provenience of historic artifacts from the Vaughn Site (33CU65), Cuyahoga Valley National Recreation Area, November 1983 49

7. Provenience of lithic artifacts from 33CU65 53

8. Provenience of minimum number of ceramic vessels represented at 33CU65 53

9. Raw material types of diagnostic debris by provenience, 33CU65, November 1983 54

10. Characteristics of diagnostic lithic debris at 33CU65 55

11. Chipped and pecked stone tools 59

12. Temper and surface treatment of prehistoric ceramics from the Vaughn Site (33CU65) 70

INTRODUCTION

This report is a summary of archeological work performed within the Cuyahoga Valley National Recreation Area (CUVA) (Figure 1) between October 31 and November 4,1983. The project involved archeological survey of a proposed sewage leachfield on a remnant river terrace located northeast of CUVA park headquarters (Figure 2). Prior to the project a Late Woodland site (33CU65) had been recorded in the area. Investigation by Midwest Archeological Center staff revealed considerable ground disturbance on the side slopes of the terrace but cultural features remained intact on top of the terrace. Limited testing and three backhoe trenches provided information on site integrity and stratigraphy. One feature was totally excavated and provides the bulk of the material analyzed in the following report.

Land Use

The Vaughn Site (33CU65) has had a varied land use history. Details are sketchy but records show that the land was previously owned by the Vaughn family (Chet Hamilton, personal communication 1983). The scope of their farming activities is unclear but areas in the bottomland to the north and east and the eastern portion of the terrace were probably cultivated. Amateur archeologists from the area report finding projectile points and other artifacts in the Vaughn's garden area (Joseph Jesensky, personal communication 1983a). The farmstead consisted of a residence and a large barn. Some smaller outbuildings were probably also present. The locations of the house and barn are shown on a 1953 sketch map compiled by Joseph Jesensky (Figure 3), a 1951 air photo (Figure 4) and on the 1965 Northfield, Ohio 7.5 min U.S.G.S. topographic map of the area (Figure 5). A comparison of the two maps reveals the extent to which the original landform has been modified. The buildings shown on the topographic map are no longer extant. The terrace surface has been altered by soil stripping activities by the Vaughn family over its entire surface, with the greatest disturbance in the areas between the previous residence and the railroad tracks and in the area east of the barn. (Figures 2,3,4). Upwards of 9.5 feet (3 meters) of soil have been removed from this eastern area, along with a number of prehistoric burials, during soil stripping operations circa 1957-1958 (Jesensky 1983).

Topsoil stripping has been widespread in several areas on the Cuyahoga River floodplain now included within CUVA (Brose 1981). In many cases, several feet of high quality topsoil were removed for fill and landscaping purposes. The borrow areas were sometimes filled with low grade fill material consisting of waste soils from construction sites, fragmented rock material, and foundary sand waste (NPS 1976:13).

Prior to Park Service aquisition of the property, the terrace was used as a staging area and parking lot for dump trucks associated with a nearby sand and gravel operation (Figure 6). A

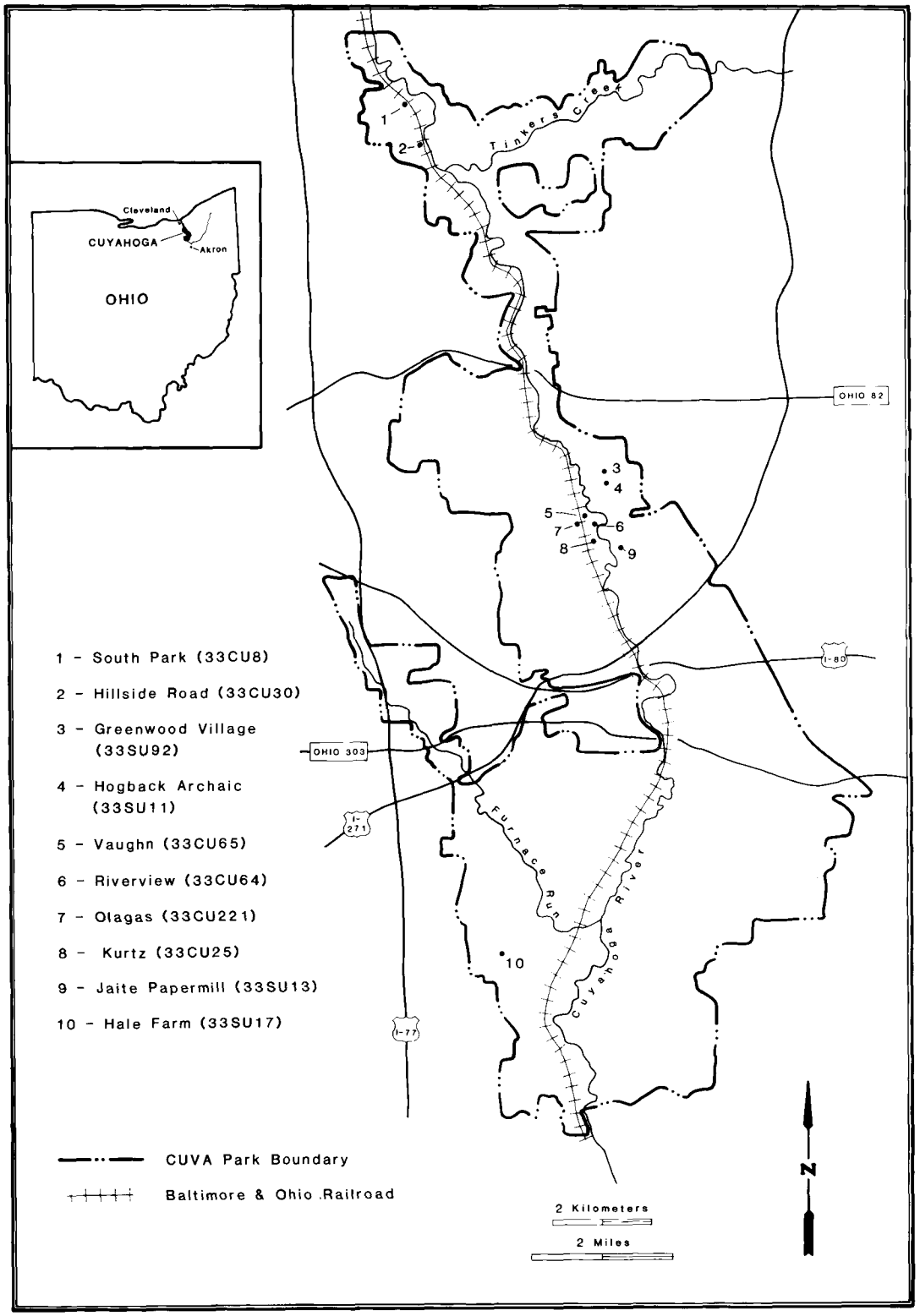


Figure 1. Cuyahoga Valley National Recreation Area with location of sites discussed in text.

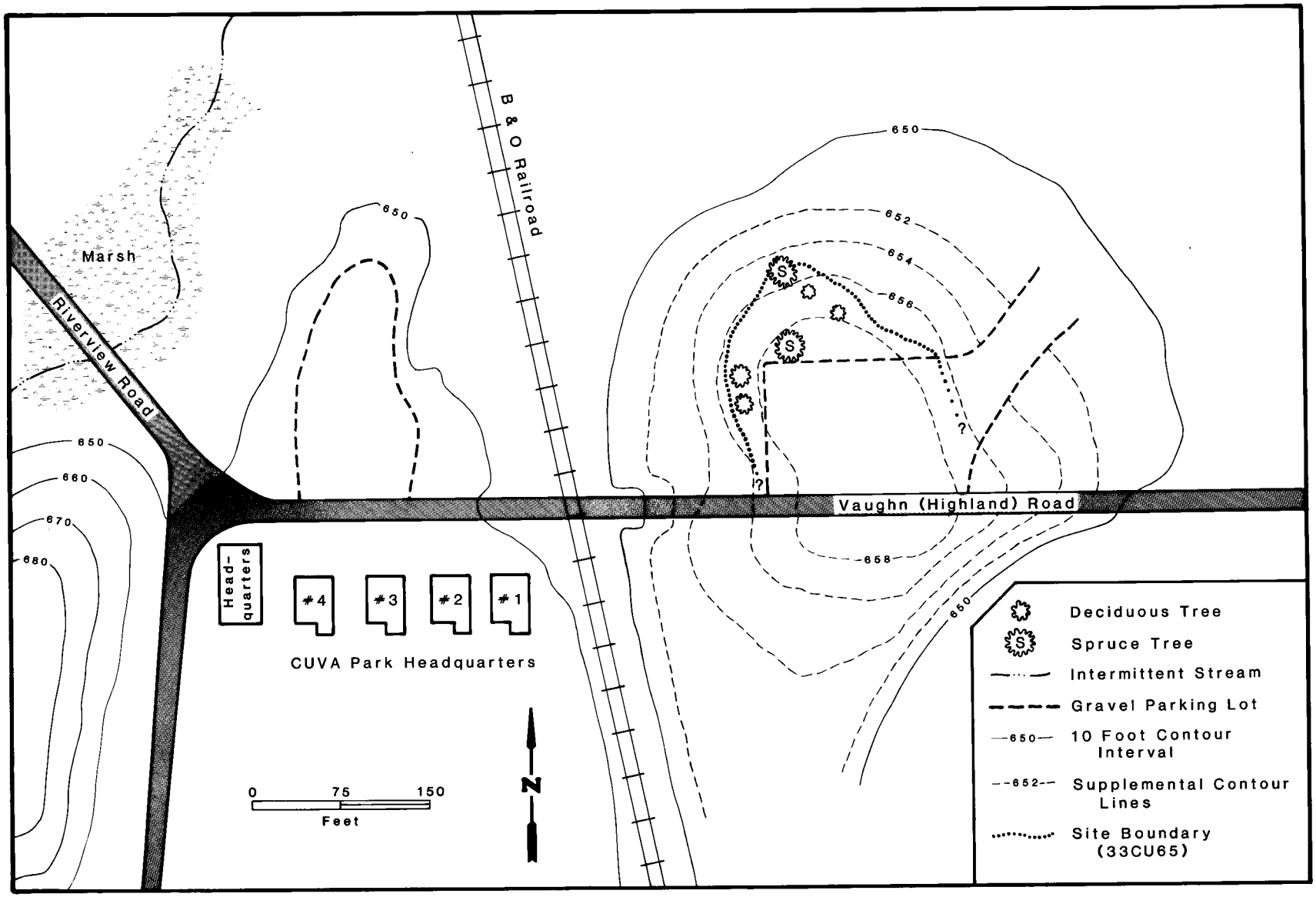


Figure 2. Vicinity of CUVA Park Headquarters.

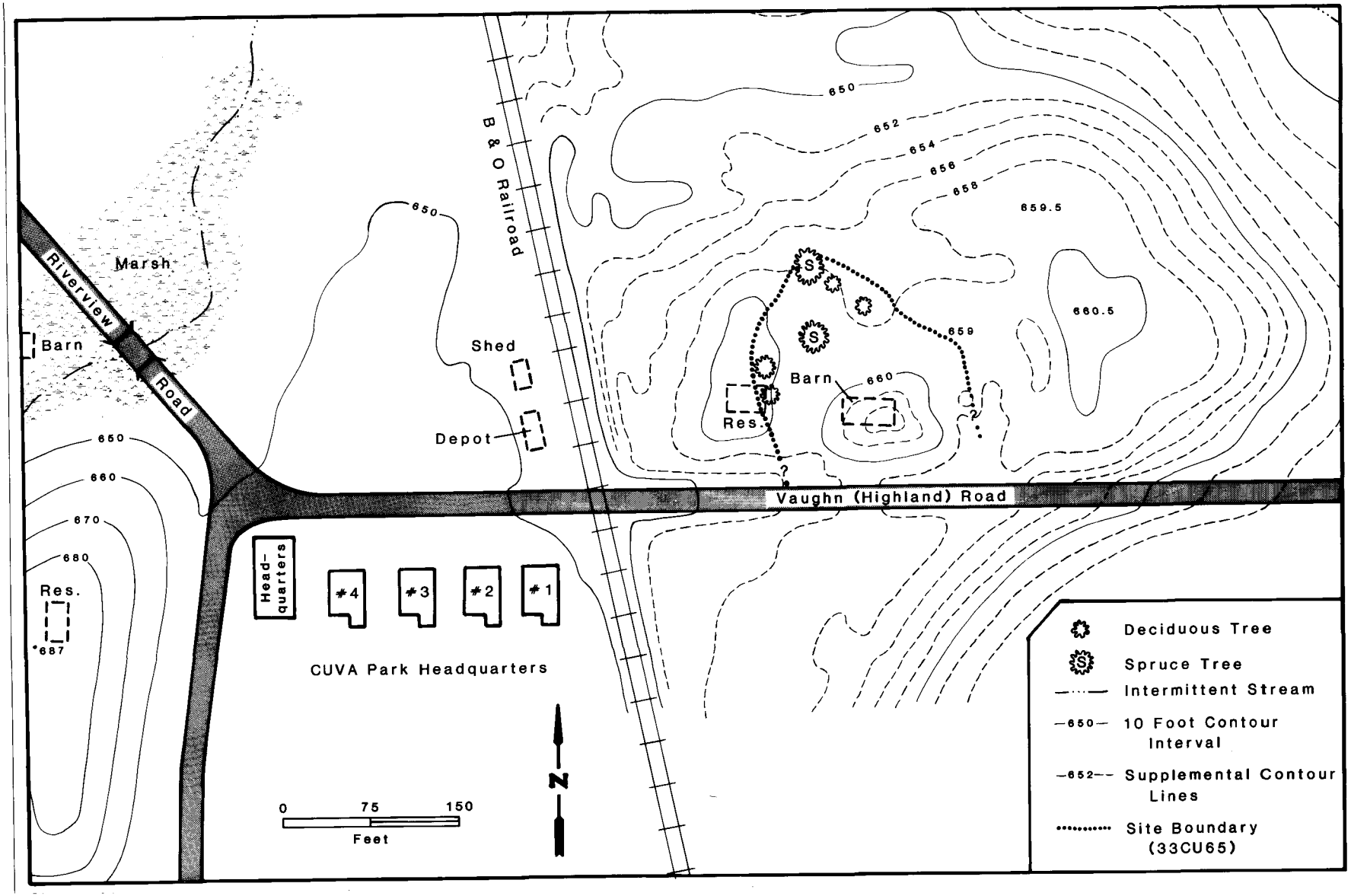


Figure 3. Sketch map of 33CU65 by Joseph Jesensky, ca. 1953.

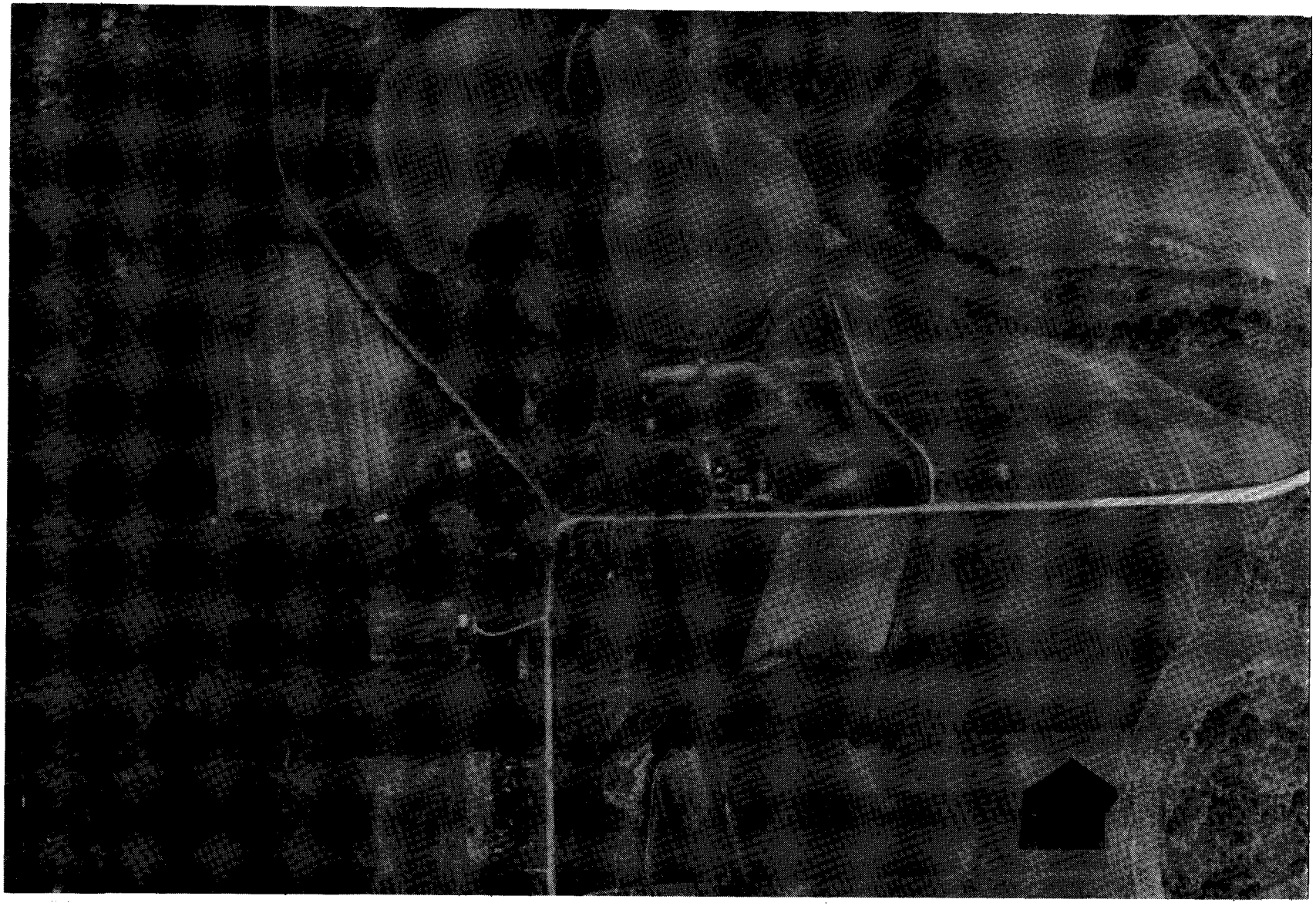


Figure 4. 1951 aerial photograph of the Vaughn Farm and the Vaughn Site prior to ground disturbance.

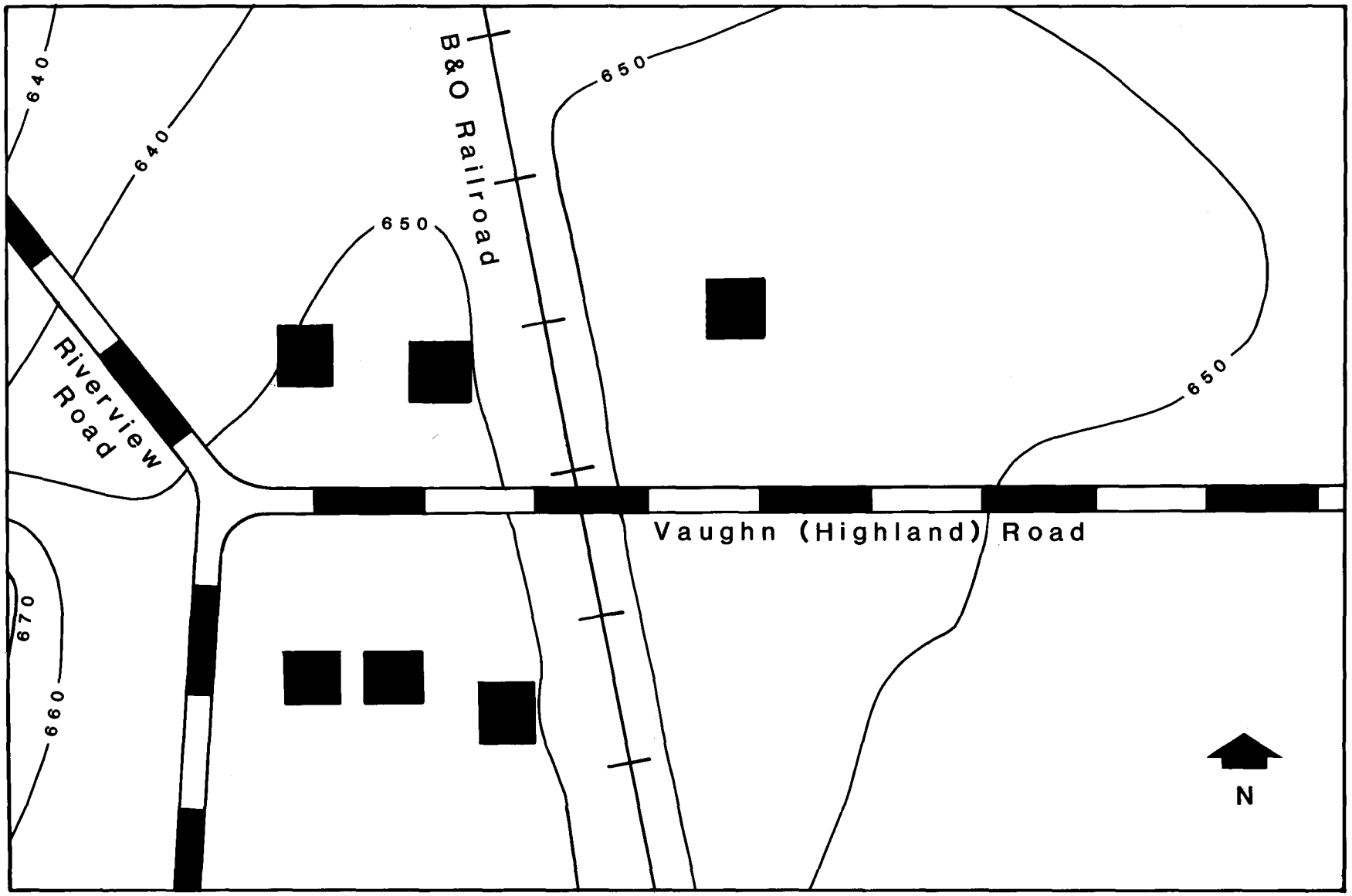


Figure 5. Enlargement of Northfield, Ohio, 1965 Quad Map.

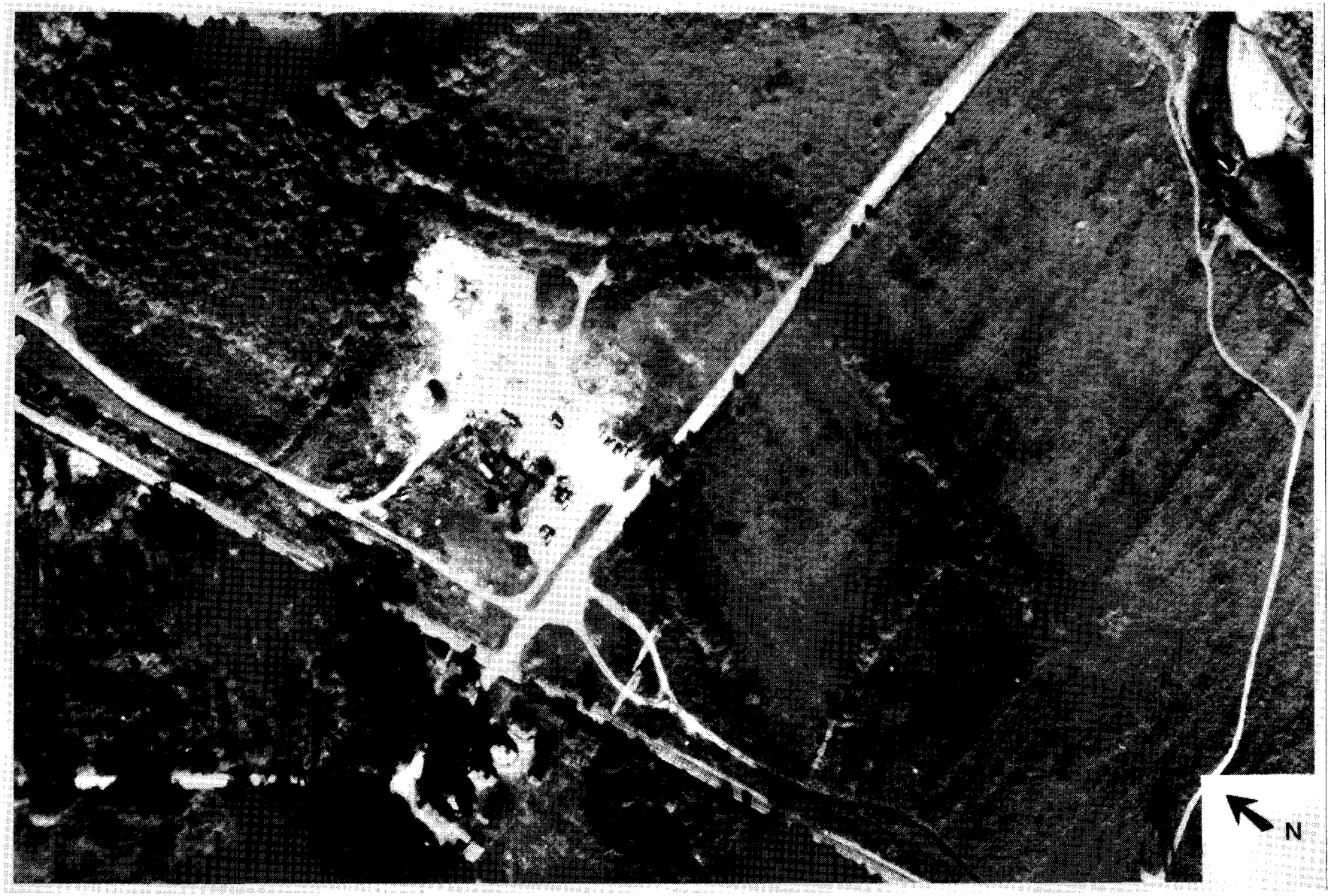


Figure 6. 1981 aerial photograph of the Jaite area, showing dump trucks at the site.

gravel parking lot is all that remains from this use. The location is presently used for overflow parking from the nearby CUVA park headquarters.

ENVIRONMENTAL BACKGROUND

Geology

The Cuyahoga Valley National Recreation Area is characterized by a rolling to rough topography, which borders the Cuyahoga River, and which is frequently cut by steep ravines.

The area is situated on the western edge of the glaciated Appalachia Plateau, a physiographic province with broad north-south trending, buried Paleozoic river valleys filled by glacial deposits (Brose 1976:25). The plateau consists of sandstone and shale bedrock overlain with varying depths of glacial sediments.

The region was covered with ice during several glacial stages, the last being the Wisconsin which ended ca. 14,000 years B.P. Drainages to the north were periodically blocked by end moraines which resulted in the formation of shallow lakes which drained to the south. The present channel of the Cuyahoga River is the result of downcutting through the last end moraine (Wabash) which allowed the Cuyahoga to subsequently flow northward into Lake Erie. Major portions of the Cuyahoga valley fill north of Akron are the result of these proglacial lake sediments.

The fluvial systems in this area are characterized as a pattern of intersecting headwaters of multiple stream systems. There is frequently considerable variation in valley morphology within short segments of the stream system. This difference in morphology combined with microenvironmental factors of slope aspect, precipitation, and altitude result in significant variation within localized areas. These factors result in perhaps the most highly mosaic of all the ecosystems within this portion of the Lake Erie drainage basin and would have provided prehistoric populations a wide range of options in terms of resource exploitation (Brose 1980:4-5).

Soils

Soils in the area are derived from a variety of sources. Upland soils formed in the sands and gravels of the Late Wisconsin age Hiram till (Hall 1981:408). Along the steep valley walls, soils consist of poorly consolidated shales and clays. There are also soils along the lower footslopes and higher terraces that reflect the proglacial lake plain. These consist of dry sandy soils in areas of old beach ridges and sandy silt loams elsewhere (Brose et al. 1981:8). The valley floor is composed of reworked stream sediments, loams, and sandy silt loams which are among the more productive agricultural lands in northeast Ohio.

More specifically, soils on the valley floor are part of the Chagrin-Tioga-Euclid soil association (Musgrave and Holloran 1980:8). These are deep soils formed in alluvium on floodplains and in stratified deposits on low stream terraces. Well drained Chagrin soils occupy the highest positions on the floodplains and

are only occasionally flooded. Tioga soils occupy slightly lower elevations than Chagrin soils and are subject to frequent flooding. Poorly drained Euclid soils occupy broad, low stream terraces at elevations above the Chagrin soils and are subject to only rare flooding.

The terrace containing the Vaughn Site is mapped as Tioga Varient loam and Udorthents, loamy (Musgrave and Holloran 1980:Sheet 57). The Tioga Varient loam is a minor soil in the Chagrin-Tioga-Euclid association. As mapped this soil is found on the peninsular terrace north of Vaughn Road, across from CUVA park headquarters, and south of Vaughn Road and east of the Baltimore & Ohio Railroad tracks. The northern end of the landform, where 33Cu65 is located, is mapped as Udorthents, loamy. These Udorthents, found in areas of cut or fill, reflect the 20th century land use practices at the Vaughn Site, rather than the original soil profile. Because the eastern portion of the terrace is in all probability the same geomorphic landform as the western portion, the soil present during prehistoric occupation was probably the Tioga Varient loam. The bottomland separating the terrace from the river to the north and east is composed of Chagrin silt loam while the slightly lower area to the south is mapped as Orrville silt loam (Musgrave and Holloran 1980:Sheet 57).

Climate

The park area has had a fairly uniform climate since 1200 A.D. (Gordon 1969:35). The basic climate statistics for this portion of northern Ohio have been presented elsewhere (Brose et al. 1981:Table 2). Generally the climate would have been favorable for prehistoric agricultural pursuits. Not only were there more than enough frost-free days for primitive maize cultivation; but the average summer precipitation even in the driest years appears to have been adequate (Brose 1976:26) to support native cultigens.

Vegetation

Vegetation has undergone a drastic change since the last stages of glaciation in the area. Succession moved quickly from the initial grasses and tundra conditions to a boreal forest habitat and finally to one of practically a continuous deciduous forest canopy (Belovich and Brose 1982:2-3). Prior to Euro-American entry into the area, the forest can be divided into three basic communities within a broader classification of mixed mesophytic forest (Shelford 1963; Braun 1950). The forest in the highlands to the west of the Cuyahoga valley was composed of Oak-Hickory-Chestnut communities. The greater portion of the eastern highlands and the lower slopes consisted of the Beech-Sugar Maple climax forest. The typical bottomland forest would have been Elm-Ash communities with willows and cottonwoods in the wetter locations. Relict communities of hemlock and pines existed along the cool damp ravines of small streams (Williams 1949).

Fauna

It is difficult to reconstruct the details of the pre-contact distribution of animal species for this region. From early pioneer journals and autobiographies it is possible to enumerate those terrestrial species common within the region where Tinkers Creek drains into the Cuyahoga River (Brose et al. 1981:12). A summary statement of representative species and their preferred habitat can be found in Brose et al.(1981:Table 3). Cleland (1966) presents a detailed and extensive discussion of prehistoric animal ecology derived from archeological data collected within the Great Lakes region. From these two sources it can be concluded that white-tailed deer were probably the most common large mammal. Evidence for elk, black bear, rabbit, oppossum, beaver, raccoon and muskrat is demonstrated. Also exploited were avian fauna including wild turkey, bobwhite quail, mallard and black duck as well as several species of pond ducks and geese (Cleland 1966). Some of the species of fish known to have been exploited are fresh water gar, pike, shad, lake sturgeon, catfish, bass and drum (Belovich and Brose 1982:4). Turtle has also been reported from archeological contexts.

CULTURAL BACKGROUND

The following is a brief overview of the prehistoric occupation in the region comprising the Cuyahoga Valley National Recreation Area. Those wishing a more detailed analysis are urged to consult Brose et al. (1981:106-160).

In the area of northeastern Ohio initial occupation during the Paleo-Indian period (ca. 6000 B.C. to 12,000 B.C.) commenced with the melting of the last glaciation and the subsequent draining of a series of pro-glacial lakes. Evidence for occupation is limited to scattered surface finds of projectile points characteristic of the time period. The distribution of the points indicates that the early mobile hunting-gathering bands utilized the Lake Erie beaches and nearby tributary river valleys as well as the uplands for their subsistence activities. No campsites of this period are presently documented in Ohio (Brose et al. 1981:108).

Information concerning the following Archaic period (ca. 800 B.C. to 6000 B.C.) is a little better developed. The period is roughly divided into Early, Middle, and Late segments with no clearcut temporal boundaries. The Early Archaic is characterized by a growing population that relied increasingly on seasonally scheduled hunting and gathering activities. Groups adapted to the beginnings of what has become the modern eco-system in the Eastern Woodlands. Sites show indications of diverse lithic "styles" within single components. Projectile points typologically assignable to this period have been found on the fossil Lake Erie beach ridges and on secondary tributary terraces in many sections of the park area (Brose et al.1981:120).

By the Middle Archaic, larger, more sedentary populations emerged. Two types of sites are identified within the region. Larger multi-family base camps are associated with small specialized, single-purpose economic activity sites. An increase in the technological inventory is also noted. Ground and polished stone axes and celts appear along with grinding implements. Toward the end of the period cold-hammered copper implements become part of the prehistoric inventory.

The Late Archaic period reflects a continuation of trends which began earlier in the period. Lithic inventories are characterized by a wide variety of stylistic variation in functional tool types and projectile points. Several types of functionally differing Late Archaic sites have been identified in the CUVA region (Brose et al.1981:132). These include gravel knoll burial locations along floodplain edge terraces, seasonal multi-family campsites located on upland bluffs overlooking secondary stream junctions (along broader sections of the Cuyahoga floodplain), and small hunting and special purpose activity sites in the uplands bordering the major stream valleys.

One stratified Archaic site has been excavated within the CUVA (Brose 1975:293-305). Recent work at the nearby Greenwood Village Site (33SU92), approximately 1.2 km northeast of 33CU65, has also

revealed Early and Late Archaic components at a predominately Late Woodland occupation location (Belovich and Brose 1983). Brose (et al. 1981: Table 17) lists sites within the park identified as having Archaic components.

The Early Woodland period (ca.800 B.C.to 100 B.C.) is represented by some local Adena cultural manifestations. A crude but highly decorated pottery appears for the first time in the region. Subsistence activities are not well known but the presence of squash/pumpkin seeds and maize indicate the beginnings of horticulture. Burial mounds are also associated with this period. The limited extent of Early Woodland sites in the area has been noted (Brose et al.1981: Table 17).

The Middle Woodland period (ca. 100 B.C.to A.D. 500) represents a continuation of tendencies developed in the prior period. No earthworks similar to these at Hopewellian sites in southcentral Ohio are present within the park region but Hopewellian projectile points, flint blade knives, and ceramics have been found at numerous local sites (Brose et al.1981:134). Several conical burial mounds have been reported from within park boundaries but no controlled or documented excavation has been undertaken.

The Late Woodland period from A.D. 500 to A.D.800-900 is poorly known in the CUVA and is transitional between the Middle Woodland and the more substantial Late Prehistoric developments of the following Whittlesey cultural complex. A list of Middle and Late Woodland sites located within park boundaries is presented in Brose et al.1981: Table 17.

The Late Prehistoric (A.D.800 to A.D.1600) period has been intensively studied and is the best understood of the prehistoric periods in the CUVA (Brose 1973,1976,1980,1984; Brose et al.1981; Brose et al. n.d.; Pratt 1979; Pratt and Brose 1976; Belovich and Brose 1983). The cultural manifestations of this period were initially described as the Whittlesey Focus by Greenman (1937) after Charles Whittlesey who had surveyed and published on sites in northern Ohio in the nineteenth century (Fitting 1964:160). Recently the Focus has been subdivided into phases (see Table 1) determined to a great extent by ceramic and lithic stylistic changes (Brose 1973, 1976; Murphy 1971a, 1971b; Brose and Scarry 1976), with some secondary support provided by a few radiocarbon dates. The present alignment of phases is based upon a reanalysis of lithic procurement and reduction strategies (Brose 1978) and the integration of the lithic data with the analysis of ceramic design element associations and motif construction techniques (see Brose et al.1981:137-141 for a more detailed analysis of phase designation). A brief description of the phase designations follows.

The earliest identified phase is designated the Hale Phase and spans ca. A.D.700 to A.D.1100 (David Brose, personal communication 1984a) and can be characterized by a slightly increased dependence on horticulture but continued exploitation

of local resources. The succeeding Riverview Phase ca. A.D.1100 to A.D.1150 is viewed by Brose (personal communication,1984) as being a brief but recognizable period. Represented by several sites in the region, the phase shows an increasing seasonal commitment to horticulture by scheduling spring through fall population aggregates in the alluvial bottomlands (Brose 1980:12; Brose et al.1981143). The Fairport Phase, A.D.1150 to A.D.1350, follows with several noticeable differences from the preceeding phases. Fort Ancient ceramic types, similar to types from southcentral Ohio, appear in assemblages for the first time along with shell tempered ceramics. A clear realignment of the settlement-subsistence patterns (Brose et al.1981:146) also occurs. The Greenwood Phase, A.D.1350 to A.D.1500, does not represent a drastic change from the previous period although Fort Ancient ceramics are rare to absent. There is also evidence for the establishment of large seasonal populations occupying bluff top locations overlooking major stream valleys as well as locations on the floodplain terraces of secondary stream junctions as in the previous phase. Maize-beans-squash horticulture became more important in the subsistence economy. The final South Park Phase, A.D.1500 to A.D.1640, represents the culmination of previous realignments of external stylistic influences and of the settlement-subsistence systems in northeast Ohio (Brose et al.1981:153). There is evidence for year-round occupation of large, fortified agricultural villages located upon promontories overlooking major river valleys. These are associated with small special economic activity sites located on nearby river bluffs. A listing of sites with Whittlesey components is presented in Brose et al.1981: Table 17.

These phase descriptions should not be construed as hard and fast categorical distinctions but rather as a framework for which to better understand the Whittlesey manifestation.

Table 1. Revised chronological phases within the Whittlesey Focus (Brose 1976, 1980, 1984, 1984a).

South Park Phase	A.D.1500 - A.D.1640
Greenwood Phase	A.D.1350 - A.D.1500
Fairport Phase	A.D.1150 - A.D.1350
Riverview Phase	A.D.1100 - A.D.1150
Hale Phase	A.D.700 - A.D.1100

PRIOR INVESTIGATIONS

Prior to Midwest Archeological Center fieldwork at the Vaughn Site (33Cu65) there had been several investigations in the immediate area. Dr. David Brose (Brose et al.1981) had originally investigated the area as part of a probabilistic sampling survey of the Cuyahoga NRA. Further investigations have been undertaken by the Cleveland Museum of Natural History under the direction of David Bush at the Jaite Site (33SU13), a Whittlesey component village site located on the east side of the Cuyahoga floodplain ca. 1 km southeast of the Vaughn Site. Another site, the Riverview Site (33CU64) was tested by students from Cleveland State University, under the direction of Dr. Douglas McKenzie (McKenzie et al. n.d.). This Late Woodland/Whittlesey occupation site is located ca. 400 m due east of the Vaughn Site on a low terrace just south of Highland Road and west of the Cuyahoga River. The Kurtz Site (33Cu25) (Brose et al. n.d.), a low floodplain site similar to the Riverview site, is located just south of the junction of the Jaite Paper Mill railroad spur and the railroad main line. There is some confusion in the literature as to the boundaries of the Riverview and Kurtz sites. In a careful re-reading of McKenzie (et al. n.d.) it is apparent that the boundaries given for the Riverview site circumscribe those given for the Kurtz site (i.e., the Kurtz site is located in the middle field described by McKenzie as part of the Riverview site (Figure 7). Regardless of its spatial definition, cultural materials collected from the Kurtz site indicate Early and Late Woodland components.

Two Archaic sites (33CU221, 33SU100), known from surface collections, are located in proximity to the Vaughn Site. One, 33Cu221, is located on the same landform approximately 200 m to the southwest. The other, 33Su100, the Hogback Archaic Site (Belovich and Brose 1983) is located on a ridge top across the Cuyahoga River valley to the northeast. The multi-component (Archaic, Early and Late Woodland) Greenwood Village Site (33Su92) is located across the river valley ca. 1.2 km to the northeast of Vaughn (Belovich and Brose 1983).

The Vaughn Site (33CU65) was previously known to local amateur archeologists who collected the lowland fields to the north and east of the terrace remnant which held the historic structures from the Vaughn farmstead. Amateurs (Jesensky 1983) have also reported the removal of a large number of prehistoric burials during soil stripping operations (circa 1957 or 1958) in an area to the northeast of the barn (Figure 8). Oral history attributes the burials to the Archaic Glacial Kame culture. However, materials reportedly associated with the burials: pottery pipes, triangular projectile points, grit and shell tempered pottery fragments, a bone comb, charred corn, and a copper effigy piece (Jesensky 1983), cast considerable doubt on the Archaic assignment. There is some indication that archeologists from the University of Illinois participated in salvage work at the site. This was suggested by the inscription "Univ. of Ill." found on a photograph taken during the soil stripping operations which

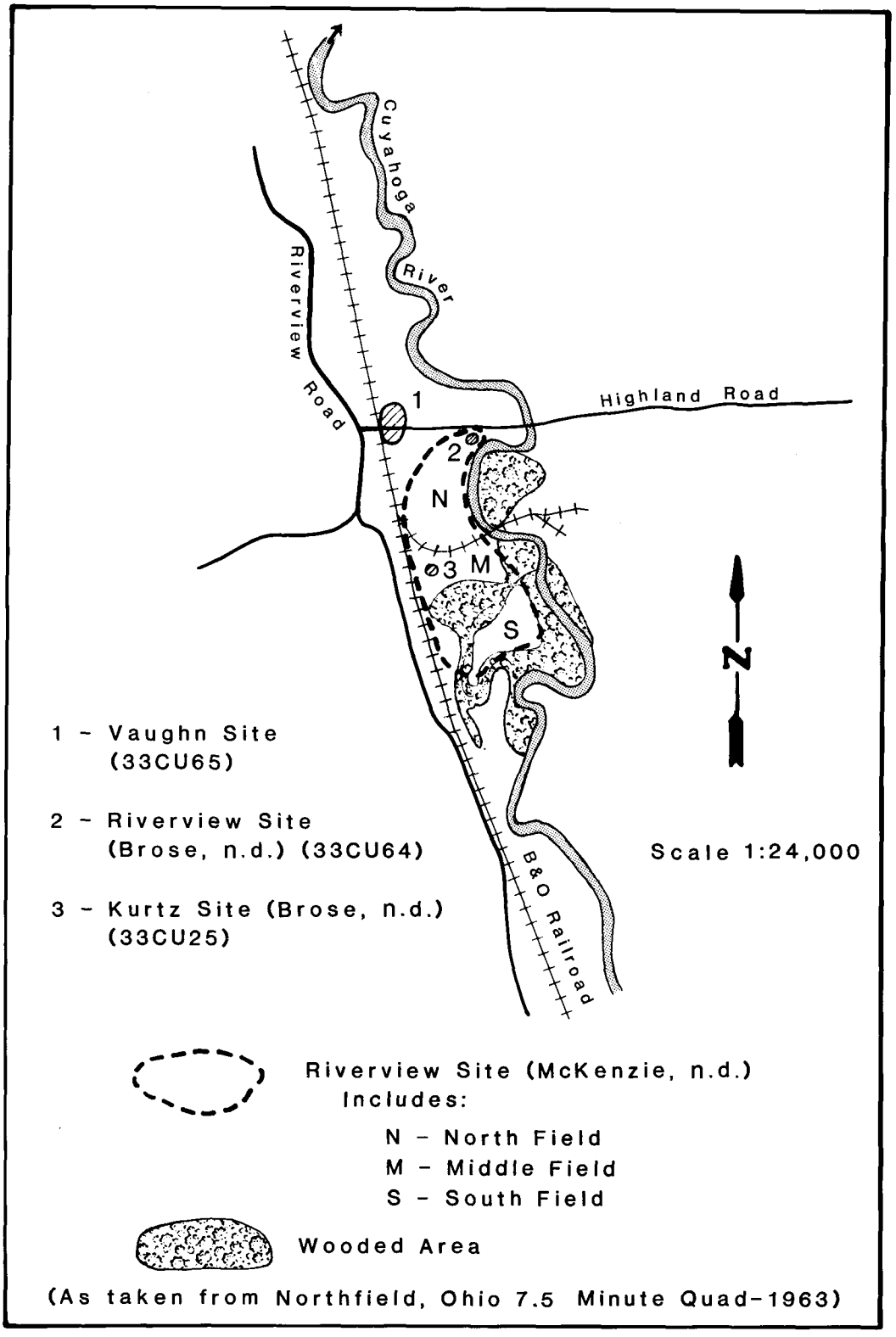


Figure 7. Prehistoric site locations in the Jaite area.

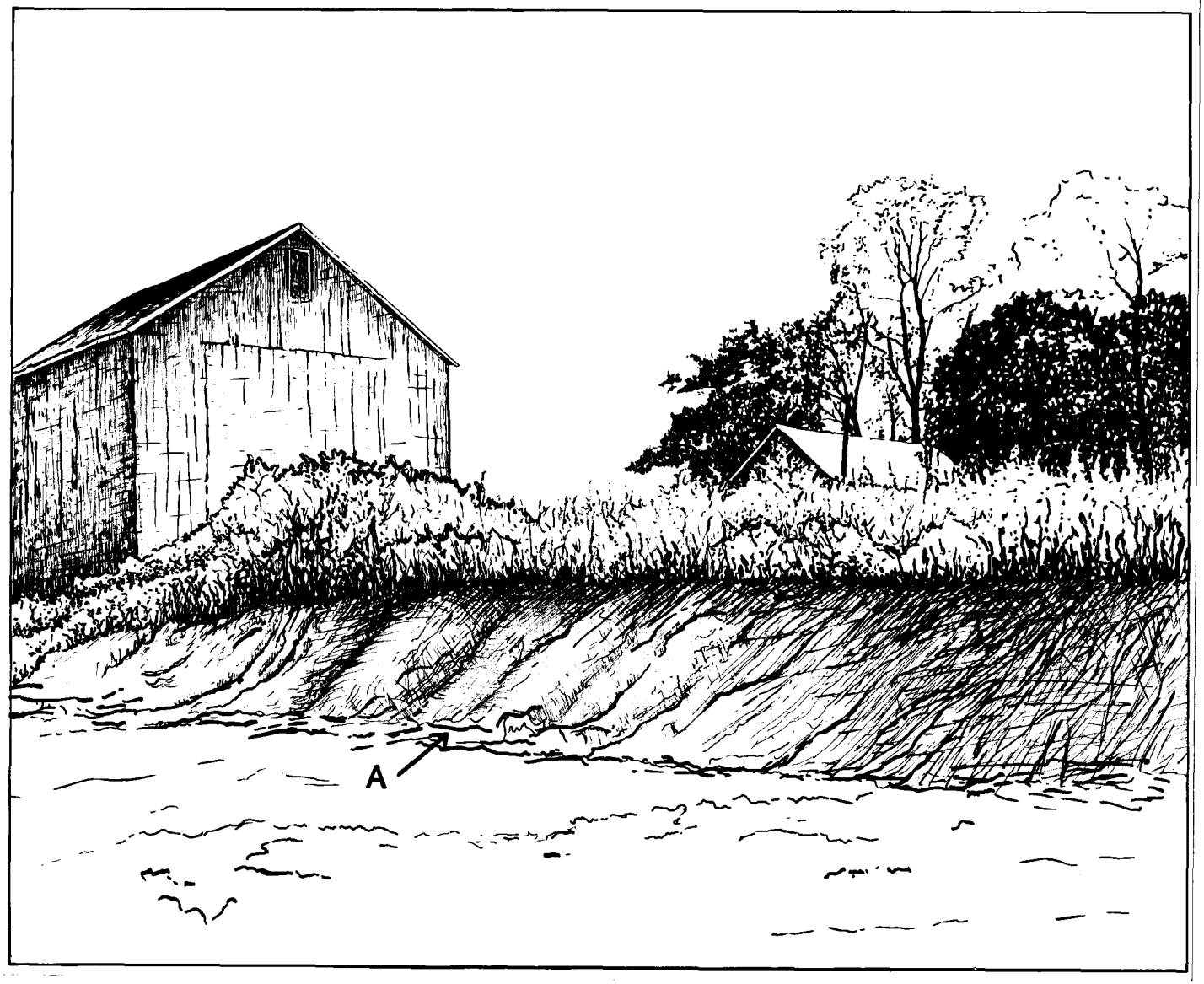


Figure 8. Drawing of Welling photo showing extent of soil stripping. View to southwest from east side of knoll. Cut bank profile 9.5 feet in height.

exposed the numerous burials. However, research at the Department of Anthropology, University of Illinois, has failed to uncover any evidence for such work (Charles Bareis, personal communication 1984).

The Vaughn Site was visited most recently (1979-1980) by staff from the Cleveland Museum of Natural History. The site was recorded as being located in the lowland fields to the north and east of the former Vaughn residence (Stephanie Belovich, personal communication 1984). Lithic tools including scrapers, a drill and triangular projectile points along with prehistoric ceramics and faunal remains were recovered from controlled surface collection and limited shovel testing at the site. Based upon recovered materials, the site was assigned to the Late Woodland period.

PROJECT OBJECTIVES

The early twentieth century mill town of Jaite has recently been adaptively restored for use as the Cuyahoga Valley National Recreation Area administrative complex. Work on the complex of structures is nearly complete, and the National Recreation Area staff is now occupying the buildings. One of the final components of the restoration project was the installation of a modern sewer system (Richner 1983). This system includes a 1000 ft. (320 m) distribution system designed in a semicircular configuration (Figure 9). The proposed location for this leach field distribution system was ca. 300 ft. (100 m) northeast of Jaite structure No.1 on a roughly circular rise that is part of a peninsular river terrace remnant that extends northeastwardly on to the Cuyahoga River floodplain (Figure 2). The distribution system was intended to be buried approximately 4 ft. (1.3 m) deep along the northern edge of the terrace. The remainder of the sewer project consisted of extending sewer lines to each of the Jaite structures.

The area immediately adjacent to the structures was previously surveyed with negative results (Richner 1982), therefore the sewer lines proposed to connect the various structures would have no impact on cultural resources. However, the leach field area had not been previously surveyed, and there were indications that prehistoric archeological materials might occur within the construction zone. Since the construction of the leach field would entail ground disturbance at considerable depth below the present surface, it was felt that traditional archeological surface survey and shovel testing procedures would not be sufficient to determine potential impacts to archeological resources. For that reason, in addition to the presence of a known archeological site (33CU65) in the immediate vicinity, and the reports of buried archeological deposits on the terrace where construction was intended, archeological test excavations were proposed in the leach field area. Test excavations were placed directly within the proposed sewer line route shown on the project drawing (NPS 644/80040A). It was anticipated that several

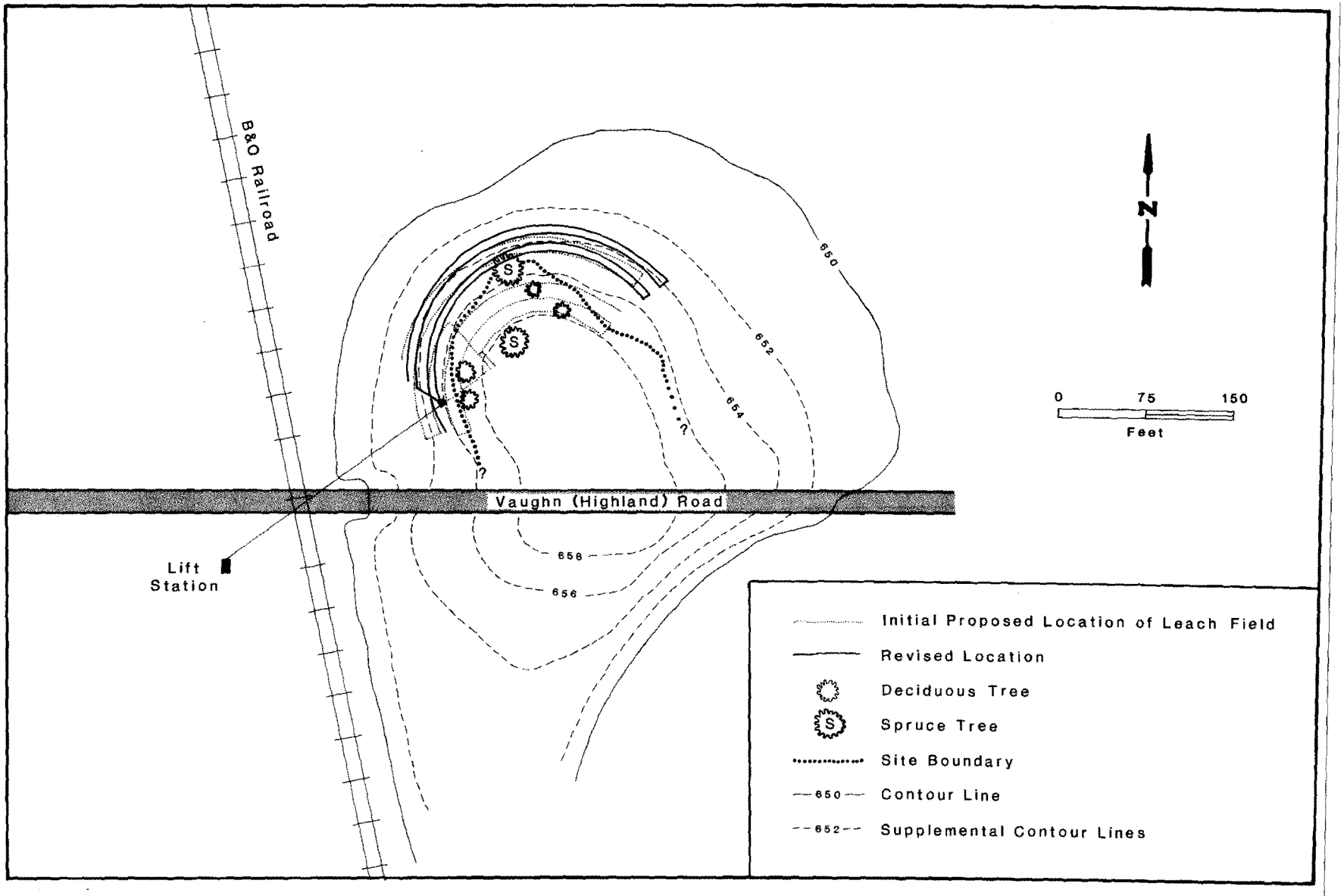


Figure 9. Initial and revised location of leachfield.

units would be excavated to the proposed depth of burial of the sewer lines.

The research objectives of the Jaite Sewer project were several fold. The first and most basic goal was to identify and evaluate the significance of any cultural deposits which might be present. This survey was designed to be extensive enough to facilitate potential planning of construction alternatives (CRM, NPS-28:3-14). Therefore, one project objective was to determine the potential archeological significance of the entire remnant terrace area. Beyond the recording of archeological data for park management purposes, another objective was to increase the data base pertaining to Late Prehistoric settlement patterns in the park. While numerous bluff top sites from the Late Woodland/ Whittlesey complex are known from the park, very few sites are known from lowland terrace locations (similar to 33CU65) due to extensive land modification on the Cuyahoga flood plain. Therefore, one research objective was to evaluate the premise that this location had a high probability of contributing to the Late Woodland settlement system data base. Finally, interpretive information regarding the site was sought for use by park staff. The interpretive potential of a site in the project area would be heightened by its proximity to park headquarters.

FIELD METHODS

Testing at the Vaughn Site (33CU65) was begun by placing four (1 x 2 m) excavation units at or below the shoulder of the landform. The excavations indicated that a portion of the area had been greatly disturbed but that some intact prehistoric deposits were present. Excavation Units 2 and 3, located on the northwest facing slope of the terrace (Figure 10), revealed highly disturbed areas with historic structural and mixed fill present. Units 1 and 4, located on the north facing slope (Figure 10), contained a mixture of historic and prehistoric fill. All units were dug in natural soil stratigraphic levels whenever possible. Only the lower levels of Excavation Unit 1 and all of Unit 4 were screened through 1/4 in hardware cloth. Units 2 and 3, due to the highly disturbed nature of the fill, were shovel skimmed and not screened.

Results from the initial excavation units indicated that because of the nature of some of the fill (large stone and concrete slabs plus densely packed clay and gravel subsoil), traditional archeological investigative techniques were not adequate to thoroughly evaluate the site. This fact coupled with project time constraints, the potential for archeological remains at considerable depth and the proposed extent of construction-related ground disturbance, field methods were changed. A backhoe was utilized to dig profile trenches across the arcs of the proposed septic lines. The park staff generously provided a backhoe and operator for this purpose. Three backhoe trenches were excavated from the adjoining bottomland up to the gravel parking lot on top of the terrace (Figure 10). Each trench was approximately 1 m wide and varied between 0.8 and 1.5 m deep.

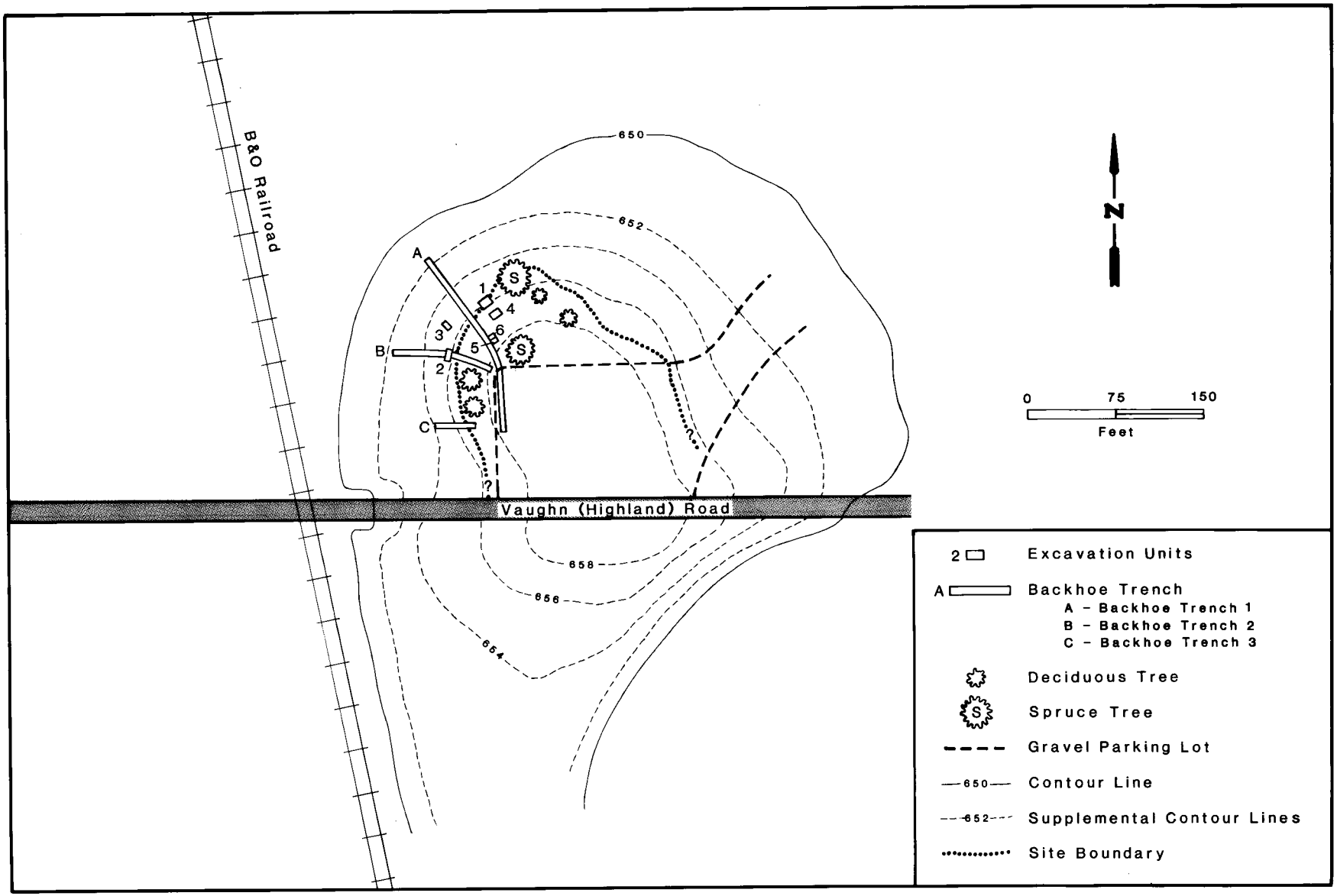


Figure 10. Excavation units and backhoe trenches at 33CU65.

Crew members monitored the trenching closely and stopped excavation when any suspected feature was exposed. This method of exploration proved very productive as several prehistoric features were exposed and a much clearer picture of site stratigraphy was gained. Once this information was recorded, further use of the backhoe was suspended.

To refine the areal extent of the soil stripping activities and the remaining portion of the prehistoric deposit, close order interval shovel testing was performed at two separate locations on the terrace. A 5x5 m grid was employed on the western slope of the terrace between Vaughn (Highland) Road, the base of the terrace and the western edge of the gravel parking lot and extended northward to the vicinity of Excavation Unit 3 (Figure 11). The other area tested was to the east of Backhoe Trench A and north of the gravel parking lot. The grid pattern in this portion was approximately 10x10 m with some allowances for highly disturbed areas (Figure 11). Shovel test units measured ca 0.3x0.3 m and were excavated down to sterile subsoil. All soil was trowelled back into the unit with all prehistoric and historic artifacts collected. Of primary consideration during this portion of the investigation was the presence or absence of an intact soil horizon.

One of the features (Feature 1) uncovered during backhoe trenching was exposed and completely excavated. Two 1x1 m units (Excavation Units 5 and 6) were placed over the feature and excavated in both natural and arbitrary levels as determined by the structural properties of the feature. All material was screened through 1/4 in mesh hardware cloth. Bulk soil samples, for the collection of faunal and floral remains, were collected from the lower levels (Quads 1-4) for fine (1/16 in) screening in the laboratory.

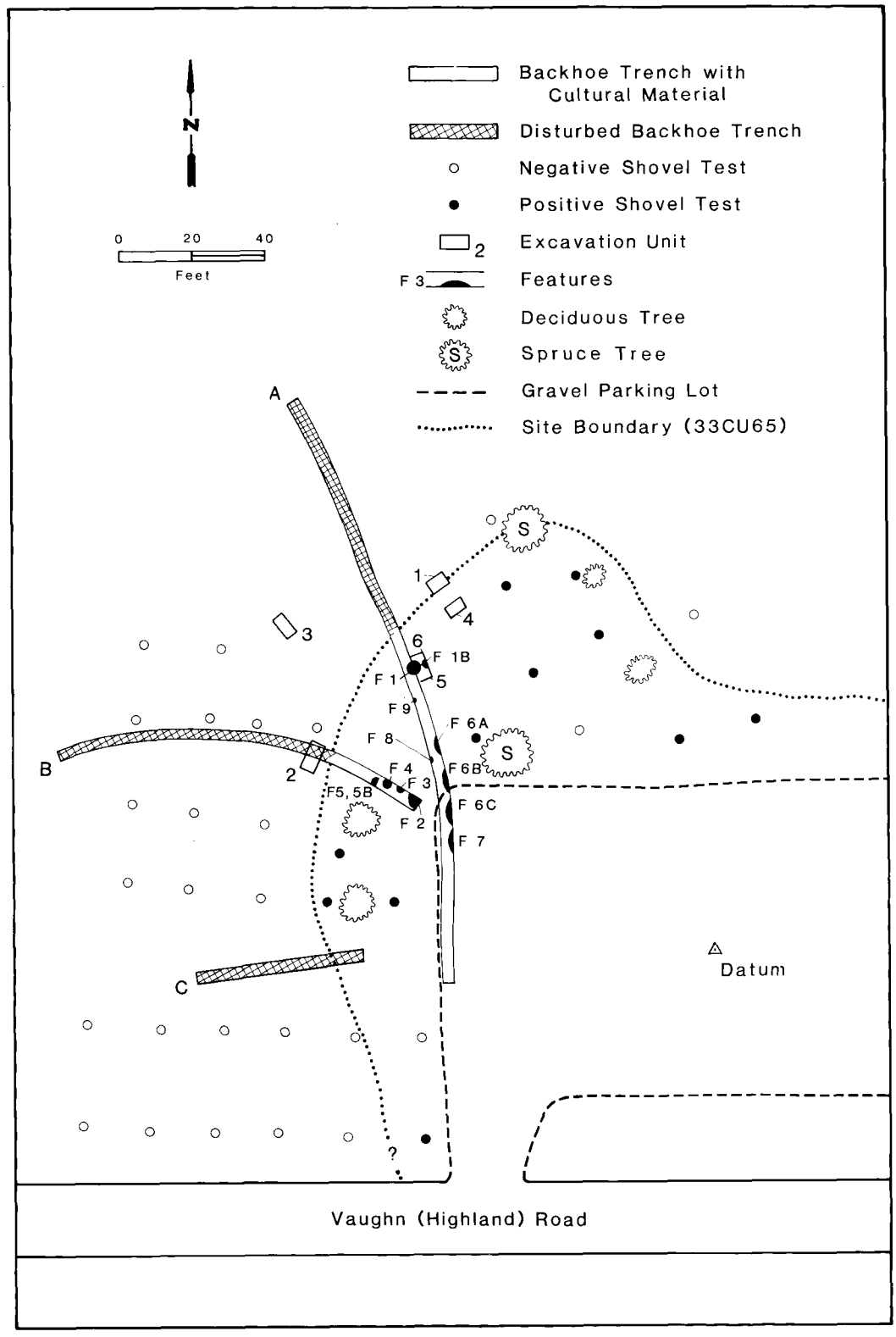


Figure 11. Excavation units, backhoe trenches and shovel test units.

LABORATORY METHODS

Methods and procedures used to analyze the various artifact classes collected during the project are detailed below. Analysis was limited due to the small sample size collected during the restricted excavation.

Prehistoric Artifacts

Lithic Materials

Lithic materials were sorted into three general classes: lithic debris, chipped stone tools and ground/pecked stone artifacts. These classes were further sorted into sub-groups, from which a variety of discrete and continuous observations were made and recorded. Materials were analyzed in a standardized manner to permit intrasite and intersite comparisons. All measurements are in metric units. Lithic debris consists of the cores and byproducts of chipped stone manufacture, while chipped stone tools include elements that have been purposely shaped by percussion or pressure flaking. Existing tool typologies for the region (Gartley et al.1974; Ritchie 1965) were used when possible to identify collected materials. Table 2 lists the attributes and definitions used in the identification of lithic materials.

Ceramic Materials

Ceramic materials were sorted into vessel rim and body fragments. Materials were further separated by type of temper, general surface treatment and presence or absence of decoration. All recovered sherds, regardless of size, were analyzed. Materials were analyzed in a standardized manner to permit intrasite and intersite comparisons. Existing regional typologies (Griffin 1943; Fitting 1964; Murphy 1971a, 1971b; Brose 1973, 1976, n.d.) were used where possible to identify individual sherds. Types were defined on the basis of decorative technique, rim form, surface treatment and temper composition. Identification of minimum number of vessels in the assemblage was determined by: 1) distinct rim sherd fragments 2) distinctive design motifs on neck/body sherds 3) distinctive temper (size, type), surface treatment, color and 4) on the basis of areal separation of dated proveniences (i.e., Feature 1 vs. Feature 4). Table 3 lists the attributes and definitions used in the identification of prehistoric ceramic materials.

Historic Artifacts

No atttempt was made to provide detailed analysis of the historic material collected at 33CU65. This decision was predicated on the fact that the historic material was recovered from a highly disturbed context. Items recovered were identified as to function and form, where possible, and tabulated by provenience.

Table 2. Lithic attributes and definitions.

A. Definition of Morphological Lithic Classes

1. Single platform core -- a piece of raw material that exhibits one platform from which two or more flakes have been struck

2. Biface -- general term given to a continuous reduction sequence from initial reduction to finished product (biface reduction sequence has been adopted from Skinner and Gallagher 1974:31-33)

a. roughout -- tools which are thick in cross-section, with sinuous edges and an outline determined more by the shape of the cobble or flake, some evidence for a midline (i.e., the slightly sinuous ridge which runs end to end on either face of stone tools, formed by a near continuous series of flake scar terminations) may be apparent at this stage

b. blank -- tools which have greater than 90% of their cortex removed, which have thinned biconvex to lenticular cross-sections with edges which are straight or slightly sinuous; shaping is advanced, commonly ovate or triangular

c. preforms -- tools with all cortex removed having been thinned to a lenticular cross-section, edges are straight, this is the final stage prior to producing a finished product

3. Projectile point -- end product of the biface reduction sequence; small, usually pressure flaked, generally triangular objects with thin lenticular or similar biconvex cross-sections; they may have a variety of hafting devices - notches, fluting, edge grinding (Skinner and Gallagher 1974:36)

4. Retouched piece -- a lithic fragment characterized by regular, short, overlapping, pressure flakes along one or more margins; flake scars are generally narrow and in most cases extend less than 3 mm back from the margin (Skinner and Gallagher 1974:38)

5. Utilized piece -- a lithic fragment exhibiting irregular retouch and usually restricted to a single margin or portion of that margin, the retouch is possibly the result of utilization rather than intentional retouch

6. Hammerstone -- a cobble exhibiting a localized area of pock marks

7. Anvil -- a cobble exhibiting a localized area of pock marks on a tabular surface indicating a probable function as a platform for some type of percussion activity

Table 2 (continued).

B. Definitions for Debitage and Non-diagnostic Shatter

1. Flake -- a fragment of chipped stone having a complete bulb of percussion and thin tapering edges at the margins

2. Proximal flake -- a partial or broken flake (distal end missing) with a complete bulb of percussion

3. Non-diagnostic shatter -- chipped stone without a recognizable bulb of percussion or striking platform, including chunky and blocky pieces as well as distal flake fragments

4. Cortical elements -- lithic debris with 100% cortex on the dorsal surface

5. Primary elements -- lithic debris with 50 - 99% cortex on the dorsal surface

6. Secondary elements -- lithic debris with the presence (1 - 49%) of cortex on the dorsal surface

7. Interior elements -- lithic debris with no cortex on the dorsal surface

8. Cortex platform -- striking platform covered with cortex

9. Plain platform -- striking platform on a noncortex surface that lacks multiple flake scars resulting from platform shaping

10. Facetted platform -- striking platform with two or more visible flake scars

11. Bifacial thinning platform -- a lipped, facetted platform

12. Crushed platform -- striking platform that has been crushed during removal leaving only the bulb of percussion

13. Dorsal flake scar count -- the number of flake scars visible on the dorsal side of flake

14. Length -- maximum dimension measured only on intact flakes and tools along the medial axis of the item

15. Width -- maximum dimension measured perpendicular to the medial axis of an item

16. Thickness -- maximum dorsal-ventral dimension of flake or tool

17. Weight -- measured in grams

Table 3. Prehistoric ceramic terminology and attributes.

A. Physical Attributes

1. Color - when applicable a Munsell color chart number (Munsell 1975) was assigned; a range of numbers was used to compensate for variations in color resulting from incomplete or uneven firing

2. Temper - nonplastic material mixed with clay to counteract shrinkage and facilitate uniform drying as well as to make the clay less sticky and easier to work (Anfinson 1979:6)
types of temper include:

a. sand
b. crushed rock (grit) - specific lithology identified when possible
c. crushed mussel shell
d. mixed shell and grit

size of temper based on a macroscopic measurement of the most common temper size:
a. coarse - temper > 2 mm in diameter
b. medium - temper 1-2 mm in diameter
c. fine - temper is sand sized or < 1 mm in diameter
d. mixed - temper exhibits a range of particle sizes

B. Vessel Form

1. Rim - defined by visual inspection, measurement and described as: a) straight, b) outcurved, c) incurved, or d) rolled (cf. Anfinson 1979:8)

2. Lip - defined by visual inspection, measurement and described as: a) flat, b) interior bevel, c) exterior bevel, or d) rounded (cf. Anfinson 1979:8)

3. Vessel thickness - defined as the average thickness of individual rim, body sherds based on three measurements per sherd

C. Surface Treatment - defined by visual inspection, microscopy, clay impressions and described as: a) smoothed, b) cordmarked, c) smoothed over cordmarked, or d) indeterminate

D. Decoration - defined by visual inspection, microscopy, clay impressions and described as:

1. Stamped - including cord impressions (twisted cord and cord wrapped stick), dentate (square) and cord wrapped paddle impressions; when possible the type of cord twist (s, z, single, or double) was noted

Table 3 (continued).

2. Incised - all impressions made with a sharp instrument, including combing, which are usually V - shaped in cross-section

3. Trailed - broad shallow linear decorations applied with a blunt-ended or rounded tool which are usually U - shaped in cross-section

4. Punctated - a small circular or angular impression made by inserting the tool into the plastic clay; a punctate on one surface can result in a boss on the opposite surface

RESULTS

Site Stratigraphy

Investigation at the proposed sewage leachfield revealed the area to be highly disturbed in all areas below the shoulder of the hill slope (ca.the 656 ft contour line, see Figure 10). Fill in that area consisted of redeposited structural and building components as well as a wide variety of household items. Portions of Backhoe Trenches A and B and all of Backhoe Trench C revealed no apparent stratigraphy or intact soil profiles but instead showed evidence for mixed and redeposited soil horizons and typical landfill debris interspersed with fragmented rock and sand deposits. Upslope from the disturbed areas, from the shoulder to the top of the terrace and beneath the present gravel parking lot, intact prehistoric cultural remains were located. From Excavation Units 1 and 4 and Backhoe Trenches A and B a composite picture of the stratigraphy of the intact portions of the site can be constructed.

The stratigraphy in Excavation Unit 1 clearly shows the contact zone between the minimally disturbed upper terrace and the highly disturbed shoulder and lower slopes. The south wall profile (Figure 12), while showing a good deal of disturbance, still retains a portion of the original soil profile (Figure 13). The upper level (ca. 30 cm) consists of a mixture of a black loam midden deposit and a disturbed fill of clay, gravel, brick and coarse aggregate characteristic of industrial and construction related fills common to this portion of the river valley (NPS 1976:13). Below this is a layer of tan loam grading to loamy sand and finally into pea gravel (at 80-90 cm below surface) which presumably comprises a large percentage of the subsoil beneath the terrace. The east wall profile (Figure 14) clearly shows the extensive disturbance and multiple fill cycles that characterize this portion of the terrace. The stratigraphy is similar to that of the south wall with the exception that the disturbed fill is present to a greater degree probably reflecting the original terrace slope. The lens of midden seen in the south wall and the sloping remnant of midden visible in the east wall probably represent lower, partially disturbed portions of a midden.

The stratigraphy present in Excavation Unit 4 is probably representative of areas of the terrace which have not been too severely modified (Figure 13). The upper level consisted of a black (10YR2/1, Munsell 1975) loam/sandy loam that varied between 18-27 cm in thickness and contained a mix of both historic and prehistoric materials. As the soil chemistry shows (Table 4) this level has a very high organic content (3.9-4.8%) compared to the rest of the profile. Soil particle size data for the same profile is presented in Table 5. Below this upper level was a zone of dark yellowish brown (10YR3/4) loam. This zone was ca. 13 cm thick and contained predominately prehistoric artifacts. Below this level was a zone of brown/dark brown (10YR4/3) loam, ca. 10 cm thick, that contained only prehistoric artifacts in greatly diminished numbers compared to the upper levels. Below this was a

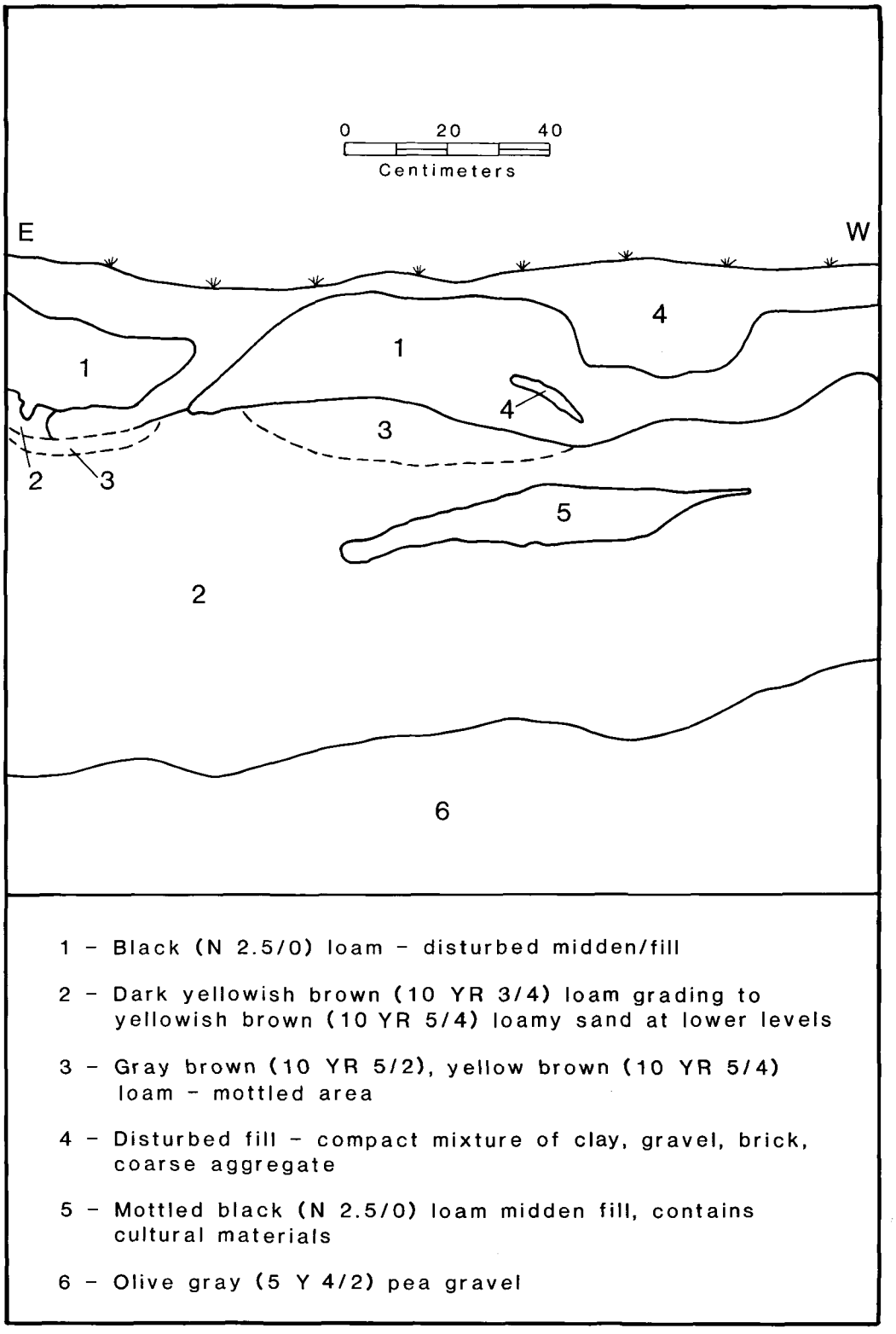


Figure 12. South wall profile of Excavation Unit 1.

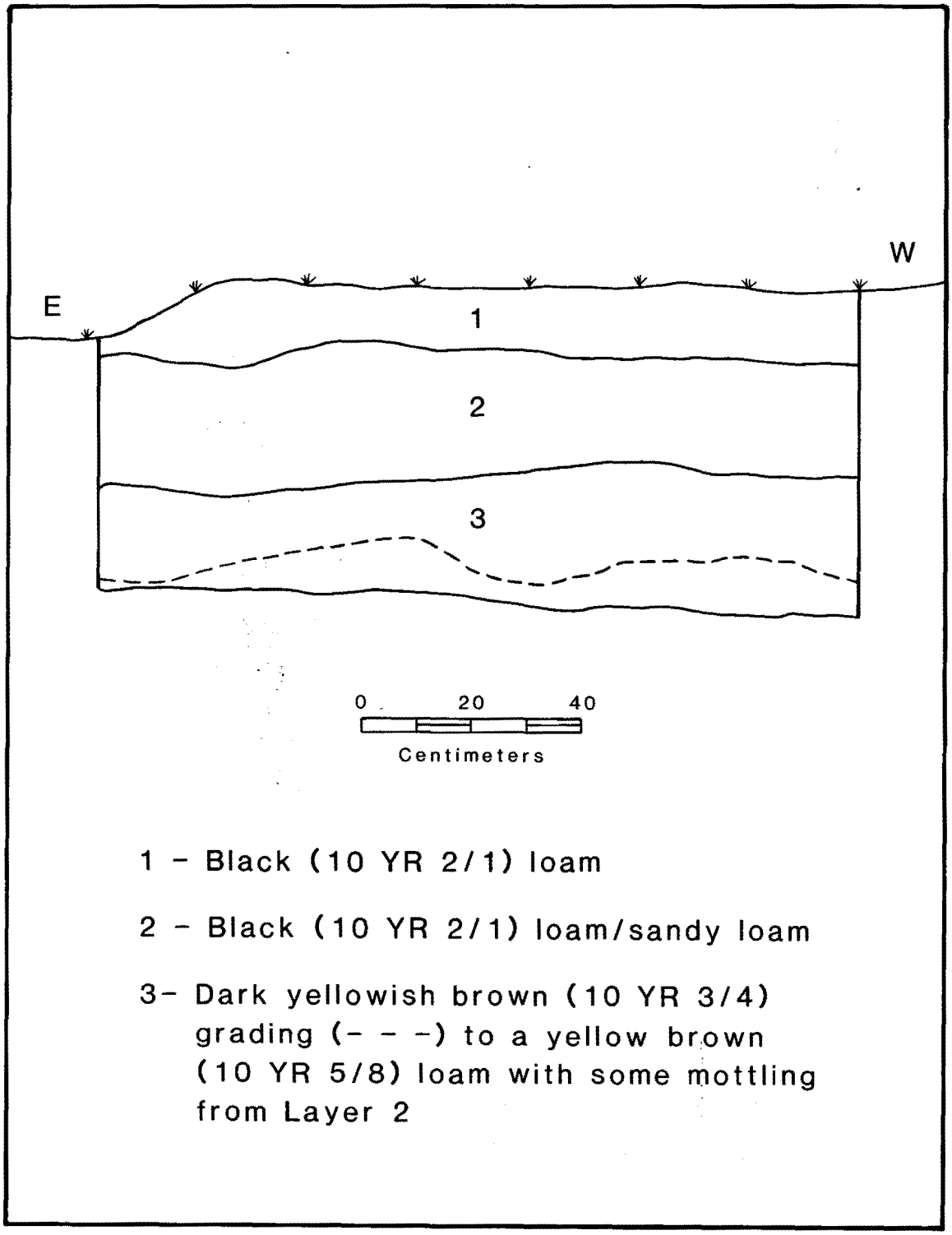
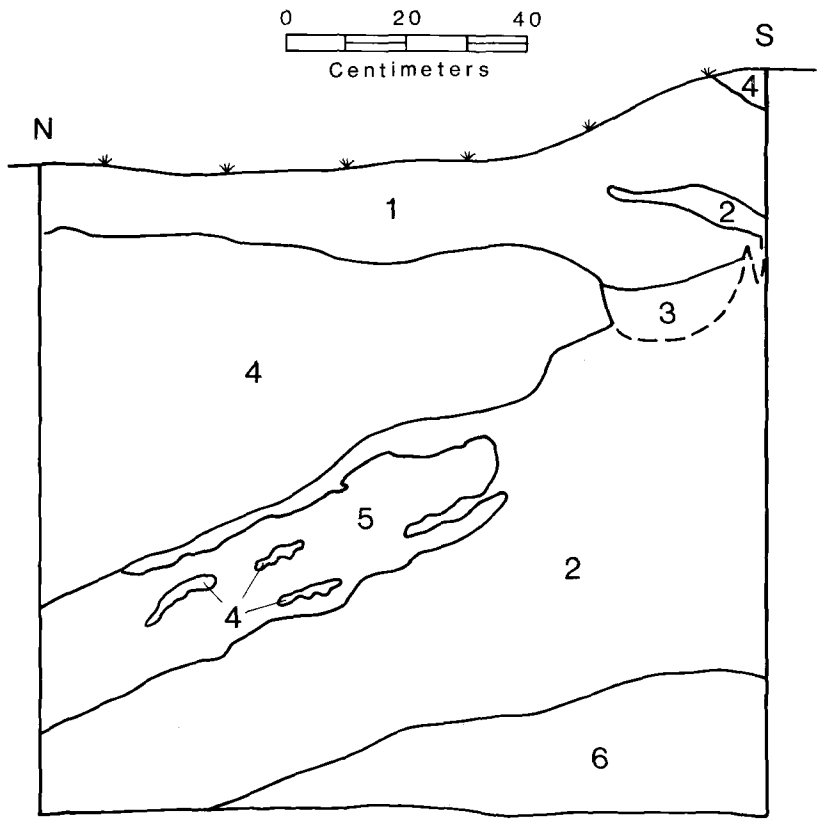


Figure 13. South wall profile of Excavation Unit 4.



1 - Black (N 2.5/0) loam - disturbed midden/fill

2 - Dark yellowish brown (10 YR 3/4) loam grading to yellowish brown (10 YR 5/4) loamy sand at lower levels

3 - Gray brown (10 YR 5/2), yellow brown (10 YR 5/4) loam - mottled area

4 - Disturbed fill - compact mixture of clay, gravel, brick, coarse aggregate

5 - Disturbed, mottled black (N 2.5/0) midden fill - contains cultural materials

6 - Olive gray (5 Y 4/2) pea gravel

Figure 14. East wall profile of Excavation Unit 1.

Table 4. Soil chemistry from samples collected at the Vaughn Site (33CU65), Cuyahoga Valley National Recreation Area, 1983.

Provenience	ca. depth below surface	textural class	organic matter	pH	phos (ppm)	K (ppm)
South wall Excavation Unit Four						
lev.1	0-10 cm	loam	4.8%	7.1	244	170
--	10-20 cm	sandy loam	3.9%	7.0	50	145
--	20-30 cm	loam	4.0%	7.0	267	119
lev.2	30-42 cm	loam	1.6%	7.2	337	185
lev.3	42-54 cm	loam	0.8%	7.1	328	159
not excavated	54-64 cm	sandy loam	0.4%	7.1	180	110
--	64-74 cm	loam	0.4%	7.1	145	115
--	74-84 cm	loam	0.3%	6.9	71	103
--	below 84 cm	sand	0.1%	6.9	31	63
Excavation Unit Five (Hearth)						
lev.1	5-13 cm	loam	3.8%	7.7	359	196
(medium lime content also noted; possibly from ash lens)						
Feature 1, Wall profile prior to excavation						
XU 6,lev.1	1 m	loam	3.5%	7.0	296	171

(abbreviations used: phos- phosphorus, K- potassium, ppm - parts per million

Table 5. Particle size analysis of soil samples collected at the Vaughn Site (33CU65), Cuyahoga Valley National Recreation Area, November 1983.

Proven	ca. depth below surface	% sand	% coarse silt	% fine silt	% v.fine silt	% clay	textural class
South wall Excavation Unit Four							
lev.1	0-10 cm	51.84	14.00	18.00	4.00	12.16	loam
--	10-20 cm	53.48	10.00	21.00	3.50	12.02	sandy loam
--	20-30 cm	50.46	15.50	19.50	4.00	10.54	loam
lev.2	30-42 cm	47.96	13.00	21.50	3.00	14.54	loam
lev.3	42-54 cm	49.96	15.00	19.00	2.50	13.54	loam
not excavated	54-64 cm	55.96	13.00	17.50	2.00	11.54	sandy loam
--	64-74 cm	44.46	10.50	27.50	2.00	15.54	loam
--	74-84 cm	51.14	18.00	16.00	2.00	12.86	loam
--	below 84 cm	88.96	2.00	2.50	1.50	5.04	sand
Excavation Unit Five (Hearth)							
lev.1	5-13 cm	51.96	14.00	20.00	4.50	9.54	loam
Feature 1, Wall profile prior to excavation							
XU 6,lev.1	1 m	51.96	13.50	23.00	4.00	7.54	loam

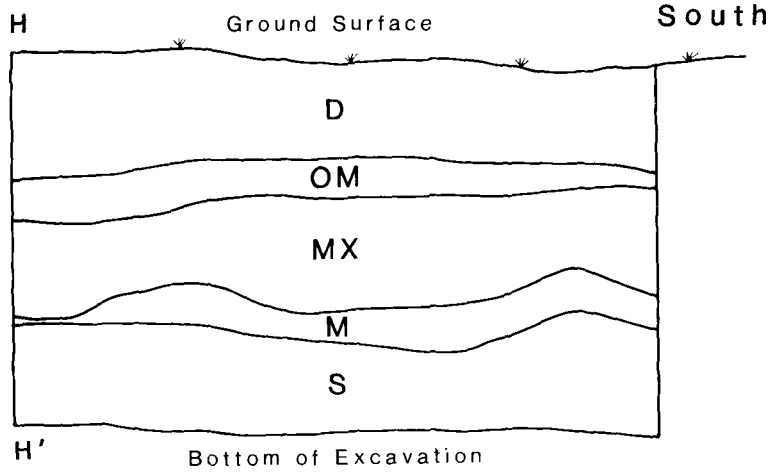
zone of dark yellowish brown (10YR3/4) loam/sandy loam from between ca. 53 to 84 cm below surface. This layer was not excavated nor was the layer below it which was composed of an olive yellow (2.5Y6/6) sand. The sand was clearly determined to be sterile in Excavation Unit 1 and in Backhoe Trenches A and B.

Backhoe Trenches A and B traverse more heavily disturbed areas than Excavation Unit 4 but profiles clearly reveal intact prehistoric features below a truncated soil profile. In a composite profile taken from Backhoe Trenches A and B (Figures 15,16) the typical stratigraphy of a considerable portion of the remaining site area is revealed. The uppermost 25- 30 cm consists of a highly disturbed mixture of various soils and historic debris. A thin layer (5-10 cm thick) of black slag and clinkers mixed with gravel was found in this level just beneath the surface of the parking lot in Backhoe Trench A. Below this upper layer was a zone (ca. 15 cm thick) of mixed gray brown soil with yellow brown pea gravel. Some mixing of historic and prehistoric materials was noted in this zone. Below this level was a black to very dark brown loam with charcoal and prehistoric artifacts present. This zone has been described as a midden and varies from 10-15 cm thick in Backhoe Trench A to a slightly thicker (ca. 18-20 cm) layer visible in the north wall profile of backhoe trench B. The contact between the mixed zone and the midden is very sharp and distinct and suggests that the break is the result of soil stripping operations which removed the upper portions of the terrace. Below the midden was a zone of sterile orange/yellow sand into which several prehistoric features (pits) were placed.

Features

Profiles in Backhoe Trenches A and B revealed at least nine prehistoric features (pits) and a concentration of firecracked rock dug down into the sandy subsoil below the midden deposit.

Feature 1 (Figures 15a,17) was uncovered during the digging of Backhoe Trench A. The feature was subsequently profiled at which time prehistoric materials were recovered from the feature fill. The backhoe was used to remove the overburden (approximately 40-45 cm of the disturbed and mixed layers) from immediately above the midden layer as viewed from the profile. Excavation Units 5 and 6 (1x1 m) were placed over Feature 1 and the entire feature was exposed. Maximum horizonal dimensions were 95x94 cm; maximum depth below the apparent orifice (the bottom of the midden layer) was 85 cm. The general profile of the feature was that of a straight sided generally flat to slightly round bottomed pit. The pit fill was a black (N2.5/0 - 5YR2.5/1) loam and contained lithic debris, stone tools, floral and faunal elements, and ceramic vessel fragments. There seems to be some concentration of lithic and ceramic materials in the upper third of the feature and the overlying midden deposit and also in the lower third of the feature. The "middle" portion of the feature fill had noticeably smaller amounts of cultural materials present. Whether this is indicative of a differential fill sequence is not entirely clear. Several fragments of firecracked rock (14.25 kg,



D - Dark gray (10YR 4/1) loam with gravel, highly disturbed, a lens of black slag - clinkers (5-10 cm thick) runs entire length of trench

OM - Yellow (10 YR 8/6) sandy loam with gray mottling, highly disturbed

MX - Dark grayish brown (10 YR 4/2) loam mixed with pea gravel, appears to be a mix of historic and midden deposits

M - Black (10 YR 2/1) loam, midden deposits with prehistoric artifacts present

BR - Yellowish brown (10 YR 5/6) loam (Feature 6 Fill)

S - Yellow (10 YR 7/6) sandy loam grading to sand at lower levels, sterile

⊖ - Firecracked rock

Figure 15a. Profile of Backhoe Trench A.

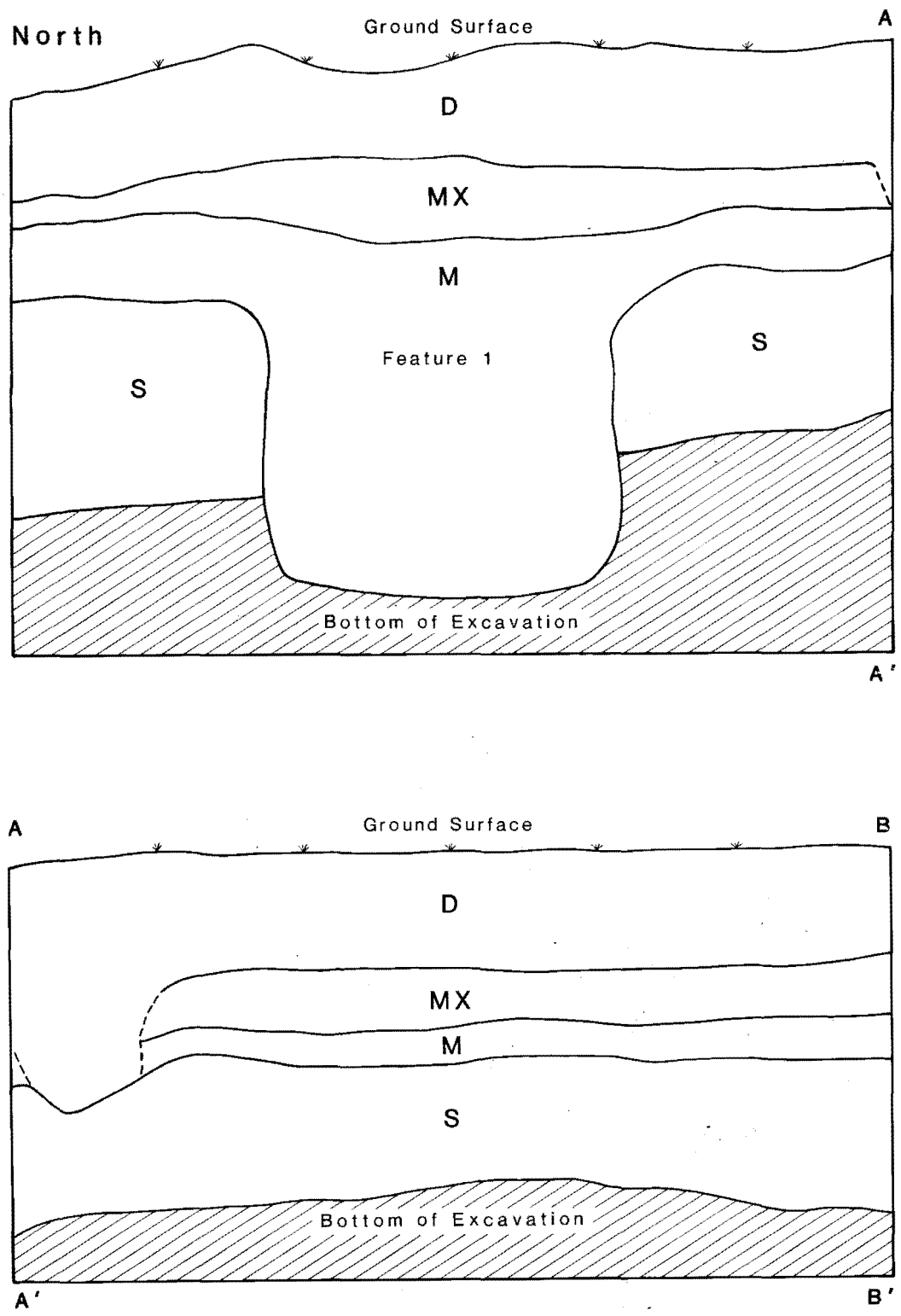


Figure 15b. Profile of Backhoe Trench A (continued).

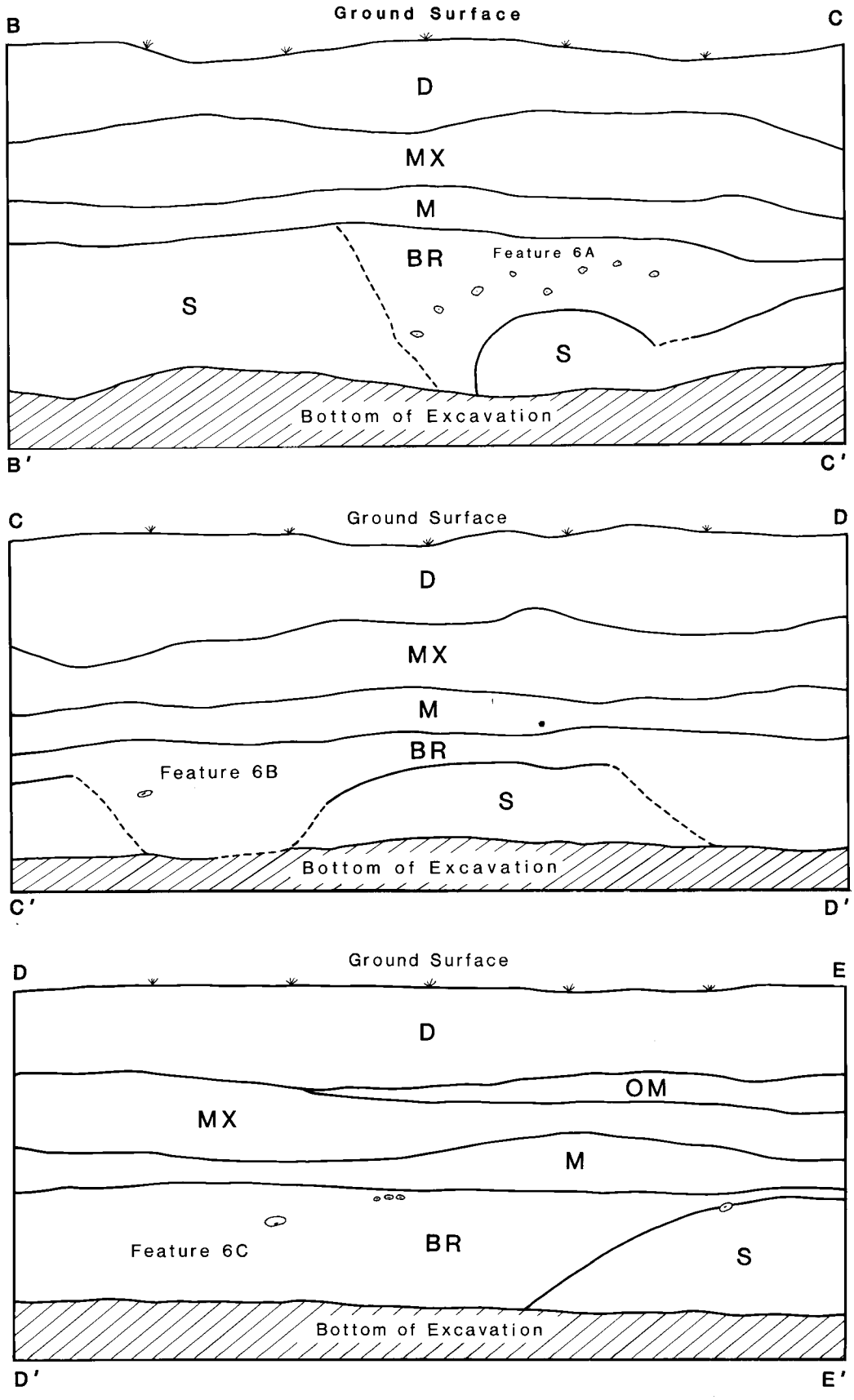


Figure 15c. Profile of Backhoe Trench A (continued).

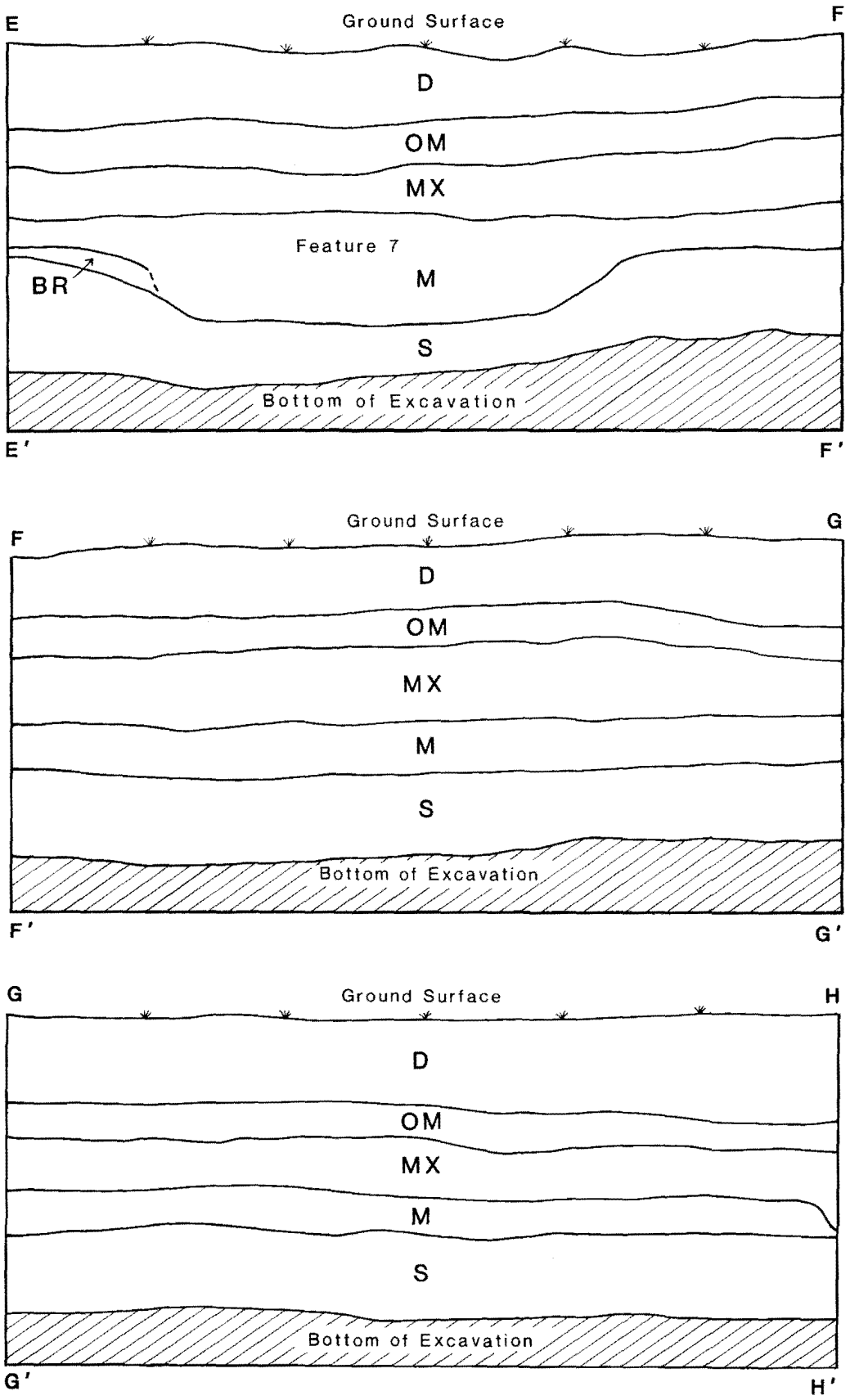


Figure 15d. Profile of Backhoe Trench A (continued).

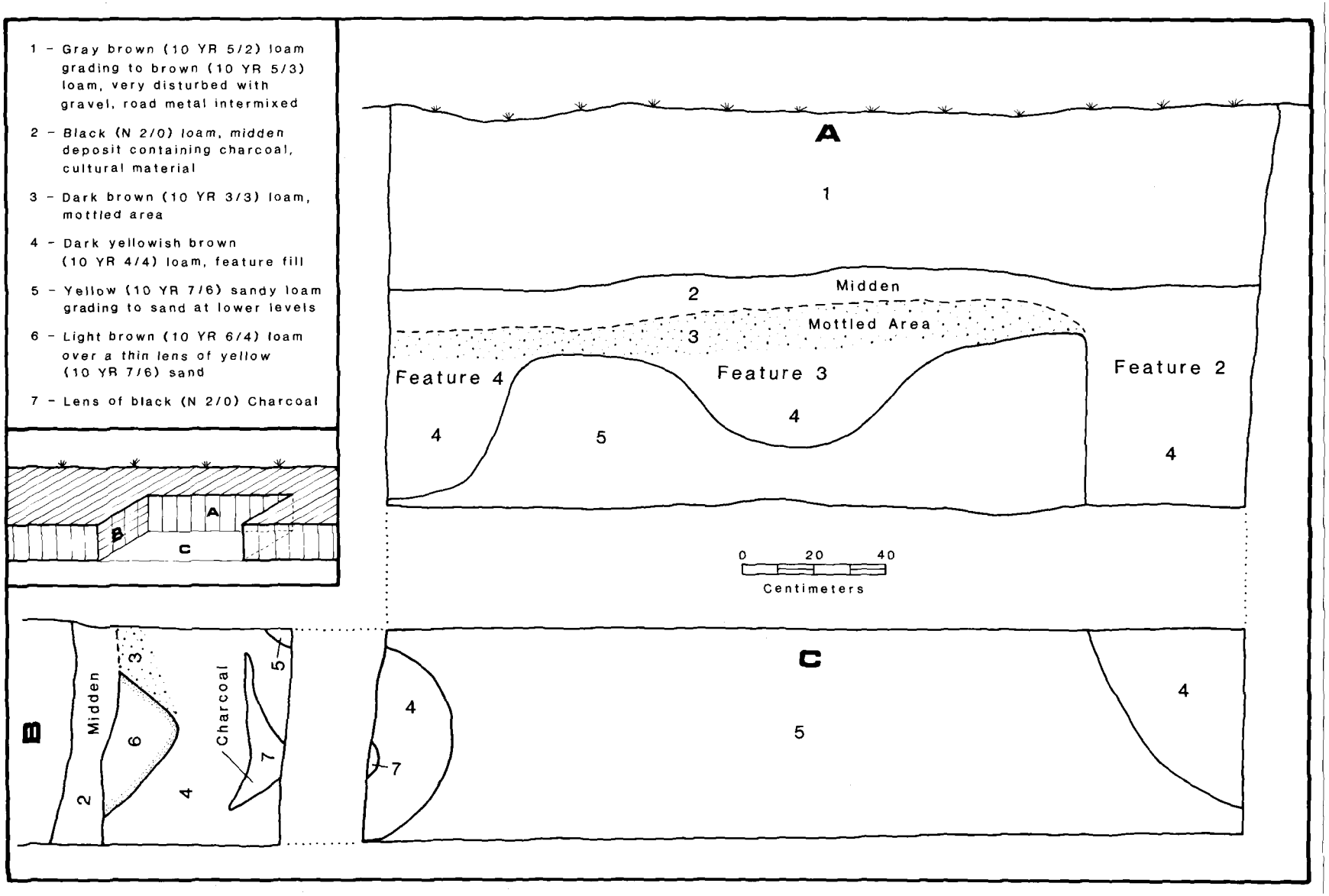


Figure 16. Profile of Backhoe Trench B.

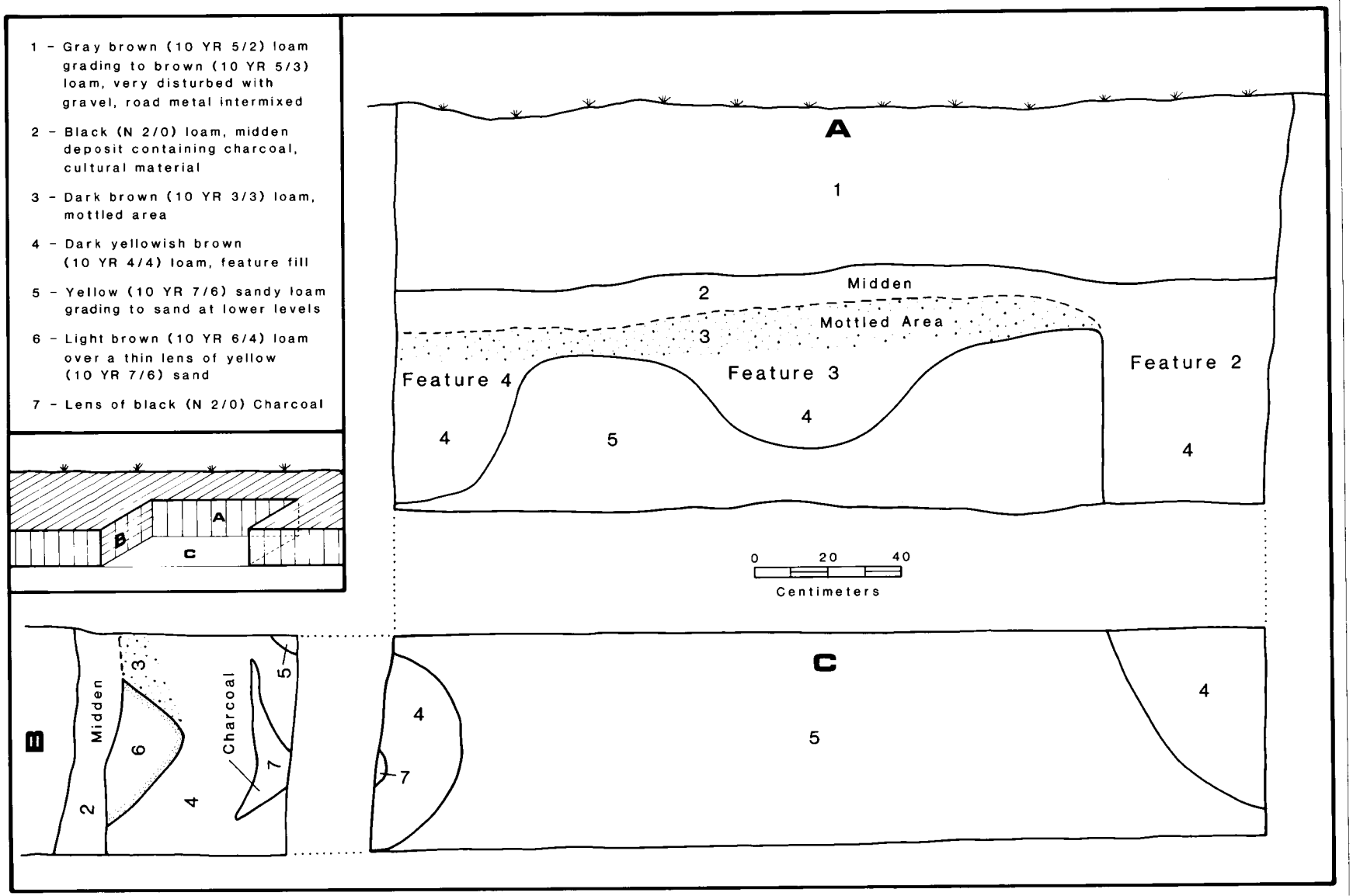


Figure 16. Profile of Backhoe Trench B.

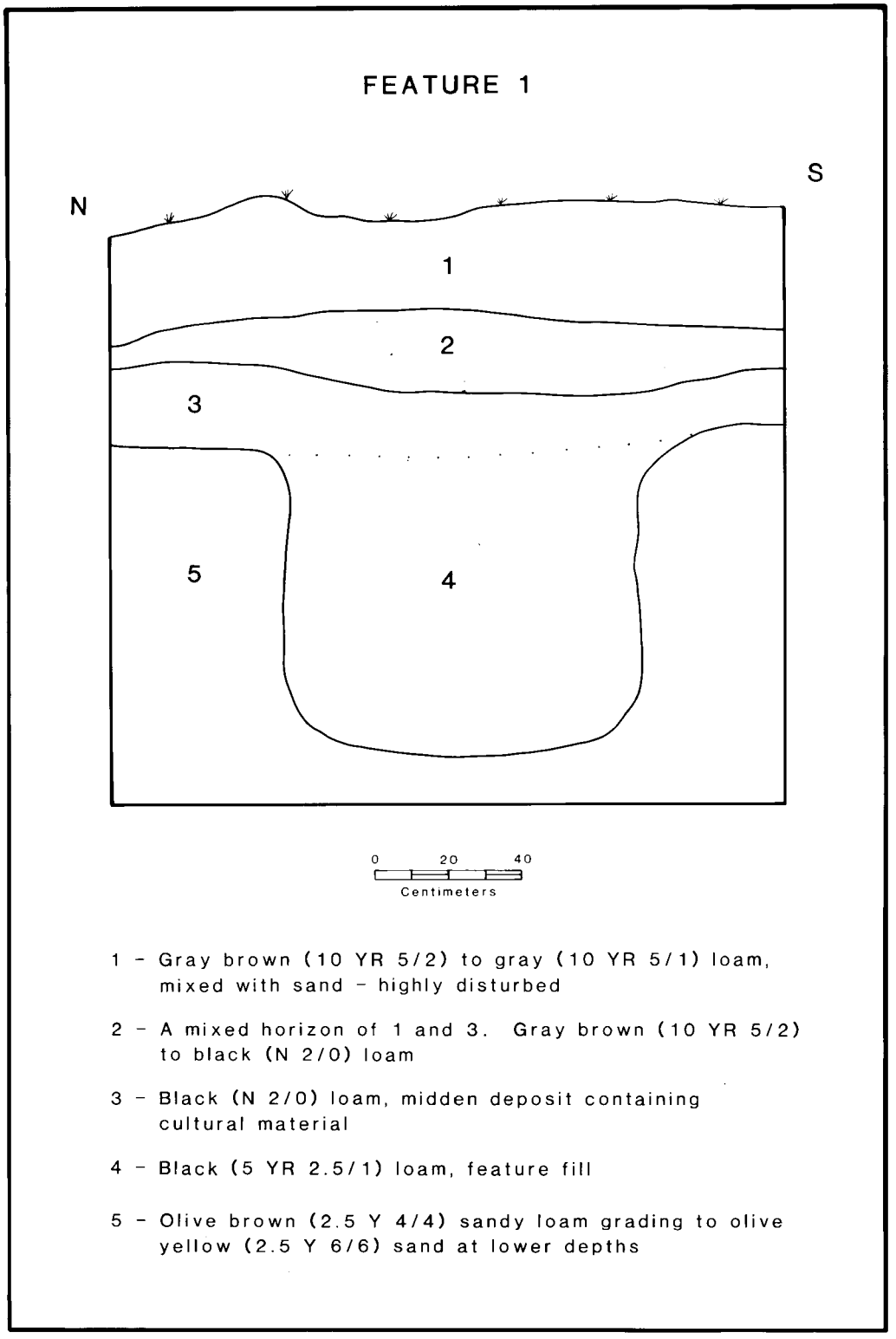


Figure 17. East wall profile of Feature 1.

31.35 lbs.) were recovered from the feature. A more detailed analysis of the material recovered from Feature 1 is presented in the artifact analysis section.

Feature 1B was exposed in the southeast corner of Excavation Unit 6 and the northeast corner of Excavation Unit 5 approximately 10 cm east of Feature 1 (Figure 18). The indistinct outline of very dark brown loam was first perceived in Level 3 of both excavation units. It appeared to be similar in outline to Feature 1 with approximate dimensions of 90 cm north-south and 50 cm east-west. As the feature was only partially exposed these dimensions must be considered approximate. Firecracked rock, and lithic and ceramic artifacts were recovered from the immediate area above Feature 1B but no excavation was done in the feature once its outline had been determined.

Feature 2 was exposed in Backhoe Trench B (Figure 16). The general outline, taken from the north wall, is of a straight sided pit. Depth from the apparent orifice to the bottom of the backhoe trench was 48 cm. In plan view, on the bottom of the trench, the pit is cylindrical or circular in nature with maximum horizonal dimensions of 48 x40 cm. The very dark brown, nearly black, fill revealed some badly decomposed faunal material, charcoal, and some ceramic vessel fragments exposed during wall clean-up.

Feature 3 was also exposed in the north wall of Backhoe Trench B (Figure 16). It is a deep basin shaped pit approximately 85 cm across and 40 cm deep. The feature fill is a dark brown to black loam similar to other features at the site. Other than charcoal flecks, little was noted in the fill.

Feature 4 is located in Backhoe Trench B approximately 40 cm west of Feature 3. Its outline is somewhat more amorphous than either Feature 2 or Feature 3 but appears to be a straight sided pit (Figure 16) similar to Feature 2. Its dimensions, as taken from the north wall profile, measure 36 cm horizonally and 38 cm below the apparent orifice. Several ceramic body sherds, large amounts of charcoal and bone, some burned earth and a triangular projectile point were found in the feature fill while scraping the wall profile. The fill in the feature is similar to the very dark brown loam found in other features. A thermoluminesence sample was collected (see discussion on dating). On the floor of the backhoe trench adjacent to the feature was the outline of a circular feature. Its relationship to Feature 4 is unclear due to a rather diffuse area in the corner of the trench where the two pit outlines are tangent to each other. It is quite likely that both are portions of the same feature but further excavation is necessary to clarify their true relationship.

Two other features, Features 5 and 5B, were noted approximately 75 cm west of Feature 4. Accordingly, the apparent complexity of features in this portion of Backhoe Trench B makes comments about relationships somewhat tenuous pending more detailed excavation.

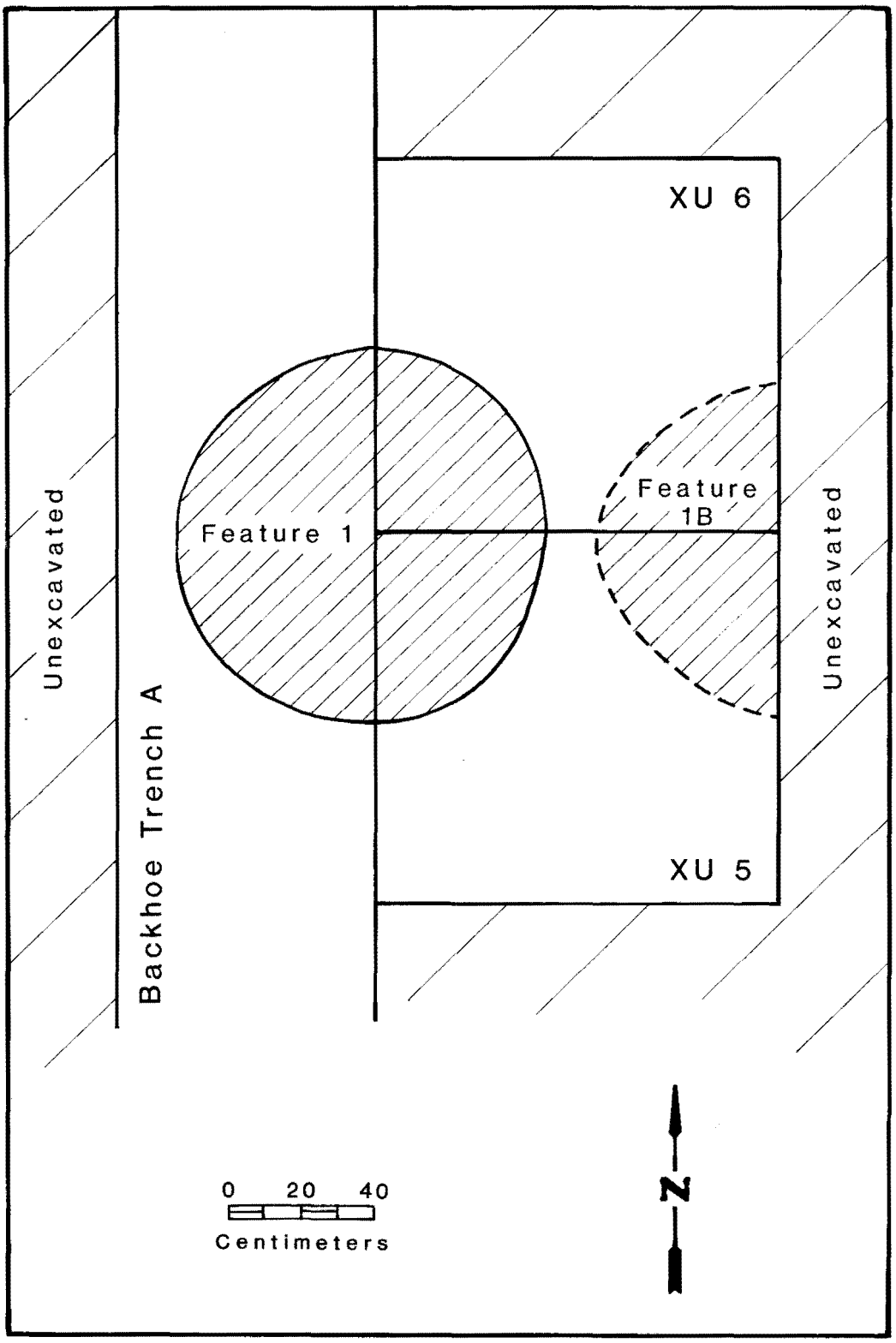


Figure 18. Floor plan of Excavation Units 5 and 6 at level 3, showing relationship of Features 1, 1B.

Feature 5 is a small basin like feature exposed in the west face of a soil balk left by the backhoe (Figure 19). It measured 28 cm across and 9 cm deep and was composed of lenses of light gray ashy material and charcoal with some red to red/brown burned earth areas.

Feature 5B is clearly visible in plan view on the floor of the backhoe trench immediately west of the soil balk. The feature appears semicircular in plan view covering the entire width (58 cm) of the backhoe trench and extending westward (ca 20 cm) from beneath the balk. In Figure 19 its relationship with Feature 5 can be seen. Based on the stratigraphic profile, Feature 5 post dates Feature 5B and is probably a small hearth that was dug down into the lower portion of the midden that caps Feature 5B. It also predates the upper portion of the midden that remains in this portion of the site. Feature 5B is probably a storage feature similar to the other features previously described.

There is one other comment on the complexity of the soil balk area. In plan view two small portions of semicircular stains (Features 4, 5B) can be seen extending from beneath the balk (Figure 20). Based on the respective diameters, the stains are interpreted as separate features. However, confirmation of this conclusion awaits further excavation.

Feature 6 was exposed in Backhoe Trench A and consists of a large, somewhat scattered concentration of firecracked rock and some charcoal. For purposes of field mapping the three concentrations were identified as Areas 6A,6B,and 6C (see Figure 15b). The feature lies ca. 4 m south of Feature 1 and was exposed for approximately 5.8 m along the east wall of Backhoe Trench A. The feature outline was not very distinct but a definite color difference between the feature fill, a medium brown loam, and the overlying dark brown/black loam of the midden was apparent. Area 6A (Figure 15b) was the most distinct of the three shallow pits with the highest amount of firecracked rock present. It measured ca. 1.2 m across and 40 cm deep to the bottom of the trench. Area 6B (Figure 15d) was slightly more basin shaped and measured 90 cm across and 25 cm deep to the bottom of the trench. This portion of the feature was also present in the west wall of the backhoe trench. Area 6C (Figure 15d,e) was the largest of the concentrations, measuring ca. 2.7 m along the east wall and 30 cm from its apparent orifice to the floor of the trench. A portion of this area also extended to the west wall of the backhoe trench.

As can be seen in the east wall profile of this portion of Backhoe Trench A (Figure 15b), the features were capped by a layer (ca.12-16 cm thick) of midden overlain by two strata of mixed and disturbed soils. The concentrations and midden lie approximately 40-45 cm below the present gravel parking lot surface.

Feature 7 was also exposed in Backhoe Trench A and lies approximately 0.5 m south of Area 6C. The feature outline

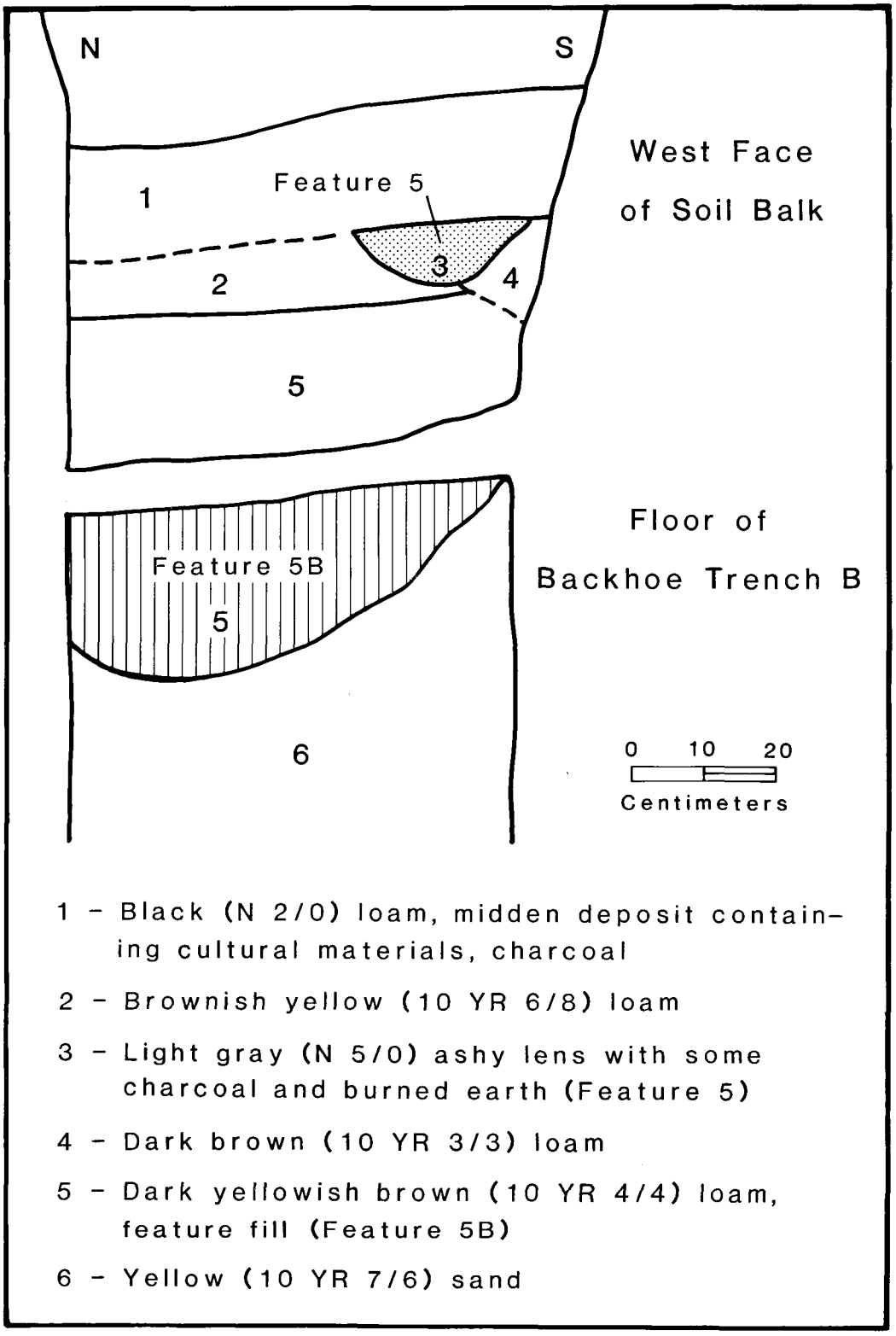


Figure 19. Profile of Feature 5.

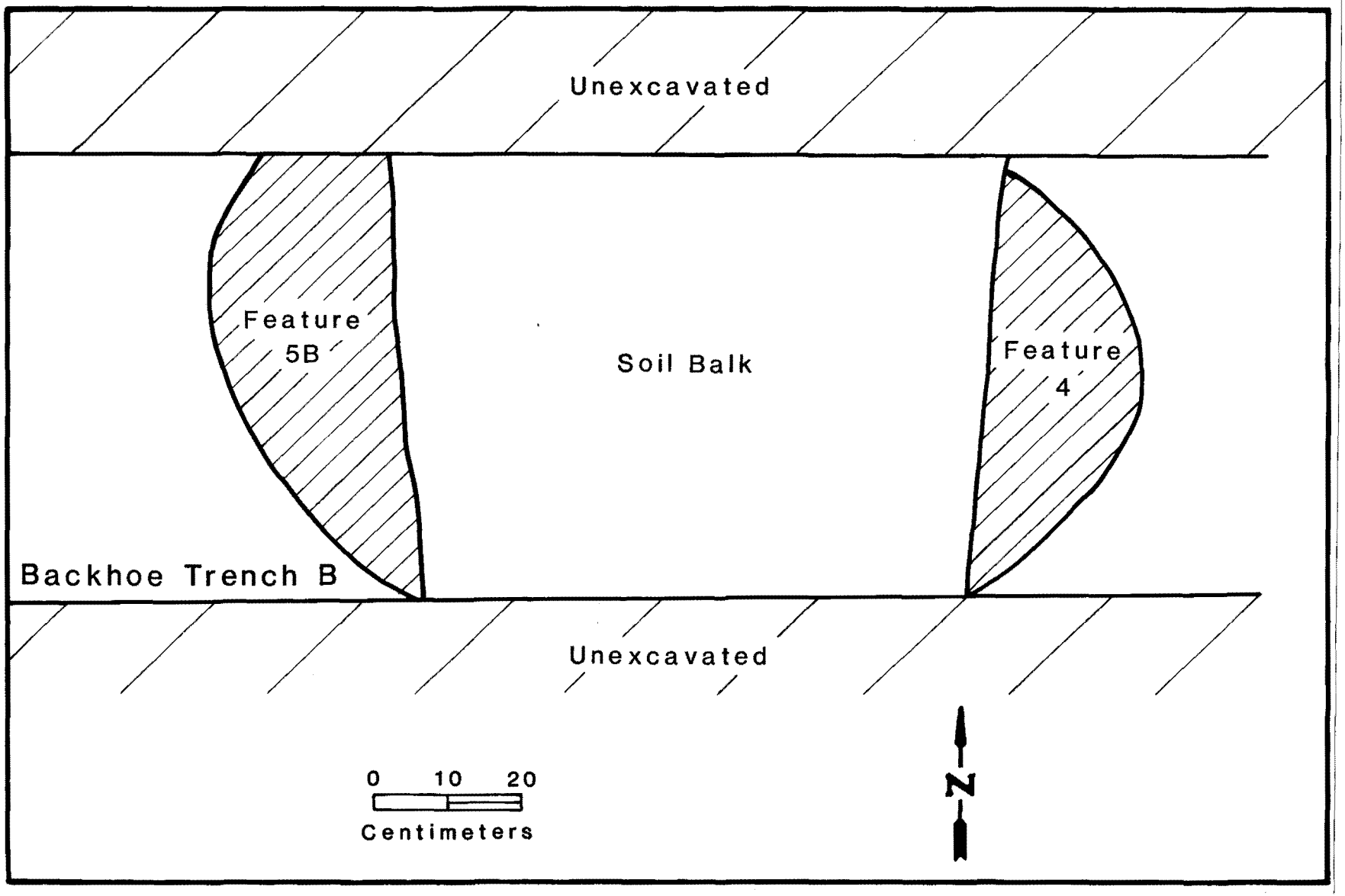


Figure 20. Plan view of Backhoe Trench B, showing soil bulk and Features 4 and 5B.

indicates a fairly large pit with a flat bottom (Figure 15c). It measured ca. 1.6 m across and 30 cm in depth. The feature fill is difficult to distinguish from the overlying midden, resembling Feature 1 in this respect. The feature extends to the west and could be observed in the west wall of the backhoe trench. Some firecracked rock was evident in the west wall portion of the feature.

Feature 8 was exposed along the west wall of Backhoe Trench A. It lies midway between Areas 6A and 6B on the opposite side of the trench. The feature is smaller than most of the other features recorded at 33CU65. It measures 28 cm horizonally and 22 cm deep (Figure 21). The fill is similar to the general midden deposit, a dark brown/black loam, but has a slightly greater concentration of charcoal.

Feature 9 was also exposed in the west wall of Backhoe Trench A approximately 1 m south of Feature 1. The feature had a very distinct dark boundary, was vertical in profile, and contained fill composed of clay, gravel, sand and dark brown loam. Closer examination revealed it to be historic in nature, most likely a rotten post that clearly crosscuts all but the uppermost portion of the disturbed soil zone.

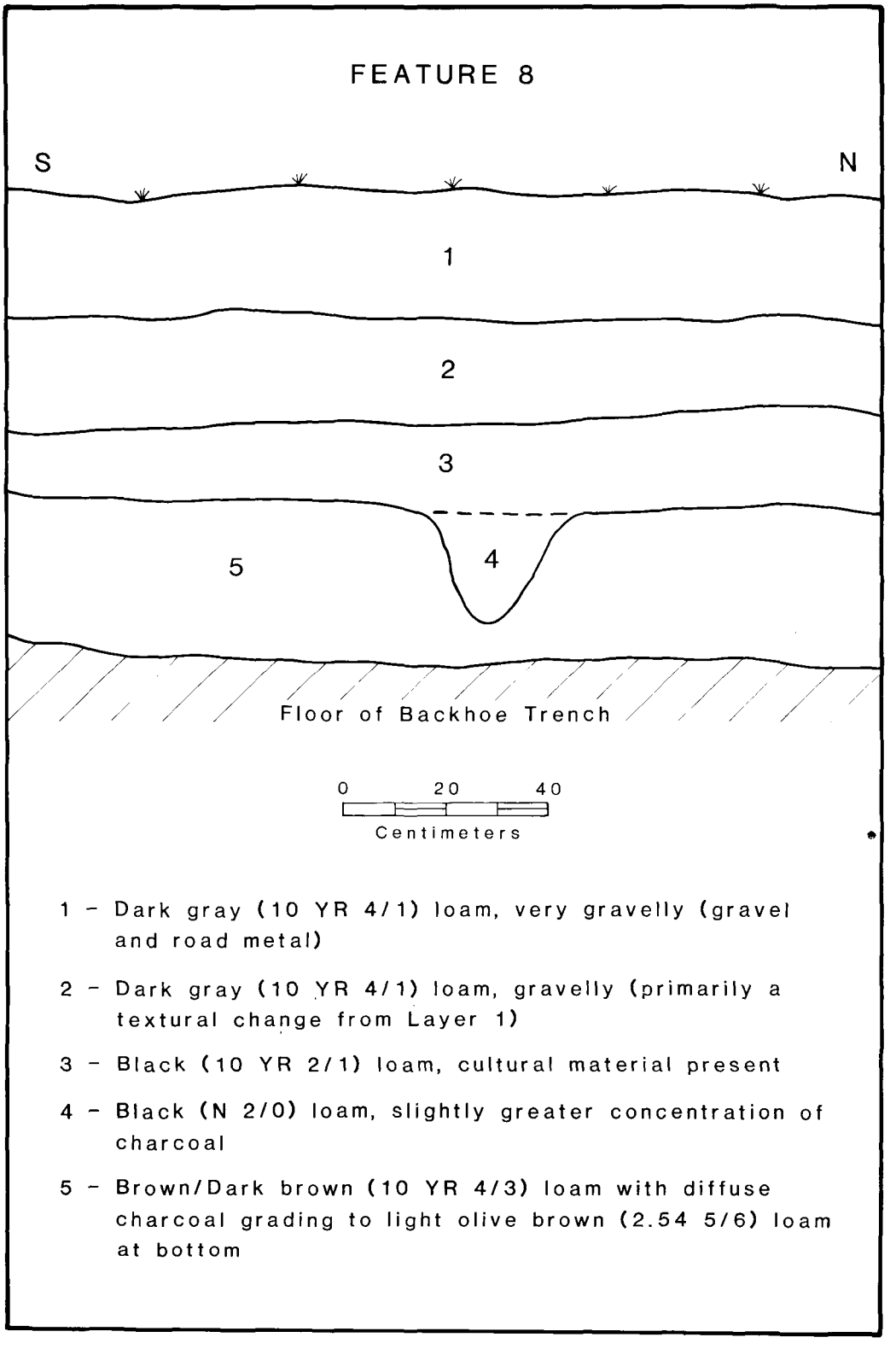


Figure 21. Feature 8, Backhoe Trench A.

Material Culture

Both historic and prehistoric cultural remains were collected during limited testing at the Vaughn Site (33CU65). Samples of both lithic and ceramic remains were collected and analyzed. Small collections of faunal and floral materials were also available for analysis. Three samples of charcoal were processed for radiocarbon dating and two ceramic sherds were collected for thermoluminescence dating. Historic items were tabulated but not analyzed.

Historic Materials

A small sample of historic items were recovered during excavation. The sample is composed of a wide range of material categories including architectural (nails, brick, wood, window glass, plaster), hardware (screws, nuts, bolts, wire), domestic (dishware, fruit jars, crock fragments, bottle glass), personal (penny, clay pipe stem), transportation (car part), tools (drill bit), and miscellaneous items. No analysis of internal relationships within the assemblage was attempted due to the highly disturbed nature of the context of recovery. It is surmised from previous land use practices in the region (NPS 1976:13) that the vast majority of the historic assemblage was deposited at the site in the form of land fill materials. It is possible that some material was derived from the Vaughn farmstead but its separation from the rest of the fill is not possible at this time. Hence, because of its secondary or tertiary depositional context, no analysis save the tabulation of the materials and their provenience was undertaken (Table 6).

Faunal Remains

Excavation at 33CU65 yielded a total of 447 faunal elements (total wt. 347 g). With the exception of a single fish scale, all remains are mammal. Analysis of the mammalian remains are presented in Appendix A (Monk 1984). Poor preservation limited the number of elements (n=14) that could be identified below the family level (see Appendix A, Monk 1984: Table 3). Nearly all the fauna identified as white-tailed deer and the Rodentia incisor were recovered from Feature 1. At least two individual deer are represented. The elements are from all parts of the skeleton and may indicate that the entire carcass was returned to the site for processing. The presence of the deer antler fragment suggests that the animal was taken between late summer and late winter. While not identifiable, the Rodentia incisor closely approximates the size range of a muskrat.

The limited number of identifiable elements precludes building a clear picture of subsistence practices at the site. It should be noted that the majority of the material recovered represents a single prehistoric storage pit and as such is a biased sample of the site as a whole. It can be said in the most general terms that occupants of the site were utilizing both the woodland (deer) and riverine (deer, fish and possibly muskrat) environs.

Table 6. Provenience of historic artifacts from the Vaughn Site (33CU65), Cuyahoga Valley National Recreation Area, November 1983.

Shovel test 3/4	
1	clear bottle glass fragment
1	faunal element, Odocoileus virginianus white-tailed deer, left diaphysis, humerous
Shovel test 5/3	
1	wood fragment
3	orange brick fragments
1	mortar fragment
1	interior (finish) plaster fragment
Shovel test 5/4	
1	flat glass fragment
1	indeterminate bottle glass
1	wire nail
1	stoneware fragment, exterior salt glaze, interior albany slip
Shovel test 6/2	
1	indeterminate black plastic fragment
Shovel test 6/3	
1	interior (finish) plaster fragment
Excavation unit 1, upper dark zone	
8	'bust and grind' fruit jar fragments (glass)
2	flat glass fragments
1	chimney glass fragment
3	melted glass fragments
1	glass tube fragment
9	whiteware cup, plate fragments
1	whiteware handle fragment
3	orange brick fragments
1	red clay drainage tile fragment
1	stoneware fragment, interior, exterior albany slip
1	heavily fired rock of indeterminate lithology
3	wire nails
3	cut (square) nails
1	roofing nail
1	metal spring snap
1	screw
1	1/2 in boring tap drill bit
Excavation unit 1, lower dark zone	
10	clinkers, cinders (wt. 38 g)
2	melted glass fragments
1	flat glass fragment
1	'bust and grind' fruit jar lip fragment (glass)
1	1956-P Lincoln head one cent piece
9	whiteware fragments
1	blue transfer print whiteware fragment
1	stoneware jug (?) fragment, interior, exterior albany slip
2	wire nails
7	cut (square) nails
2	indeterminate metal fragments

Table 6 (continued)

Excavation unit 2, level 1
- 1 - unidentified metal fragment
- 1 - orange clay drainage tile fragment
- 2 - brown glazed drainage tile fragments

Excavation unit 3, level 1
- 1 - bakelite distributor rotor
- 7 - clear flat glass fragments
- 5 - clear/aqua bottle glass fragments
- 11 - brown bottle glass fragments
- 5 - wire nails
- 1 - wire fragment
- 1 - interior (finish) plaster fragment
- 1 - yellow ware fragment
- 2 - redware fragments
- 1 - stoneware fragment with exterior salt glaze and brown strip of glaze on exterior and interior
- 7 - whiteware fragments
- 2 - milkglass fragments
- 1 - semi-vitreous whiteware fragment
- 1 - blue transfer print whiteware fragment
- 1 - polychrome transfer print whiteware fragment
- 1 - flooring tile fragment with lead glaze
- 1 - blue handpainted whiteware fragment
- 1 - annularware fragment

Excavation unit 4, level 1
- 1 - clear flat glass fragment
- 4 - clear bottle glass fragments
- 1 - brown bottle glass fragment
- 1 - milk glass Ball jar lid liner
- 1 - 1/4 in carriage bolt
- 3 - cut (square) nails
- 1 - indeterminate metal fragment
- 1 - red brick fragment
- 1 - basal fragment to small cylindrical stoneware vessel
- 4 - whiteware fragments
- 1 - rim fragment stoneware crock with exterior, interior albany slip
- 1 - blue transfer print whiteware fragment
- 1 - black transfer print whiteware fragment
- 2 - stoneware fragments with yellow glaze

Excavation unit 4, level 2
- 1 - cut (square) nail

Excavation unit 5, lev.1
- 1 - orange brick fragment
- 1 - clear glass fragment

Feature 1, Quad 1
- 1 - small wire fragment
- 1 - clear glass fragment

note: it is likely these articles are the result of the backhoe operations

Backdirt pile from backhoe operation in vicinity of Feature 1
- 1 - clay pipe fragment

Also, at least one white-tailed deer individual was procured between late summer and late winter.

Floral Remains

Excavation at 33CU65 yielded a total of 96 grams of macrobotanical remains and wood charcoal samples, the analyses of which are presented in Appendix B (Voigt 1984).

Examination of 18 samples from Feature one revealed elements of Convolvulaceae (morning glory family), strophostyles (wild bean) and Zea mays (maize) present in the feature fill (Voigt 1984). The Mesoamerican cultigen (maize) is by far the most common taxa with 31 kernals and 10 cupules represented.

Analysis of carbonized nut remains revealed elements of Carya spp. (both shagbark and shellbark hickories) present (Voigt 1984).

The wood charcoal assemblage is dominated by probable bottomland and lower slope taxa such as oak (red and white groups), true hickory, sycamore and ash (see Voigt 1984:Table 2).

Interpretations based on the small charcoal sample collected must be considered tenuous. Ideally, samples should be collected from several proveniences as a means of eliminating sampling bias (Zalucha 1982). Wood charcoal collected from a single storage pit, as in the sample from 33CU65, can only be used as a very general indication of the presence of various wood types in the local area. All the taxa represented by charcoal in Feature 1 are available on the Cuyahoga floodplain adjacent to the site and along the lower slopes of the valley walls.

The presence of maize, and possibly the wild bean (recovered in archeological contexts at sites ranging from Late Archaic to the Mississippian period; Voigt 1984), indicates that horticulture was being practiced by site inhabitants. The presence of hickory nut remains, common in other Late Woodland contexts (Voigt 1984), indicates that site inhabitants exploited fall/winter nut resources probably located within close proximity to 33CU65.

While both maize and hickory nut crops are harvested in late summer and early fall, such an assignment of seasonality to 33CU65 is considered tenuous as both crops can be stored for considerable lengths of time. However both crops would support the contention by Brose (1980:12-16) that similar sites in floodplain locations were spring through late summer occupations.

Prehistoric Materials

The material culture is composed primarily of lithic debris including flakes, non-diagnostic shatter, chipped stone tools and a pecked stone tool. A small sample of ceramic vessel fragments was also collected. A tabulation of this data according to their provenience is presented in Tables 7 and 8.

Lithic Materials. Lithic debris consists of 225 flakes, 320 pieces of non-diagnostic shatter and a single core fragment. The predominant lithology of the entire assemblage is chert (69.2% by count), which was broken down into light colored chert (48.6% by count) and dark colored chert (20.6% by count), followed by chalcedony (26.4% by count) with small percentages of quartz, shale/slate, basalt and quartzite comprising the remainder of the sample. Analysis of only the diagnostic debris changes the proportions only slightly. Chert is still the predominant lithology (59.5% by count, 67.4% by weight) followed by chalcedony (39.5% by count, 16.4% by weight) and single instances of quartz (0.5% by count, 0.3% by weight) and diorite (0.5% by count, 15.9% by weight). An attempt was made to separate the various varieties of chert and chalcedony based on color, texture and presence or absence of fossil inclusions. Efforts toward this goal were only partially successful (Table 9) owing to the wide range of color variations, especially present in the chalcedony samples and the lack of a comparative lithic collection from the area. Materials similar to the milky blue chalcedony described as a common grade of Flint Ridge chalcedony along with a dark blue to black chert similar to the Upper Mercer, Zaleski or Coshocton cherts (cf. Stout and Schoenlaub 1945; Keel 1976) are present in the Vaughn assemblage. Several of the light gray/gray chert samples are similar to the gray glacially transported cherts discussed by Belovich and Brose (1983) at the nearby Greenwood Village Site (33Su92).

Analysis of the striking platform characteristics on the diagnostic debris (Table 10) indicates that plain platform elements (46.2%, n=104) are the most common followed by facetted (24%, n=54) and bifacial thinning (15.1%, n=34) elements. Cortical elements (7.1%, n=16) comprise the remainder of the sample, with 7.6% of the sample (n=17) exhibiting crushed platforms too fragmentary to be analyzed further. Analysis of the amount of cortex present on diagnostic debitage indicates a predominance of interior (79.1%, n=178) and secondary (15.1%, n=34) elements with minor amounts of cortical (2.7%, n=6) and primary (3.1%, n=7) elements present.

The low amount of cortical elements and cortical platforms is some indication that initial procurement and core reduction activities were not very prevalent at 33CU65. In contrast, the high proportion of interior and secondary elements (94.2%) and the relative abundance of facetted and bifacial thinning elements (39.1%) indicates that the later stages of core reduction, biface

Table 7. Provenience of lithic artifacts from 33CU65

Provenience	Flakes	NDS	Cores	Tools	Totals
XU 1,lev.1	4	9	--	2	15
XU 4,lev.1	37	59	--	4	100
lev.2	6	23	--	2	31
lev.3	2	--	1	1	4
XU 5,lev.1	18	23	--	2	43
lev.2A	15	18	--	1	34
lev.2B	5	7	--	--	12
lev.3	4	6	--	--	10
XU 6,lev.1	31	42	--	1	74
lev.2	11	12	--	1	24
lev.3E	5	6	--	--	11
lev.3W	5	3	--	--	8
Feature 1	78	113	--	5	196
Other	4	2	--	--	6
Shovel tests	--	8	--	--	8
Totals	225	331	1	19	576

Table 8. Provenience of minimum number of ceramic vessels represented at 33CU65.

Temper / Provenience	Shell	Mixed	Grit	average thickness (mm)	vessel part/ vessel number	Figure
XU 1,lev.1	--	--	1	6.5	rim/vessel 1	25a
XU 4,lev.1	--	--	1	6.9	rim/vessel 2	25b
	--	--	1	7.05	rim/vessel 3	25c
	--	--	1	5.0	rim/vessel 18	27d
XU 5,lev.1	--	--	1	7.1	body sherd/vessel 15	27b
lev.2A	--	--	1	5.8	rim/vessel 10	26a
lev.2B						
XU 6,lev.1						
XU 6,lev.1	1	--	--	5.6	rim/vessel 4	25d
	1	--	--	5.0	rim/vessel 14	27a
XU 6,lev.2	1	--	--	5.2	rim/vessel 5	25e
	--	--	1	6.4	rim/vessel 6	25f
	--	--	1	7.5	rim/vessel 7	25g
Feature 1	--	1	--	5.0	rim/vessel 8	25h
	--	--	1	6.2	rim/vessel 9	25i
	1	--	--	8.8	body sherd/vessel 16	27c
	--	--	1	6.3	body sherd/vessel 17	27e
Feature 2	--	--	1	5.8	body sherd/vessel 11	26b
Feature 4	--	--	1	8.3	rim/vessel 12	26c
	--	1	--	5.2-8.4	body sherd/vessel 13	26d
Totals	4 (22.2%) shell	2 (11.1%) mixed	12 (66.7%) grit		18 vessels	

Table 9. Raw material types of diagnostic debris by provenience, 33CU65, November 1983.

	Lithologies (see explanation below)																						% by count		
Provenience	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	total	chert	calcd	other
XU 1,lev.1	-	-	-	2	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	4	100.0	0.0	0.0
XU 4,lev.1	4	9	1	-	5	-	-	5	2	-	1	1	-	-	-	-	-	-	-	-	9	-	37	73.0	24.3	2.7
lev.2	-	1	-	1	1	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	1	-	6	66.7	33.3	0.0
lev.3	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2	100.0	0.0	0.0
XU 5,lev.1	4	4	-	-	2	-	-	-	-	-	-	-	2	-	6	-	-	-	-	-	-	-	18	55.6	44.4	0.0
lev.2A	1	1	-	1	-	3	-	4	-	-	-	-	-	-	3	-	-	-	2	-	-	-	15	66.7	33.3	0.0
lev.2B	1	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	1	-	-	1	-	-	5	40.0	60.0	0.0
lev.3	-	-	-	-	2	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	4	75.0	25.0	0.0
XU 6,lev.1	1	5	-	3	5	3	1	2	-	1	-	-	3	-	-	-	-	1	-	-	6	-	31	67.7	32.3	0.0
lev.2	-	-	-	-	3	4	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	11	63.6	36.4	0.0
lev.3E	-	3	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	5	80.0	20.0	0.0
lev.3W	-	1	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	1	1	-	-	5	40.0	60.0	0.0
XU 5,6,lev.4	-	2	-	-	1	2	-	-	-	-	-	-	2	-	-	1	-	-	-	-	-	-	8	62.5	37.5	0.0
Feature 1	4	8	1	10	2	2	-	-	-	-	4	-	8	1	15	1	2	1	-	-	10	1	70	44.3	54.3	1.4
Misc.	-	-	-	1	-	1	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	4	50.0	50.0	0.0
Totals	15	35	2	18	22	16	1	13	2	3	7	1	23	2	24	2	4	2	4	2	26	1	225	59.5	39.5	1.0

Explanation

Chert
- A - tan/yellow/brown
- B - gray/dark gray
- C - reddish brown
- D - blue/gray mottled
- E - black/dark blue
- F - light gray
- G - blue/red
- H - gray/blue banded
- I - olive brown
- J - white/white fossiliferous
- K - yellow/tan fossiliferous

Chalcedony
- M - milky blue/blue gray
- N - black/dark blue
- O - amber/light tan
- P - pink/gray
- Q - reddish/brown
- R - dark brown/black
- S - gray
- T - white
- U - light gray/dark gray/blue banded

Other
- L - white quartz
- V - green doirite

Table 10. Characteristics of diagnostic lithic debris at 33CU65

Platform Type

	wt.(g)	plain	cortical	facetted	bifacial thinning	crushed
Flakes (n=225)	104.1	104	16	54	34	17
%		46.2	7.1	24.0	15.1	7.6

Raw Material

	light chert	dark gray chert	quartz	chalcedony	other
n=225	91	43	1	89	1
%	40.4	19.1	0.5	39.5	0.5
wt.=104.1g	46.3	23.8	0.3	17.1	16.6
%	44.5	22.9	0.3	16.4	15.9

Amount of Cortex Present

	cortical (100%)	primary (50-99%)	secondary (1-49%)	interior (0%)
n=225	6	7	34	178
%	2.7	3.1	15.1	79.1

reduction, tool finishing and tool sharpening were a common occurrence at the Vaughn Site. This proposition is supported by the average flake length (13.02 mm, standard deviation 5.62 mm) and the distribution of flake lengths (Figure 22) which is skewed toward smaller flakes. Lynott (1981) has shown that a wide range of flake lengths is probably indicative of all or most of the phases in the reduction sequence. The sizable amount of plain platform elements would also support the early stages of core reduction and biface reduction. The slight incongruity between the platform preparation data and the flake length data may be informative as to the size raw material being utilized at the site. Further research is necessary to clarify this point.

One core fragment was collected from 33CU65 (Figure 23g). It is a single platform core with five flake scars apparent although only one is a measurable detachment (21.2 mm). The core is made from a light gray (N7/0) to gray (N5/0) chert found within a pale brown (10YR6/3) grainy matrix. This is probably a locally available raw material. The core was exposed between 30-40 cm below surface in Excavation Unit 4 .

Chipped Stone Tools. The chipped stone assemblage consists of six projectile points, seven biface fragments and five retouched/utilized pieces. Table 11 lists the tools by provenience and presents metric and lithologic data for each item.

Four of the six projectile points are the plain triangular form normally associated with Late Prehistoric, Late Woodland sites in eastern North America. Two of the points appear similar to the Madison type (Figure 23a,b) and two more closely resemble the Levanna type (Figure 23c,d) as illustrated by Ritchie (1965:Plates 88,92). The distinction made between the two is that the Levanna point is considered earlier and is larger and more equilateral with a concave or straight base while the Madison point is smaller in size and has an isosceles shape (Ritchie 1965:275-276). As the illustrations in Ritchie show, there is much overlap of these characteristics in any one assemblage. It is interesting to note however that the two Madison-like points were found in proveniences within the midden deposit (Excavation Unit 4, Level 1 and Excavation Unit 6, Level 2) which may postdate and cap the two features (Feature 1 and 4) where the two Levanna- like points were recovered. The radiocarbon and thermoluminescence dates also support this observation.

While the sample is too small to categorize, morphologically it could easily be placed within the assemblage illustrated (Brose 1984:Plate III) for the Hale Farm Site (33SU17) which Brose typifies as transitional between the two mentioned types and which he assigns a date range of A.D. 1000 - A.D. 1200 (Brose 1984:21).

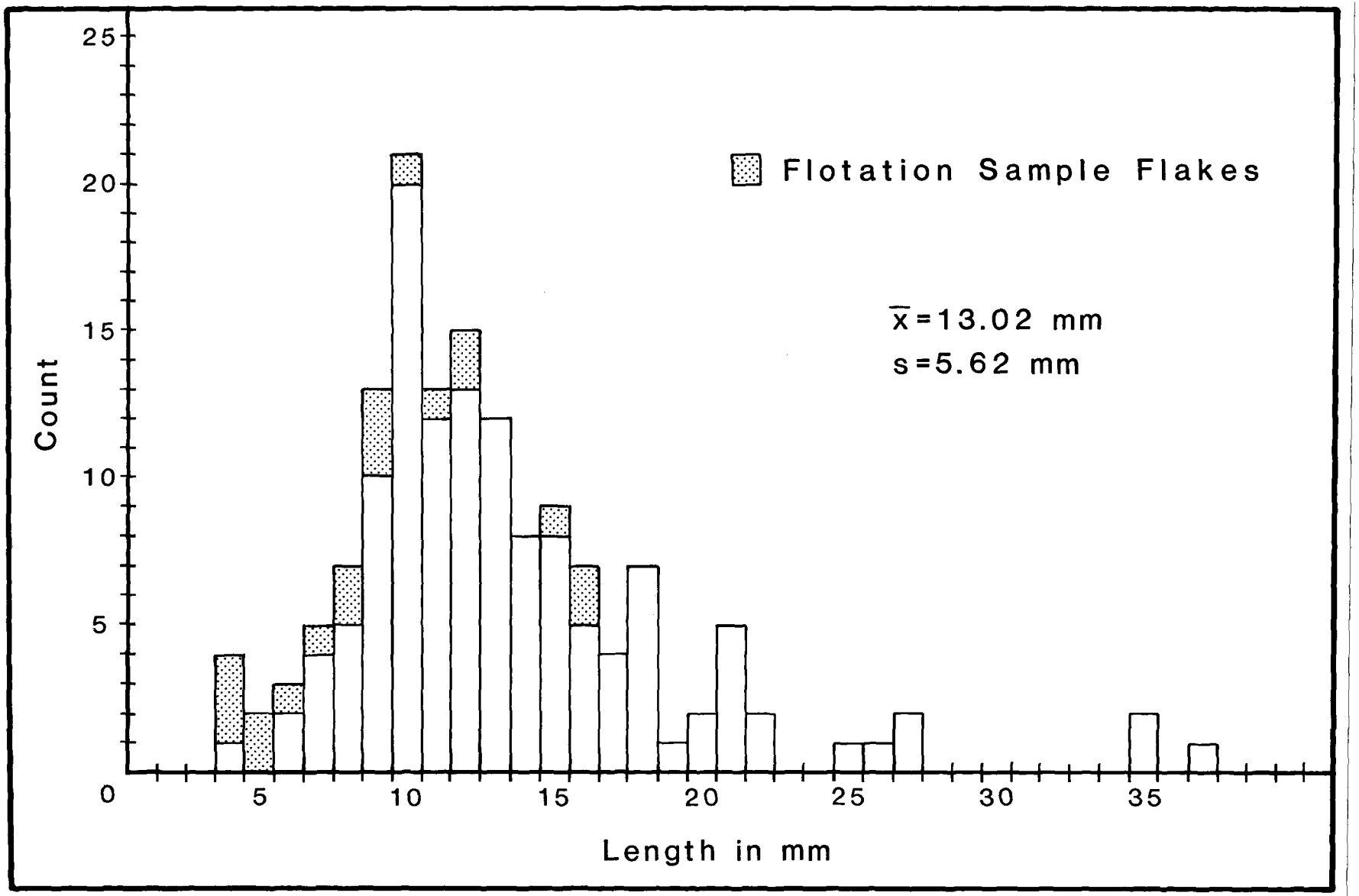


Figure 22. Distribution of flake lengths at 33CU65, Cuyahoga Valley National Recreation Area.

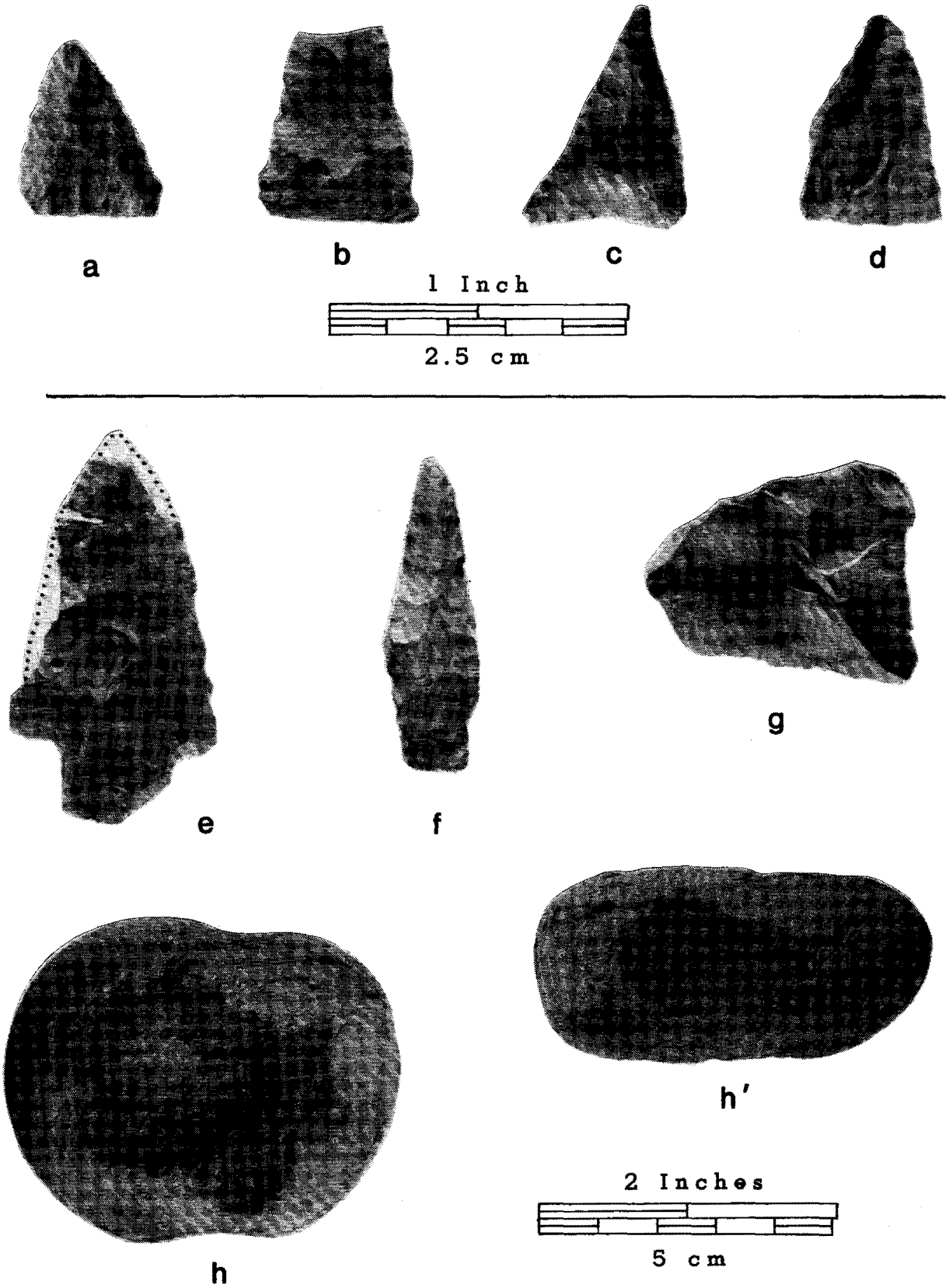


Figure 23. Lithic artifacts from 33CU65.

Table 11. Chipped and Pecked Stone Tools.

(* - broken tool)

Provenience	Illust	Tool (mm)	Color/Lithology
XU 1,lev.1	24a	biface fragment (29* x 26 x 8.8)	lt gray(N7/0) to gray (N5/0) chert in a pale brn (10YR6/3) matrix
	24c	biface fragment	very pale brown (10YR8/3) chert
XU 4,lev.1	23a	projectile point (17.1 x 11.7 x 3.4)	gray (N6/0 to10YR5/1) chert
	24e	biface fragment	blue/gray (5BG4/1) slate
	24f	biface fragment	dark blue (2.5PB3/2) chert
	24j	retouched/utilized flake	gray (N5/0 to N7/0) banded chert
XU 4,lev.2	23e	projectile point (57.5* x 33.5 x 7.1)	gray (N6/0 to N7/0) chert
	24g	biface fragment	dull white to lt gray (N7/0) chert
XU 4,lev.3	23g	core fragment (single platform)	lt gray (N7/0) to gray (N5/0) chert in a pale brn (10YR6/3) matrix
	24d	biface fragment (36.8* x 25.1 x 8.3)	lt gray (N7/0) to gray (N5/0) chert in a pale brn (10YR6/3) matrix
XU 5,lev.1	23f	projectile point (56.2 x 17.1 x 8.8)	gray (10YR5/1) chert with lt gray (N7/0) mottles
	24b	biface/blank (36.2 x 17.8 x 7.9)	grayish brown (10YR5/2) chert
XU 5,lev.2A	24h	retouched flake	gray (N5/0) chert
XU 6,lev.1	24i	retouched/utilized flake	dk gray (N4/0),gray (N5/0) banded chert
XU 6,lev.2	23b	projectile point (16.7* x 13.9 x 4.1)	very dk gray (N3/0) chert with fossil inclusions
Feature 1	23c	projectile point (19.2 x 13.7 x 3.4)	lt gray (N6/0) calcedony with dark gray (N4/0) mottling
	24k	retouched flake	very pale brn (10YR7/3) to gray (N6/0) mottled chert
Feature 1	24l	retouched/utilized shatter	lt gray/white (N6/0) chert
	23h,h'	hammerstone/anvil	brown (10YR5/3) fine grain sandstone
Feature 4	23d	projectile point (14.9 x 12.1 x 3.1)	dk gray (N4/0), lt gray (N7/0) banded calcedony

The other two projectile points are straight to slightly contracting stemmed forms suggestive of an Archaic time period (Figure 23e,f). One point was exposed in Level 2 of Excavation Unit 4 and the other was in the midden deposit (Excavation Unit 5, Level 1). It is not uncommon to find Archaic points on secondary tributary terraces in many sections of the park (Brose et al.1981:120, Brose 1984:21; McKenzie et al. n.d.).

Seven biface fragments (Figure 24a-g) were recovered at 33CU65. One, a mid-section fragment, is suggestive of a stemmed projectile point (Figure 24a) but is too fragmentary to facilitate a conclusion. It is made from a light gray (N7/0) to gray (N5/0) chert of probable local occurrence. Five other biface fragments, ranging from nondescript fragments to blanks, are also made from locally available gray (N5/0) to gray/brown (10YR5/2) cherts. The seventh biface is made of a blue/gray (5BG4/1) slate material (Figure 24e) and exhibits very irregular and uneven flaking along two edges. Flaked shale/slate tools are fairly common and have been reported at several sites in the area (Brose 1984:21; Belovich and Brose 1983; Brose et al. 1976:59; Jeffrey Richner, personal communication 1984).

The final class of chipped stone tools recovered from the Vaughn Site consist of five retouched or utilized pieces of chert debitage (Figure 24h-l). All show unifacial retouch along one or more margins. One piece was recovered from level one in Ecavation Unit 4, two were exposed in the midden above Feature 1 and two came from Feature 1 itself.

Pecked Stone Tool. A single pecked stone tool was recovered from the Vaughn Site. It is a brown (10YR5/3) fine grained sandstone river cobble that shows deep pock marked areas on both top and bottom surfaces (Figure 23h) and some shallow pock marked areas on two opposing sides. It is presumed that the tool functioned as an anvil and as a hammerstone. It was recovered from the bottom of Feature 1.

While our chipped stone tool sample is admittedly small (n=18), the percentage of utilized debitage (27.8%) is similar to those assemblages described by Brose as winter campsites (Brose 1980:16) and contrasts with the high percentages of utilized debitage reported for all three occupations at the South Park Site (33CU8) (Brose 1973) and for reported summer villages in similar topographic locations throughout the Whittlesey sequence (Brose 1978, Brose et al.1981). This may be due to the small sample size and limited excavation or it may also indicate a slightly different lithic utilization strategy at the Vaughn Site than previously believed for similar sites.

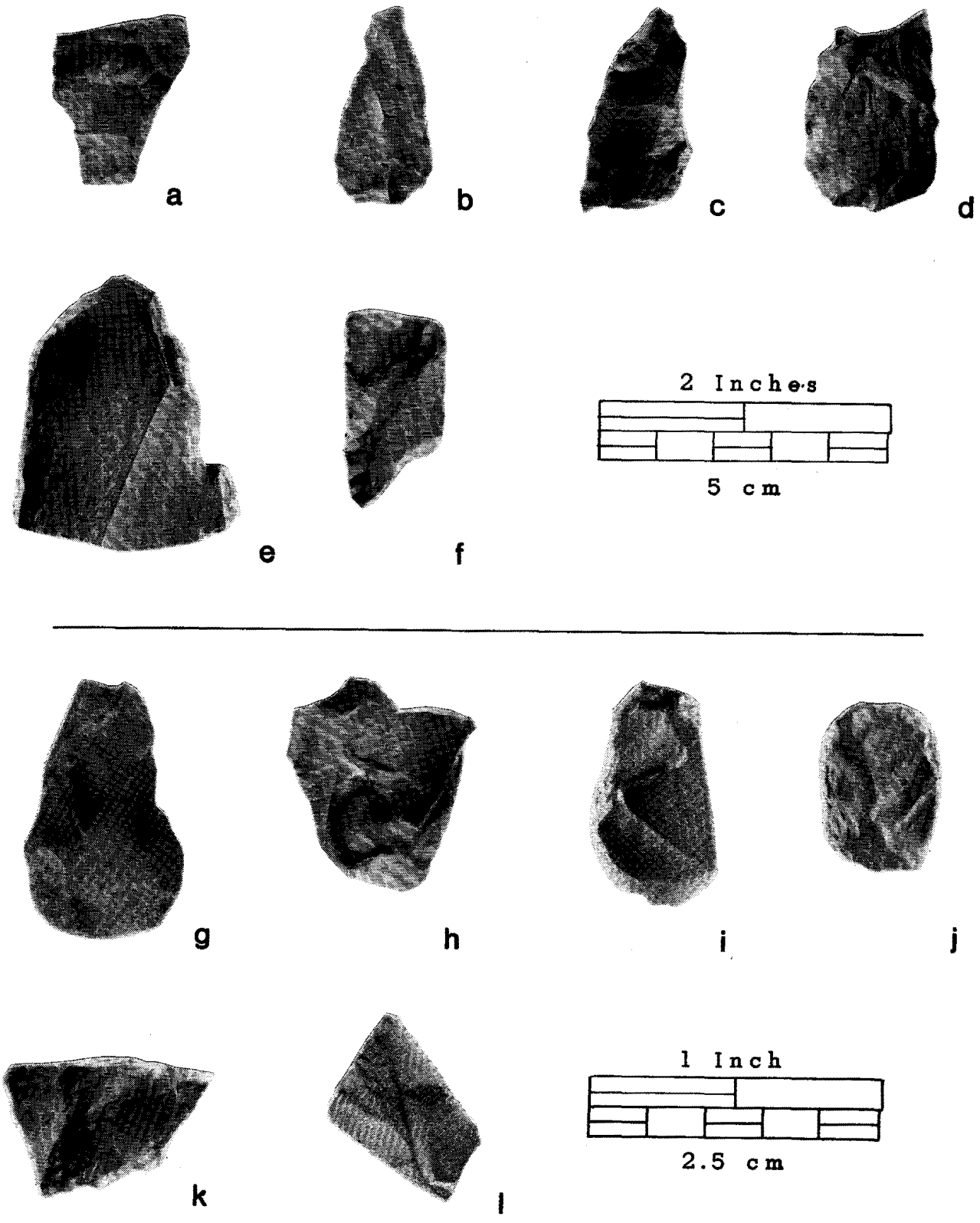


Figure 24. Lithic artifacts from 33CU65.

Ceramic Materials. The ceramic sample collected at the Vaughn Site consists of 170 fragments of prehistoric pottery of which 13 are rim fragments. The assemblage represents at least 18 different vessels whose provenience and characteristics are presented in Table 8.

Analysis of the 18 vessels represented, including the 13 rim sherds, revealed few sherds that could clearly be typed according to existing ceramic typologies for the region (Brose 1973, 1976, 1984, n.d.; Brose et al.1976; Fitting 1964; Griffin 1943; Murphy 1971a, 1971b; Ritchie 1965). This is somewhat understandable given the small sample size but also points up the vagueness of ceramic typologies.

Vessel 1 (Figure 25a) is represented by a single rim sherd recovered from the lower level of Level 1 in Excavation Unit 1. The rim has a slightly outcurving profile with a flattened,thickened lip. Temper is medium sized crushed rock. Both exterior and interior coloration is brown (10YR5/3) with the exterior showing indeterminate vertical markings; probably cording. Average vessel wall thickness is 6.5 mm.

Vessel 2 (Figure 25b) is represented by a single rim sherd recovered from Level 1 of Excavation Unit 4. The sherd has very coarse crushed rock temper (some granules as large as 3.9 mm in diameter). The rim profile is slightly incurving. The lip is rounded and both interior and exterior surfaces have been smoothed. The exterior is a reddish brown (5YR5/4); the interior is a lighter reddish yellow (7.5YR7/6). The average vessel wall thickness is 6.9 mm.

Vessel 3 (Figure 25c) is defined by a single grit tempered rim sherd. The crushed granite and quartz temper ranges from medium to coarse size. The rim has a vertical profile with a flat lip having an exterior bevel. The top of the lip exhibits oblique cordmarking or trailing only vaguely discernable. In cross-section, indications of slab rather than coiled construction techniques are present. Both interior and exterior surfaces have been smoothed and are a light yellowish brown (10YR6/4). The average vessel thickness is 7.05 mm. The sherd was recovered from Level 1 in Excavation Unit 4.

Vessel 4 (Figure 25d) is represented by a single shell tempered rim sherd recovered from level one of Excavation Unit 6. The rim profile is vertical to slightly outflaring with a flat to slightly rounded lip. Both interior and exterior surfaces are smoothed. A coiled constructional technique is suggested by a macroscopic analysis of the sherd in cross-section. The paste is very dark gray (N3/0) in cross-section while the exterior and interior vary from light gray (10YR6/1) to gray (10YR5/1). Average vessel thickness is 5.6 mm.

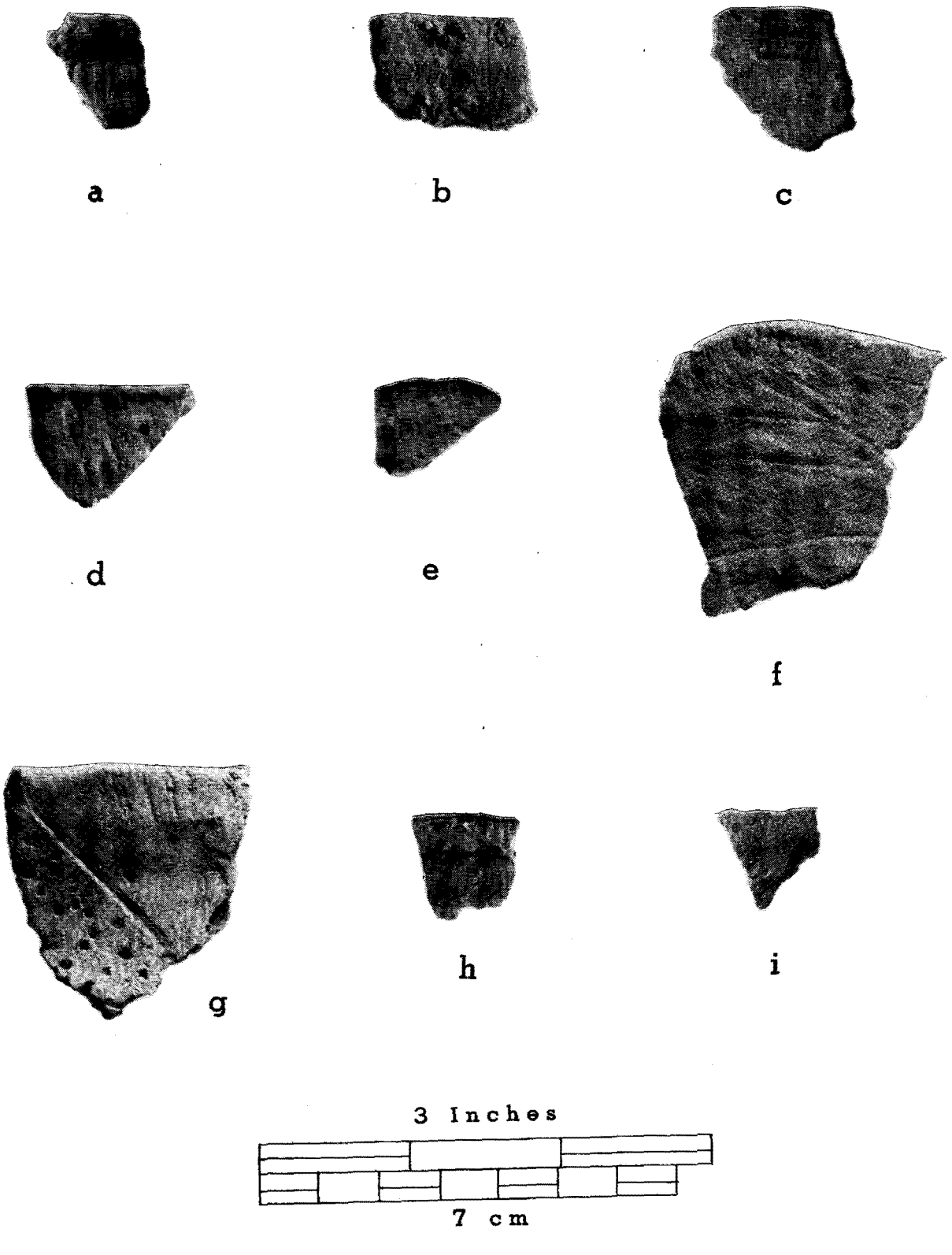


Figure 25. Prehistoric ceramic vessels from 33CU65.

Vessel 5 (Figure 25e) is defined by a single shell tempered (with quartz inclusions) rim sherd recovered from Level 2 of Excavation Unit 6. The rim profile is nearly vertical with a rounded lip. Coiled construction is suggested. The interior paste is dark gray (N4/0) while the smooth exterior surface is light yellowish brown (10YR6/4). The interior is largely exfoliated. Average vessel thickness is 5.2 mm.

Vessel 6 (Figure 25f) is represented by a single grit tempered rim sherd recovered from Level 2 of Excavation Unit 6. The temper is composed of medium to coarse angular quartz and crushed rock fragments. The rim profile is outflaring with a flat lip. The rim profile flares forming a rounded castellation vaguely similar to several sherds from the Fairport Harbor Site (33La5) illustrated by Murphy as Fairport "plain" rimsherds (1971b:Fig.11). Murphy also mentions "...low subangular castellations on some of the 'plain' vessels..." present in the ceramic assemblage at the same site (Murphy 1971b:39). David Brose (personal communication,1984b) has suggested that the sherd bears some resemblance to early Parker rimforms (cf. Lee 1958:20,Fig.8) from a Whittlesey component site in southern Ontario. Both the interior and exterior of the vessel have been smoothed with the exterior exhibiting several shallow trailed or dragged impressions in both oblique and horizonal directions below the lip. There is also decoration in the form of shallow vertical impressions just below the lip near the peak of the castellation. The interior and exterior are both very dark gray (N3/0) to black (N2/0) with additional blackening from burned organic residue on both surfaces. The average vessel thickness is 6.4 mm.

Vessel 7 (Figure 25g) is defined by a single grit tempered rim sherd recovered from Excavation Unit 6 Level 2. The temper is medium to coarse crushed rock and quartz granules. The rim profile is straight to slightly flaring with a slightly rounded lip. The exterior is smooothed to smoothed over vertical cordmarking. The exterior has a zoned decoration consisting of an oblique trailed line separating an area of random punctates (1.2-2.3 mm in diameter) from a plain surface area. The exterior is pale brown (10YR6/3) to gray (10YR5/1) while the smooth interior surface is buff to pale brown (10YR6/4- 10YR6/3). Average vessel wall thickness is 7.5 mm.

While not similar to any commonly recognized Whittlesey type the sherd is similar to an illustrated rim collected at the South Park Site, 33CU8 (Brose 1973:30,Fig.2-lower left corner). It also bears some similarities in design motif to Feurt Incised and Anderson Incised Fort Ancient ceramics illustrated by Griffin (1943:Plate 24,Fig.17; Plate 39,Fig.7,10).

Vessel 8 (Figure 25h) is represented by a single rim sherd recovered from the lowest level (Quad 4) of Feature 1. Its temper is predominately shell but several coarse granules of crushed rock are also present. The rim profile is straight to slightly incurving. The lip is flat with a single oblique tool impression.

The exterior is badly exfoliated. The portion of the remaining exterior surface is light brownish gray (10YR6/2) and was probably cordmarked. The interior is blackened with encrusted organic material. The average vessel thickness is 5 mm.

Vessel 9 (Figure 25i) is defined by one rim sherd and six body sherds recovered from three different proveniences. The rim fragment was recovered from the lowest level (Quad 1) of Feature 1, four body sherds were recovered from Level 3 of Excavation Unit 6 and two body sherds were collected from Level 2 of Excavation Unit 6. While there are no absolute cross matches among the sherds, their grouping was precipitated by similarities in vessel thickness, temper (medium to coarse angular crushed rock and quartz), surface treatment (cordmarked to smooothed over cordmarked) and the high degree of micaceous grit apparent on the exterior and interior surfaces. Temper density is relatively high, possibly representing between 20 and 30% by volume. The rim profile is straight with a flat lip. Lip decoration consists of indistinct oblique cordwrapped stick impressions. The exterior surface is dark gray to very dark gray (10YR4/1- 10YR3/1). The smoothed interior is light yellowish brown (10YR4/4). Average vessel wall thickness ranges from 6.2 mm at the rim to between 5.8-6.6 mm for the body sherds. Following Brose (1984:24, n.d.), this vessel most closely resembles the Fairport Harbor Plain variety Fairport type vessel.

Vessel 10 (Figure 26a) is represented by one rim sherd and eight body sherds from three and possibly four separate proveniences. Cross matches from three proveniences (Excavation Unit 6 Level 1, Excavation Unit 5 Level 2B and 2A) are found on the rim sherd indicating contemporaneity between those particular levels. Likewise seven of the body sherds were recovered from either Level 2A or 2B in Excavation Unit 5. The eighth body sherd, which closely resembles the other sherds, was recovered from Level 3E of Excavation Unit 6. The cross matches for this vessel indicate that the upper two levels of Excavation Units 5 and 6 including the midden can be treated as one depositional unit.

The vessel has medium to coarse crushed rock and quartz temper. Temper density is relatively high, possibly representing between 20 and 30% by volume. The rim profile is straight to slightly flaring with a flat lip decorated with indeterminate tool impressions. The body sherds have cordmarked exteriors while the rim is smooth above the shoulder. Both interior and exterior surfaces are very dark gray (N3/0) to black (N2/0). Portions of the interior are encrusted with black organic material. The rim is decorated with shallow trailed lines in a chevron pattern bordered by shallow rectalinear tool impressions. This ceramic type is not common in the CUVA region but resembles a type best described as Reeve Horizonal grading into Mixter Dentate variety Parker (David Brose, personal communication 1984b). Average vessel thickness for the rim is 5.8 mm and for the body sherds ranges between 4.6-5.6 mm.

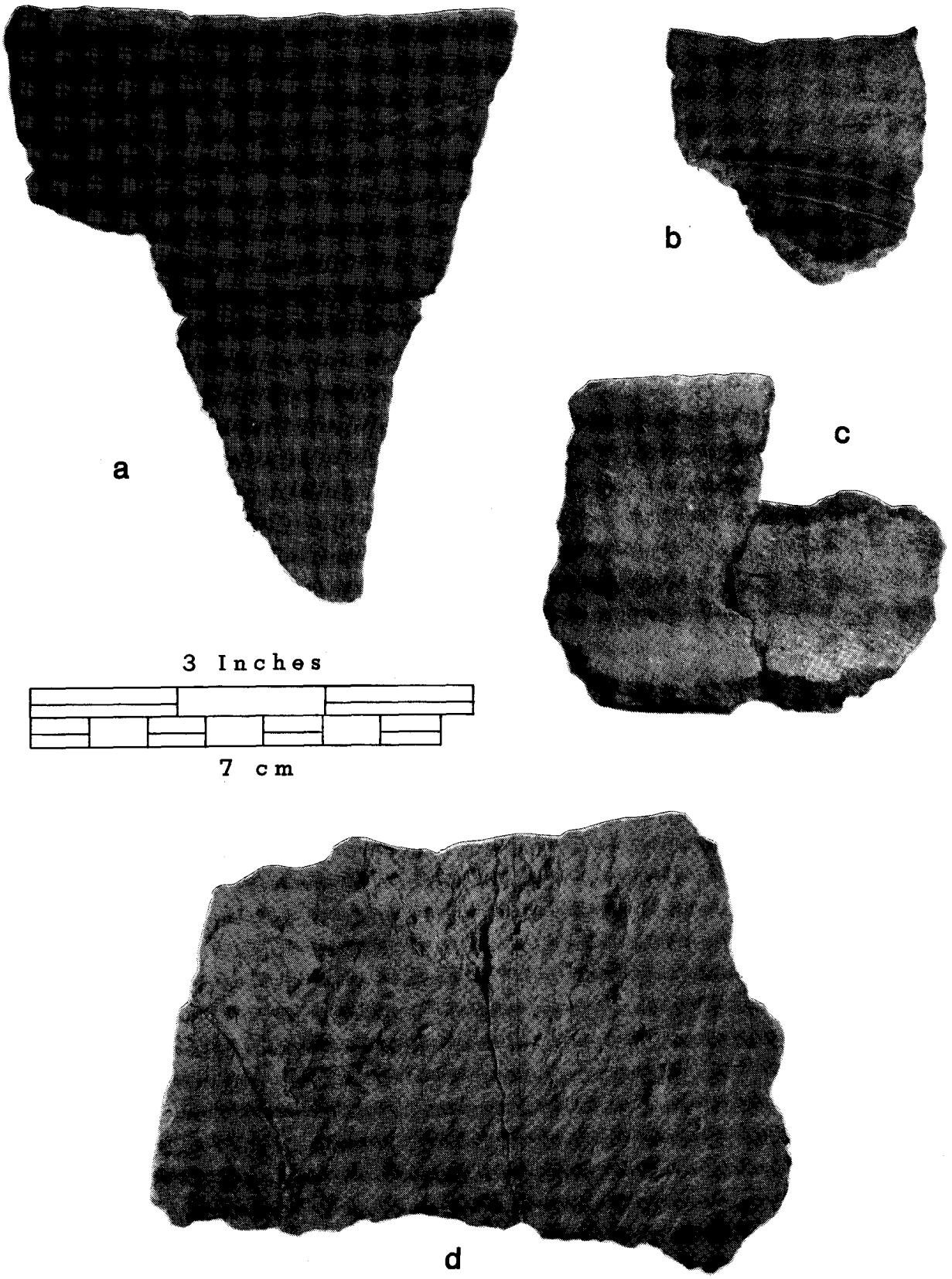


Figure 26. Prehistoric ceramic vessels from 33CU65.

Vessel 11 (Figure 26b) is defined by a single grit tempered neck/shoulder sherd recovered from Feature 2. The temper is medium to coarse sized and consists of mostly rounded quartz grains with some angular crushed rock fragments. The exterior surface above the shoulder is smooth while the surface below the neck is smoothed over cordmarked. The exterior is largely dark gray (10YR4/1) while the interior is dark gray brown (10YR4/2). The portion above the shoulder is decorated with two oblique incised lines intersected by two horizonal lines over a single row of squared punctate impressions. This design motif, combining both horizonal and oblique incised lines, most closely resembles vessels described as Reeve Opposed (Murphy 1971a:16) or Reeve Incised variety Lyman (Brose n.d., personal communication, 1984b). The average vessel thickness is 5.8 mm.

Vessel 12 (Figure 26c) is represented by a single grit tempered rim sherd exposed in Feature 4 while profiling the north wall of Backhoe Trench B. The medium to coarse sized temper consists of crushed rock. The straight rim profile tapers from neck to lip. The lip is flat, with an exterior bevel, and is decorated with tool impressions resulting in a slightly notched inner lip. Both exterior and interior surfaces have been smoothed. Both surfaces are pale brown (10YR6/3) in color. The average vessel thickness, 9.1 mm tapering to 7.5 mm near the lip, clearly separates this vessel from others in the assemblage by its thickness. The characteristics of this vessel most clearly resemble vessels described as Fairport Harbor Plain variety Fairport (Brose n.d.).

Vessel 13 (Figure 26d) is defined by a single shell and grit tempered body sherd recovered from Feature 4. The mixed temper is predominately shell but also includes some medium sized rounded quartz grains. The exterior is cordmarked to smoothed over cordmarked and pale brown (10YR6/3) to dark gray (10YR4/1) in color. The smoothed interior is buff colored (10YR5/3). The vessel wall thickness ranges from 5.2 to 8.4 mm and suggests that the sherd is from the lower third of the vessel near the base.

Vessel 14 (Figure 27a) is represented by a single shell tempered rim sherd recovered from Level 1 of Excavation Unit 6. The rim profile is straight to slightly rolled at the lip. The lip is flat with a single tool impression. The exterior surface appears to be smooth but is badly weathered. The exterior is grayish brown (10YR5/2); the interior is light reddish brown (5YR6/4). Average vessel thickness is 5 mm.

Vessel 15 (Figure 27b) is defined by a single grit tempered body sherd recovered from Level 1 of Excavation Unit 5. The medium sized temper is composed of dark angular rock fragments with very little quartz present. The very dark gray (N3/0) exterior is smoothed with a distinct opposing incised pattern. This motif is nearly identical to sherds illustrated as Reeve Opposed (Murphy 1971a:19,Fig.8) or Reeve Incised variety Lyman (Brose n.d.).

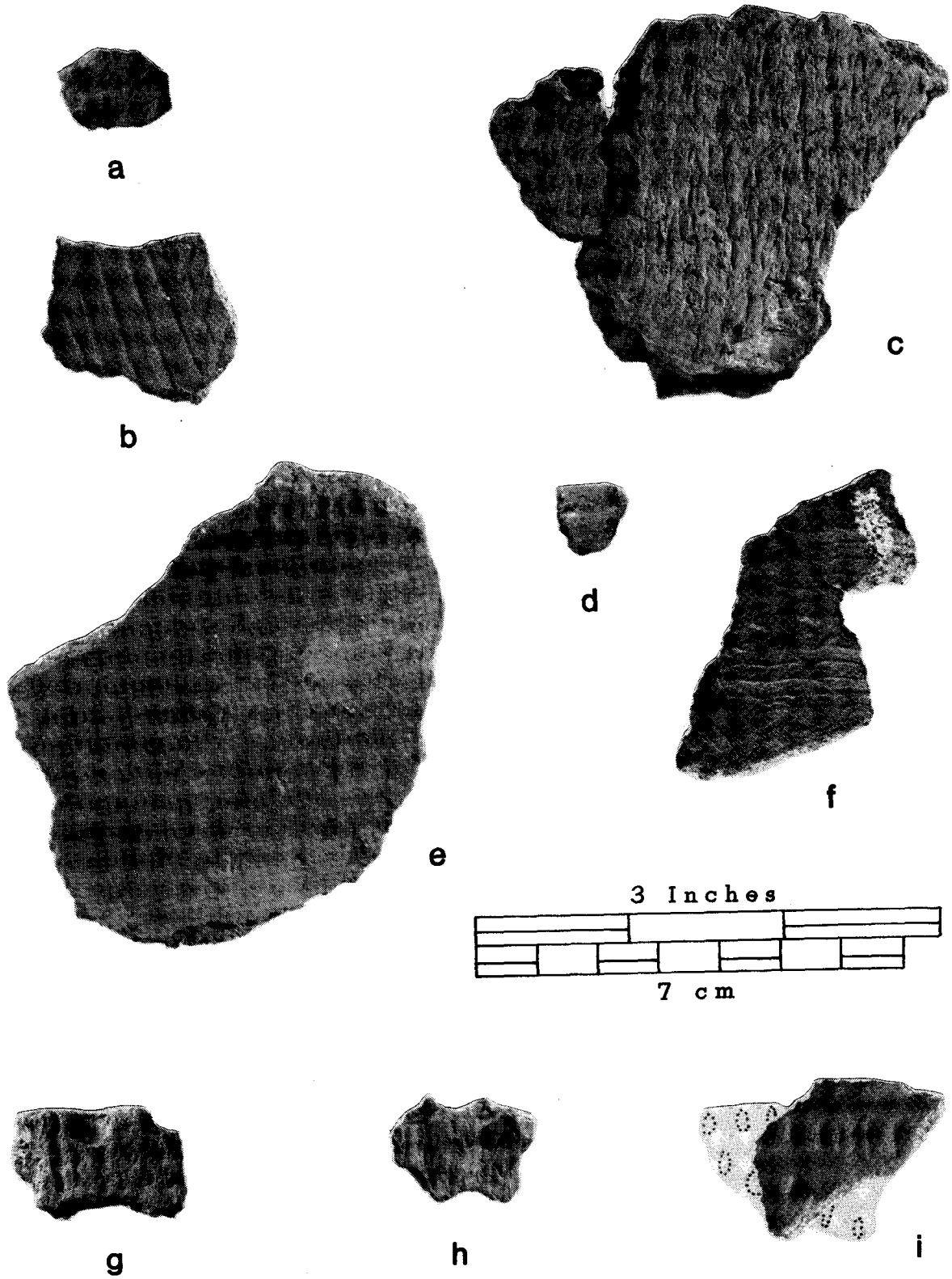


Figure 27. Prehistoric ceramic vessels from 33CU65.

Vessel 16 (Figure 27c) is represented by eight body sherds from six different proveniences. Two of these sherds, cross-match from Excavation Unit 5 Level 3 and Excavation Unit 6 Level 4 at Feature 1, while the other sherds are from overlying proveniences (XU 6, Level 1, 3E, 3W; XU 5, Level 2A) (Figure 28 for the relationships of excavated levels). The sherds are basically shell tempered with small amounts of sand sized grains throughout. The light yellow brown (10YR6/4) exterior is cordmarked while the gray (10YR5/1) interior is smoothed. In cross section, the dark gray (N4/0) to very dark gray (N3/0) paste presents a sharp contrast to the exterior and interior colors. The average vessel thickness is 8.8 mm.

Vessel 17 (Figure 27e) is defined by a single grit tempered neck/shoulder sherd recovered from the lowest level (Quad 4) of Feature 1. The temper consists largely of medium to very coarse crushed granite. Temper density is very high in places, representing between 30 and 40% by volume. The exterior features a smoothed over cordmarked surface while the interior has been smoothed. Exterior surface color ranges from grayish brown to dark gray (10YR5/2- 10YR4/1). The interior is brown (10YR5/3). Decoration consists of very large cording ("z" twist) or dentate stamping with some type of cordwrapped tool just above the neck/shoulder juncture.

Vessel 18 (Figure 27d) is represented by a single grit tempered rim sherd recovered from Level 1 of Excavation Unit 4. Temper consists of medium sized crushed rock and sand. The rim profile is straight to slightly outflaring. The lip is flat with a small tool impression on the outer lip. The grayish brown (10YR5/2) exterior has been smoothed. The weathered interior prevents an accurate measurement of the vessel wall thickness.

Four other decorated sherds were recovered from the Vaughn Site. One (Figure 27f) is a grit tempered body sherd from Feature 1 that exhibits broad shallow dragged or brushed lines somewhat reminiscent of a surface treatment observed on occasional Reeve Horizonal sherds (David Brose, personal communication 1984b). Another sherd (Figure 27g) has a cordmarked exterior decorated by a circular (6.2 mm diameter) punctate. A third fragment (Figure 27h) consists of a cordmarked body sherd with an elongate punctate impression formed by the end of a cordwrapped stick tool. The final decorated sherd (Figure 27i) has a horizonal row of angular punctates intersected by an oblique line of similar punctates. Also present is a broad trailed area parallel to the horizonal punctates. This trailed area may be a channel below a braced or thickened rim.

The remaining undecorated body sherds are included within the site totals tabulated in Table 12.

One fragment (3.8 g) of reddish yellow (7.5YR6/6) baked clay/daub was recovered from the lowest level of Feature 1. It clearly shows stem and rod-like impressions at various

orientations and is indirect evidence for the presence of a structure at the site. Daub and other evidence for structural remains have been reported for sites in the region although most are from blufftop locations (Brose 1973, 1976; Belovich and Brose 1983).

Dating Results

In the course of the excavations, three radiocarbon (C-14) and two thermoluminescence (TLM) samples were collected. Figures 28 and 29 show the stratigraphic relationships of the samples collected from Feature 1 and Feature 4.

Sample 1 (Figure 28) consisted of wood charcoal collected from a probable hearth exposed in Level 1 of the southeast corner of Excavation Unit 6 and the northeast corner of Excavation Unit 5 at a depth of between 5-13 cm below the top of the midden. It yielded an age of 190 +/-60 yrs. B.P. (Beta - 8956) which when adjusted to a 95% confidence interval and calibrated with dendrochronology data gives a date range of A.D. 1620 to present (Klein et al.1982:144).

Sample 2 (Figure 28) was a grit tempered body sherd subjected to TLM analysis. It was collected from Level 2 of Excavation Unit 6 approximately 5-10 cm below the location of the hearth mentioned above in Level 1. It yielded an age of 280 +/- 30 yrs. B.P. (Alpha-959) which when adjusted for a 95% confidence interval yields a calendrical range of A.D. 1610 - A.D.1730.

Samples 3 and 4 (Figure 28) were fragments of wood charcoal collected from soil samples taken in the lowest level of Feature 1. Sample 3 yielded an age of 700 +/- 50 yrs. B.P. (Beta- 8957) when adjusted to a 95% confidence interval yields a date range of A.D.1235- A.D.1345 (Klein et al.1982:142). Sample 4 yielded an age of 410 +/-50 yrs B.P. (Beta-8958) which when adjusted gives a date range of A.D.1405- A.D.1605 (Klein et al.1982:143).

Table 12. Temper and surface treatment of prehistoric ceramics from the Vaughn Site (33CU65).

			(rims/body sherds)			
temper	smoothed over cordmarking	cordmarked	smoothed	indeter	wt.(g)	total
shell	0/2	0/7	3/7	0/15	124.0 (12.4%)	3/31 (20.0%)
mixed	---	0/5	0/5	1/9	142.5 (14.3%)	1/19 (11.8%)
grit	1/20	1/32	7/38	0/17	730.9 (73.3%)	9/107 (68.2%)
totals	1/22 (13.5%)	1/44 (26.5%)	10/50 (35.3%)	1/41 (24.7%)	997.4 (100.0%)	13/157 (100.0%)

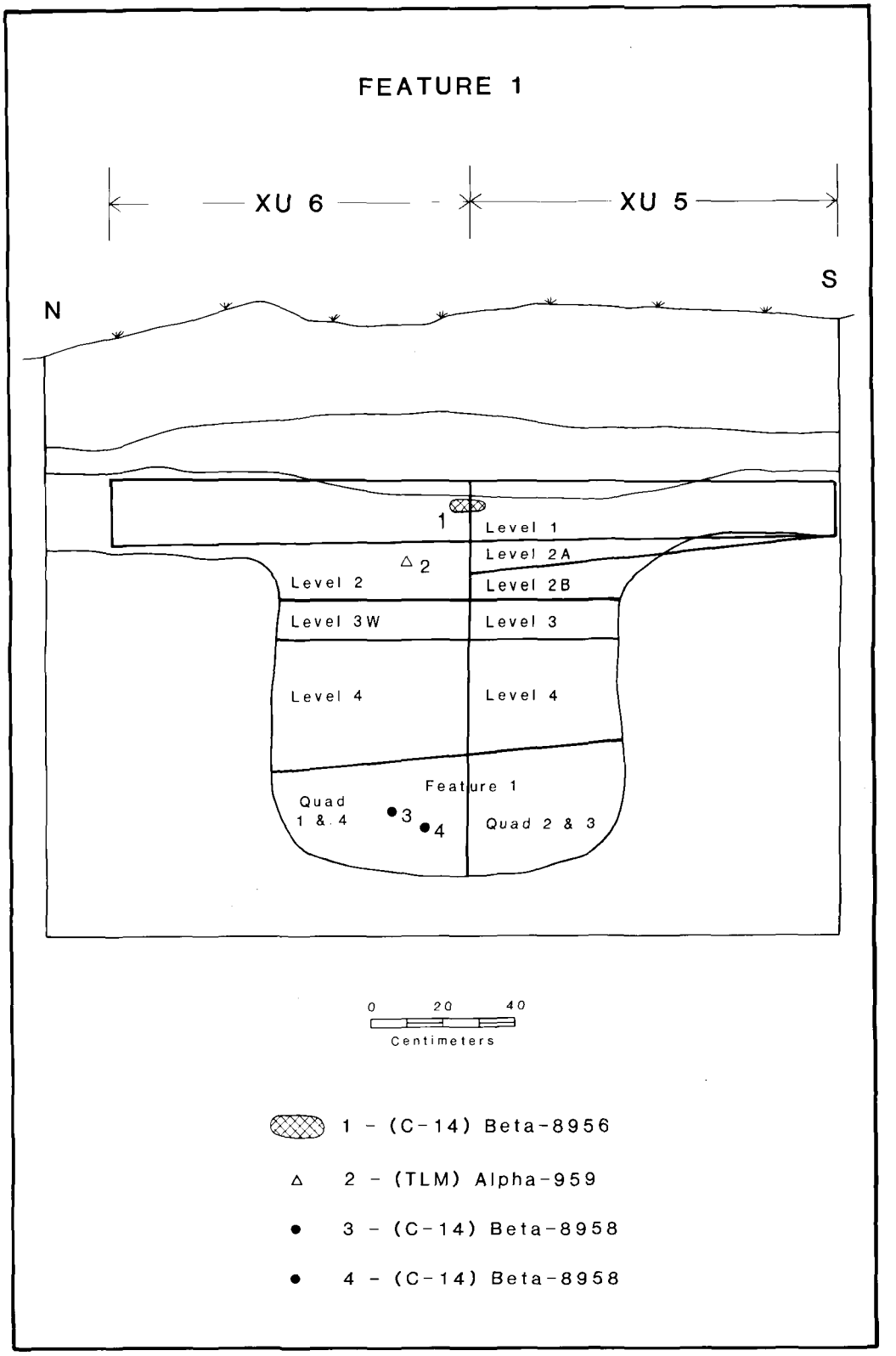


Figure 28. Location of dating samples and excavation units in Feature 1.

Sample 5 (Figure 29) was a grit tempered body sherd collected from the lower third of Feature 4, exposed in the north wall of Backhoe Trench B. The TLM analysis yielded an age of 680 +/-90 yrs B.P. (Alpha-960) which when adjusted to a 95% confidence level yields a calendrical range of A.D.1090- A.D.1450.

Discussion of Dates. The suite of dates obtained from the C-14 and TLM analysis indicates the possibility that at least two separate occupations are present at 33CU65.

The most recent occupation is indicated by the C-14 date range A.D.1620-present (Beta-8956), obtained from a probable hearth that was dug into the upper portion of the midden deposit, and a TLM date range A.D.1610- A.D.1730 (Alpha-959) from a body sherd found just below and in close proximity to the hearth in the midden. It is felt that despite the late date ranges both indicate prehistoric use of the area. The midden deposit surrounding the hearth and into which the hearth was placed has been clearly shown to be prehistoric with no evidence of historic or contact materials. Brose's latest Whittlesey phase, South Park A.D.1500- A.D.1640 (Brose et al.1981:153), would appear to encompass the dates for this portion of the site. Likewise there seems to be "... no evidence for any contact period aboriginal occupation in northeast Ohio following this phase" (Brose et al.1981:153). This statement would also argue for an assignment of the hearth and upper midden to the terminal Whittlesey phase in the region.

The other three dates are from features dug into the subsoil. The two C-14 dates come from charcoal found in approximately the lower 20 cm of Feature 1 (Figure 28). They indicate date ranges of A.D.1235-A.D.1345 (Beta-8957) and A.D.1405-A.D.1605 (Beta-8958). As shown in Figure 30 the range for these two dates do not overlap and would suggest two separately dated events. However, both samples came from nearly identical locations within the fill at the bottom of Feature 1 and another explanation must be considered. In conversations with Dr. Murry Tamers of Beta Analytical Inc. (Murry Tamers, personal communication 1984) another explanation was proposed. He suggested that the mixing of old wood from previous campfires or from older growth stock could easily explain the apparent discrepancy between dates. It was not uncommon in this portion of Ohio to find oak, hickory, walnut (the predominant charcoal types identified in macrobotanical analysis of Feature 1 charcoal; see Appendix B (Voigt 1984)) and other dominant climax forest species that dated to 400 years old (Shelford 1963:32). Given this backround it is not difficult to construct a scenario that would account for a range of C-14 dates from a single campfire. Hence, if the multiple dates are accepted as dating the same feature then the latest date range must be considered as most likely indicating the actual use of the feature (A.D.1405-A.D.1605, Beta-8958). This date also overlaps with the span proposed for the South Park Phase (A.D. 1500-A.D.1640) but its stratigraphic placement argues for an earlier occupation than that indicated by the date obtained from the hearth. Also, the pedogenic processes needed to fill the feature

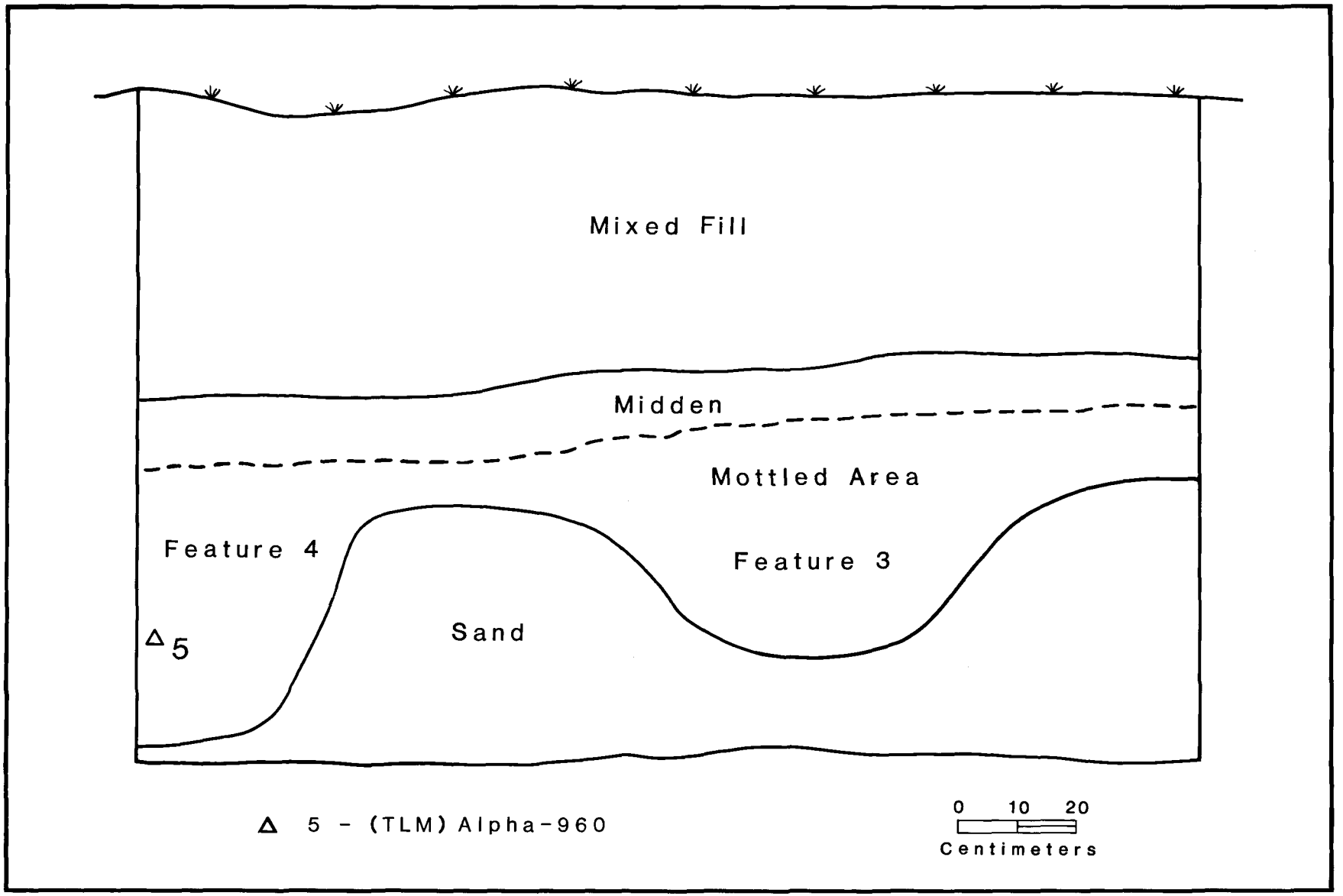


Figure 29. Location of thermoluminescence sample taken from Feature 4.

and deposit the midden over the feature would argue for a period of time between the two events.

The other date from a subsurface feature was a TLM sample run on a body sherd collected while exposing Feature 4 in the north wall of Backhoe Trench B. Its date range, A.D.1090-A.D.1450 (Alpha-960), indicates some overlap (Figure 30) with the latest date range from Feature 1 and indicates possible contemporaneity. However, a considerable portion of the range is earlier and may indicate a third occupation of the site. Materials collected from the feature fill do not add to an understanding of its temporal placement with regard to Feature 1. Its date range does indicate that there is a very strong likelihood that Feature 4 predates the midden deposit which is stratigraphically superior to Feature 1 and presumably the same midden observed above Feature 4. In fact, based on the TLM results, there is a 95% probability that there is at least a 150 year difference between the age of the sherd dated in Feature 4 and the sherd dated from the midden above Feature 1 (cf. Figure 30).

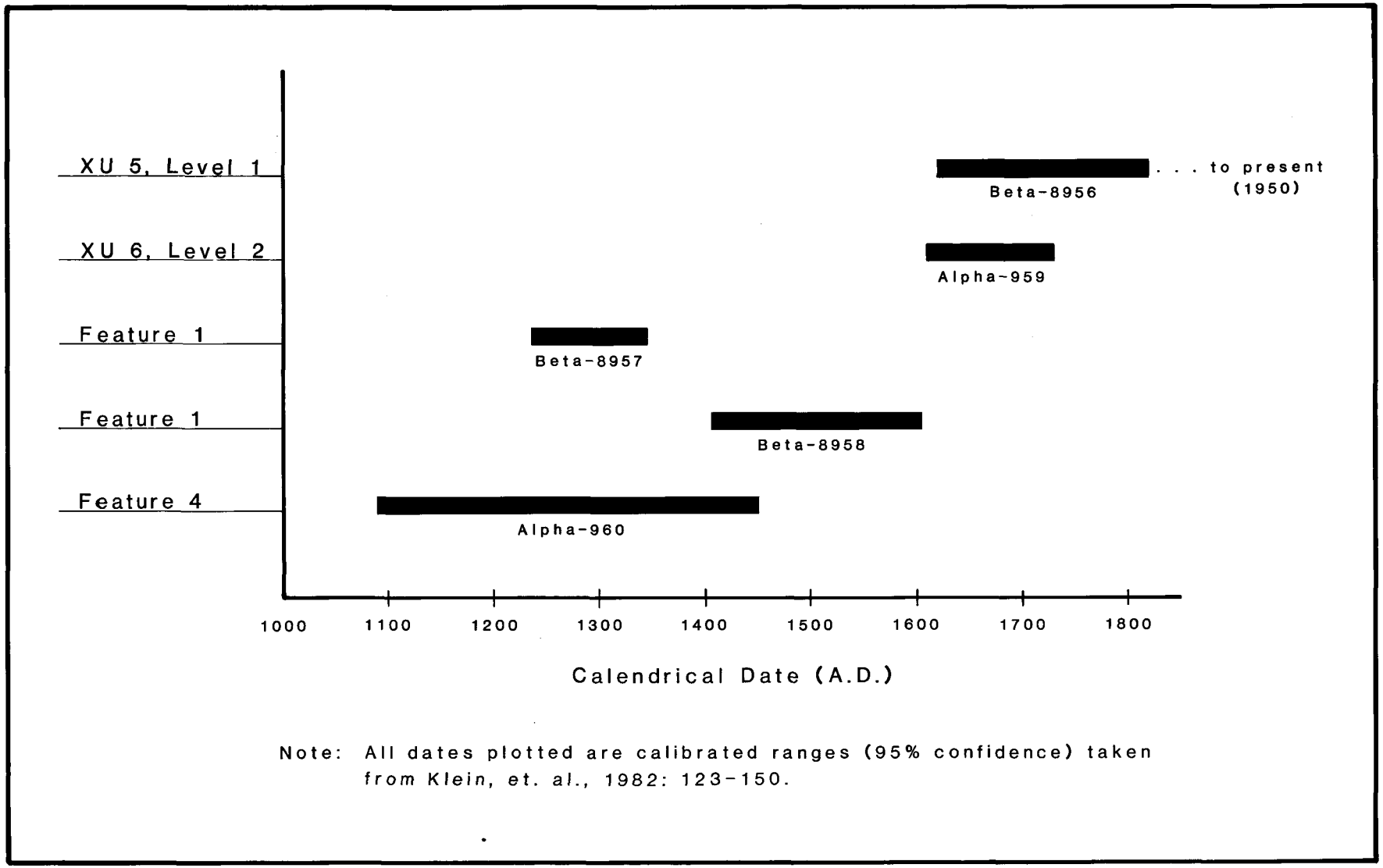


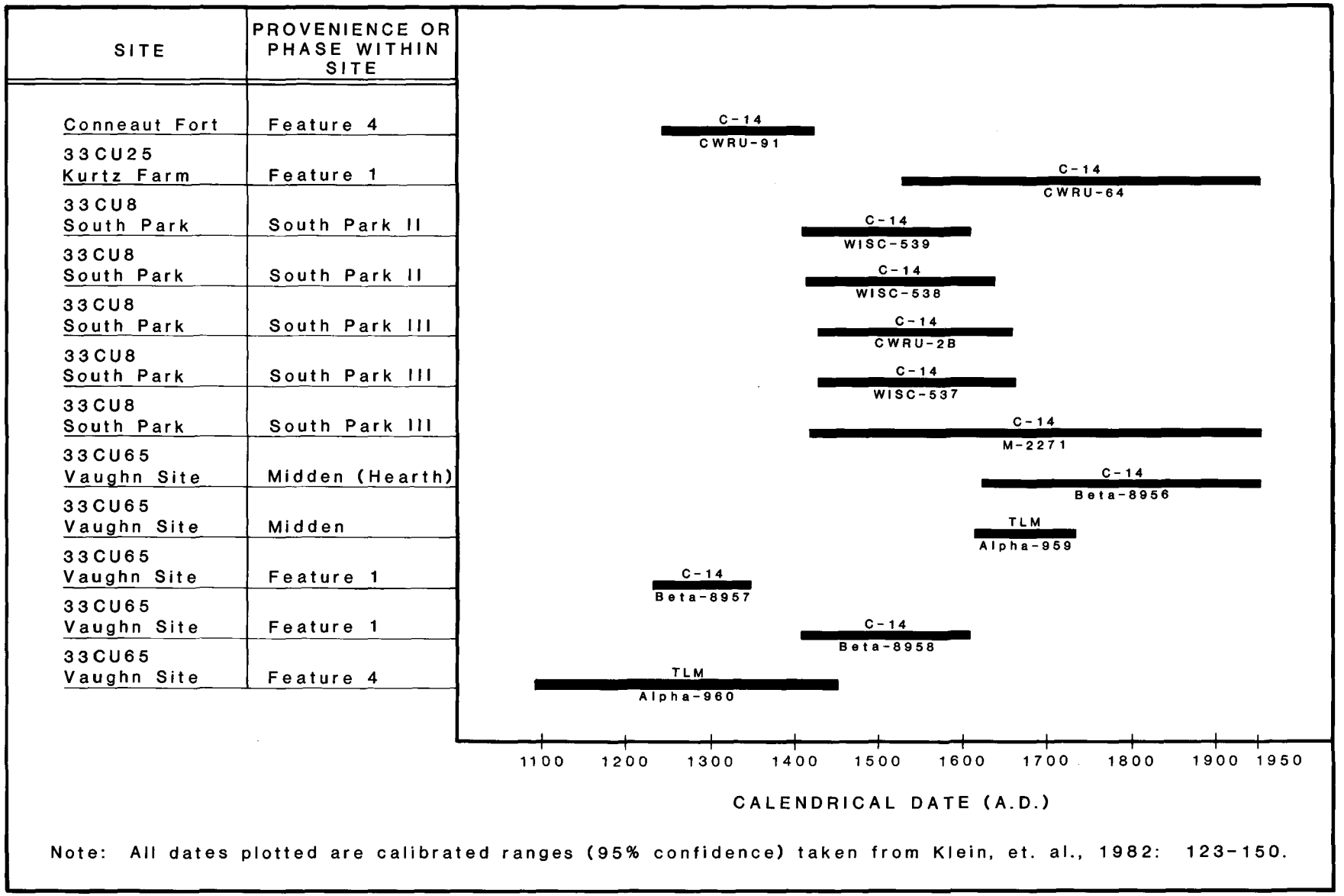
Figure 30. Dating results from the Vaughn Site (33CU65) Cuyahoga Valley National Recreation Area, November 1983.

DISCUSSION AND CONCLUSIONS

The small sample recovered from the Vaughn Site (33CU65) during excavation allows some tentative conclusions to be drawn. It should be noted that the sample is quite biased, coming largely from a single storage pit, and as a result probably does not reflect upon the entire Vaughn Site assemblage.

Analysis indicates the multi-component nature of the site. Evidence for the earliest occupation consists of the two stemmed projectile point forms which are generally indicative of an Archaic time period. The other lithic specimens, similar to Levanna and Madison point types, are clearly assignable to the Late Woodland period as is the accompanying ceramic assemblage.

Viewed as a whole, the ceramic assemblage most closely resembles the ceramic styles and types associated with the Fairport Phase, A.D.1150 - A.D.1350 (see Brose 1980:15; Brose et al.1981:146) of the Whittlesey Focus. The two identifiable ceramic types from the Vaughn Site, Fairport Harbor Plain and Reeve Opposed, are common in early and intermediate Whittlesey ceramic assemblages (Brose 1976:28, Brose 1980:12-20; Brose et al.1976:40). The distinctive filleted varieties (Fairport Filleted, Tuttle Hill Notched) most common at the later sites (Brose 1976:28) are absent from the Vaughn sample. Likewise the presence of shell tempering (22% of the minimal number of vessels) at Vaughn would place it in the Fairport Phase or later as the previous two phases lack shell tempered vessels (Brose 1980:11,12). Brose feels that shell tempering appears relatively early in the seriation of Whittlesey ceramics, ca. after A.D.1200 (Brose 1984:25). Murphy (1971b:39) has suggested a ceramic sequence from early to late based on work at the Fairport Harbor Site (33La5) i.e., Fairport "plain", Fairport Filleted, Reeve Horizonal, Reeve Filleted, Reeve Opposed and finally Tuttle Hill Notched. The assemblage at Fairport Harbor, dominated by Fairport "plain" ceramics (47.6%) with lesser amounts of the other types mentioned, is thought to date to A.D.1300 based on ceramic seriation (Murphy 1971b:42). Work at the Conneaut Fort Site in Ashtabula County revealed a somewhat similar ceramic inventory. Fairport Plain rim sherds comprise 83.8% of the total with Fairport Filleted (10.4%) and negligible amounts of Reeve Filleted, Reeve Horizonal and Reeve Opposed also present (Brose et al.1976:40-41). A single radiocarbon sample from Conneaut Fort (Brose et al. 1976:42) yielded a date of A.D.1330+/-120 (CWRU-91) with a 95% confidence interval of A.D.1240 - A.D.1420 (Klein et al.1982:142). This range reportedly dates a late manifestation of Early Whittlesey (Brose et al.1976:42). This date range would also overlap the C-14 and TLM date ranges obtained from samples collected in Feature 1 and Feature 4 which both contain at least one Fairport Plain vessel (Figure 31). This concurrence supports the contention that at least two features at 33CU65 probably date from an early Whittlesey occupation. The Reeve Opposed vessels identified in Feature 2 and in the midden generally might be placed slightly later in the ceramic seriation than the Fairport Plain vessels (cf. Murphy 1971b:39). However, the type is also



Note: All dates plotted are calibrated ranges (95% confidence) taken from Klein, et. al., 1982: 123-150.

Figure 31. Radiocarbon and thermoluminescence dates from the Vaughn Site (33CU65) and other nearby sites. Cuyahoga Valley National Recreation Area, Ohio.

consistently listed as present in small amounts in early Whittlesey occupations (see Murphy 1971b:37; Brose et al.1976:40-41; Brose 1980:12,15,21). The C-14 and TLM dates for the midden argue for a terminal occupation of the site during the last Whittlesey phase (South Park A.D.1500 - A.D.1640). The lack of the characteristically filleted rim sherd types associated with the later Whittlesey assemblages is not clear but may be a reflection of the small sample size.

It is informative to compare the Vaughn C-14 and TLM dates with those from nearby sites in the valley (Figure 31). From the graph it is fairly clear that the South Park II dates (Wis - 538, Wis - 539; Brose 1973:32), the South Park III dates (Wis - 537, CWRU - 2B, M - 2271; Brose 1973:35), the Kurtz Site date (CWRU - 64; Brose et al.1981:258), and the three latest dates from Vaughn (Alpha - 959, Beta - 8956, Beta - 8958), presented as 95% confidence intervals, could easily be grouped together in the last Whittlesey phase (South Park) as proposed by Brose (1980:23). This conclusion would tend to conflict with the interpretations proposed by Brose in the 1973 South Park report. While the illustrated ceramic assemblages show considerable variation between the intermediate (South Park II) component and the final (South Park III) component (cf. Fig.4,Fig.5 Brose 1973) the radiometric dates do not support the distinction. Likewise the latest date (Beta - 8958) from Feature 1 (Vaughn) is identical to one of the South Park II dates (Wis - 539) and would suggest that Feature 1 is the result of an occupation later in the Whittlesey sequence than the ceramic assemblage indicates. Conversely, it may also indicate that the early Fairport Phase ceramic repertoire (sans thickened or filleted rims) may last until A.D.1450 (Brose 1980:15) or even later. More work at the Vaughn Site and a more critical evaluation of current radiometric dates may cause a reevaluation of the ceramic seriation for early Whittlesey components in the area.

The floral and faunal remains (primarily from Feature 1) allow some comparisons to the settlement and subsistence models proposed by Brose (1980:11-31) for the various Whittlesey phases. The presence of deer and fish remains along with maize, wild bean and the various hickory nut remains indicate a diversified economy of horticulture, hunting and gathering present at the Vaughn Site. The first significant commitment to horticulture is noted during the Riverview Phase at sites such as the nearby Kurtz and Riverview Sites (Brose 1980:12-13). Spring through late summer occupations were located near secondary stream junctions in the alluvial bottomlands. Limited maize and squash horticulture is indicated.

The succeeding Fairport Phase results in larger multi-family spring through early autumn-fall villages in similar terrace floodplain locations as in the previous phase (i.e., the Kurtz Site). Maize and squash horticulture and/or fishing appear as the major economic activities (Brose 1980:16). Beans (Phaseoleus) have been recovered from several of the later sites. At the intermediate South Park II component included in this phase by

Brose (1980:17) waddle and daub structures are suggested. The single fragment of daub recovered from Feature 1 indirectly supports the presumption of similar structures at the Vaughn Site.

The succeeding phases (Greenwood and South Park) have such drastically different ceramic assemblages that they will not be included in this comparison.

The faunal and floral sample lacks conclusive seasonal indicators although the presence of the deer antler in Feature 1 indicates procurement during the late summer through late winter seasons. Prior research (Brose 1973, 1976, 1984; Brose et al. 1976; Brose et al. n.d.; Pratt 1979), which led to the formulation of the settlement and subsistence model (Brose 1980:11-31), failed to locate overwintering locations other than in the uplands bordering the Cuyahoga valley. This indirect (negative) evidence would also suggest a spring through fall occupation at the site. It is conceded that negative evidence such as this can only suggest avenues for further investigations and in no way supports previous assumptions. The presence of various nut hulls, indicative of a resource collected in the fall, may indicate a fall occupation or possible storage for use during the spring and summer months.

In summary, the Vaughn Site is a multi-component site with indications of utilization from Archaic through Late Woodland time periods. It appears that the major occupations took place during the Late Woodland period probably during the Fairport Phase ca. A.D.1200 - A.D.1450. The South Park Phase occurred ca. A.D.1600 - A.D.1670. This conclusion is tentative, however, because of the small areal extent of excavation and fewer South Park features. The occupations were fairly intensive, as evidenced by the concentration of subsurface features. Some horticultural pursuits in addition to hunting, fishing, and gathering activities are indicated for the Fairport occupation. The South Park Phase occupation may have been less intensive as evidenced by a lack of features with demonstratively late ceramic vessel fragments included in the feature fill. This conclusion should be considered tenuous however, based upon the small areal extent of excavation. That the site deposit is a result of a series of reoccupations is evidenced by the complex intersection and superimposition of several of the features (i.e., Features 4, 5, 5B). Additional research will be needed to fully understand the complexities of the series of occupations at the Vaughn Site over the last millennium.

SUMMARY, RECOMMENDATIONS AND EVALUATION

Project Redesign and Site Protection

Consequent to our excavations and prior to laboratory analysis it was clear that the Vaughn Site (33CU65) was a significant archeological resource which should be protected from further disturbance. Park personnel were kept informed during excavations regarding preliminary findings and the implications for the overall project. Park staff, after an appraisal of the preliminary findings, were in complete consensus that the project should and could be redesigned to protect and avoid the site. With site protection in mind, plastic sheeting was placed over all features exposed prior to backfilling the excavations. Marker stakes were also used above each feature to designate its location for future relocation. Flagging was used to clearly demarcate all archeologically sensitive areas on the terrace.

Using information provided by the Midwest Archeological Center, CUVA maintenance and cultural resources personnel and the Ohio Environmental Protection Agency, the leachfield project was redesigned (Figure 9) and subsequently constructed. This resulted in the completion of the modern sewage system for the Jaite administrative complex while at the same time preserving an important cultural resource. The remaining site deposit as defined and plotted through this project was not adversely impacted in any way by the redesigned leachfield construction project and will remain intact for future scientific investigations.

Recommendations

Limited excavation at the Vaughn Site has revealed the presence of a significant cultural resource despite extensive local land modification. The Vaughn Site is of sufficient importance for inclusion in the National Register of Historic Places. This along with a heightened awareness of its significance by park staff will insure protection of the site from further disturbance.

The site is important in that it should make park management and the archeological community cognizant of the fact that significant and intact prehistoric remains can still be recovered from locations known to be greatly disturbed. This would be especially true of locations on the floodplain which have been subjected to extensive modification in recent years.

Site Significance

The significance of archeological resources has become the basis for making managerial decisions about the utilization, avoidance or protection of individual resources (Lynott et al.1982:50). The evaluation of resources should not be considered a static process but a dynamic one (Lynott 1980) which changes in response to changing research interests or the quality and

quantity of the data base. Cultural resources can be evaluated for several types of significance. It is felt that the Vaughn Site can contribute in the areas of scientific and public significance.

Scientific significance deals with the research potential of a particular site and is most easily evaluated against a research design. Brose has developed a research design, in conjunction with extensive work done in the region (Brose 1973, 1978, 1980), to evaluate the archeological resources of the park (Brose et al.1981:36-37). Research areas in which the Vaughn Site can contribute data include subsistence, site structure, settlement patterns and intrasite variability within the valley, prehistoric chronology, and environmetal reconstruction.

Both faunal and floral remains were recovered from the single feature excavated. These data classes allow a reconstruction of the subsistence habits of Late Woodland groups. They also allow the reconstruction of the environmental conditions that influenced faunal and floral populations. Questions concerning the seasonality of procurement and settlement can also be answered with this class of data. Relatively few known sites within CUVA preserve these types of ecofacts. The presence of undisturbed subsurface features at 33CU65 greatly enhances this research potential.

Despite considerable ground disturbance, the site retains substantial integrity, with numerous cultural features (e.g. hearths, subsurface features and a midden deposit) preserved in an undisturbed primary context. This factor affords the opportunity to answer questions of site structure, intrasite variability and land use patterns.

The presence of datable materials at 33CU65 provides data for placement of the site and its material culture into a larger chronological framework already developed for the region (Brose 1973, 1978, 1980). Dated materials from the site allow certain material/temporal associations to be confirmed or rejected and reevaluated in terms of new information.

The Vaughn Site also contains information for developing a greater understanding of the placement of floodplain localities in the settlement system of Late Woodland groups. Previous research, working under an assumption that extensive modification of large areas of the floodplain had taken place, concentrated on hilltop locations overlooking the valley. Very few intact floodplain sites remain today and while 33CU65 has been greatly modified, the portion remaining is reasonably intact and affords the opportunity to study a very poorly understood portion of the Whittlesey settlement system. As presently understood, horticulture on the Cuyahoga floodplain made up a considerable portion of the Late Whittlesey subsistence system. This makes the few remaining floodplain sites like Vaughn a significant resource in an attempt to understand the role of horticultural/floodplain sites in the subsistence system.

REFERENCES CITED

Anfinson, Scott F. (editor)
1979 A Handbook of Minnesota Prehistoric Ceramics. Occasional Publications in Minnesota Anthropology No. 5, Minnesota Archeological Society, St. Paul.

Bareis, Charles J.
1984 Personal communication, letter, April 13,1984.

Belovich, Stephanie J.
1984 Personal communication, April 24,1984.

Belovich, Stephanie J. and David S. Brose
1982 Survey and Evaluative Testing Within the Cuyahoga Valley National Recreation Area: Sites 33Su87 and 33Su102. Archeological Research Reports of the Cleveland Museum of Natural History 40:1-85. Cleveland.

1983 Evaluative Testing at the Greenwood Village Site (33Su92). Cleveland Museum of Natural History, Archeological Research Report No. 47.

Braun, E. Lucy
1950 Deciduous Forests of Eastern North America. The Free Press, London.

Brose, David S.
1973 A Preliminary Analysis of Recent Excavations at the South Park Site, Cuyahoga County, Ohio. Pennsylvania Archaeologist 43(1):25-42.

1975 The Botanical Archaeology at the Norman P. Site: A Method for Discovering Recent Disturbance at an Archaic Alluvial Floodplain Site, Summit County, Ohio. Journal of Field Archaeology 2(4):293-305.

1976 The Hillside Road Site (33Cu30): Fort Ancient Influence in a Middle Whittlesey Component. Ohio Archaeologist 26(4):25-37.

1978 A Model of Changing Subsistence Technology in the Late Woodland of Northeastern Ohio. In Dave Davis (ed.), Lithics and Subsistence: The Analysis of Stone Tool Use in Prehistoric Economies. Vanderbilt University Publications in Anthropology, No. 20, Nashville, pp. 87-115.

1980 The Late Prehistoric Occupations of the South-Central Lake Erie Area. Paper presented at the 14th Annual Meeting of the Ontario Archaeological Society, London, Ontario.

1984 The Prehistoric Occupation of the Hale Farm, Bath Township, Summit County, Ohio. Manuscript on file, Cleveland Museum of Natural History.

1984a Personal communication, March 22,1984.

1984b Personal communication, April 25,1984.

n.d. A Statistically Dendritic Analysis of Whittlesey Ceramics with an Illustated Type-Variety Classification. Manuscript on file, Cleveland Museum of Natural History Archaeological Archives.

Brose, David S., Stephanie Belovich, Michael Brooslin, Robert Burns, John Hall, Harold Haller, Christopher Pierce, and Carl Ubbelohde
1981 Prehistoric and Historic Archaeological Investigations of the Cuyahoga Valley National Recreation Area, Ohio. Archaeological Research Reports of the Cleveland Museum of Natural History 30:1-524. Cleveland.

Brose, David S., Sarah Ford and Nancy M. White
n.d. Seventeen Prehistoric Sites in Northern Ohio. Manuscript on file, Case Western Reserve University, Department of Anthropology, Cleveland.

Brose, David S. and John F. Scarry
1976 Boston Ledges: Spatial Analysis of an Early Late Woodland Rockshelter in Summit County, Ohio. Mid-Continental Journal of Archaeology 1(2):115-156.

Brose, David S., Gregory Wentzel, Helga Bluestone and Pat Essenpreis.
1976 Conneaut Fort, A Prehistoric Whittlesey Focus Village in Ashtabula County, Ohio. Pennsylvania Archaeologist 46(4):29-77.

Cleland, Charles E.
1966 The Prehistoric Animal Ecology and Ethnozoology of the Upper Great Lakes Region. Anthropological Papers, Museum of Anthropology, University of Michigan No. 29.

Cultural Resources Management Guidelines
1981 NPS-28. Release No. 2, December 1981.

Environmental Assessment
1976 Cuyahoga Valley National Recreation Area, Ohio, National Park Service. Manuscript on file, Midwest Archeological Center, Lincoln.

Fitting, James E.
1964 Ceramic Relationships of Four Late Woodland Sites in Northern Ohio. Wisconsin Archaeologist 45(4):160-175.

Gartley, Richard, Carskadden, Jeff and Gregg, Tim
1974 Fort Ancient Projectile Points from the Philo Site. Ohio Archaeologist 24(1):10-11.

Gordon, Robert B.
1969 The Natural Vegetation of Ohio in Pioneer Days. Bulletin of the Ohio Biological Survey 3(2). Ohio State University, Columbus.

Greenman, Emerson F.
1937 Two Prehistoric Villages near Cleveland, Ohio. The Ohio State Archaeological and Historical Quarterly 46(4):305-366.

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

Hall, John
1981 Appendix A. In Prehistoric and Historic Archaeological Investigations of the Cuyahoga Valley National Recreation Area, Ohio. Archaeological Research Reports of the Cleveland Museum of Natural History 30:1-524. Cleveland.

Hamilton, Chet
1983 Personal communication, November 1,1983.

Jesensky, Joseph D.
1983 The Vaughn Archeological Site, Jaite, Ohio. Comments from conversations with Mr. Anthony Welling. Transcript on file, Midwest Archeological Center, Lincoln.

1983a Personal communication, November 2,1983.

Keel, Bennie C.
1976 An Archaeological Reconnaissance of East Fork Lake, Ohio. Wright State University, Laboratory of Anthropology, Reports in Anthropology No. 5, Dayton.

Klein, Jeffrey, J.C. Lerman, P.E. Damon and E.K. Ralph
1982 Calibration of Radiocarbon Dates: Tables based on the consensus data of the Workshop on Calibrating the Radiocarbon Time Scale. Radiocarbon 24(2):103-150.

Lee, Thomas E.
1958 The Parker Earthworks, Corrona, Ontario. Pennsylvania Archaeologist 28(1):5-32.

Lynott, Mark J.
1980 The Dynamics of Significance: An Example from Central Texas. American Antiquity 45(1):117-120.

1981 23GR250: An Early-Middle Archaic Site at Wilson's Creek National Battlefield. Missouri Archaeological Society Newsletter pp.357-358.

Lynott, Mark J., Susan Monk, Jeffrey Richner and Therese Ryder-Chevance
1982 Archeological Survey and Testing at Wilson's Creek National Battlefield: Tour Road Alternatives A, B, and C. Manuscript on file, Midwest Archeological Center, Lincoln.

McKenzie, Douglas, Don Bier, Donald Iannone and Steve Verba
n.d. The Riverview Site - A Late Woodland Occupation on the Banks of the Cuyahoga River. Manuscript on file, Cleveland State University, Department of Anthropology, Cleveland.

Monk, Susan M.
1984 Faunal Remains Recovered from 33CU65. In The Vaughn/Jaite Sewer Site (33CU65), Cuyahoga Valley National Recreation Area by James Zalesky. Manuscript on file Midwest Archeological Center, Lincoln.

Munsell Soil Color Charts
1975 Kollmorgen Corporation, Baltimore, Maryland.

Murphy, James L.
1971a The Lyman Site (33La2) Lake County, Ohio. Pennsylvania Archaeologist 41(3):12-25.

1971b The Fairport Harbor Site (33La5), Lake County, Ohio. Pennsylvania Archaeologist 41(3):26-43.

Musgrave, D.K. and D.M. Holloran
1980 Soil Survey of Cuyahoga County, Ohio. United States Department of Agriculture, Soil Conservation Service.

Pratt, G. Michael
1979 Salvage Excavations at the Walnut Tree Site (33CU40): Evidence for Agricultural Intensification in Northeastern Ohio. Ohio Archaeologist 29(1):26-30.

Pratt, G. Michael and David S. Brose
1976 Test Excavations at the Seibert Site: A Late Prehistoric Village in the Cuyahoga Valley. Ohio Archaeologist 26(1):7-10.

Richner, Jeffrey
1982 Trip Report, Archeological Survey, June 28 - July 2. Memorandum on file, Midwest Archeological Center, Lincoln.

1983 Archeological Work Plan - Jaite Sewer Project. Memorandum on file, Midwest Archeological Center, Lincoln.

1984 Personal communication, April 25,1984.

Ritchie, William A.
1965 The Archaeology of New York State. The Natural History Press, New York.

Shelford, Victor E.
1963 Ecology of North America. University of Illinois Press, Urbana.

Skinner, S. Alan and Joseph Gallagher
1974 An Evaluation of the Archaeological Resources at Lake Whitney, Texas. Southern Methodist University Contributions in Anthropology No. 14, Dallas.

Stout, Wilbur and R.A. Schoenlaub
1945 The Occurance of Flint in Ohio. State of Ohio, Department of Natural Resources, Division of Geological Survey. Fourth Series - Bulletin 46, Columbus.

Tamers, Murry
1984 Personal communication, March 27,1984.

Voigt, Eric E.
1984 Analysis of Paleoethnobotanical Remains from the Jaite Sewer Site (33CU65). In The Vaughn/ Jaite Sewer Site (33CU65) Cuyahoga Valley National Recreation Area by James Zalesky. Manuscript on file Midwest Archeological Center, Lincoln.

Williams, Arthur B.
1949 The Native Forests of Cuyahoga County, Ohio. Scientific Publications of the Cleveland Museum of Natural History 9(1):1-90.

Zalucha, L. Anthony
1982 Methodology in Paleoethnobotany: A Study in Vegetational Reconstruction Dealing with the Mill Creek Culture of Northeastern Iowa. Unpublished Ph.D. dissertation, Department of Anthropology, University of Wisconsin, Madison.

APPENDIX A

Faunal Remains Recovered from 33CU65

by

Susan M. Monk

A total of 446 elements of faunal debris were recovered from test units at the Jaite Sewer Site (33CU65). All of these remains were mammal, no other classes were represented. Of these, 142 elements exhibited charring on one or more surfaces.

Remains were initially sorted into classes and counted and weighed according to provenience. Size grade equivalents are Grade 0 = 1/4-inch mesh and less than Grade 3 = less than 1/4-inch. Table 1 contains a summary of frequency and weight for all recovered remains.

Table 1. Frequency and weight information by class for unmodified vertebrate remains from 33CU65.

Size Grade		Mammal n	Mammal % Class and total
		() indicates charring	
0	no.	8	2.6
	wt.(g)	177	55.3
1	no.	2	0.7
	wt.(g)	8	2.5
2	no.	78(19)	25.7(13.4)
	wt.(g)	89(5)	27.8(18.5)
3	no.	136(74)	44.7(52.1)
	wt.(g)	31(14)	9.7(51.9)
<3	no.	80(49)	26.3(34.5)
	wt.(g)	15(8)	4.7(29.6)
Total			
	no.	304(142)	100.0(100.0)
	wt.(g)	320(27)	100.0(100.0)

Table 2 summarizes weights and frequency of remains associated with Feature 1. Approximately 77% of all remains were recovered from Feature 1. After counting and weighing,

identifiable specimens were removed, with unidentified specimens examined no further.

Table 2. Frequency and weight information by class for unmodified vertebrate remains from Feature 1, 33CU65.

Size Grade		n	Mammal % Class and total
		() indicates charring	
0	no.	6	2.4
	wt.(g)	116	61.1
1	no.	1	0.4
	wt.(g)	3	1.6
2	no.	45(14)	17.9(15.1)
	wt.(g)	31(4)	16.3(20.0)
3	no.	119(37)	47.4(39.8)
	wt.(g)	25(9)	13.2(45.0)
<3	no.	80(42)	31.9(45.2)
	wt.(g)	15(7)	7.9(35.0)
Total			
	no.	251(93	100.0(100.0)
	wt.(g)	190(20)	100.0(100.0)

Identifiable Specimens

A total of 14 identifiable elements were present in the sample. White tailed deer represents the largest percentage of remains (n = 10 %=71.5). Other taxa include Artiodactyla,Canidae, Rodentia, and domestic cow. The eroded and broken nature of most elements, combined with carnivore gnawing left a large percentage of the sample unable to be identified below the family level. A few specimens would have been identifiable if it were not for the poor condition of the specimen (Table 3).

The recovered elements for each taxa are as follows: Rodentia , one incisor fragment; Canidae, one left mandible, broken and eroded; Artiodactyla, 1 rib diaphysis fragment; Odocoileus virginianus one right complete Tf (calcaneum) , one right Tf (calcaneum) diaphysis, one unsided tooth fragment, one left proximal metatarsal fragment, one right scapula spine, one left humerus diaphysis, one left very eroded complete Tt (astragalus), one left distal scapula-three pieces, one lower third molar, and one antler fragment; Bos taurus one unsided femur diaphysis, round bone-steak. The elements recovered from the white-tailed deer are not indicative of a certain cut of meat or butchering practice. The elements are from all sections of

the animal and limited information is available for a discussion of butchering. One right Tt (astragalus) element exhibited cut marks from the butchering or skinning process.

Very little concrete subsistence data can be gleened from this small faunal assemblage. Basically, it can be said that white-tailed deer, recovered from the prehistoric context indicates a woodland diet heavily reliant upon deer. The butchered historic remains offer little to the understanding of the historic nature of the occupation. While definitive subsistence practices cannot be determined, the quality and quantity of faunal remains recovered from Feature One does offer the hope of finding larger faunal samples in future excavations in this area. The possibility of good subsistence data being recovered is quite high in such a situation.

Table 3. Summary of identified vertebrate remains and minimum number of individual estimates according to provenience from 33CU65.

Taxonomic Identification	No.	% Total	MNI	Cat.#
MAMMAL				
Rodentia	1	7.1	1	201/005
Canidae	1	7.1	1	105/001
Artiodactyla (even toed hoofed mammal)	1	7.1	1	104/001
Odocoileus virginianus (white-tailed deer)	10	71.5	2	104/002 201/004 105/002a 106/001 201/005 201/006
Bos taurus (Domestic cow)	1	7.1	1	103/001
Total	14	99.9		

APPENDIX B

Analysis of Paleoethnobotanical Remains from the Jaite Sewer Site (33CU65)

by

Eric E. Voigt

This report presents the results of paleoethnobotanical analysis of 18 samples from Feature 1 of the Jaite Sewer site (33CU65). The carbonized plant remains were recovered from a cylindrical pit which dates to the Late Woodland period.

Samples were selected for analysis by Mr. James Zalesky. Each sample was weighed, and all carbonized seed, cultigen, and nut remains were identified. Twenty pieces of wood were identified from each sample of carbonized wood. The twenty pieces were selected at random; statistical analysis indicates that twenty specimens is a statistically viable sample. An American Optical Microstar Stereoscopic microscope with a magnification range of 7-45x was used in the identification of carbonized plant remains.

Identification of paleoethnobotanical remains was made through comparison of archeological specimens to known modern carbonized material from the laboratory's herbarium collections, and through reference to published identification manuals (e.g., Martin and Barkley 1961). In general, identification of seeds is accomplished by comparing morphological characteristics of the archeological specimens to those of known taxa. Species differences are not always apparent, and critical diagnostic characteristics (e.g., awns, outer seed coat, and color) often are lost during carbonization. Wood was identified by examination of the internal anatomy of the specimen and the use of a key developed for identification of carbonized wood. The arrangement of vessel elements, rays, and parenchyma tissue are some characteristics used in identification of archeological specimens.

Herbaceous Plant Remains

Seeds from herbaceous plants were identified in four samples. Identified seeds include those from wild native taxa and from a tropical cultigen. Taxa represented include Convolvulaceae, strophostyles spp., and Zea mays (Table 1).

Convolvulaceae: A single carbonized seed of the morning glory family was recovered from Quadrant 1/65cm-bottom. Due to the lack of diagnostic characteristics, it was impossible to determine to which genus the specimen belongs. Plants from both the Convolvulus and Ipomoea pandurata were used for medicinal purposes (Burlage 1968:60) and the Zapotecs used parts of Ipomoea violacea as a narcotic (Hofman 1972:257-258). Carbonized specimens from this family have been recovered mainly from Mississippian period sites in the Midwest (Johannessen 1984; Smith, 1978).

Strophostyles spp.:A single cotyledon from wild bean was recovered from Quadrant 1/65cm-bottom. In the Midwest this species has been recovered from archeological sites that date from the Late Archaic period to the Mississippian period (Asch and Asch 1982; Ford 1981; Johannessen 1984). A domesticated variety of bean--Phaseolous vulgaris--has been recovered from Middle and/or Late Mississippian period contexts and some Historic period sites (Ford 1981).

Zea mays: Remains of kernels (n=31) and cupules (n=10) were recovered from Feature 1 at the Jaite Sewer site. The breakdown of these remains by sample is presented in Table 1. The presence of maize in a Late Woodland period context is consistent with data gathered at Late Woodland period sites in the Midwest (e.g., Asch and Asch 1982; Johannessen 1984; Voigt 1982, 1983). In the central Mississippi River valley, maize has been recovered primarily from late Late Woodland period sites (e.g., those occupations that date around or after A.D. 800).

General Land Office survey notes (e.g.; Reeder et al. 1983; Warren 1982) in the Midwest indicate that all the taxa recovered probably were both abundant and accessible to the site's inhabitants.

Table 1. Carbonized Herbaceous Plant Remains Feature 1, Jaite Sewer Site.

Provenience			
Quadrant 1/65 cm-bottom	201/004	Convolvulaceae	1
		Zea mays (kernel)	6
		Zea mays (cupule)	5
Quadrant 3/56-65cm	201/003	Zea mays (kernel)	5
Feature 1	201/000	Zea mays (kernel)	1
Quadrant 1/65cm-bottom		Zea mays (kernel)	19
		Zea mays (cupule)	5

Table 2. Carbonized Wood Remains Identified from Feature 1, Jaite Sewer Site

Provenience	Taxa													Sample Number
	Carya spp. (true hickory)	Fagus grandifolia	Fraxinus spp.	Juglans nigra	Ostrya virginiana	Platanus occidentalis	Quercus spp. (red group)	Quercus spp. (white group)	Ulmus cf. americana	Quercus spp.	Ring porous	Diffuse porous	Unidentifiable	
Quad 1/65 cm-bottom		5	1		3	5			6					201/004
TP 6/F1/SW Quad/L4	2						6	2		1	1	1	2	201/002
TP 5/F1/NW Quad/L4	1						4	9		4				201/001
Quad 3/50-65cm				1		2	2				2		1	201/003
Quad 2/65cm-bottom							18				1		1	201/005
Quad 3/65cm-bottom							9	5					1	201/006
Quad 4/65cm-bottom	2						18							201/007

Tree Remains

Analysis of the wood charcoal recovered from Feature 1 indicates that the inhabitants of the site probably exploited riparian, bottomland, and lower slope forests when collecting wood. Wood charcoal from ten taxa was identified from Feature 1, including remains of Platanus occidentalis (American sycamore), Fagus grandifolia (American beech), Fraxinus spp. (ash) Ulmus cf. americana (American Elm), Ostrya virginiana (hophornbeam), Quercus spp. (red group), Quercus spp. (white group), Carya spp. (true hickory), Salicaceae (willow family) and Juglans nigra (black walnut) (Table 2).

White oak group refers to the subgenera Leucobalanus, and includes such species as Q. alba, Q. macrocarpa, Q. lyrata, and Q. stellata. Red oak group refers to the subgenera Erythrobalanus, and includes such species as Q. rubra, Q. valutina, Q. palustris, Q. falcata, and Q. nigra (see Harlow and Harrar 1969:296). True hickory refers to non-pecan hickories.

While it has been suggested that certain taxa are more resistant to the rigors of postdepositional conditions than others, this has not been demonstrated empirically. A taxon represented by carbonized wood fragments could have either been preferred by a site's inhabitants for its heat value, or the taxon merely could have been accessible and/or locally abundant. Carya has the highest comparative heat value (CHV) of all taxa present, Quercus (white group) also has a very high CHV, white Quercus (red group), Fraxinus, and Ulmus have only moderate CHV's (see Zawacki and Hausfater 1969). In addition, analysis of General Land Office survey notes (e.g.; Reeder et al. 1983; Warren 1982) in the Midwest indicate that all the taxa recovered probably were both abundant and accessible to the site's inhabitants.

Nut Remains

Carbonized nut remains of Carya spp. (both shagbark and shellbark groups) were identified from Feature 1 (Table 3). The shagbark group of hickories includes the small-fruited species such as C. ovata and C. glabra, while the shellbark group includes large-fruited species such as Cd. laciniosa. All nut remains belong to the true hickories (see Harlow and Harrar 1969). Determination as to whether a specimen belonged to either the shagbark, shellbark, or general hickory groups was based on measurements of the nutshell and by using data and formulae developed by Lopinot (1982).

The dominance of carbonized hickory nut sehll within the carbonized nut assemblage is not unusual. However, in other Late Woodland period sites, acorns, black walnut, and hazelnut also have been recovered (see Johannessen 1984; Voigt 1982, 1983).

The paucity of remains of other taxa could be attributable to accessibility, abundance, site location, and nut collection strategies.

The data derived from analysis of the carbonized nut remains indicate that the site's inhabitants exploited fall/winter nut resources. The hickory species exploited probably occurred within the general site vicinity--especially in lower slope and bottomland contexts.

Table 3. Carbonized Nut Remains Recovered from Feature 1, Jaite Sewer Site

Provenience	Sample Number	Taxa	Number of Specimens	Weight
Quad 3/65cm-bottom	201-006	Carya (shellbark)	1	1 gram
TP6/Level 2	106/002	Carya (shellbark)	1	1 gram
TP5/NW Quad/Level 4	201/001	Carya (shagbark)	1	1 gram
Quad 1/65cm-bottom	201/00	Carya (cf. shagbark)	174	4.0 grams
Quad 1/65cm-bottom	201/04	Carya (shagbark)	7	1 gram
		Carya (shellbark)	19	1 gram
Quad 4/65cm-bottom	201007	Carya (shellbark)	1	1 gram

Discussion

Carbonized plant remains were identified from a single feature excavated at a Late Woodland period site in Ohio--the Jaite Sewer site (33CU65). Our analysis indicates that some native wild taxa and a Mesoamerican cultigen were used by the human groups that once inhabited the site. Herbaceous plant remains are dominated by kernels and cupules of Zea mays. The carbonized nut assemblage consists solely of remains of hickory nut shell (both the shellbark and shagbark groups). The carbonized wood assemblage is dominated by probable bottomland and lower slope taxa such as oak (red and white groups), true hickory, sycamore, and ash.

The carbonized plant remains from this site compare favorably with data from other Late Woodland period sites. However in marked contrast with other Late Woodland period sites in the Midwest, no remains of native cultigens (e.g., sumpweed, goosefoot, little barley, maygrass, or knotweed) were identified. However, this could represent a result of data recovery techniques rather than a possible difference in plant exploitation strategies. In any event, the presence of maize indicates that some kind of agriculture was being practiced by the site's inhabitants.

The presence of hickory nut and maize within the matrix of Feature 1 indicates that the site was occupied at least during

the late summer and fall. If crops were planted in the site vicinity in the spring, and tended throughout the summer, then we might suggest that the site probhably was occupied for most of the year, if not year-round.

References Cited

Asch, D.L., and N.B. Asch
1982 A chronology of the development of prehistoric agriculture in west central Illinois. Paper presented at the 47th annual meeting of the Society for American Archaeology, Minneapolis, Minnesota.

Burlage, H. M.
1968 Index of plants of Texas: with reputed medicinal and poisonous properites. Austin: H. M. Burlage.

Ford, R. I.
1981 Gardening and farming before A.D. 1000: patterns of prehistoric cultivation north of Mexico. Journal of Ethnobiology 1:6-27.

Harlow, W.H., and E. S. Harrar
1969 Textbook of dendrology: covering the most important forest trees of the United States and Canada (5th ed.). New York: McGraw Hill.

Hofmann, A.
1972 Ergot: a rich source of pharmacologically active substances. In Plants in the development of modern medicine, edited by T. Swain. Cambridge: Harvard University Press. Pp. 235-258.

Johannessen, Sissel
1984 Paleoethnobotany In American Bottom Archaeology ed. by Charles J. Bareis and James W. Porter. University of Illinois Press, Urbana and Chicago.

Lopinot, N.
1982 Plant macroremains and paleoethnobotanical implications. In The Carrier Mills Archaeological Project: human adaptation in the Saline Valley, Illinois, edited by R. W. Jeffries and B. M. Butler. Southern Illinois University, Center for Archaeological Investigations, Research Paper, 33, 671-860.

Martin, A.C., and W.D. Barkley
1961 Seed identification manual. Berkeley: University of California Press.

Reeder, R. L., E. E. Voigt, and M. J. O'Brien
1983 Investigations in the lower Perche-Hinkson drainage. University of Missouri-Columbia, Department of Anthropology, American Archaeology Division, Publications in Archaeology, No. 1.

Smith, B. D.
1978 Prehistoric patterns of human behavior: a case study in the Mississippi Valley. New York: Academic Press.

Voigt, E. E.
1982 Late Woodland subsistence at 23MS12: prehistoric environment and agriculture in the Ozark Highland. In the Feeler Site, 23MS12: a multi-component site in the central Gasconade drainage (Appendix III), edited by R. L. Reeder. Report submitted to the Missouri Highway and Transportation Department.

1983 Analysis of paleoethnobotanical remains. In Investigations in the lower Perche-Hinkson drainage, by kR. L. Reeder, E.E. Voigt, and M. J. O'Brien. University of Missouri-Columbia, Department of Anthropology, American Archaeology Division, Publications in Archaeology, No. 1, 235-248.

Warren, R. E.
1982 The historical setting. In The Cannon Reservoir Human Ecology Project: an archaeological study of cualtural adaptations in the southern Prairie Peninsula, edited by M. J. O'Brien, R. E. Warren, and D. E. Lewarch. New York: Academic Press. Pp. 29-70.

Zawacki, A. A., and G. Hausfater
1969 Early vegetation of the lower Illinois kValley. Illinois State Museum, Reports of Investigations. No. 17.