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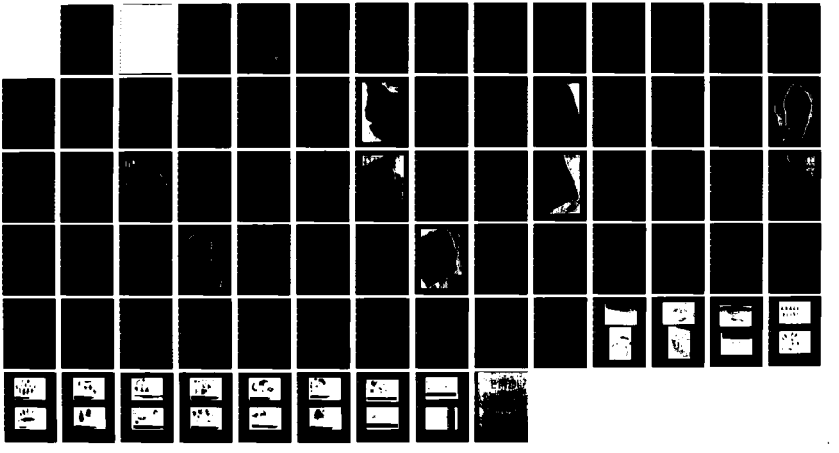

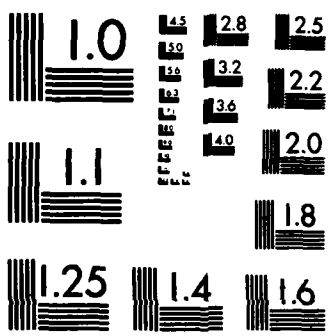

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Twenty-seven prehistoric archaeological sites were resurveyed and nine of these were tested to assess site type, cultural affiliation, current condition, and data potential. Cultural materials included over 4,000 lithic and ceramic artifacts ranging from the Early Archaic through the Late Woodland and Oneota periods. Geomorphological studies resulted in the formulation of generalized land form models which clarify relationships between geomorphic features and site distributions.

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RESURVEY AND INTENSIVE TESTING OF ARCHAEOLOGICAL SITES AT SAYLORVILLE LAKE POLK AND DALLAS COUNTIES, IOWA

TECHNICAL REPORT

VOLUME II: INTENSIVE TESTING

Prepared Under the Supervision of

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SECTION I. INTRODUCTION

In this volume, the second phase of this project - the testing of 10 archaeological sites - will be discussed. Since a description of the project area and other relevant information was presented in Volume I, that data will not be repeated herein.

By the time the initial survey of 27 sites at Saylorville Lake was completed in the Fall of 1982, a formal agreement had been reached between the Corps of Engineers and the Iowa Water Resources Council, specifying an increase in the lake's conservation-pool level from 833' NGVD to 836' in the summer and 838' in the winter. The exact date that this increase would go into effect had not yet been chosen, but it was agreed that it would take place sometime during the summer or fall of 1983. It was therefore decided that additional testing of any sites which warranted such treatment should be completed during 1982, so as to leave time for final mitigative actions in early 1983. In October 1982, the data gathered during site survey were presented to the Corps of Engineers and the Iowa State Historic Preservation Office. Evaluation of that information resulted in the selection of 9 of the surveyed sites for additional testing. At that time, it was also discovered that another site, 13PK152, was in danger of damage from the pool-level increase, but had never been subjected to any subsurface testing. That site was thus added to the list of sites to be examined during the second phase of the project.

This further research was conducted under the terms of a series of modifications to the original contract (see Appendix II, Volume III). The personnel involved were the same persons who had participated in the survey phase of the project. The required archaeological testing was conducted between October 28 and December 20, 1982; Dr. Harlan R. Finney conducted his detailed examinations of the geomorphology of the 10 subject sites during the first week of November, 1982.

PROJECT OBJECTIVES

The goals of the work which is reported in this volume followed directly from the objectives of the initial resurvey project. This research was to be, essentially, a continuation of the investigation begun during survey, in order to more fully define the character and research potential of a selected group of sites.

As discussed below, the specific objectives of the work were:

a) to conduct intensive testing of nine archaeological sites, in order to recover data appropriate to addressing a set

of questions about each site, including cultural affiliation, site type and current condition;

b) to resurvey an additional site, and then conduct more intensive investigations if the results of intial survey so warranted;

c) to perform detailed geomorphological examinations of the landforms upon which the ten subject sites are located, and to integrate this information with the archaeological data recovered from those sites;

d) to analyze the data recovered during fieldwork in the light of six broad research topics set forth in the Scope of Work.

DISCUSSION OF SCOPE OF WORK

The contract modifications which engendered intensive testing can be found in Appendix II to this report. Because the Scope of Work for this phase of the project was generated through a series of discussions among representatives of the Corps of Engineers, the Iowa SHPO and the Contractor, it was possible to be quite specific about the nature and extent of work to be completed. The reader will notice, however, that some requirements were left to the discretion of the Contractor. In particular, the actual extent of testing to be done at each site was expressed in terms of a range of square meters to be excavated, rather than a fixed quantity. This was done in order to accomodate variable field conditions, and to allow for field decisions to be made as testing progressed.

In an effort to provide a general framework for the project, a set of broad research topics to be addressed during fieldwork and lab analysis was generated. These topics were formulated in the same manner as the rest of the Scope of Work, during discussions among the Contractor and representatives of the COE and SHPO. They were based on preliminary research results, which suggested that the subject sites held some potential for yielding data relating to these topics.

By formulating the Scope of Work in this manner, it was possible to avoid any major misunderstandings as to the nature and extent of the work to be completed. As was mentioned in Volume I, the continual involvement of the contracting agency and the State Historic Preservation Office in the conduct of the project allowed for more efficient completion of the required work than would probably have been possible otherwise.

GEOMORPHOLOGICAL ANALYSIS

In the following pages, a detailed comparison of the geomorphic positions, soil stratigraphy and estimated relative ages of the ten subject sites is presented. An attempt will also be made to evaluate the extent of erosional damage to each site, and predict how each will be affected by erosion in the future. (Specific pedon descriptions for each site can be found in

Section II. See Volume I of this report for a general discussion of the geomorphology of the project area.)

Landforms

Six of the ten subject sites are alluvial fans. Five of these (13PK272, 13PK273, 13PK274, 13PK314, and 13PK315) are on a series of coalescing or nearly coalescing fans. The central portions of these fans are only a few feet above the 833' lake level. However, the fans farther north are slightly higher than the ones farther south, for example, about 842' for 13PK315 and about 837' for 13PK272. Thus, these fans are at consecutively lower elevations going downstream. 13PK276 is several kilometers upstream from these sites. Its central part has an elevation of about 865'.

These fans all have the typical conformation of alluvial fans. They are highest near the mouth of the drainageway, and slope downwards towards the lake and downward both upstream and downstream. Slopes on the central parts of the fans typically range from 1 to 5 percent. The fans all have considerably steeper slopes facing the lake and the drainageway. These slopes commonly have gradients of 10 to 30 percent. Drainageways passing through or adjacent to the fans are incised one to several meters below the surface of the fans. Thus, the fans no longer are receiving sediments from the drainageways that in the past provided sediments to form them.

The alluvial sediments comprising these fans are mostly loamy. However, a few strata with coarser texture and a few strata with few to many pebbles are in these sediments. However, such strata generally are only a few centimeters thick and extend horizontally for only a few meters or less. Also, a few angular or subangular stones and cobbles are in these sediments in some places. These alluvial sediments lack free lime to depths of more than 2 meters.

Incised drainageways separate 13PK314 from 13PK315 and 13PK273 from 13PK274. Thus, 13PK314 and 13PK315 are on the same old alluvial fan, as are 13PK273 and 13PK274. Occupation of these sites thus could have occured before or after incisement of the drainageway, or both.

Four of the sites (13PK152, 13PK259, 13PK264 and 13PK266) are on terraces (or floodplains). 13PK152 and 13PK266 are on the main lower terrace. 13PK259 and 13PK264 are on positions significantly lower than the main lower terrace. 13PK264 is on the modern floodplain, whereas 13PK259 is on a terrace which is about 2 meters higher than 13PK264.

13PK152 and 13PK266 have slopes rather typical of the treads of terraces. 13PK152 has slopes mostly of about 2 to 5 percent, and 13PK266 has slopes mostly of about 2 percent. 13PK259 and 13PK264 are partly on the convex summits of elongated knolls and on the sideslopes of those knolls. Slopes on the summits are mostly 2 to 3 percent. Slopes on the sides are as much as 10

percent.

Sediments comprising the terrace at 13PK266 are mostly loamy and silty. However, a few mostly continuous coarser textured strata are in the eroded escarpment which faces the lake. Sediments at 13PK152 and 13PK259 consist of a loamy mantle overlying dominantly sandy sediments. Sediments at 13PK264 are mostly loamy.

Soils

The soils at all sites on alluvial fans have a similar combined thickness of genetic horizons. However, the thickness of the A horizon and the soil moisture regime vary among sites. The A horizon is thinnest (5 cm) at 13PK276, and thickest (25 cm) at 13PK274. The soils at the other 3 sites on alluvial fans have A horizons of intermediate thickness. Forest probably has been the dominant kind of vegetation at 13PK276, whereas savannah probably has been the dominant vegetation at the other 5 sites alluvial fans. The soils at 13PK273 and 13PK274 are moderat well drained, whereas the soils at the other sites are drained.

Soils at the sites on terraces vary considerably in th kinds of horizons and degree of development. This primar results from differences in parent material, vegetation, and age. The A horizon is thinnest at 13PK266 and thickest at 13PK259 and 13PK264. Further, soils at 13PK266 have an E horizon, whereas the other soils do not. Soils at 13PK266 have a distinct argillic horizon, but the soils at 13PK259 and 13PK264 lack such a horizon. The soils at 13PK152 have a weakly expressed argillic horizon. Soils at 13PK266 have appreciably more clay than do the soils at the other sites. Forest appears to have been the dominant vegetation at 13PK266, whereas savannah was dominant at 13PK152. Prairie or savannah appears to have been dominant at 13PK259 and 13PK264.

In regard to classification, the soils at all sites on alluvial fans and the soils at 13PK266 on the terrace have distinct argillic horizons. However, they vary in their thickness of A horizons. Soils with the thinnest A horizon, namely, soils at 13PK276, are placed in the subgroup of Typic Hapludalfs. The soils at 13PK274 have the thickest A horizon and are placed in Aquic Argiudolls. Soils intermediate in thickness of A horizon are placed in Mollic Hapludalfs. The soils at 13PK152 have a weakly expressed argillic horizon and are placed in Mollic Hapludalfs, but they are marginal to the subgroup of Typic Eutrochrepts. Soils at 13PK259 have a thick A horizon and a cambic horizon. Thus, they are placed in Typic Hapludolls. Soils at 13PK264 likewise have a thick A horizon and a cambic horizon. However, they have a buried A horizon beginning within depths of 1.25 meters. Thus, they are placed in Fluventic Hapludolls.

In summary, soils at all of the sites on alluvial fans and the soils at 13PK266 are similar in their degree of development.

They are by far the most developed soils of the 10 sites. The soils at 13PK152 are next in degree of development, and are followed by the soils at 13PK259. The soils at 13PK264 have, by far, the least development.

Recent Erosion and Sedimentation

Slight to severe erosion has occured at all sites because of wave action by Saylorville Lake. The most severely eroded sites are 13PK266, 13PK276, and 13PK152. Nearly vertical escarpments resulting from undercutting by waves range from about 2 meters at 13PK152 to as much as 8 meters at 13PK276. At 13PK266, it is about 3 meters. The width of the eroding fringe (distance from the crest of the eroded bluff to the 833' lake level) at 13PK152 ranges from about 20 to 35 meters. It is less at the other two sites because of the larger proportion of nearly vertical escarpments.

Slight to moderate erosion has occurred at the other sites on alluvial fans (13PK272, 13PK273, 13PK274, 13PK314, and 13PK315). These sites have eroded fringes typically ranging from 4 meters to as much as 15 meters, with gradients of about 5 to 30 percent. Undercutting has occured in only a few places at these sites. However, a series of micro-terraces are on this fringe. Erosion on the lower parts of these fringes has extended into the C horizon in many places. Further, some erosion has occurred on the valley slopes above the fans to an elevation of about 870'.

The other two sites, 13PK264 and 13PK259, have slight to moderate erosion. 13PK264 has as an eroded fringe facing the lake and the inlet which ranges from 9 to 15 meters. Slopes there typically range from 5 to 10 percent. Erosion has extended into the B horizon on the lower parts of that fringe. 13PK259 has the least erosion of any of the 10 sites: only a small part of the southeastern part of the site is eroded.

Post-Saylorville Lake sedimentation has occured at all sites except for 13PK276. The most sedimentation has occured on the lower part of the escarpment at 13PK152. Further, wave action there has built a barrier bar across the drainageway immediately north of the site. The amount of sedimentation on the less sloping parts of the other sites ranges from a trace to as much as 10 centimeters. The sediments there are mostly sandy.

Some disruption of the A horizon has occurred in some places at 13PK272, 13PK273, and 13PK274 because of the action of lake ice. There, as much as the upper 15 centimeters consist of irregular masses of grayish brown sandy sediments and black A horizon material.

In summary, all 10 archaeological sites have been eroded by wave action of Saylorville Lake, and erosion of the sites continues. Further stabilization of shorelines where the lake level fluctuates is nearly impossible. Thus, all 10 sites probably will be severely damaged or destroyed within the next few decades.

Relative Age of Landform Surfaces

How the landforms relate one to another in age is important in assessing archaeological sites. (The following discussion precludes any modification of land surfaces by Saylorville Lake.) Here, an attempt is made to fit the various landforms into the chronology developed by Benn and Bettis (1981) amd Benn and Harris (1982). The surfaces of no landform in the area can be older than about 14,000 B.P. (Ruhe, 1969) because that is when the last glacier left the area. Surfaces of the floodplains can be no older than the last flood that deposited sediments on them, and such floods apparently occur every few years.

The valley slopes comprise two components: an erosional component (the shoulders and backslopes) and a depositional component (the footslopes and alluvial fans). The surfaces of these components are perceived to be contemporaneous. The period in which landscapes were actively eroding and alluvial fans were being built (prior to the arrival of the European settlers) was 2,500 to 8,500 B.P. Thus, those surfaces can be no younger than 2,500 B.P. or no older than 8,500 B.P.

Most of the surfaces of the uplands presumably were affected by that period of erosion. Thus, they can be no younger than 2,500 B.P. or no older than 8,500 B.P. Perhaps some knolls with nearly level, linear summits would not have been affected by periods of post-glacial erosion. However, most summits that were observed in the area have convex summits, and thus were probably affected by such periods of post-glacial erosion.

Sediments comprising the high terrace must be at least about 12,000 years old, because by that date the glacier had retreated north of the drainage system of the Des Moines River. Thus, some of the nearly level higher surfaces of the high terrace (as in Sec. 13, T. 81 N., R. 26 W.) may well be that old. However, surfaces on the eastern disected portion of that terrace are younger, perhaps only about 2,500 years old. This assumes they were affected by the later part of the period of post-glacial erosion.

Because of their lower-lying position, the nearly level surfaces of the main lower terrace must be younger than the oldest surface on the high terrace. The question is - how much younger? If those are depositional surfaces of a fill of glacial outwash and are analogous to the Beaver Creek terraces of the downstream corridor, they must be at least 12,000 years old. Further, alluvial fans appear to overlie this terrace in places, but this has not been substantiated by borings. If it is true, then that terrace is older than the alluvial fans. However, if the nearly level surfaces of the main lower terrace are features produced by an incising Des Moines River in the Holocene, they are younger than about 12,000 B.P. If the terrace where 13PK259 is located is analogous to the "intermediate or high terrace" of the downstream corridor, it is no older than about 5,000 B.P.; thus, the nearly level surfaces of the main lower terrace are

older than about 5,000 B.P. However, the author favors the premise that those surfaces are depositional surfaces of glacial outwash, and thus, are about 12,000 years old. An investigation of the stratigraphic relationships between the alluvial fans and the lower main terrace would help to resolve this question.

In Figure 1, very tentative age ranges for the landforms of the 10 subject sites are presented. This sequence assumes that the main lower terrace is of glacial origin. Sites on alluvial fans are among the higher lying ones in the valley of the Des Moines River. Therefore, it can be inferred that they formed in the early part of the period of alluvial fan formation. If the terrace on which 13PK259 is located is analogous to the high terrace of the downstream corridor, it is about 4,000-5,000 years old. If it is analogous to the intermediate terrace of that corridor, it is about 1,000-4,000 years old. The later date appears preferable at this time. Much more detailed studies than were done for this project would be required to determine more precise ages of landforms.

Figure 1. Estimated Dates of Formation for Major Landforms in the Saylorville Project Area

Landform	Sites Located on this Landform	Range in Age (yrs. B.P.)
Main lower terrace	13PK152, 13PK266	12,000-14,000
Alluvial fan	13PK272, 13PK273, 13PK274, 13PK276, 13PK314, 13PK315	5,000-8,500
Terrace just below main lower terrace	13PK259	1,000-5,000
Floodplain	13PK264	<1,000

SECTION II. INTENSIVE TESTING PROCEDURES AND RESULTS

RESEARCH PROCEDURES

Field Methods

The field procedures that were employed during the first phase of this project have already been explained. Those methods were employed in order to meet a particular set of goals. When the second phase of the project was initiated, another set of field methods appropriate to more intensive examination of the subject sites was selected. The results of the initial site survey had indicated that patterned surface reconnaissance does not yield particularly useful information in terms of defining site boundaries and intra-site patterning. Therefore, little emphasis was placed on the recovery of surface materials during intensive testing. The only sites at which it was employed to any great extent were 13PK152 and 13PK259, as discussed below. At the rest of the subject sites, excavation of test units was the major means of investigation. This technique is described in detail in the following paragraphs.

Excavation Units

The Scope of Work for this phase of the project specified a range of square meters to be excavated at each site, but did not require the use of a consistent size of test unit. At each site, field decisions were made as to the most appropriate placement of test units, based on a number of factors: results of preliminary testing, topography, site size and integrity of remaining cultural deposits. Three different sizes of test units were excavated: 50 cm by 50 cm square units, 50 cm by 1 meter rectangular units, and 1 meter by 1 meter square units. The choice of a particular size of unit was based on the same factors used to determine placement of the units within the site area.

In all cases, the basic procedure for excavation of test units was standard. Units were excavated by trowel in 5 cm artificial levels, and all backdirt was screened through 1/4" wire mesh screen. Any artifacts recovered were bagged according to provenience by pit and level. The 1 m by 1 m units were divided into quadrants during excavation, and all materials were kept separate according to pit, level and quadrant. In a similar manner, the 50 cm by 1 m units were excavated by halves. When features were encountered during excavation of a test unit, they were first pedestaled and then excavated separately from the rest of the unit. Detailed notes of artifact distribution, features, and any other information deemed relevant were taken during excavation. Each test unit was excavated to sterile soil and then backfilled.

Because much of the fieldwork for this phase of the project was done during the late fall and winter, as the ground was

freezing, some adjustments of normal field techniques had to be made. Because it was not possible to push a soil probe into the frozen ground, transect samples for phosphate testing could not be taken. Where the ground was frozen to a depth of 10 to 15 cm, the top levels of each excavation unit could not be worked with trowels, so shovels were used to break the soil out of the units in chunks. Since the size of these chunks could not be controlled, the upper levels of several pits were of variable depth. Also, because frozen soil cannot be screened, a considerable quantity of backdirt had to be bagged, brought back to the laboratory, and water-screened after it had thawed out. In the most extreme cases, the soil was frozen so hard that it was impossible to dig through it. When this occurred, fires were used to heat the soil until it had thawed and could be scraped out of the unit. This process was extremely time-consuming; on the average, it took over twice as long as normal to excavate one 5-cm level. (The fires, however, did help to maintain crew morale by providing a deterrent to frostbite.)

Geomorphological Methods

The detailed investigations of the 10 subject sites which are reported in this volume were conducted using a "Backsaver" sampling tube, a bucket auger, and a spade to study soils. Several probes were made at each site to determine the range in soil properties, and all exposures on and near the sites were examined. Then, a place near the center of each site was selected that had soil properties normal for that site. A pedon taken from that location was described using the standard terminology of the National Cooperative Soil Survey. Also, observations were made on the amount of recent erosion and deposition, and several measurements of slope inclination were taken.

Laboratory Methods

The laboratory procedures described in Volume I of this report were also applied to the cultural materials recovered during intensive testing. Additional materials from each site were catalogued in sequence with the artifacts recovered during initial survey, and artifact descriptions and typological classifications were generated in the manner previously described. Additional analytical techniques that were applied are described in Section III of this volume.

SITE DESCRIPTIONS

In the following pages, the ten sites which were tested during the second phase of this project will be discussed in detail. The format used will be essentially the same as that employed in Volume I of this report, with the addition of detailed descriptions of soil stratigraphy at each site.

13PK152

Landscape Setting: first terrace above the 833′ lake level at this site; elevation of pedon is about 845′ ; pedon has slightly concave slope of about 3 percent.

Vegetation: low shrubs with an understory of grasses and herbs.

Parent Material: glacial alluvium.

Drainage: well-drained.

Soil Classification: Mollic Hapludalfs, coarse-loamy, mixed, mesic (but marginal to Typic Eutrochrepts).

Pedon Description:

A--0 to 24 cm; very dark grayish brown (10YR 3/2) sandy loam; moderate very fine and fine granular structure; friable; abrupt smooth boundary.

Bt1--24 to 38 cm; dark brown (10YR 4/3) sandy loam; dark brown (10YR 3/3) ped faces; weak fine subangular blocky structure; friable; few thin coatings of clean sand and silt particles on faces of peds; clear smooth boundary.

Bt2--38 to 62 cm; dark brown (10YR 4/3) sandy loam; weak medium prismatic structure parting to weak coarse subangular blocky; friable; common thin dark brown (7.5YR 4/2) clay films on faces of peds; gradual boundary.

Bt3--62 to 96 cm; yellowish brown (10YR 5/4) sandy loam; weak coarse subangular blocky structure; friable; few thin dark brown (7.5YR 4/4) clay films on faces of peds; clear boundary.

BC--96 to 165 cm; dark brown (7.5YR 4/4) loamy sand; massive; very friable; few strata of sand and sandy loam.

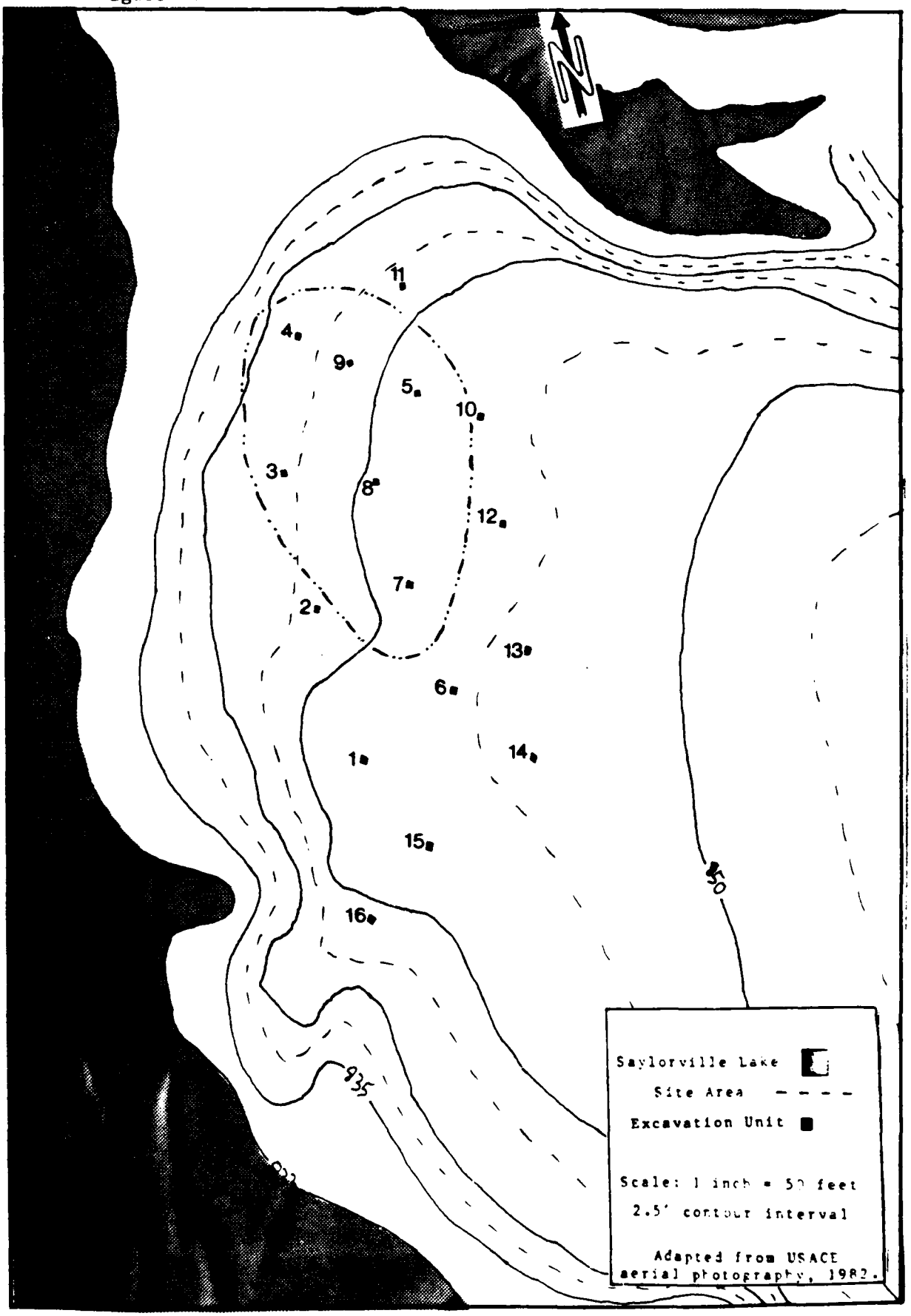
Remarks: the thickness of the A horizon ranged from 15 to 30 cm on the basis of 8 probes made within 40 m of pedon.

Testing Procedure: surface reconnaissance, cutbank planing, 16 shovel tests (shovel tests were a minimum of 30 cm by 30 cm in size).

Material Recovered:

Surface
7 core fragments
9 primary flakes
335 secondary flakes
33 retouch flakes

Figure 2. 13PK152



Surface, cont.
2 projectile points
2 flake tools
1 broken tool
1 preform
1 grit rim sherd (vertical cord impressions w/rectangular punctates)
8 grit body sherds, cr
1 grit body sherd, smooth
8 eroded body sherds and ceramic crumbs
4 historic crockery sherds

Shovel Test #3
10-20 cm 3 secondary flakes
20-30 cm 1 retouch flake

Shovel Test #4
10-20 cm 1 secondary flake
1 retouch flake
20-30 cm 2 secondary flakes
30-40 cm 1 " "

Shovel Test #5
10-20 cm 1 secondary flake

Shovel Test #7
10-20 cm 1 primary flake, utilized

Shovel Test #8
0-10 cm 1 primary flake
1 secondary flake

Shovel Test #9
10-20 cm 1 secondary flake
20-30 cm 1 " "
30-40 cm 1 " "

This site was not one of the 27 sites to be resurveyed under the terms of the original project contract. However, during the course of fieldwork, it was discovered that no subsurface testing had ever been done here, and it was therefore added to the list of sites to be tested under the contract modification. The modification specified that preliminary testing was to be conducted at 13PK152, and, if warranted by the results of that testing, full-scale intensive testing was then to be done.

As noted above, this site lies on a remnant of the main lower terrace of the river valley. This terrace is apparently one of the oldest landforms in the area, having formed from glacial outwash between 12,000 and 14,000 years ago. The portion of terrace upon which this site is located has been severely affected by the presence of Saylorville Lake, primarily due to bank slumpage from wave undercutting. It is estimated that between 20 and 35 meters of the original terrace edge are now gone. This has created a nearly vertical escarpment, averaging 2

meters in height, along the lake edge of the terrace.

Almost all of the cultural material recovered from surface was found along the eroded fringe of the terrace, between the waterline and the cutbank. The site was first visited when the lake level was above its normal elevation, and, at that time, a considerable amount of material was actually found in the lake, in 6 to 12 inches of water. That material was most likely washed out of its soil matrix as portions of the terrace slumped into the lake.

A series of shovel tests was done on the terrace remnant to determine if any of the site area remains intact. These tests were done in transects running parallel to the lake shore. The only tests which yielded any artifactual material were in the two transects closest to the shoreline edge of the terrace. Tests further back on the terrace were unproductive. This indicates that an area no larger than 30 m wide (north-south) is all that now remains of the original site area. The sparse distribution of the material found in subsurface context, compared to the quantity of material found along the surface of the shoreline, suggests that what remains of the site is probably on the edge of what was the main activity area. The results of the preliminary testing thus did not warrant any more intensive examination of this site (see Plate II-1).

Only a few artifacts indicative of cultural affiliation were recovered during site survey. The rim sherd, which was found in about 6 inches of water, is very similar to the type designated as Havana Cordmarked in eastern Iowa. The body sherds found on surface are badly eroded for the most part, and do not either support or refute this typological classification. Two projectile points were found during surface reconnaissance, both of which are corner-notched, with broad, expanding stems and slightly convex bases. On the basis of these artifacts, a Middle Woodland cultural affiliation is the most likely temporal classification for this site, even though all the diagnostic materials were found in secondary deposition (see Plates II-8 and II-14).

13PK259

Landscape setting: second terrace above the 833' lake level at this site; elevation of pedon is about 840' ; pedon has convex slope of about 2 percent. Terrace below this one is a recent floodplain.

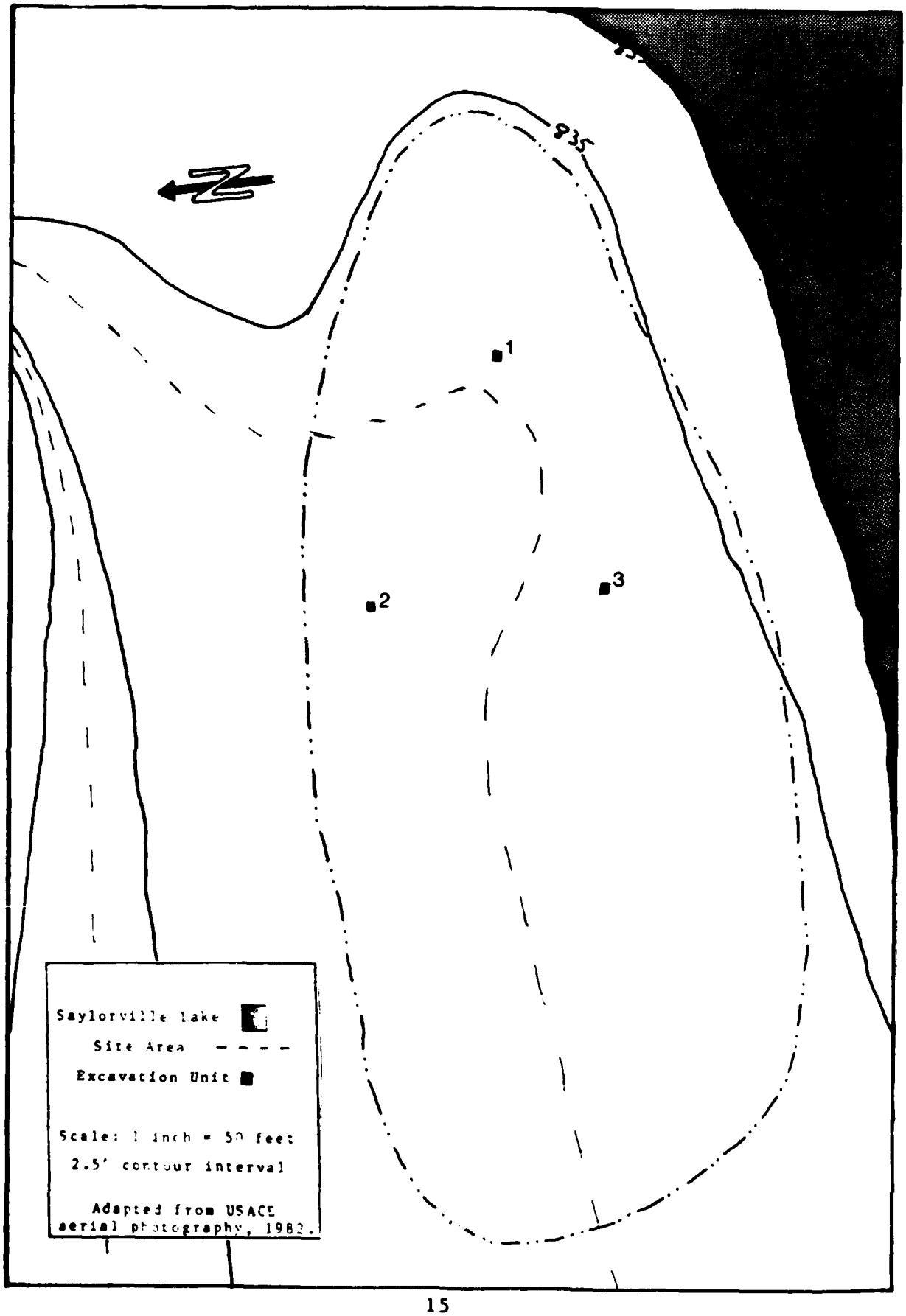
Vegetation: sparse cover of grasses and herbs.

Parent Material: alluvium.

Drainage: well-drained.

Soil Classification: Typic Hapludolls, coarse-loamy, mixed mesic (but marginal to Typic Argiudolls).

Figure 3. 13PK259



Pedon description:

C--0 to 1 cm; grayish brown (10YR 5/2) fine sand; single grained; loose, abrupt smooth boundary.

A1--1 to 26 cm; very dark gray (10YR 3/1) loam; moderate fine and medium granular; friable, clear smooth boundary.

A2--26 to 44 cm; very dark grayish brown (10YR 3/2) loam; very dark gray (10YR 3/1) faces of peds; moderate fine and medium granular structure; friable; clear smooth boundary.

BA--44 to 63 cm; dark gray brown (10YR 4/2) to dark brown (10YR 4/3) loam; very dark grayish brown (10YR 3/2) faces of peds; weak very fine prismatic structure parting to moderate fine and medium subangular blocky; friable; few thin clay films and few thin coatings of clean sand and silt particles on faces of peds; clear smooth boundary.

Bt1--63 to 85 cm; dark brown (10YR 4/3) loam; very dark grayish brown (10YR 3/2) faces of peds; weak fine and medium prismatic structure parting to moderate fine and medium subangular blocky; friable; few thin clay films and few thin coatings of clean sand and silt particles on faces of peds; gradual boundary.

Bt2--85 to 110 cm; dark brown (10YR 4/3) to dark yellowish brown (10YR 4/4) loam; weak medium and coarse prismatic structure parting to weak medium and coarse subangular blocky; friable; few thin clay films and few thin coatings of clean sand and silt particles on faces of peds; gradual boundary.

BC--110 to 140 cm; dark yellowish brown (10YR 4/4) fine sandy loam; massive with a few vertical cleavage faces; abrupt boundary.

C--140 to 170 cm; dark brown (10YR 4/3) stratified loam and fine sandy loam; massive; very friable.

Remarks: Free water began at 150 cm.

Testing Procedure: 3 excavation units. (Note: Unit #1 was 1 meter square in size; Units 2 and 3 were each 50 cm by 1 meter in size.)

Material Recovered:

Surface	
1	core fragment
31	secondary flakes
1	retouch flake
1	projectile point, unfinished
1	end scraper
1	base of knife
3	eroded grit body sherds
3	grit ceramic crumbs

Unit #1		
0-5 cm, NW 1/4	10	secondary flakes
NE 1/4	3	" "
	1	grit body sherd, cr
0-5 cm, SE 1/4	2	secondary flakes
SW 1/4	4	" "
5-10 cm, NW 1/4	3	secondary flakes
	1	retouch flake

Unit #1, cont.

5-10 cm,	NE 1/4	2 secondary flakes
		1 retouch flake
	SE 1/4	1 secondary flake
		2 retouch flakes
10-15 cm,	NW 1/4	1 " "
		6 secondary flakes
	NE 1/4	2 " "
	SW 1/4	1 retouch flake
15-20 cm,	SE 1/4	1 secondary flake
	SW 1/4	3 " "
20-25 cm,	NW 1/4	2 " "
		1 retouch flake
	NE 1/4	5 secondary flakes
		3 retouch flakes
	SE 1/4	3 secondary flakes
		2 retouch flakes
	SW 1/4	1 secondary flake
		1 retouch flake
25-30 cm,	NW 1/4	2 secondary flakes
		2 retouch flakes
	NE 1/4	1 secondary flake
		1 retouch flake
	SE 1/4	2 secondary flakes
		1 retouch flake
	SW 1/4	1 secondary flake
		1 retouch flake
30-35 cm,	NW 1/4	1 " "
	NE 1/4	3 " "
	SE 1/4	1 secondary flake
		1 retouch flake
		1 knife
		1 bone fragment, burned
	SW 1/4	1 retouch flake
35-40 cm,	NW 1/4	1 secondary flake
	SW 1/4	1 bone fragment
40-45 cm,	NW 1/4	1 retouch flake

Unit #2

5-10 cm,	S 1/2	1 secondary flake
10-15 cm,	N 1/2	1 retouch flake
	S 1/2	2 secondary flakes
15-20 cm,	N 1/2	2 " "
	S 1/2	1 " "
20-25 cm,	N 1/2	2 " "
		1 retouch flake
25-30 cm,	N 1/2	1 secondary flake
		3 retouch flakes
	S 1/2	4 secondary flakes
		2 retouch flakes
30-35 cm,	N 1/2	2 secondary flakes
	S 1/2	3 " "
		1 primary flake
35-40 cm,	N 1/2	1 secondary flake
	S 1/2	1 " "

	Unit #2, cont.	
40-45 cm,S	1/2	1 retouch flake
45-50 cm,S	1/2	1 broken scraper
50-55 cm,N	1/2	1 bone fragment
S	1/2	1 secondary flake

	Unit #3	
0-5 cm,S	1/2	2 secondary flakes
10-15 cm,S	1/2	4 " "
15-20 cm,N	1/2	1 " "
20-25 cm,S	1/2	1 " "
25-30 cm,S	1/2	1 retouch flake
30-35 cm,N	1/2	3 secondary flakes
S	1/2	1 " "
		2 retouch flakes
		2 bone fragments
35-40 cm,N	1/2	1 secondary flake
		3 retouch flakes
40-45 cm,N	1/2	1 secondary flake
		1 retouch flake
S	1/2	2 secondary flakes

The preliminary testing done at 13PK259 had resulted in the recovery of quite a quantity of cultural materials covering a wide temporal range. When additional subsurface testing was done, it confirmed that cultural strata reach to a depth of approximately 60 cm, or about 35 cm beyond the plowzone (see Plate II-2).

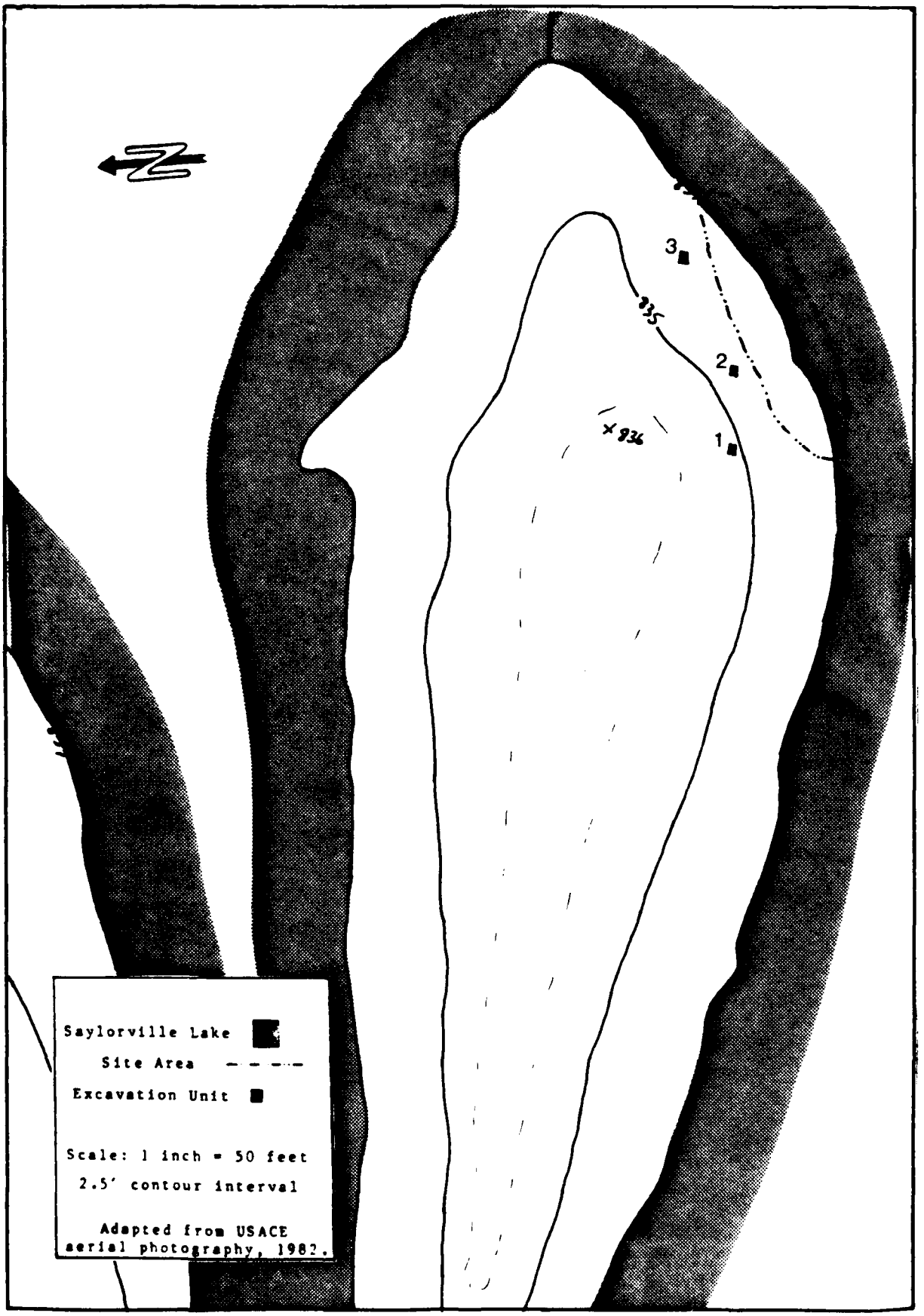
Unfortunately, no materials indicative of cultural affiliation were recovered from subsurface context during the second phase of testing at this site. Analysis of edgewear patterns was done on a sample of lithic artifacts; it revealed a high incidence of tools and flakes that were used to cut or scrape bone. This tends to reinforce the original estimation of this site as a resource-procurement base.

Examination of the site area indicated that this site has been less disturbed by erosion and bank slumpage than any other site in the entire group of sites examined during this project. However, its exact geomorphological position is still unclear: it lies upon a terrace which is below the high terrace system of the river valley, but above the floodplain. Definition of this landform is of particular interest because of the apparent antiquity of at least one component of this site. At present, some conflict exists between the estimated age of the landform per geomorphological analysis, and the probable time of earliest occupation of the site, based upon artifactual information. Thus, further geomorphological investigations intended to establish a maximum possible age for this landform would be of use in interpreting the cultural data found here.

13PK264

Landscape setting: first terrace above the 833' lake level at

Figure 4. 13PK264



this site; elevation of pedon is about 835'; pedon has a linear slope of about 2 percent.

Vegetation: few scattered herbs.

Parent material: alluvium.

Drainage: moderately well-drained.

Soil classification: Fluventic Hapludolls, coarse-loamy, mixed mesic.

Pedon description:

C--0 to 7 cm; grayish brown (10YR 5/2) sand; single grained; loose; few thin strata of dark grayish brown (10YR 4/2) in lower part; few non-calcareous whitish crusts on surface.

A--7 to 36 cm; very dark grayish brown (10YR 3/2) fine sandy loam; weak medium subangular blocky structure parting to weak very fine granular; very friable; clear smooth boundary.

Bw--36 to 96 cm; dark brown (10YR 4/3) in upper part grading to dark grayish brown (10YR 4/2) in lower part, fine sandy loam; weak medium subangular blocky structure; very friable; clear smooth boundary.

Ab--96 to 120 cm; very dark grayish brown (10YR 3/2) fine sandy loam; massive; very friable.

Remarks: Free water began at 120 cm. Materials below that depth could not be removed with sampler.

Testing Procedure: 3 excavation units. (Note: Unit #1 was 1 meter square in size; Units #2 and #3 were each 50 cm by 1 meter in size. No cultural material was recovered from these units.)

Material Recovered:

Surface
2 core fragments
1 primary flake
5 secondary flakes
1 projectile point
2 broken tool bases
1 rim sherd, severely eroded
2 bone fragments, burned

Further testing at this site emphasized more detailed geomorphological analysis than had previously been done, in order to clarify the landform position of the site. As discussed on pp. 2-8 of this volume, that analysis resulted in the identification of the landform at the recorded site location as an extremely recent formation, created by the accrual of sediments over the original floodplain surface. A buried A horizon can be detected intermittently within 120 cm (the depth at which free water was encountered) of the present land surface. Thus, it appears that 13PK264 is actually underneath this landform, and therefore also below the normal pool elevation. This conclusion is supported by the negative results

of the three excavation units done here during the second phase of testing.

A very small quantity of cultural material was found on surface during intensive testing. Included in this material is a small triangular projectile point that can be classified as a Fresno point, diagnostic of a Late Woodland or Mississippian cultural affiliation. Because there was ice on the lake at the time this site was revisited, it was not possible to recheck the area along the southern edge of the knoll from which most of the material found during survey was recovered.

13PK266

Landscape setting: first terrace above 833′ lake level at this site; elevation of pedon is about 850′; pedon has linear slope of about 2 percent.

Vegetation: forest with many openings with shrubs.

Parent material: glacial alluvium.

Drainage: well-drained.

Soil classification: Mollic Hapludalfs, fine-silty, mixed mesic.

Pedon description:

Ap--0 to 22 cm; very dark grayish brown (10YR 3/2) silt loam; moderate very fine granular structure; friable; abrupt smooth boundary.

E--22 to 48 cm; dark grayish brown (10YR 4/2 to 4/3) silt loam; weak medium and thick platy structure parting to weak very fine subangular blocky structure; friable; clear smooth boundary.

Bt1--48 to 68 cm; brown (10YR 4/3) silt loam; moderate fine and medium subangular blocky structure; friable; many thin and medium coatings of clean sand and silt particles and few thin dark grayish brown (10YR 4/2) clay films on faces of peds; gradual boundary.

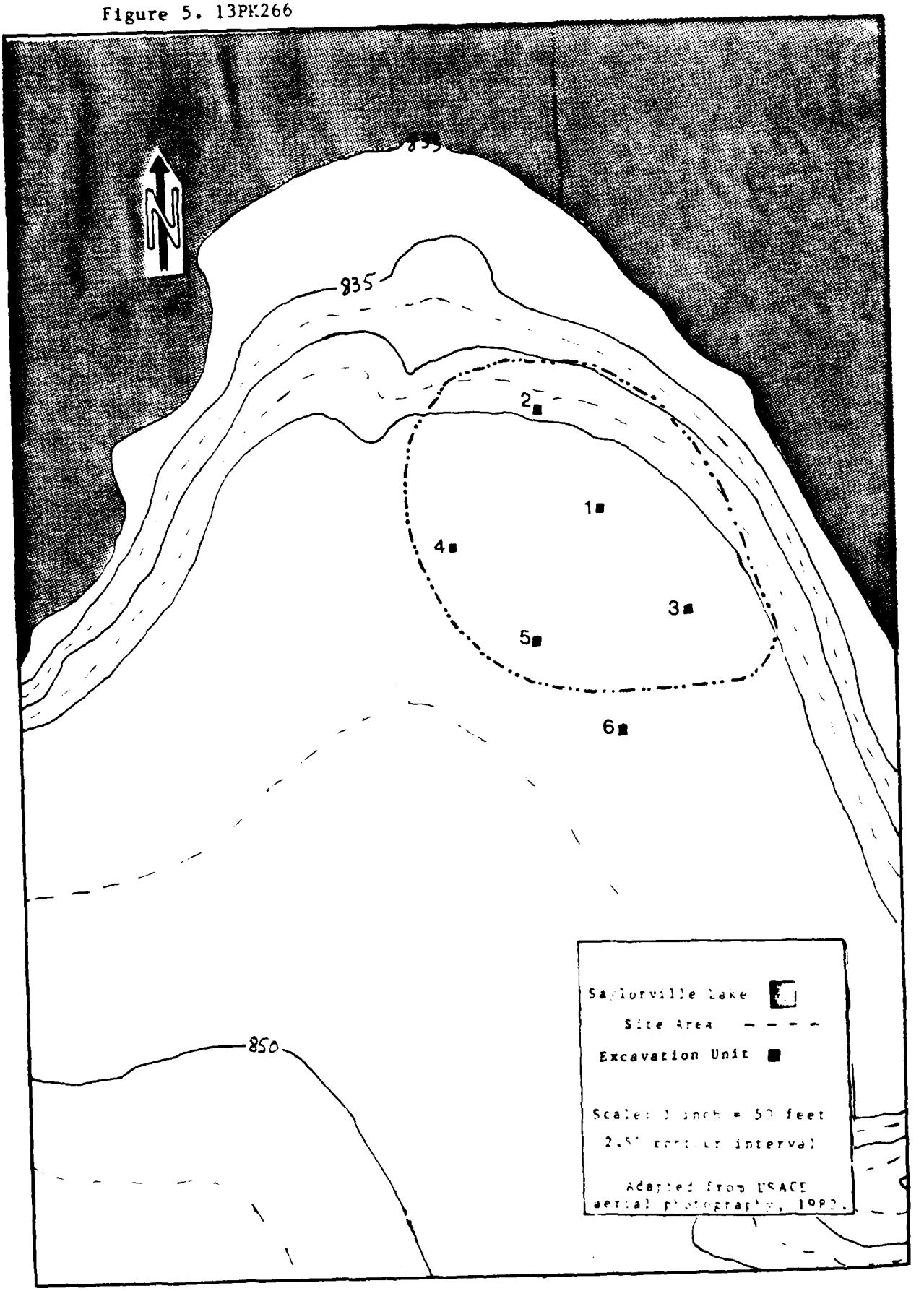
Bt2--68 to 90 cm; dark yellowish brown (10YR 4/4) silty clay loam; common fine distinct strong brown (7.5YR 5/6) mottles mostly in lower part; weak fine and medium prismatic structure parting to moderate medium subangular blocky; firm; many thin and medium very dark brown (10YR 3/3) clay films and few thin and medium coatings of clean sand and silt particles on faces of peds; gradual boundary.

Bt3--90 to 127 cm; brown (10YR 5/3) silt loam; few fine distinct strong brown (7.5YR 5/6) mottles; weak medium and coarse prismatic structure parting to weak medium and coarse subangular blocky; firm; common thin and medium very dark brown (10YR 3/3) clay films on faces of peds; abrupt smooth boundary.

2BC1--127 to 147 cm; yellowish brown (10YR 5/6) stratified coarse sand and sand; massive; loose; abrupt smooth boundary.

3BC2--147 to 175 cm; light grayish brown (2.5Y 6/2) silt loam; many fine and medium yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) mottles; massive; firm; few fine black (MnO_2)

Figure 5. 13PK266



masses.

Testing Procedure: 6 excavation units. (Note: Units #1, #2 and #3 were each 1 meter square in size; Units #4, #5 and #6 were each 50 cm square in size.)

Material Recovered:

Unit #1

0-5 cm,	NE 1/4	2 secondary flakes
5-10 cm,	NW 1/4	1 " "
	NE 1/4	1 primary flake
		1 secondary flake
		1 retouch flake
	SE 1/4	1 secondary flake
		1 retouch flake
10-15 cm,	NW 1/4	1 secondary flake
	SE 1/4	1 primary flake
		2 secondary flakes
15-20 cm,	NW 1/4	3 " "
	NE 1/4	1 " "
	SE 1/4	1 " "
	SW 1/4	1 primary flake
		2 secondary flakes
20-25 cm,	NW 1/4	1 secondary flake
	SE 1/4	1 " "
	SW 1/4	2 " "
		1 retouch flake
25-30 cm,	NW 1/4	1 secondary flake
	NE 1/4	2 retouch flakes
	SE 1/4	2 secondary flakes
		1 retouch flake
	SW 1/4	4 secondary flakes
		1 retouch flake
30-35 cm,	NW 1/4	1 primary flake
		2 secondary flakes
	NE 1/4	1 " "
	SW 1/4	1 " "
35-40 cm,	NW 1/4	3 " "
	NE 1/4	3 " "
	SE 1/4	1 " "
		2 retouch flakes

Unit #2

0-5 cm,	NE 1/4	1 secondary flake
	SE 1/4	1 " "
5-10 cm,	NW 1/4	1 " "
	SE 1/4	1 " "
10-15 cm,	NW 1/4	1 primary flake
		2 secondary flakes
	NE 1/4	2 " "
	SE 1/4	2 " "
	SW 1/4	1 retouch flake
15-20 cm,	NW 1/4	1 primary flake
		1 retouch flake
	NE 1/4	1 secondary flake
	SE 1/4	1 primary flake

Unit #2, cont.

SW 1/4	1	secondary flake
20-25 cm,SW 1/4	1	retouch flake

Unit #3

10-15 cm,NW 1/4	1	retouch flake
SE 1/4	1	secondary flake
15-20 cm,NW 1/4	1	retouch flake
NE 1/4	1	secondary flake
20-25 cm,NE 1/4	2	" "
SE 1/4	1	" "
SW 1/4	1	grit body sherd

Unit #4

10-15 cm	1	retouch flake
15-20 cm	1	secondary flake
20-25 cm	2	" "
25-30 cm	1	" "

Intensive testing of this site did not yield any information that would clarify either the cultural affiliation of the site or its probable function. One additional ceramic sherd was found in subsurface testing, but its small size and poor condition did not allow for any definition of decorative technique or typological classification (see Plate II-3).

Analysis of edgewear patterns on selected artifacts did not reveal much consistency in utilization, except that all of the pieces examined were used for cutting. However, this pattern may be the result of differential preservation rather than a true reflection of the site's function. Loss of a portion of the site prior to testing has limited the range of behaviors that can be reconstructed from artifactual evidence. The sample of cultural materials that was available for examination may very well represent just one activity area within the total spatial extent of the occupation.

13PK272

Landscape setting: old alluvial fan; elevation is about 837'; pedon has a linear slope of about 4 percent.

Vegetation: very sparse cover of herbs.

Parent material: alluvium.

Drainage: moderately well-drained.

Soil classification: Mollic Hapludalfs, fine-loamy, mixed, mesic.

Pedon description:

C--0 to 2 cm; light brownish gray (10YR 6/2) coarse sand; single grained; loose; abrupt smooth boundary.

A--2 to 22 cm; very dark grayish brown (10YR 3/2) loam;

moderate very fine and fine granular structure; very friable; common fine dark brown (7.5YR 3/2) coatings on peds and around root channels; clear smooth boundary.

E--22 to 39 cm; dark brown (10YR 4/3) loam; few fine distinct olive brown (2.5Y 4/4) mottles; weak very fine and fine subangular blocky structure; friable; few fine very dark grayish brown (10YR 3/2) fillings in root channels; gradual boundary.

Bt1--39 to 80 cm; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; firm; many thin and medium dark yellowish brown (10YR 4/4) clay films and few thin coatings of grayish brown (10YR 5/2) E material on peds; about 2 percent pebbles except for 8 cm strata with about 15 percent pebbles; gradual boundary.

Bt2--80 to 135 cm; yellowish brown (10YR 5/4) clay loam; few fine faint strong brown (7.5YR 5/6) mottles; moderate fine prismatic structure parting to moderate medium subangular blocky; firm; many medium dark brown (10YR 4/3) clay films and few thin to thick coatings and fillings of grayish brown (10YR 5/2) E material on and in peds; trace of pebbles ; diffuse boundary.

Bt3--135 to 175 cm; yellowish brown (10YR 5/6) clay loam; common fine distinct light brownish gray (10YR 6/2) mottles; mostly massive but a few vertical cleavage faces; firm; few black coatings and masses; few medium dark yellowish brown (10YR 4/4) clay films on cleavage faces; trace of pebbles; a thin strata with less clay in upper part.

Remarks: Seven probes within 20 m of the pedon described had A horizons ranging from 20 to 42 cm, but range of 20 to 30 cm was more common.

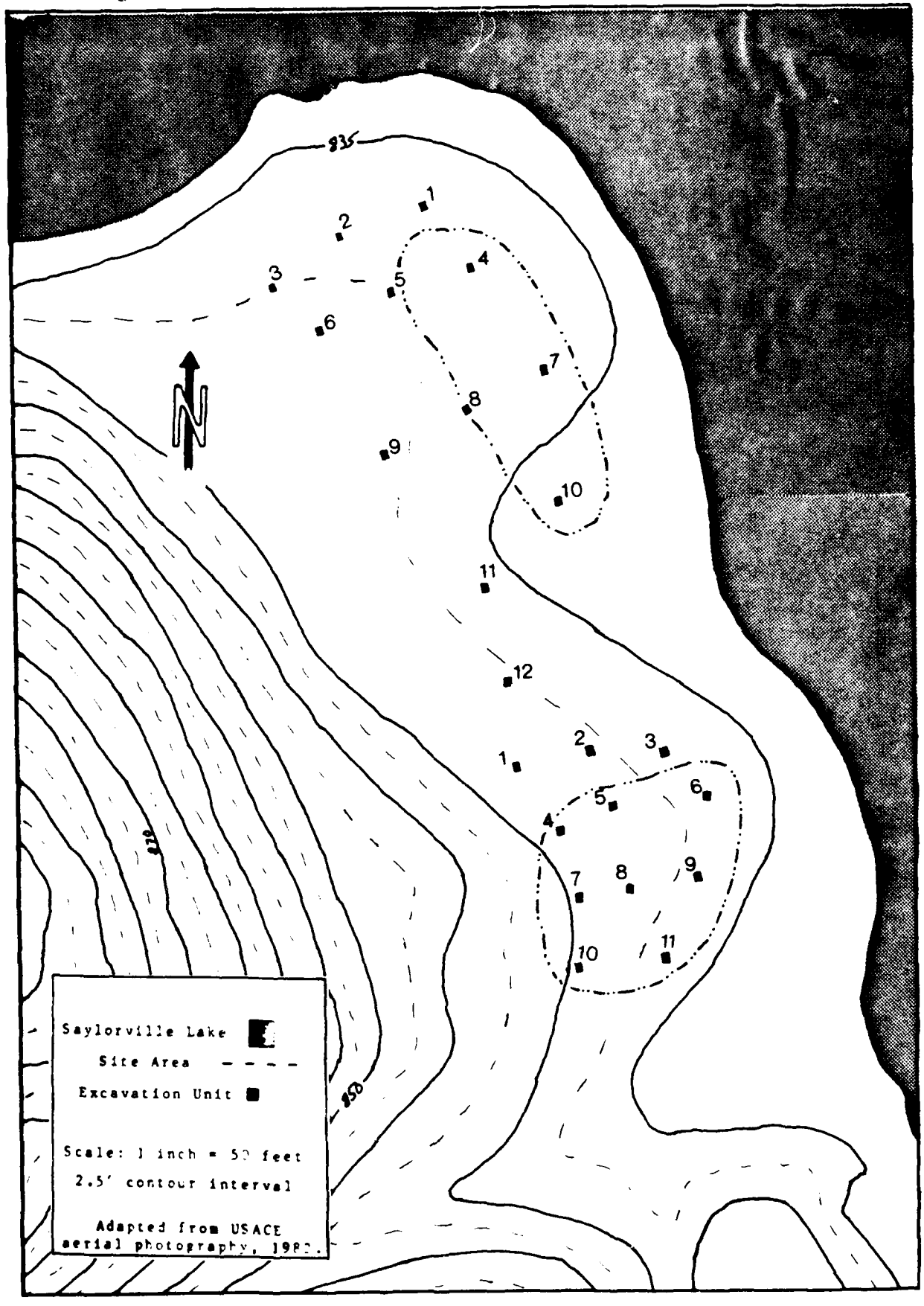
Testing Procedure: 11 excavation units. (Note: All of the excavation units at this site were 50 cm square in size.)

Material Recovered:

	Unit #4
10-15 cm	1 projectile point, corner-notched
15-20 cm	1 primary flake
	1 piece of red ochre
25-30 cm	2 secondary flakes
	Unit #6
0-5 cm	1 secondary flake
	Unit #8
30-35 cm	1 secondary flake
	Unit #10
5-10 cm	1 secondary flake
	Unit #11
10-15 cm	1 core nodule

Although the initial subsurface testing of this site did not yield any cultural material, more intensive testing did indicate that a small portion of the vertical site component remains in place. The artifacts recovered from subsurface

Figure 6. 13PK272/13PK273



context, however, did not display any particularly consistent horizontal distribution. There are at least two possible explanations for this: either the site was a very short-term occupation and thus never generated a cultural deposit of any size and consistency, or the upper strata of the cultural deposit have eroded away, leaving only scattered remnants of the original site. Most of the artifacts found in excavation units are small enough to have been susceptible to vertical movement due to frost action, so that the present depth at which these materials were recovered may actually be below the prehistoric A-horizon level.

Only one additional diagnostic artifact was recovered during this phase of testing: a small, corner-notched projectile point (see Plate II-7). Although a formal type name could not be defined for this point, its general form and size are indicative of a probable Middle to Late Woodland cultural affiliation, which is reasonably consistent with the temporal classification suggested by materials recovered during previous examination of this site.

13PK273

Landscape setting: old alluvial fan; elevation is about 838'; pedon has slightly concave slope of about 3 percent.

Vegetation: very sparse cover of herbs.

Parent material: alluvium.

Drainage: moderately well-drained.

Soil classification: Mollic Hapludalfs, fine-loamy, mixed, mesic.

Pedon description:

A--0 to 23 cm; very dark grayish brown (10YR 3/2) loam near fine sandy loam; moderate very fine granular structure; very friable; clear smooth boundary.

E--23 to 49 cm; dark grayish brown (10YR 4/2) loam; few fine distinct olive brown (2.5Y 4/4) mottles; moderate very fine subangular blocky structure; friable; clear smooth boundary.

Bt1--49 to 78 cm; brown (10YR 4/3) clay loam; few fine distinct yellowish brown (10YR 5/4) mottles; moderate fine and medium subangular blocky structure; firm; common thin dark brown (10YR 6/2) coatings of E material on faces of peds; clear boundary.

Bt2--78 to 137 cm; yellowish brown (10YR 5/4) clay loam; few fine grayish brown (10YR 5/2) mottles mostly in lower part; moderate medium subangular blocky structure; firm; common medium dark brown (10YR 4/3) clay films and few thin light brownish gray (10YR 6/2) coatings of E material on faces of peds; diffuse boundary.

BC--137 to 175 cm; yellowish brown (10YR 5/6) loam; common fine distinct grayish brown (10YR 5/2) mottles; massive; firm; sandy loam strata at 150-158 cm.

Testing Procedure: 12 excavation units. (Note: All of the excavation units at this site were 50 cm square in size.)

Material Recovered:

	Unit #4
5-10 cm	1 secondary flake
	1 bone fragment
25-30 cm	1 ground hammerstone
	Unit #7
5-10 cm	1 secondary flake
	Unit #7, cont.
15-20 cm	1 projectile point
25-30 cm	1 secondary flake
30-35 cm	1 " "
	Unit #10
0-5 cm	1 core fragment
	1 secondary flake
10-15 cm	1 " "

As discussed in Volume I, the actual boundary between this site and 13PK272 was never determined during initial survey. When intensive testing was initiated, several excavation units were placed in the low-lying area between the two sites, in order to test the supposition that the two sites are actually a continuous cultural deposit. Those excavation units revealed that the depression between the site areas actually is an old drainageway that has been filled in with sediments. This fill material is mixed and poorly consolidated, indicating that it is of more recent origin than the alluvial fans upon which the two sites lie (see Plate II-4).

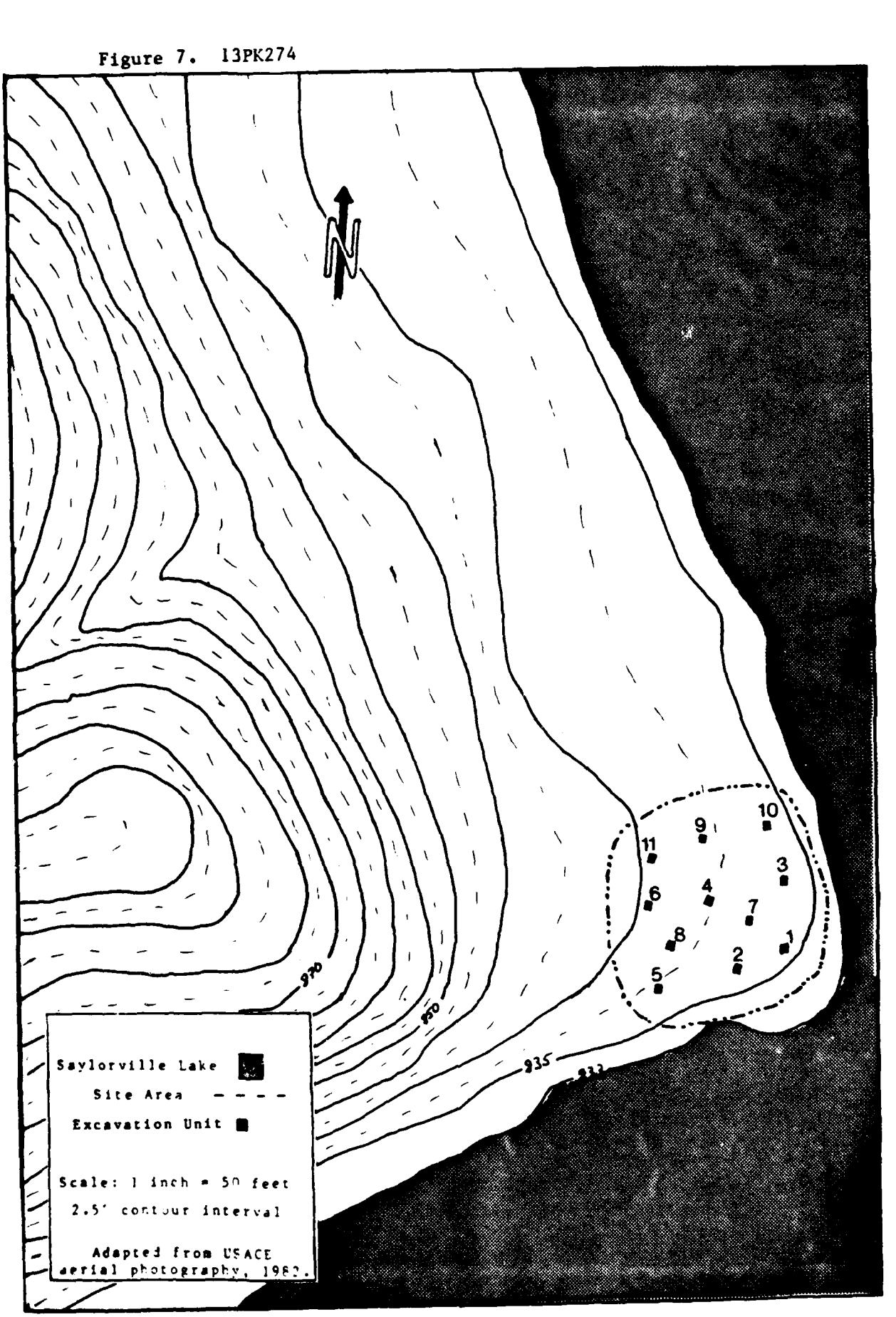
Geomorphological analysis also revealed that 13PK273 lies on the same alluvial fan as 13PK274 (discussed below), although the two sites are now separated by a rather wide inlet. Thus far, it has not been possible to determine if that separation occurred before or after the two sites were occupied; or, indeed, if they are actually part of one occupation area which has been bisected by the inlet. The cultural deposit at 13PK273 is much sparser and of less consistency than that encountered at 13PK274, a situation that could be the result of differential erosion. Much more intensive research would be necessary in order to determine the relationship between the two sites, if it actually is possible to do so.

The lone diagnostic artifact recovered during intensive testing is a corner-notched projectile point. Most of the base of this point is missing, which makes it difficult to discern the exact configuration of the notching. The intact portion does suggest, however, a form most common to the Early to Middle Woodland Period.

13PK274

Landscape setting: old alluvial fan; elevation is about 840'; pedon has slightly concave slope of about 4 percent.

Figure 7. 13PK274



Vegetation: very sparse cover of herbs.

Parent material: alluvium.

Drainage: moderately well-drained.

Soil classification: Aquic Argiudolls, fine-loamy, mixed, mesic.

Pedon description:

C--0 to 5 cm; stratified light brownish gray (10YR 6/2) sand and very dark gray (10YR 3/1) loamy sand and sandy loam; single grained) (coarser part) and massive (finer part); very friable and loose; abrupt smooth boundary.

A1--5 to 30 cm; very dark gray (10YR 3/1) loam; moderate very fine and fine granular structure; very friable; clear smooth boundary.

E--40 to 54 cm; dark grayish brown (10YR 4/2) loam; few fine faint olive brown (2.5Y 4/4) and few fine distinct strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; friable; gradual boundary.

Bt1--54 to 86 cm; dark grayish brown (10YR 4/2) heavy loam; moderate medium subangular blocky structure; firm; many thin and medium very dark grayish brown (10YR 3/2) clay films and many thin and medium grayish brown (10YR 5/2) coatings of E material and clean sand and silt particles on faces of peds; gradual boundary.

Bt2--86 to [illegible] cm; brown [illegible] heavy loam; weak very fine prismatic structure parting to moderate medium subangular blocky; firm, many thin and medium very dark grayish brown (10YR 3/2) clay films and few thin coatings of clean sand and silt particles on faces of peds; gradual boundary.

Bt3--[illegible] heavy loam, weak fine prismatic structure parting to moderate medium subangular blocky structure, firm, few [illegible] grayish brown (10YR 3/2) clay films, many fine [illegible] a few clear particles of sand and silt [illegible] diffuse boundary.

BC--[illegible] heavy loam; few fine distinct gray [illegible] massive, firm; strata of light [illegible]

Testing Procedure [illegible] Note: All excavation units at this site were [illegible] except Unit #7A, which was [illegible]

Material Recovered [illegible]

[illegible] cm [illegible]
5-1[illegible] cm [illegible]
20-25 cm [illegible]
25-3[illegible] cm [illegible]

	Unit #7
25-30 cm	1 grit body sherd

Unit #4

15-20 cm	1 secondary flake
	2 grit body sherds
30-35 cm	1 secondary flake
	1 core nodule

Unit #5

0-5 cm	1 base of knife or projectile point
15-20 cm	2 secondary flakes
	1 retouch flake
	1 grit body sherd
20-25 cm	2 secondary flakes
	1 grit body sherd
25-30 cm	1 retouch flake
	1 piece fire-cracked rock
30-35 cm	2 secondary flakes
35-40 cm	1 secondary flake

Unit #6

15-20 cm	1 projectile point
25-30 cm	1 core fragment
35-40 cm	1 projectile point

Unit #7

15-20 cm NW 1/4	2 grit body sherds, cr
	1 grit body sherds
SE 1/4	1 secondary flake
	6 grit body sherds, cr
	2 grit rim sherds (vertically cr w/bosses)
	3 ceramic crumbs
20-25 cm	1 grit body sherd, cr

Unit #7A

10-15 cm	2 grit body sherds, cr
25-30 cm	1 secondary flake

Unit #10

10-15 cm	1 secondary flake
30-35 cm	1 groundstone tool

Unit #11

0-5 cm	1 secondary flake
	1 retouch flake
10-15 cm	2 secondary flakes
15-20 cm	1 retouch flake
25-30 cm	1 grit body sherd, cr

The cultural deposit at this site, as revealed in excavation units, appears to be much denser than was indicated by the results of shovel testing. As the pedon description above states, the top 5 cm of soil consist of a recent deposition of sand and sediment. Below this, however, the original soil strata remain intact and essentially undisturbed. The cultural component lies primarily between 15 and 35 cm below the surface

(see Plate II-5).

The ceramic sherds recovered from Units #7 and #7A all appear to be from a single vessel; it has been possible to reconstruct a small portion of the rim and neck of that vessel. On the basis of thickness, surface treatment and decoration, these sherds can be classified as Havana Cordmarked (see Plate II-14). The projectile points recovered are of a variety of types, but all seem to reflect an Early to Middle Woodland cultural affiliation for this site.

During excavation of Unit #8, scattered flecks of charcoal were observed between approximately 20 and 30 cm, although no specific feature could be defined. A few larger pieces of charcoal were removed for possible radiocarbon dating. The largest of these pieces was submitted to Beta Analytic, Inc. for processing. Unfortunately, the radiocarbon date derived from that sample is quite a bit later than the timeframe indicated by the artifactual evidence (see Appendix V). This may be due to the relatively small size of the sample, or possibly is the result of contamination from rootlets or periodic inundation of the site area.

13PK276

Landscape setting: old alluvial fan; elevation is about 860'; pedon has a convex slope of about 4 percent.

Vegetation: forest.

Parent material: alluvium; sedimentary bedrock, mostly sandstone and shale with thin limestone strata in upper part begin about 3 meters below surface.

Drainage: well-drained.

Soil classification: Typic Hapludalfs, fine-loamy, mixed, mesic.

Pedon description:

A--0 to 5 cm; very dark grayish brown (10YR 3/2) loam; moderate fine granular structure; very friable; clear wavy boundary.

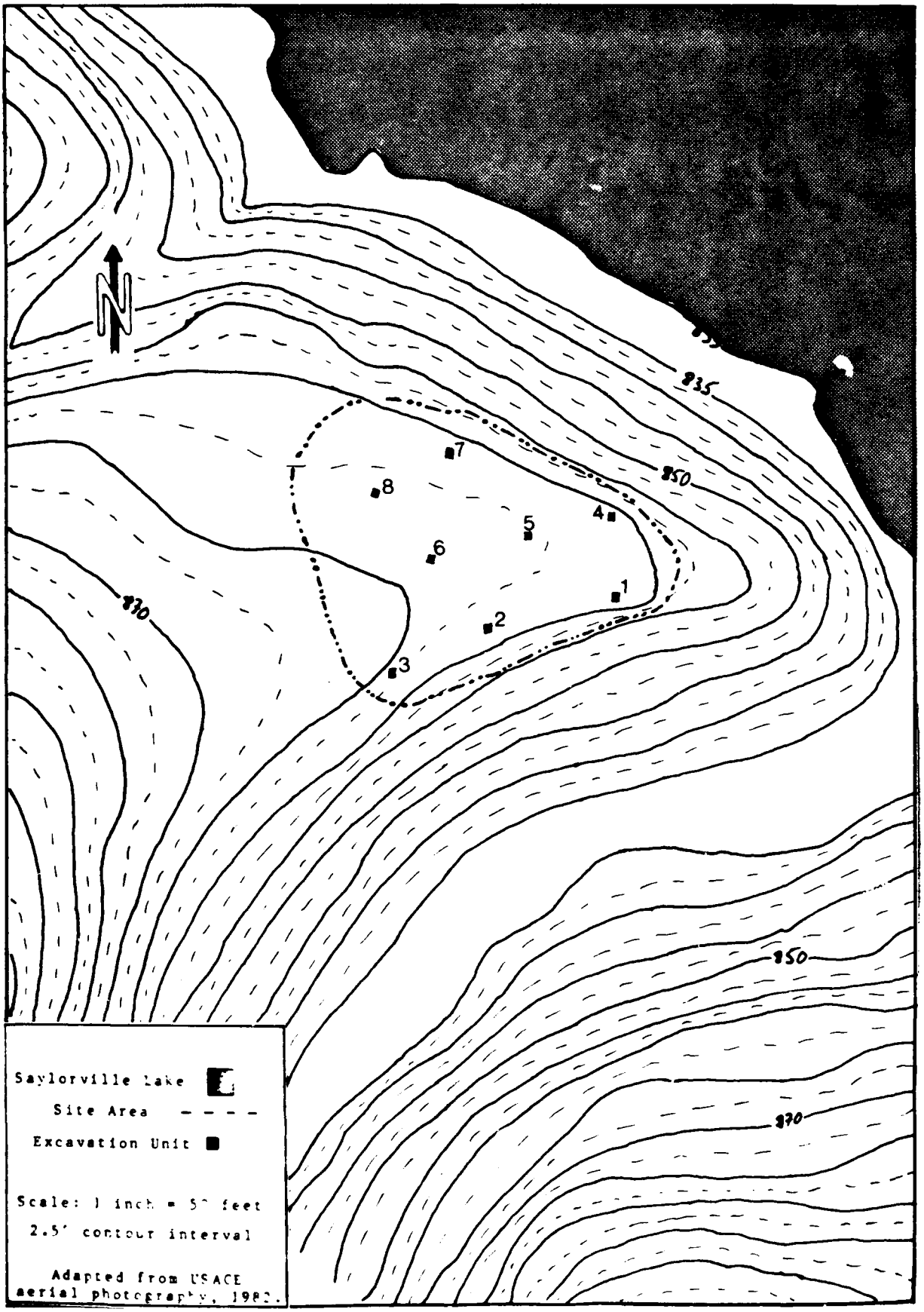
E--5 to 31 cm; brown (10YR 5/3) loam; weak very fine and fine granular structure; very friable; gradual smooth boundary.

Bt1--31 to 53 cm; yellowish brown (10YR 5/4) loam; moderate very fine and fine subangular blacky structure; friable; few thin coatings of E material on faces of peds; clear smooth boundary.

Bt2--53 to 68; yellowish brown (10YR 5/4) heavy loam; strong fine and medium subangular blocky structure; firm; common thin dark brown (10YR 5/3) clay films and many thin coatings of clean sand and silt particles on faces of peds; clear smooth boundary.

Bt3--68 to 88 cm; brown (10YR 5/3) clay loam; moderate fine and medium prismatic structure parting to moderate fine and medium angular blocky; firm; many thin and medium dark brown (10YR 4/3) clay films, few thin and medium coatings of clean

Figure 8. 13PK276



sand and silt particles, and few black (MnO2) coatings on faces of peds; gradual smooth boundary.

Bt4--88 to 142 cm; grayish brown (10YR 5/2) heavy loam; common fine prominent strong brown (7.5YR 5/6) mottles; moderate medium and coarse prismatic structure parting to weak coarse angular blocky; firm; many thin to thick dark grayish brown (10YR 4/2) clay films, common in parts and many in other parts coatings of clean sand and silt particles, and common black (MnO2) coatings on peds; few coarser strata with a few fine pebbles; abrupt smooth boundary.

Bt5--142 to 160cm; grayish brown (10YR 5/2) loam; many fine and medium prominent strong brown (7.5YR 5/6) and brown (7.5YR 4/4) mottles; weak medium and coarse prismatic structure; few thin to thick dark grayish brown (10YR 4/2) clay films, few thin to thick coatings of clean sand and silt particles, and few fine black (MnO2) coatings on faces of peds; thin coarser strata in lower part; clear smooth boundary.

BC--160 to 190 cm; brown (10YR 5/3) sandy loam; many fine to coarse prominent red (2.5YR 4/8) and strong brown (7.5YR 5/6) mottles; massive with few vertical cleavage faces; friable; few thin clay films on cleavage faces; clear smooth boundary.

C--190 to 250 cm; grayish brown (2.5Y 5/2) silt loam; few fine to coarse prominent dark reddish brown (5YR 3/4) mottles; massive; friable.

Testing Procedure: 8 excavation units. (Note: All of the excavation units at this site were 50 cm square in size.)

Material Recovered:

	Unit #1
20-25 cm	1 retouch flake

	Unit #2
0-5 cm	2 secondary flakes
10-15 cm	1 " "
15-20 cm	1 " "
	1 flake tool
20-25 cm	2 secondary flakes
30-35 cm	1 core fragment

	Unit #3
0-5 cm	1 secondary flake
5-10 cm	6 " "
	1 retouch flake
10-15 cm	2 " "
15-20 cm	1 secondary flake
	2 retouch flakes
20-25 cm	1 primary flake
	7 secondary flakes
	3 retouch flakes
25-30 cm	1 core fragment
	6 secondary flakes
	1 retouch flake
30-35 cm	1 secondary flake
	2 retouch flakes

	Unit #4	
0-5 cm	2	secondary flakes
10-15 cm	2	" "
15-20 cm	1	" "
25-30 cm	1	" "
	Unit #5	
0-5 cm	2	primary flakes
	4	secondary flakes
	2	retouch flakes
5-10 cm	7	secondary flakes
	2	retouch flakes
10-15 cm	8	secondary flakes
	1	retouch flake
15-20 cm	1	primary flake
	5	secondary flakes
	1	retouch flake
20-25 cm	6	secondary flakes
	1	triangular scraper
25-30 cm	5	secondary flakes
	1	retouch flake
30-35 cm	2	secondary flakes
35-40 cm	3	" "
40-45 cm	1	" "
	Unit #6	
5-10 cm	1	secondary flake
10-15 cm	1	" "
15-20 cm	2	" "
20-25 cm	1	" "
25-30 cm	1	" "
30-35 cm	2	" "
	Unit #7	
0-5 cm	1	primary flake
15-20 cm	1	secondary flake
20-25 cm	1	" "
	Unit #8	
5-10 cm	1	retouch flake
20-25 cm	1	secondary flake
25-30 cm	1	" "
30-35 cm	2	" "
35-40 cm	1	" "

The intensive testing of this site served primarily to confirm the estimations of site size and condition that were generated on the basis of shovel test results. The cultural horizon is consistent in both vertical and horizontal distribution, and appears to have been disturbed only by bank slumpage and tree-clearing activities.

Analysis of edgewear patterns on a sample of flakeage recovered from 13PK276 had mixed results. A number of these artifacts could be not assigned a definite function, perhaps as

the result of multi-purpose use, which obscures wear patterns. The remainder of the examined artifacts were used for scraping bone. This action could be part of a number of different technological or subsistence-related activities, one of which would be the manufacture of bone implements.

As was the case during preliminary survey, no indication of the cultural affiliation of this site was encountered during intensive testing. Since it is located on an alluvial fan which apparently formed during a specific erosional episode, the site can tentively be assigned an age range between 2,500 B.P. and 8,500 B.P. Further geomorphological analysis of this particular alluvial fan and refinement of regional landform models may eventually help to narrow that timeframe.

13PK314

Landscape setting: old alluvial fan; elevation is about 840 feet; pedon has slightly convex slope of about 5 percent.

Vegetation: very sparse cover of herbs.

Parent material: alluvium.

Drainage: well-drained.

Soil classification: Mollic Hapludalfs; fine-loamy, mixed, mesic.

Pedon description:

A--0 to 12 cm; very dark grayish brown (10YR 3/2) silt loam; moderate very fine and fine granular structure; very friable; abrupt smooth boundary.

E--12 to 35 cm; brown (10YR 5/3) loam; weak very fine and fine subangular blocky structure; very friable; clear smooth boundary.

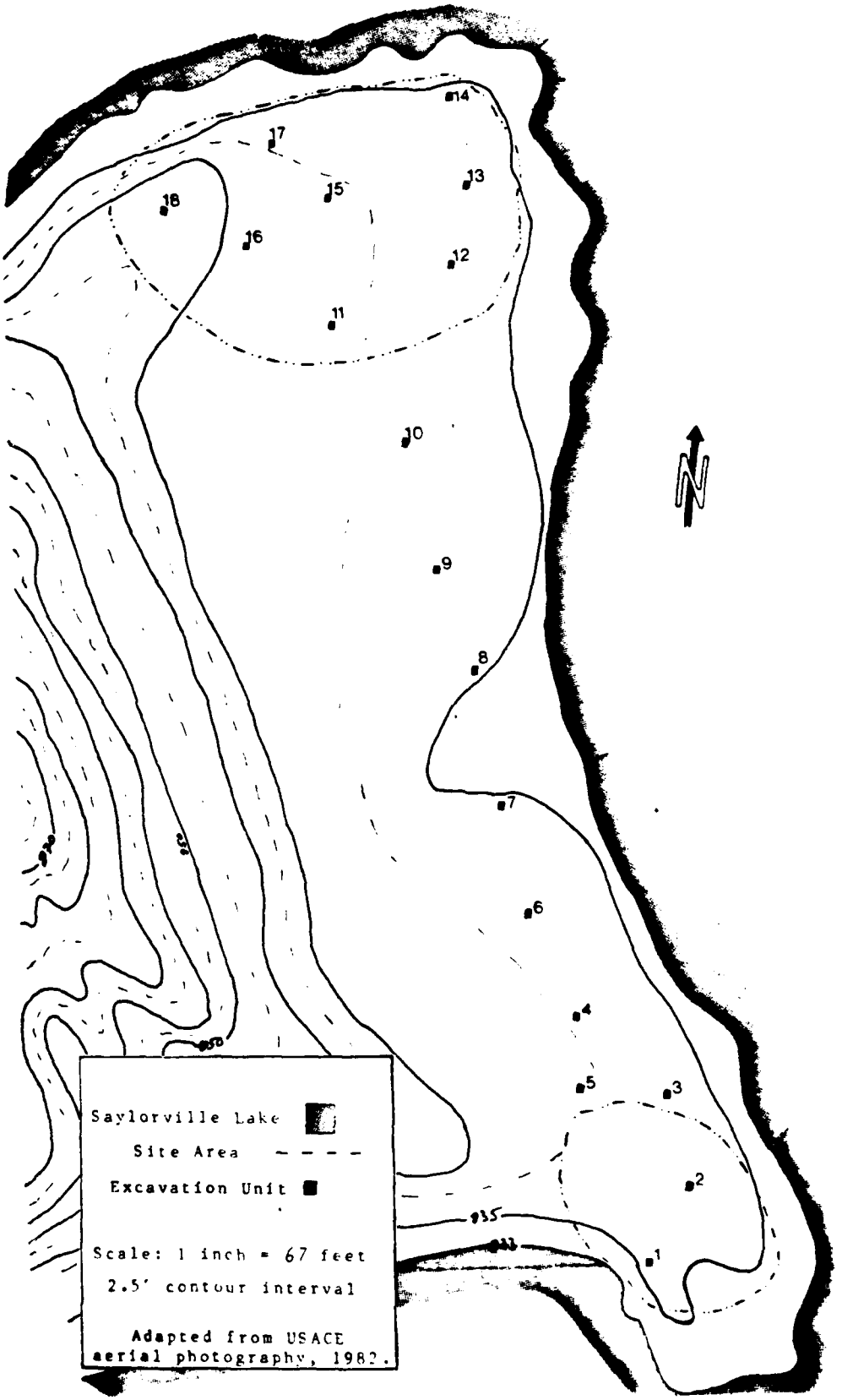
Bt1--35 to 53 cm; dark brown (10YR 4/3) clay loam; moderate fine and medium subangular blocky structure; firm; common thin very dark grayish brown (10YR 3/2) clay films and few thin coatings of clean sand and silt particles on faces of peds; gradual boundary.

Bt2--53 to 70 cm; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; many medium very dark grayish brown (10YR 3/2) clay films and common thin coatings of clean sand and silt particles on faces of peds; gradual boundary.

Bt3--70 to 120 cm; dark yellowish br[illegible] (10YR 4/4) clay loam; weak medium prismatic strusture parting to weak medium and coarse subangular blocky; firm; common medium and thick dark brown (10YR 3/3) clay films and few medium coatings of clean sand and silt particles on faces of peds; 2 cm thick strata in lower part with about 5 percent pebbles; diffuse boundary.

BC--120 to 175 cm; dark brown (10YR 4/3) loam; few medium gray (10YR 5/1) mottles; massive; friable; few thin strata of sandy loam.

Figure 9. 13PK314



Testing Procedure: 18 excavation units. (Note: Units #1, #14 and #18 were 1 meter square in size; all other excavation units at this site (including extensions #1B and #1C) were 50 cm square.)

Material Recovered:

Unit #1

0-5 cm,W 1/2	2 secondary flakes
5-10 cm,W 1/2	1 secondary flake
10-15 cm,W 1/2	1 seed, charred
15-20 cm,W 1/2	2 secondary flakes
E 1/2	1 ceramic crumb
20-25 cm,W 1/2	1 secondary flake
E 1/2	1 " "
30-35 cm,W 1/2	1 " "

Unit #1B

0-5 cm	1 retouch flake
5-10 cm	1 secondary flake
10-15 cm	1 grit body sherd, eroded

Unit #1C

0-15 cm	1 ceramic crumb
15-20 cm	1 secondary flake

Unit #2

0-5 cm	1 grit body sherd, eroded

Unit #11

5-10 cm	1 vertebra, burned
10-15 cm	1 secondary flake

Unit #12

15-20 cm	1 primary flake

Unit #13

0-5 cm	1 secondary flake

Unit #14

surface	3 retouch flakes
0-5 cm,NW 1/4	1 secondary flake
	3 retouch flakes
NE 1/4	1 secondary flake
SE 1/4	1 " "
	1 retouch flake
5-10 cm,NW 1/4	2 secondary flakes
	1 retouch flake
NE 1/4	1 secondary flake
SE 1/4	1 " "
SW 1/4	1 " "
10-15 cm,NW 1/4	1 " "
	1 retouch flake
NE 1/4	2 secondary flakes
SE 1/4	1 " "
SW 1/4	1 retouch flake

	Unit #14, cont.	
15-20 cm,NW 1/4	2	secondary flakes
	1	retouch flake
NE 1/4	1	secondary flake
SW 1/4	1	" "
20-25 cm,NW 1/4	1	retouch flake
NE 1/4	2	secondary flakes
25-30 cm,SE 1/4	2	" "
SW 1/4	1	secondary flake
30-35 cm,NE 1/4	3	" "
	Unit #15	
10-15 cm	1	secondary flake
15-20 cm	1	" "
20-25 cm	1	" "
25-30 cm	1	" "
	Unit #16	
0-5 cm	1	secondary flake
20-25 cm	1	" "
	Unit #18	
0-5 cm,NW 1/4	2	primary flakes
SE 1/4	1	secondary flake
SW 1/4	1	" "
	1	retouch flake
5-10 cm,NW 1/4	1	primary flake
NE 1/4	1	secondary flake
SE 1/4	1	retouch flake
10-15 cm,NW 1/4	2	secondary flakes
NE 1/4	1	" "
SE 1/4	1	base of drill
SW 1/4	1	primary flake
	3	secondary flakes
15-20 cm,NW 1/4	1	" "
SW 1/4	2	" "
20-25 cm,NW 1/4	1	core fragment
30-35 cm,SE 1/4	1	primary flake

Intensive testing of 13PK314 confirmed the existence of two distinct concentrations of artifactual materials at the far north and far south ends of the landform upon which the site lies, and the absence of any evidence of occupation in the intervening portion of the defined site area. One feature was encountered during testing: a series of postmolds forming a roughly right-angled corner was uncovered in Unit #1, which was located on a small terrace remnant at the extreme south end of the site area. It was not possible to extend this unit in order to recover a greater portion of the structure, however, because of the severe erosion which has left only intermittent portions of the cultural horizon intact. The lines of postmolds extended in both directions onto a part of the original terrace which is no longer in existence.

Very few ceramic sherds were recovered from excavation

units, which is in contrast to the considerable number of sherds found on surface during preliminary survey. Since one would expect to find vessel remnants on and just below the actual living surface, this suggests that the occupation level has been removed for the most part by erosion, and the remaining horizontal component is below that level (see Plate II-6). That erosional disturbance appears to be proceeding at a rapid pace; there is a distinct possibility that the remainder of the cultural deposit here will be entirely gone after one more season of fluctuating water levels.

The only organic material of any size encountered during testing was one charcoal sample recovered from 22 cm below surface in Unit #14. This sample was submitted to Beta Analytic, Inc. for radiocarbon dating, but, despite special pretreatment, it proved to contain too low a percentage of carbon to allow for reliable processing (see Appendix V).

13PK315

Landscape setting: old alluvial fan; elevation is about 842 feet; pedon has a slightly concave slope of about 3 percent.

Vegetation: very sparse cover of herbs.

Parent material: alluvium.

Drainage: well-drained.

Soil classification: Mollic Hapludalfs, fine-loamy, mixed, mesic.

Pedon description:

A--0 to 12 cm; very dark grayish brown (10YR 3/2) loam; moderate very fine and fine granular structure; very friable; clear smooth boundary.

E1--12 to 29 cm; dark grayish brown (10YR 4/2) loam; weak very fine and fine granular structure; very friable; clear smooth boundary.

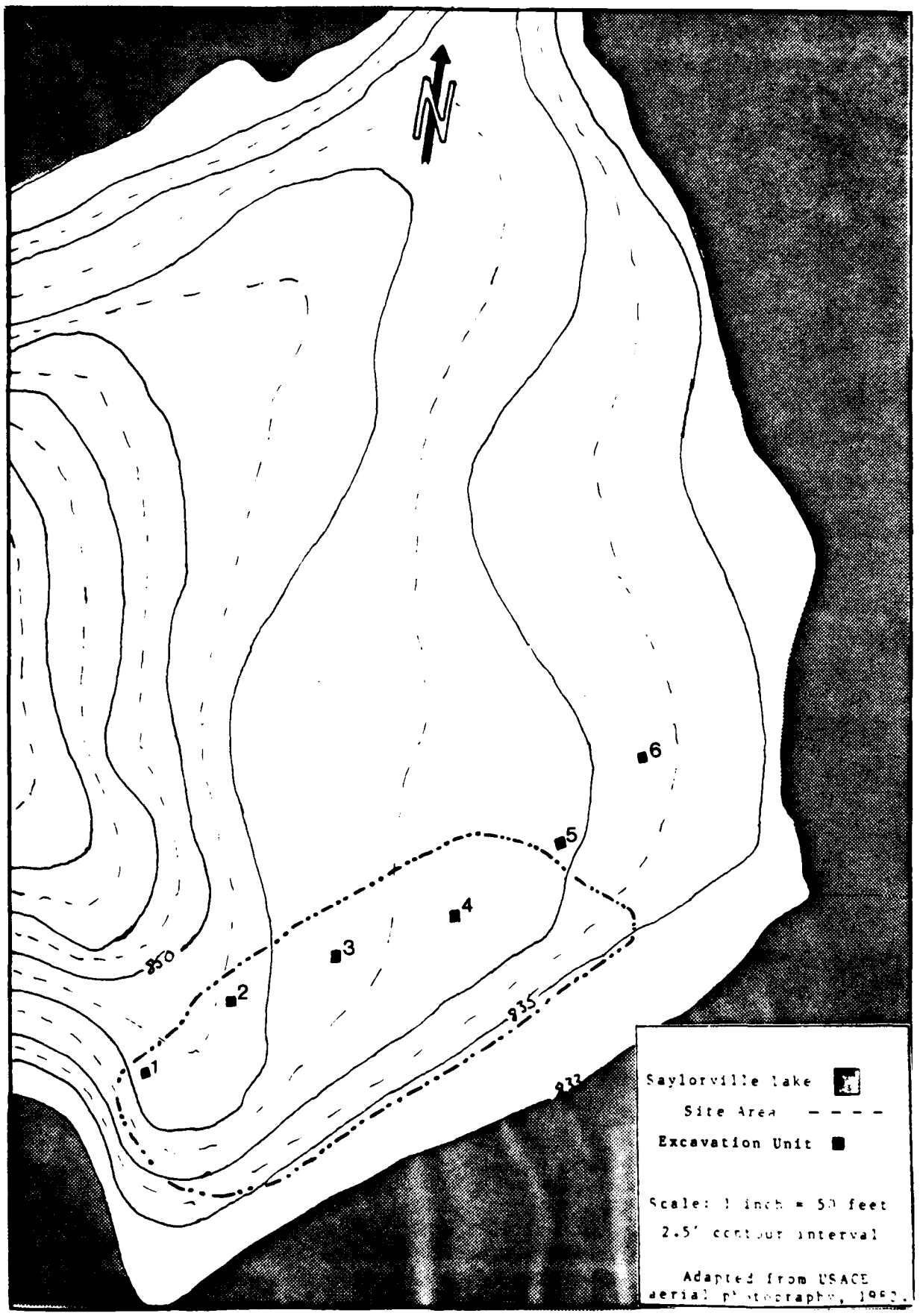
E2--29 to 42 cm; brown (10YR 5/3) loam; weak fine subangular blocky structure; very friable; clear smooth boundary.

Bt1--42 to 56 cm; yellowish brown (10YR 5/4) heavy loam; moderate medium subangular blocky structure; friable; few thin dark brown (19YR 3/3) clay films and few thin coatings of clean sand and silt particles on faces of peds; clear smooth boundary.

Bt2--56 to 70 cm; yellowish brown (10YR 5/4) heavy loam; weak fine and medium prismatic structure parting to moderate medium subangular blocky; firm; common thin dark brown (10YR 4/3) clay films and many thin and medium coatings of clean sand and silt particles on faces of peds; gradual boundary.

Bt3--70 to 108 cm; yellowish brown (10YR 5/4) heavy loam; weak medium prismatic structure parting to moderate medium subangular blocky structure; firm; many medium dark brown (10YR 3/3) clay films and few thin coatings of clean sand and silt particles on faces of peds; gradual boundary.

Figure 10. 13PK315



BC1--108 to 140 cm; dark yellowish brown (10YR 4/4) loam; few fine distinct strong brown (7.5YR 5/6) and grayish brown (10YR 5/2) mottles; massive with few vertical cleavage faces; few thin dark brown (10YR 3/3) clay films on cleavage faces; diffuse boundary.

BC2--140 to 170 cm; yellowish brown (10YR 5/6) loam near sandy loam; few fine distinct strong brown (7.5YR 5/6) mottles; massive; friable.

Testing Procedure: 6 excavation units. (Note: Unit #1 was 1 meter square in size; all other units were 50 cm square.)

Material Recovered:

Unit #1

0-5 cm,NE 1/4	1 primary flake
	1 secondary flake
SW 1/4	4 " "
	1 retouch flake
5-10 cm,NW 1/4	4 secondary flakes, 1 heat-treated
	1 retouch flake
NE 1/4	1 secondary flake
SE 1/4	3 " "
10-15 cm,NW 1/4	2 " "
NE 1/4	2 " "
SW 1/4	2 " "
15-20 cm,NW 1/4	1 " "
NE 1/4	1 primary flake
SE 1/4	4 secondary flakes, 1 heat-treated
SW 1/4	1 primary flake
	2 secondary flakes
20-25 cm,NW 1/4	7 " "
NE 1/4	3 " "
	1 retouch flake
SW 1/4	3 secondary flakes
25-30 cm,NW 1/4	2 " "
SE 1/4	1 " "
30-35 cm,NW 1/4	1 " "
NE 1/4	2 " "
SE 1/4	1 " "
SW 1/4	1 secondary flake, heat-treated
35-40 cm,NW 1/4	1 retouch flake
NE 1/4	3 secondary flakes
	1 retouch flake
SE 1/4	1 secondary flake
SW 1/4	1 secondary flake

Unit #2

0-5 cm	3 secondary flakes
10-15 cm	2 retouch flakes

Unit #3

0-5 cm	1 secondary flake
5-10 cm	1 " "
10-15 cm	1 " "

Unit #5	
5-10 cm	1 retouch flake
10-15 cm	1 " "
15-20 cm	1 secondary flake
20-25 cm	1 " "

Additional testing at 13PK315 did not yield any information that was helpful in clarifying the cultural affiliation or function of the site. It did further define the extent of the cultural horizon as being quite constricted and concentrated for the most part in the extreme southwestern corner of the defined site area.

As is the case with 13PK273 and 13PK274, 13PK314 and 13PK315 are located on the same alluvial fan. That fan has been bisected by a drainageway which now forms the northern boundary of 13PK314 and the southern boundary of 13PK315. Thus, the possibility exists that 13PK315 is actually associated with the occupation area located at the northern end of 13PK314. If this is the case, the differences in kinds of artifactual materials found at the two sites may reflect spatial patterning of activities within the site as a whole, as, for instance, the separation of technological and subsistence activities from living areas.

SECTION III. DATA ANALYSIS

The results of several specific analytical procedures which were applied to the data recovered during this project will be presented in this section. These procedures were applied to the total inventory of cultural materials collected during both the resurvey and intensive testing phases of the project. Because this report had to be compiled within a relatively short time after fieldwork was completed, it was necessary to limit the scope of this level of research. Thus, only a few of many possible analyses were done. It is hoped, however, that they will provide a starting-point from which further research can proceed.

LITHIC MATERIALS

In Volume I, summaries of the types of lithic artifacts recovered from the subject sites and the types of raw materials used at each site were presented and discussed. Those summaries have been revised to include the additional lithic artifacts recovered from the sites that were intensively tested. The amended tables are presented in Figures 10 and 11.

The inclusion of this additional material does not appear to have significantly altered the general distribution of artifact types among the sites investigated during the second stage of this project. Some changes in relative proportions are apparent, which may be due in large part to changes in recovery techniques. Lower percentages of cores and primary flakeage in the amended table may simply reflect the reduced emphasis on collection of surface materials during intensive testing. Also, eliminating sites which yielded very small numbers of lithic artifacts from consideration may have had the effect of bringing the sample distribution more in line with the actual population parameters.

The only site at which a greater quantity of lithic material was recovered during intensive testing than during resurvey is 13PK276. This site is distinguished from the others because it is situated at a considerably higher elevation, which has protected it somewhat from periodic inundation. It thus has not suffered as much disruption of its horizontal component as most of the other sites examined during this project.

The distribution of raw material types recovered from these sites is also slightly different than that observed during the first stage of investigation, but the relative rankings of occurance have not changed. Non-oolitic cherts and flints still appear to be the most frequently-utilized materials, with jaspers, oolitic cherts, quartz and quartzites and chalcedonies somewhat less common. The two sites which display a very limited range of utilized materials (13PK264 and 13PK272) both yielded relatively small quantities of lithic artifacts. Those

Figure 10. Summary of Lithic Artifacts by Type

Site	Cores	Primary Flakes	Secondary Flakes	Retouch Flakes	Tools	Total Lithics
13PK152	7	11	347	35	6	406
13PK259	6	27	463	106	28	630
13PK264	5	5	14	2	3	29
13PK266	2	28	150	22	2	204
13PK272	3	5	24	2	3	37
13PK273	7	7	53	-	21	88
13PK274	17	4	68	4	12	105
13PK276	15	11	120	25	3	174
13PK314	18	39	297	16	10	380
13PK315	20	51	483	24	26	604
TOTALS	100	188	2,019	236	114	2,657
(%)	(3.76)	(7.08)	(75.99)	(8.88)	(4.29)	

Figure 11. Summary of Lithic Artifacts By Material

Site	Non-ool. Chert	Ool. Chert	Flint	Jasper	Chal-cedony	Quartz & Quartzite	Other	Total
13PK152	356	2	29	14	1	4	-	406
13PK259	388	1	174	20	10	36	1	630
13PK264	17	-	11	-	-	1	-	29
13PK266	132	4	55	5	1	7	-	204
13PK272	19	-	17	-	-	-	1	37
13PK273	49	1	27	5	-	4	2	88
13PK274	57	8	24	6	1	7	2	105
13PK276	129	1	19	9	4	12	-	174
13PK314	255	8	75	7	13	18	4	380
13PK315	344	67	85	87	8	12	1	604
TOTALS	1746	92	516	153	38	101	11	2657
(%)	(65.7)	(3.5)	(19.4)	(5.8)	(1.4)	(3.8)	(.41)	

particular distributions may therefore be primarily due to sampling error.

Edgewear Analysis

As a part of the process of defining possible site functions, an analysis of lithic wear patterns was done for a sample of the lithic materials recovered during resurvey and testing of the subject sites. This analysis was done according to a method developed in the Mankato State University Archaeology Laboratory. Each artifact was examined under a stereomicroscope on low magnification with side and overhead lighting. The pattern of edgewear observed was compared with microphotographs and line drawings of experimentally-derived samples. A sequential flowchart developed from controlled-usage models was then used to determine, first, the particular action for which the artifact had been used, and, second, the type of material on which it was used. Using this procedure, an accuracy rate of 85% or better can be obtained.

Selection of artifacts for analysis was done in a somewhat random manner; the intention was to examine only a portion of the recovered material from the entire set of sites, so as to obtain a general picture of the range of activities that had taken place at the sites. The entire set of artifacts from each site was reviewed visually, and those items which seemed to evidence usage were chosen for analysis (this review process included artifacts that had been collected by Iowa State University). Specific action/material determinations could be made for 187 of the 304 artifacts analyzed. The remaining 117 items fell into two categories: those which did not appear to have been utilized, and those which exhibited undefinable edgewear patterns. It is probable that most of the artifacts in the second category were used for more than one purpose, thereby obscuring the characteristic wear patterns upon which analysis must be based. A few items were also included in this category because, while they appeared to be tools, they were of materials such as quartzite which do not wear in a recognizable pattern.

The results of this analysis are shown in Figure 12, summarized on a site-by-site basis. One site, 13PK277, which is not represented here was omitted simply because no lithic artifacts which appeared to have been utilized were recovered from that site. (The figures shown for "13PK272/3" represent artifacts collected by Iowa State University, and for which no specific provenience is available.) In some cases, it was possible to determine that the artifact had been used on more than one material. These items are indicated in the figure by "*"; the exact definition of use is shown at the bottom of the figure.

Some of the implications of this analysis in terms of defining specific site functions have already been discussed in Section II of this volume. When the results are compared across sites, certain general patterns of use can be discerned. The most common activities encountered in this particular set of

Figure 12. Results of Edgewear Analysis

Site	Total Items	Non-utilized	Indeterminate	Action: Cutting			Action: Scraping		
				Wood	Bone	Meat	Wood	Bone	Meat
13PK152	17	1	2	1	4	2	4	3	-
13PK163	5	-	3	-	2	-	-	-	-
13PK194	4	-	1	-	-	-	1	2	-
13PK195	12	5	1	-	-	-	-	6	-
13PK198	3	1	-	-	1	-	-	1	-
13PK242	3	1	-	-	1	-	-	1	-
13PK246	8	3	2	1	1	-	-	1	-
13PK259	51	5	16	3*	35*	2	5	16	-
13PK263	12	2	-	2*	3*	-	-	24	-
13PK264	8	1	1	-	5	-	-	1	-
13PK266	12	2	4	1	3	2	-	-	-
13PK267	1	-	-	-	-	-	-	1	-
13PK272	9	3	2	1*	3*	-	-	1	-
13PK272/3	4	1	-	-	1	1	-	1	-
13PK273	10	-	-	-	6*	1*	1	3	-
13PK274	6	-	1	-	2	1	-	2	-
13PK275	6	4	-	-	-	-	-	2	-
13PK276	16	-	8	-	1	1	1	5	-
13PK279	3	1	1	-	-	-	-	1	-
13PK285	5	-	1	1	-	-	-	3	-
13PK286	3	1	1	-	-	-	1	-	-
13PK288	9	3	2	1	1	-	1	1	-
13PK313	31	4	11	2*	8*	-	1	6	-
13PK314	28	4	4	3	2	3	4	8	-
13PK315	16	3	2	2*	3*	2	5*	2*	-
13DA9	5	2	1	-	-	-	-	2	-
13DA160	1	-	1	-	-	-	-	-	-
13DA161	16	3	2	1*	4*	2*	1	4	-

* 3 tools from 13PK259 were used to cut both wood and bone.
1 tool from 13PK263 was used to cut both wood and bone.
1 tool from 13PK272 was used to cut both wood and bone.
1 tool from 13PK273 was used to cut both bone and meat.
1 tool from 13PK313 was used to cut both wood and bone.
2 tools from 13PK315 were used to cut both wood and bone, and
2 tools were used to scrape both wood and bone.
1 tool from 13DA161 was used to cut both bone and meat, and
1 tool was used to cut both wood and bone.

artifacts are cutting and scraping of bone, which account for a large proportion of the identifiable tools from 19 of the 28 sites in the sample. One might at first assume that this relates to the need to carry out subsistence activities continually, regardless of the other purposes of a particular settlement. However, tools used to cut meat, which would seem to be a collateral activity, are not in very great evidence in the sample. Perhaps this reflects the use of bone as a medium for tool-manufacture.

The use of a single tool for more than one purpose is also very much in evidence. A number of artifacts were apparently used for cutting both wood and bone, while only one was used for cutting bone and meat. It is probable that a high proportion of the artifacts with undefinable edgewear patterns were also multi-purpose tools.

The results of this analysis did indicate that the description of artifacts on the basis of form may not be particularly accurate as a reflection of function: "scrapers" were not always used for scraping, and the reshaping and re-use of broken tools for new purposes may have been a more common occurrance than is generally thought. If human behavior is to be delineated through archaeological research, these are questions which require further study.

CERAMIC MATERIALS

Because very few additional ceramic sherds were recovered during intensive testing, no further analysis of these materials was conducted. Determinations of type and temporal classifications can be found in Appendix I, Artifact Inventory. Briefly, it can be stated that very few of the sherds examined appeared to fit into established taxonomic schemes. This is partially due to the degraded condition of most of the ceramics found at the subject sites, which made it difficult or impossible to identify diagnostic characteristics such as exact decorative techniques, surface treatment, vessel thickness, etc. Most of the better-preserved sherds, however, still were difficult to classify while maintaining the integrity of typological definitions.

HISTORIC MATERIALS

When Saylorville Lake was created, it inundated an area that had been the scene of a variety of human activities since settlement of the region by Europeans. Evidence of these activities can be observed along virtually every part of the lakeshore: old fenceline, broken crockery and glass, rusted tools, empty shell casings left by sportsmen and National Guard artillery personnel, and a significant amount of recent debris as evidence of the recreational nature of the reservoir. The presence of these materials, however, was not indicative of the

existence of any significant historic resources in the vicinity of the sites resurveyed during this project. Only a small sample of historic material was collected during fieldwork; these items (all of which were found on surface, primarily in obviously redeposited context) serve as examples of the less-common or better-preserved types of historic artifacts present in the project area.

ORGANIC MATERIALS

Because the first stage of this project was concerned mainly with obtaining a general picture of each of the subject sites, recovery of micro-organic materials was not a primary objective of fieldwork. During the second stage of the project, some flotation of soil samples was done, and the organic materials thus derived were roughly sorted and described, and retained for future analysis. Because periodic inundation results in deposition of sediments and mixing of soil strata along the shoreline, most of the organic material available for recovery must be considered contaminated to a greater or lesser degree by recent materials, and thus not entirely suitable for in-depth analysis. A few of the subject sites do appear to retain some intact cultural deposits which may yield more reliable organic samples during data recovery.

SECTION IV. CONCLUSIONS

The research topics which were to have been addressed during the intensive testing stage of this project have all been touched upon, to a greater or lesser degree, in the preceding pages of this volume. A few general conclusions relevant to those topics will be discussed here.

It appears that the most difficult questions to address during this project were those that relate to the internal structure of archaeological sites. Because that structure exists only in terms of spatial relationships among other entities, it is the most fragile dimension of the archaeological record, and is most susceptible to damage or destruction by natural and man-made forces. The patterns of human behavior reflected in that structure are therefore the most difficult to reconstruct when working with disturbed sites.

Other patterns of behavior which are preserved on a lower level of study - the artifactual level - can be examined with a somewhat greater chance of success, even if the sites from which artifactual data are recovered have been subjected to disruption. Lithic and ceramic typologies, interaction among various cultural groups, temporal variations in settlement location, and many other topics can be reasonably addressed if proper consideration is given to the types of biases likely to occur in such circumstances.

On a higher level of study, geomorphological analysis appears to hold great potential for clarifying the nature of the archaeological record within a specific region, as well as on the individual site level. The geomorphological research which was done as part of this project proved to be invaluable both during fieldwork and in the interpretation of recovered data. That research is, admittedly, only a beginning, but it does provide a basis for further examination of land-formation processes and chronologies in the Des Moines River Valley.

Thus, the potential does exist for deriving information relevant to a number of research concerns from even the most disturbed contexts. Overall, the results of this project suggest that the utility of archaeological research in reservoir areas may lie not so much in the description of individual sites as in the examination of patterns of behavior; that is, in using specific activities rather than sites as the basic units of study.

SECTION V. RECOMMENDATIONS

All of the archaeological sites under consideration herein are in the process of "disappearing" as a result of the creation and operation of Saylorville Lake. The extent of disturbance at the present time varies from site to site, and ranges from minimal disruption to destruction of virtually the entire site area. The increase in operating-pool level scheduled for Fall 1983 will only serve to accelerate the current rate of destruction at each of these sites. Thus, it is imperative that efforts to mitigate that damage be promptly applied.

It should be made explicit that "mitigation" is not necessarily synonymous with "excavation"; proper application of cultural resource management guidelines requires that due consideration be given to all possible strategies for insuring preservation of the resource base. In the present situation, modification of planned activities in order to avoid disrupting the archaeological record is not a feasible alternative. The use of artificial means to protect the subject sites from further damage is another approach that could be considered. However, given the nature and intensity of disruptive forces at Saylorville Lake, any such attempt would certainly require the application of extraordinary and expensive measures, with less than assured success. Recovery of as much data as possible from these sites while they are still available for examination is thus the only practical approach to mitigation.

All archaeological sites have some potential for yielding information relevant to the goals of the discipline. A reasonable mitigation strategy, however, recognizes that excavation of every site threatened with destruction is rarely a practical approach, and thus focuses on maximizing the probability of recovering reliable and useful data. With this in mind, it is possible to eliminate some of the subject sites from consideration for further research. In light of the information presented in the preceding pages, six of the ten subject sites appear to warrant additional examination, and are recommended for mitigative action. These sites are: 13PK259, 13PK264, 13PK274, 13PK276, 13PK314 and 13PK315.

Although they all have been disrupted to some degree, preliminary research has indicated that each one of these sites retains sufficient integrity to insure that reasonable standards of precision and accuracy in data recovery can be maintained. In terms of geomorphological position, function and temporal classification, they appear to constitute a representative sample of the range of sites once extant in the central Des Moines River Valley. Thus, both individually and when taken as a group, these sites hold the potential to yield data relevant to theoretical and methodological research concerns on both regional and general levels.

REFERENCES CITED

Aandahl, A. R. et al.
1960 Soils of the North Central Region of the United States. North Central Region, Agricultural Experimental Station. Publication No. 76, Bulletin No. 544. Madison: University of Wisconsin.

Alex, Lynn M.
1980 Exploring Iowa's Past: A Guide to Prehistoric Archaeology. Iowa City: University of Iowa Press.

Anderson, Duane C.
1975 Western Iowa Prehistory. Ames: Iowa State University Press.

Anfinson, Scott, ed.
1979 A Handbook of Minnesota Prehistoric Ceramics. St. Paul: Minnesota Archaeological Society, Fort Snelling.

Ashworth, Michael J., and Marshall McKusick
1964 Archaeological Resources of Saylorville Reservoir Drainage. Iowa City: University of Iowa.

Bell, Robert E.
1958 Guide to the Identification of Certain American Indian Projectile Points. Special Bulletin No. 1. Norman: Oklahoma Anthropological Society.

1960 Guide to the Identification of Certain American Indian Projectile Points. Special Bulletin No. 2. Norman: Oklahoma Anthropological Society.

Benn, David W.
1978 "The Woodland Ceramic Sequence in the Culture History of Northeastern Iowa." Mid-Continental Journal of Archaeology. 3(2):215-283.

1979 "Some Trends and Traditions in Woodland Cultures of the Quad-State Region in the Upper Mississippi River Basin." The Wisconsin Archeologist. 60(1): 47-82.

1980 Hadfields Cave: A Perspective on Late Woodland Culture in Northeastern Iowa. Report 13, Office of the State Archaeologist. Iowa City: The University of Iowa.

Benn, David W. and Arthur E. Bettis III
1981 Archaeological and Geomorphological Survey of the Downstream Corridor, Saylorville Lake, Iowa. Report submitted to the U.S. Army Corps of Engineers, Rock Island District. Decorah: Luther College Archaeological Research Center.

Benn, David W. and Suzanne Harris
1982 Testing Nine Archaeological Sites in the Downstream Corridor, Saylorville Lake, Iowa: 1982. Report submitted to the U.S. Army Corps of Engineers, Rock Island District. Center for Archaeological Research. Springfield: Southwest Missouri State University.

Bettis, E. Arthur III, and Dean M. Thompson
1981 "Holocene Landscape Evolution in Western Iowa: Concepts, Methods, and Implications for Archaeology." In Current Directions in Mid-Western Archaeology: Selected Papers from the Mankato Conference. Scott Anfinson, ed. Occasional Publications in Minnesota Anthropology No. 9. St. Paul: Minnesota Archaeological Society, Fort Snelling.

Brown, Lionel A.
1966 An Appraisal of the Archaeological Resources of the Saylorville Reservoir, Dallas, Boone and Polk Counties, Iowa. Smithsonian Institution River Basin Surveys, October 1966.

Carl F. Mahnke Productions, Inc.
1978 Map of Polk County, Iowa. County Road Map. Des Moines: Carl F. Mahnke Productions, Inc.

Gradwohl, David M.
1974 "Archaeology of the Central Des Moines River Valley: A Preliminary Summary." In Aspects of Upper Great Lakes Anthropology. Elden Johnson, ed. pp. 90-106. St. Paul: Minnesota Historical Society.

1975 Final Report on the Investigation of Archaeological Sites in Saylorville Reservoir, Iowa, as Covered in Four Contracts between the National Park Service and Iowa State University. (With the assistance of Nancy M. Osborn). Research Report. Ames: Iowa State University Archaeological Laboratory.

Gradwohl, David M., and Nancy M. Osborn
1973a Site Seeking in Saylorville: An Intensive Archaeological Site Survey of Reconnaissance Units 1 & 3, Saylorville Reservoir, Iowa. Report submitted to the U.S. Army Corps of Engineers, July 1973. Ames: Iowa State University

Archaeological Laboratory.

1973b A Roster of Reported Archaeological Sites in Saylorville Reservoir, Iowa. Report submitted to the U.S. Army Corps of Engineers, October 1973. Ames: Iowa State University Archaeological Laboratory.

1974 More Site Seeking in Saylorville: An Intensive Archaeological Site Survey of Reconnaissance Units 2 & 4, Saylorville Reservoir, Iowa. Report submitted to the U.S. Army Corps of Engineers, January 1974. Ames: Iowa State University Archaeological Laboratory.

1975a Still More Site Seeking in Saylorville: An Intensive Archaeological Site Survey of Reconnaissance Units 5 through 11 and 20, Saylorville Reservoir, Iowa. Report submitted to the U.S. Army Corps of Engineers. Ames: Iowa State University Archaeological Laboratory.

1975b Contract Completion Report Stage I: Exploration of Archaeological Sites Endangered by Saylorville Reservoir, Iowa. Report submitted to the U.S. Army Corps of Engineers, October 1975. Ames: Iowa State University Archaeological Laboratory.

1976 Continued Site Seeking in Saylorville: An Intensive Archaeological Site Survey of Reconnaissance Units 12 through 19, Saylorville Reservoir, Iowa. Report submitted to the U.S. Army Corps of Engineers. Ames: Iowa State University Archaeological Laboratory.

Iowa Soil Survey Staff
n.d. Soil Survey of Dallas County, Iowa. U.S. Government Printing Office. (In Press).

Lenihan, Daniel J., et. al.
1981 The Final Report of the National Reservoir Inundation Study, Vols. 1 & 2. U. S. Department of the Interior. National Park Service. Santa Fe, New Mexico: Southwest Cultural Resources Center.

Logan, Wilfred D.
1959 Analysis of Woodland Complexes in Northeast Iowa. Ph.D. Dissertation, Department of Anthropology. Madison: University of Wisconsin.

1976 Woodland Complexes in Northeastern Iowa. Publications in Archaeology 15. Washington, D.C.: United States Department of the Interior, National Park Service.

Luchterhand, Kubet
1970 Early Archaic Projectile Points and Hunting Patterns in the Lower Illinois Valley. Illinois Archaeological Survey Monograph No. 2, Illinois Valley Archaeological Program Research Papers, No. 3. Illinois Archaeological Survey, Inc. Urbana: University of Illinois.

McCracken, R.J., et. al.
1960 Soil Survey of Polk County, Iowa. U.S. Government Printing Office.

McGimsey, Charles R. III, and Hestor A. Davis, ed's.
1977 The Management of Archaeological Resources: The Airlie House Report. Special Publication. Washington, D.C.: The Society for American Archaeology.

McKusick, Marshall B.
1964 Men of Ancient Iowa, As Revealed by Archaeological Discoveries. Ames: Iowa State University Press.

1971 Prehistoric Investigations. Marshall B. McKusick, ed. Report No. 3, Office of the State Archaeologist. Iowa City: University of Iowa.

1979 "Documenting Iowa Prehistory: 1928-1964." The Wisconsin Archaeologist. 60(1):3-25.

Montet-White, Anta
1968 The Lithic Industries of the Illinois Valley in the Early and Middle Woodland Period. Anthropological Papers No. 35, Museum of Anthropology. Ann Arbor: University of Michigan.

Office of County Engineer
1975 Polk County, Iowa. County Road Map. Revised in 1979. Polk City: Office of the County Engineer.

Office of the Iowa State Archaeologist
n.d. Dallas County Site Forms.

n.d. Polk County Site Forms.

Osborn, Nancy M., and David M. Gradwohl
1981 Saylorville Stage 2 Contract Completion Report: Archaeological Investigations in the Saylorville Lake Project, Iowa. Report submitted to the U.S. Army Corps of Engineers, January 1981. Ames: Iowa State University Archaeological Laboratory.

1982 Saylorville Stage 3 Contract Completion Report: Testing of Priority 1 Archaeological Sites 1980-1981. Report submitted to the U.S. Army Corps of Engineers. Ames: Iowa State University

Archaeological Laboratory.

1982 Appendix to Saylorville Stage 3 Contract Completion Report. Report submitted to the U.S. Army Corps of Engineers. Ames: Iowa State University Archaeological Laboratory.

Perino, Gregory

1968 Guide to the Identification of Certain American Indian Projectile Points. Special Bulletin No. 3. Norman: Oklahoma Anthropological Society.

1971 Guide to the Identification of Certain American Indian Projectile Points. Special Bulletin No. 4. Norman: Oklahoma Anthropological Society.

Prior, J.C.

1976 A Regional Guide to Iowa Landforms. Iowa Geologic Survey, Educational Series 3. Iowa City: Iowa Geologic Survey.

Ritzenthaler, Robert

1971 Wisconsin Indian Projectile Point Types. Popular Science Series II. Milwaukee: Milwaukee Public Museum.

Roetzel, Kathleen A., et.al.

1981 Intensive Archaeological Reconnaissance and Site Testing for the National Register of Historic Places, Harlan County, Nebraska. Volume I: Technical Report. Report submitted to the U.S. Army Corps of Engineers.

Ruhe, R.V.

1965 "The Iowa Quaternary." In INQUA Guidebook for Field Conference C, Upper Mississippi Valley. pp. 110-126.

1969 Quaternary Landscapes in Iowa. Ames: Iowa State University Press.

Tiffany, Joseph

1977 "Artifacts from the Sharp's Site: A Sterns Creek Component in Southwestern Iowa." Journal of the Iowa Archaeological Society. 24:84-121.

1978 "Middle Woodland Pottery Typology From Southwest Iowa." Plains Anthropologist. 23(81):169-181.

U.S. Army Corps of Engineers

USACE Topographic Maps of the Saylorville Lake Project Area. Plates 1-4. Taken from the Hurd Surveys, 1960.

U.S. Geologic Survey
1956 Des Moines NW Quadrangle. 7.5-minute series. (Photorevised in 1967, 1971, and 1976.)

1965 Granger Quadrangle. 7.5-minute series. (Photorevised in 1976.)

1965 Grimes Quadrangle. 7.5-minute series. (Photorevised in 1976.)

1972 Polk City Quadrangle. 7.5-minute series.

Winters, Howard D.
1967 An Archaeological Survey of the Wabash Valley in Illinois. Reports of Investigations, No. 10. Springfield: Illinois State Museum.

Plate II-1. 13PK152, looking southwest.

Plate II-2. Excavation unit at 13PK259.

Plate II-3. Excavation unit at 13PK266.

Plate II-4. Soil sampling at 13PK272.

Plate II-5. Testing at 13PK274, looking northeast.

Plate II-6. Surface artifacts at south end of 13PK314, looking southeast.

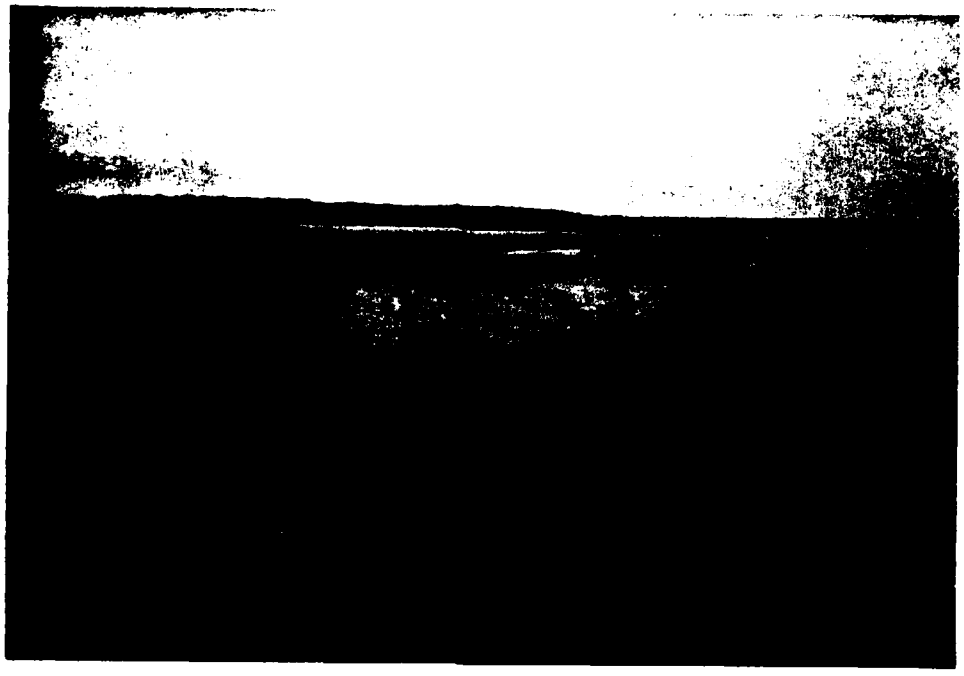
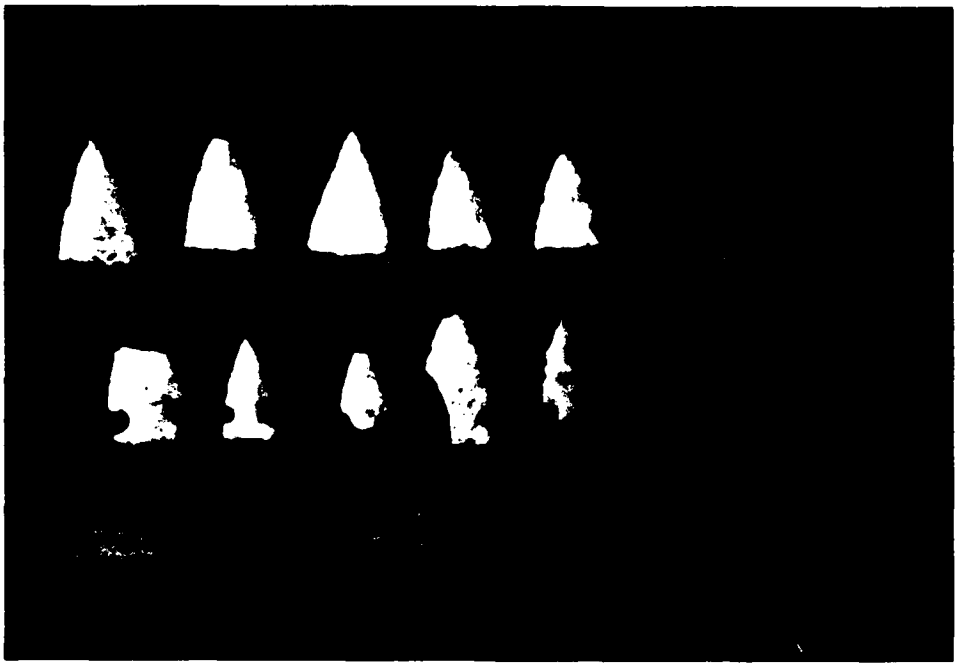


Plate II-7. Lithic artifacts.

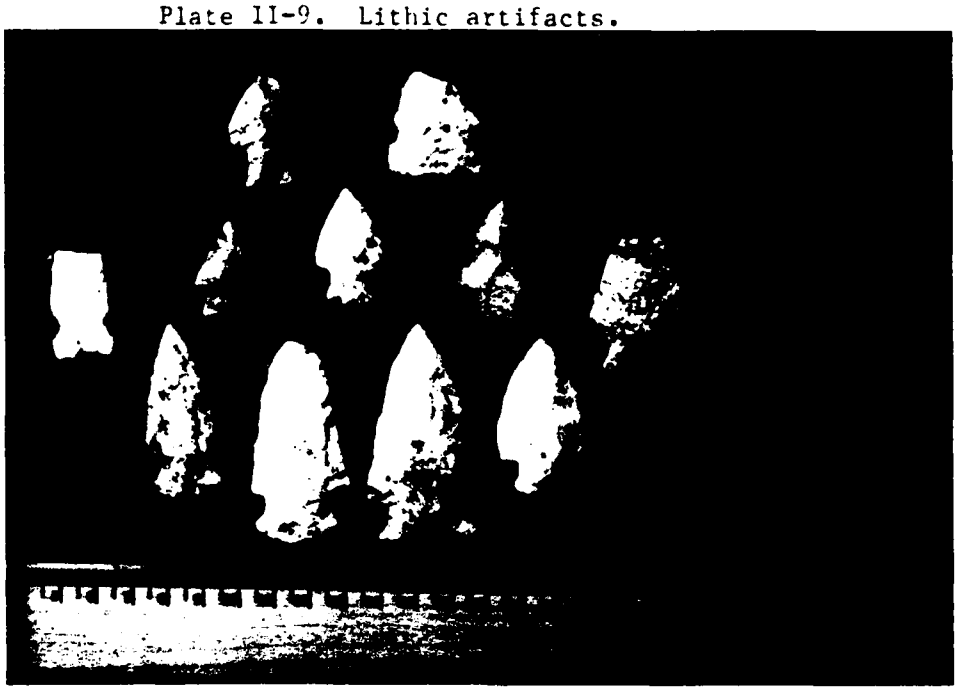


Top: 13PK198-6, 13PK315-332, 13PK195-91, 13PK264-4, 13PK313-208.
Bottom: 13PK160-1, 13PK313-118, 13DA9-9, 13PK272/273-16, 13PK272-57.

Plate II-8. Lithic artifacts.

Top: 13PK264-1, 13PK275-2, 13PK163-19, 13PK152-438, 13PK279-3, 13PK152-19, 13PK272/273-14. Middle: 13PK314-115. Bottom: 13PK272/273-15, 13PK273-13, 13PK288-6, 13PK315-333.

Plate II-9. Lithic artifacts.

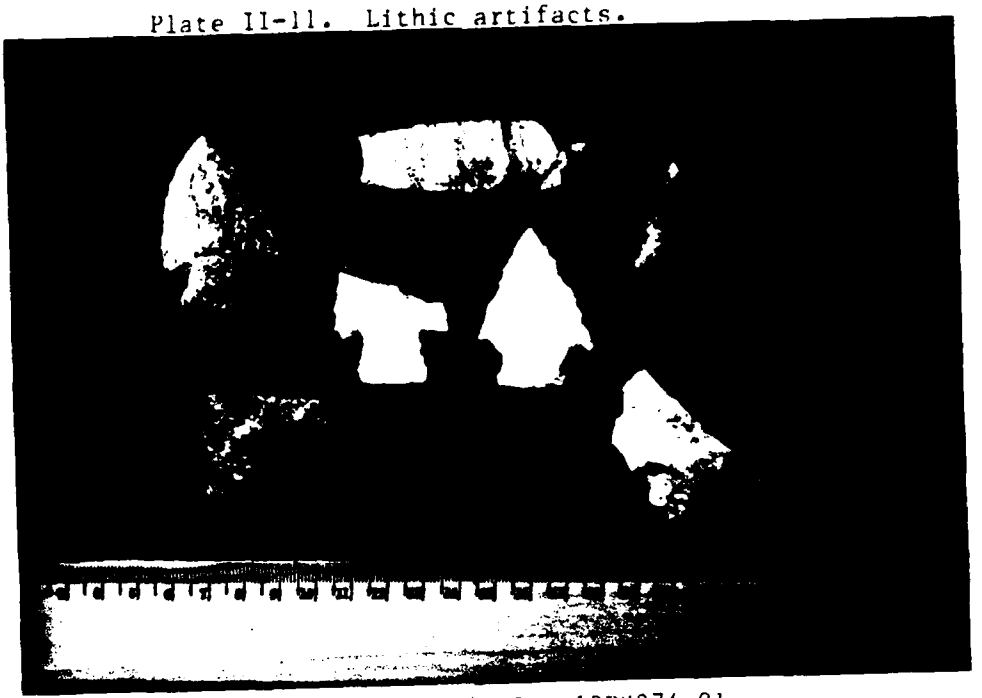


Top: 13PK313-119, 13DA161-13.
Middle: 13PK313-149, 13PK315-2, 13DA161-12, 13PK315-1, 13PK274-123.
Bottom: 13PK273-10, 13PK274-121, 13PK314-453, 13PK315-546.

Plate II-10. Lithic artifacts from 13PK259.

Top: Artifact numbers 2, 48, 501, 500, 28.
Bottom: Artifact numbers 498, 643, 18.

Plate II-11. Lithic artifacts.



Top: 13PK314-81, 13PK242-5, 13PK274-91.
Middle: 13PK277-1, 13PK274-97.
Bottom: 13PK274-72, 13PK263-31.

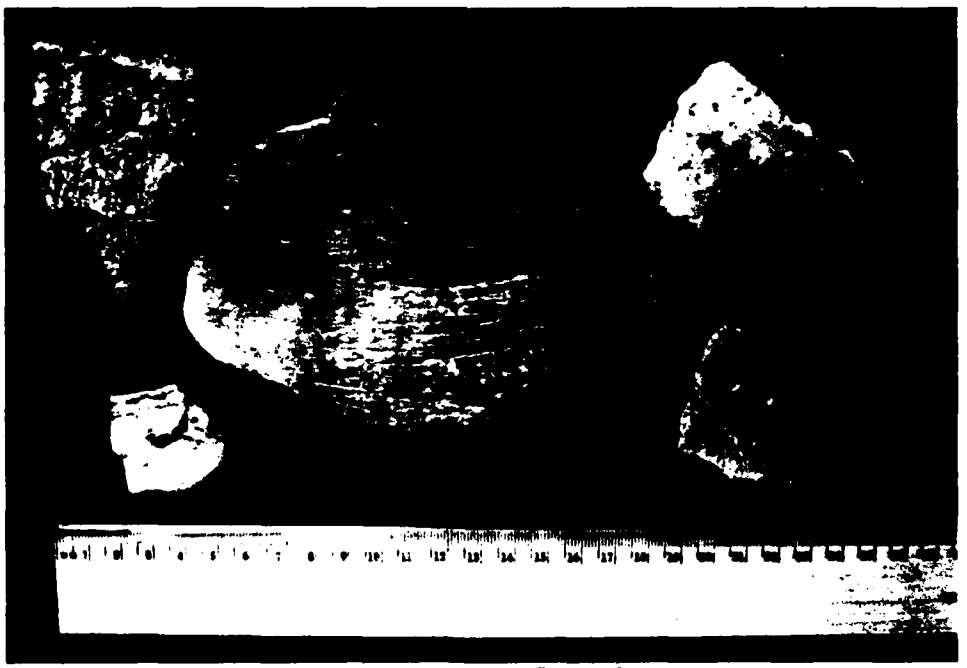
Plate II-12. Lithic artifacts.

Left: 13PK274-71. Top: 13DA101-15.
Bottom: 13PK315-337. Right: 13PK272/273-5.

Plate II-13. Lithic artifacts.

Top: 13DA161-28, 13PK315-544, 13PK195-38.
Center: 13PK266-10.
Bottom: 13PK314-28, 13PK266-11, 13DA161-16, 13PK195-27.

Plate II-14. Rim sherds.



Top: Reconstructed rim from 13PK274, 13PK263-1...
Center: 13PK285-24.
Bottom: 13PK259-45, 13PK152-290.

Plate II-15. Rim sherds from 13PK314.

Top: Artifact numbers 143, 771, 230, 774, 224, 1.
Center: Artifact numbers 770, 2, 772, 775.
Bottom: Artifact numbers 144, 773, 768/769.

Plate II-16. Rim and neck sherds.

Top: 13DA160-5, 13PK272-1, 13PK264-217, 13PK194-8.
Center: 13PK264-218, 13PK266-9.
Bottom: 13PK272/273-10, 13DA161-69, 13PK263-95, 13PA9-21.

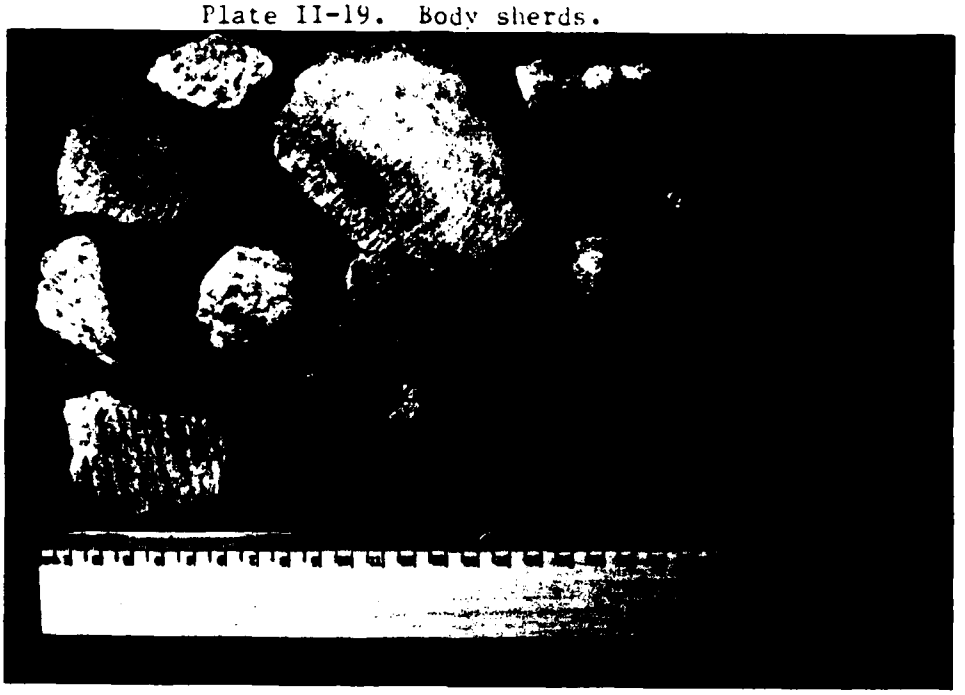
Plate II-17. Shell-tempered sherds from 13PK264.

Left: Artifact number 216. Top: Artifact number 214.
Bottom: Artifact number 235. Right: Artifact number 215.

Plate II-18. Reconstructed vessels from 13PK314.

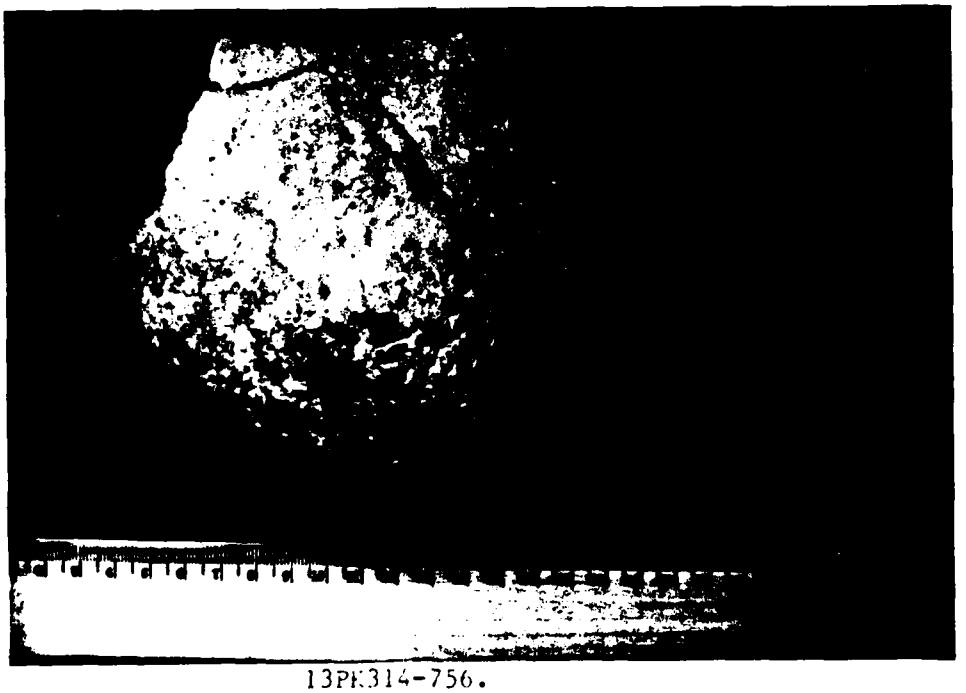
Left: 13PK314-37. Center: 13PK314-37A. Right: 13PK314-36.

Plate II-19. Body sherds.



Left top: Eroded sherd from 13PK314. Left center: 13PK264-210.
Left bottom: 13PK264-121. Center: 13DA9-23/24.
Right top: 13PK264-213. Right bottom: 13PK314-572/540/601.

Plate II-20. Vessel base from 13PK314.



13PK314-756.

Plate II-21. Teeth from 13PK264.

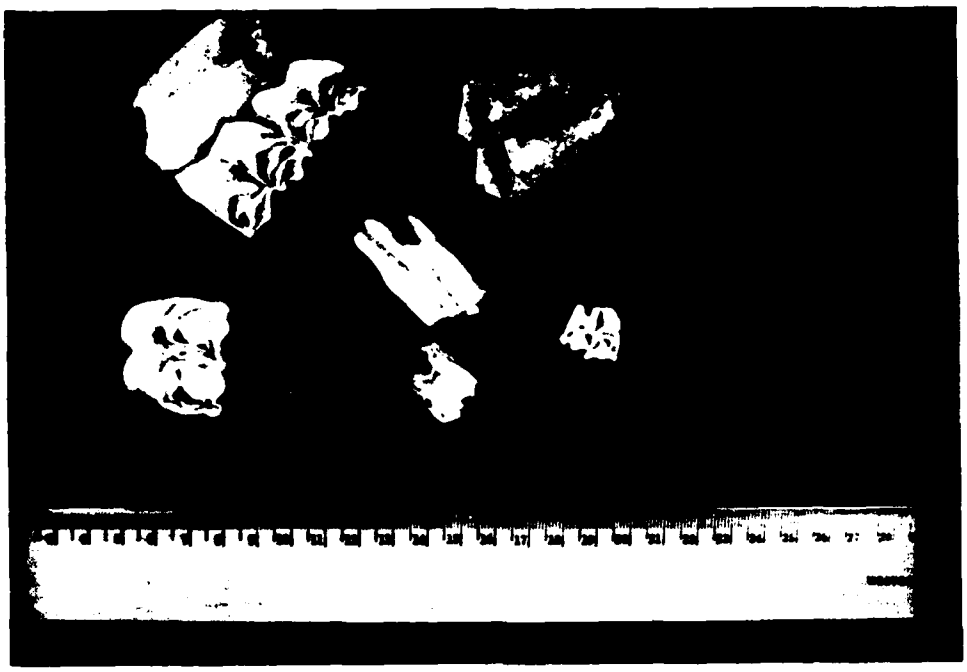
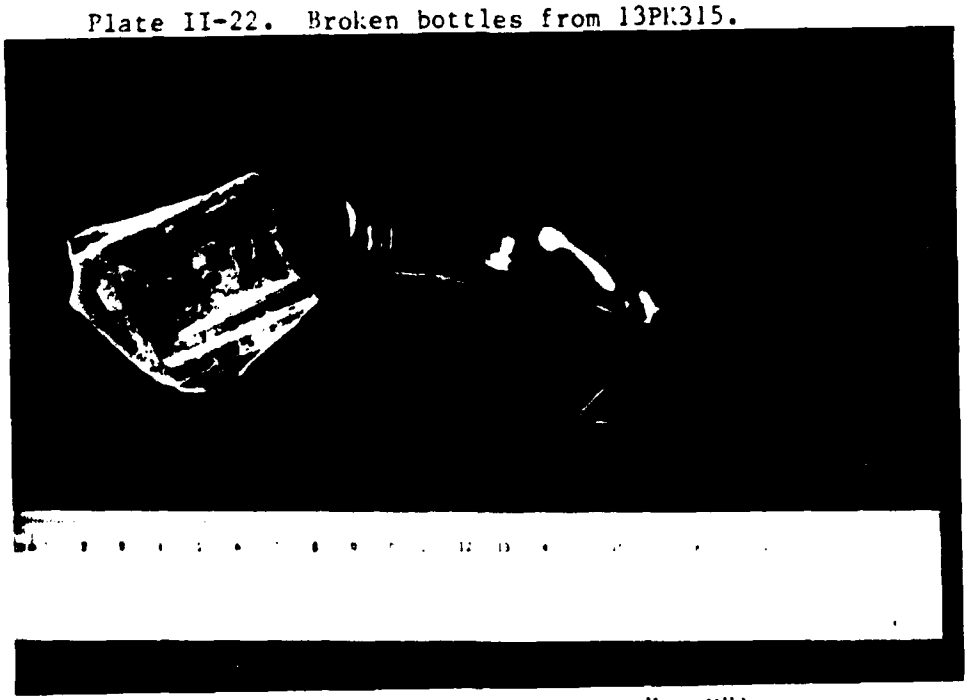
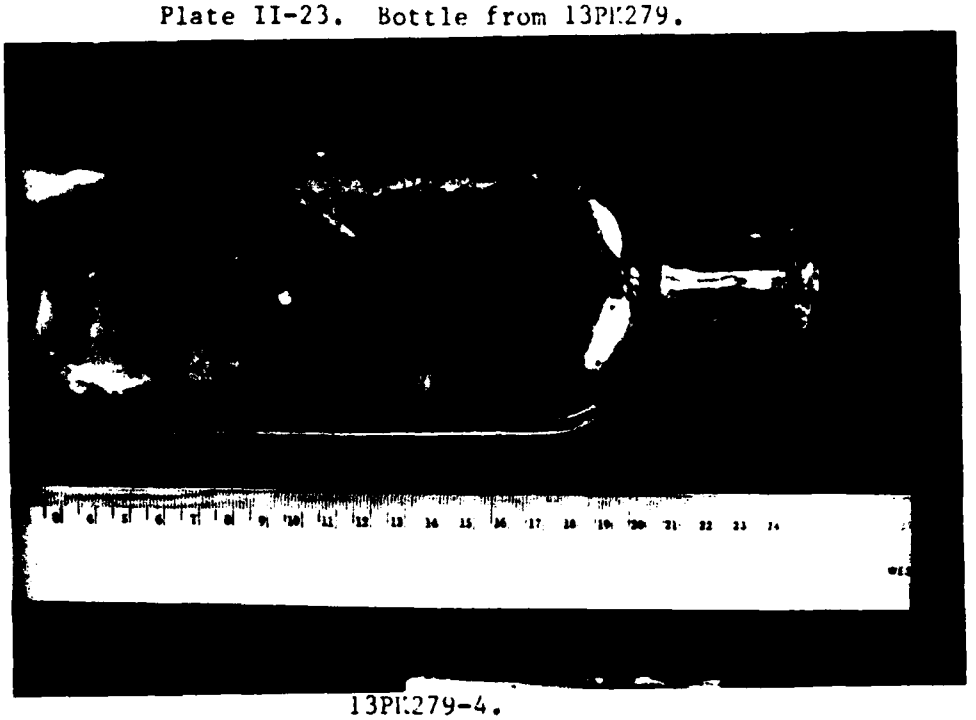


Plate II-22. Broken bottles from 13PK315.



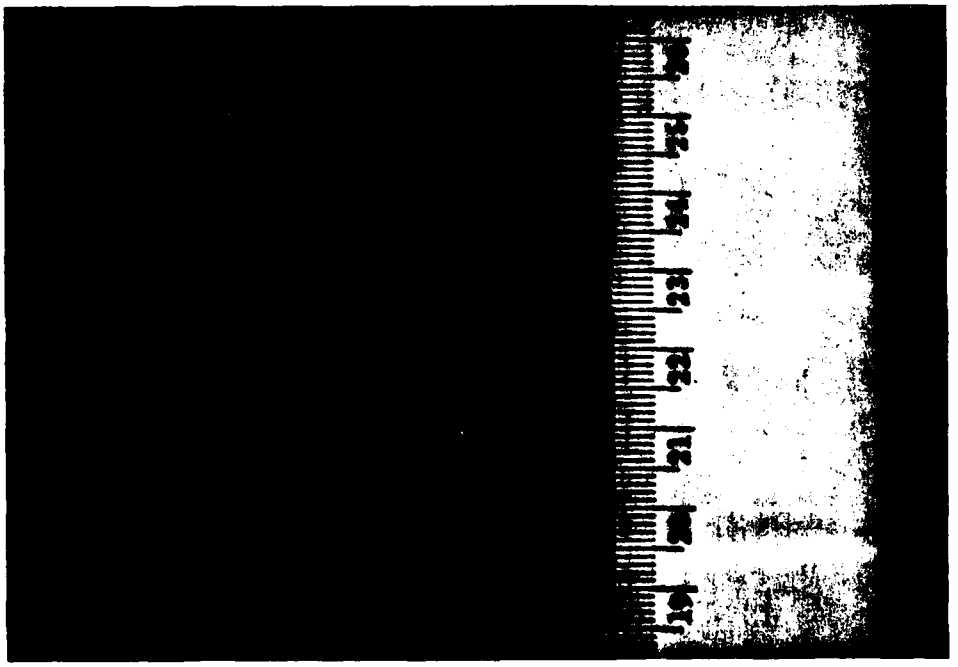
Left: 13PK315-434 (lettering reads "Dr K").
Right: 13PK315-435 (lettering reads "HANNIS DISTIL").

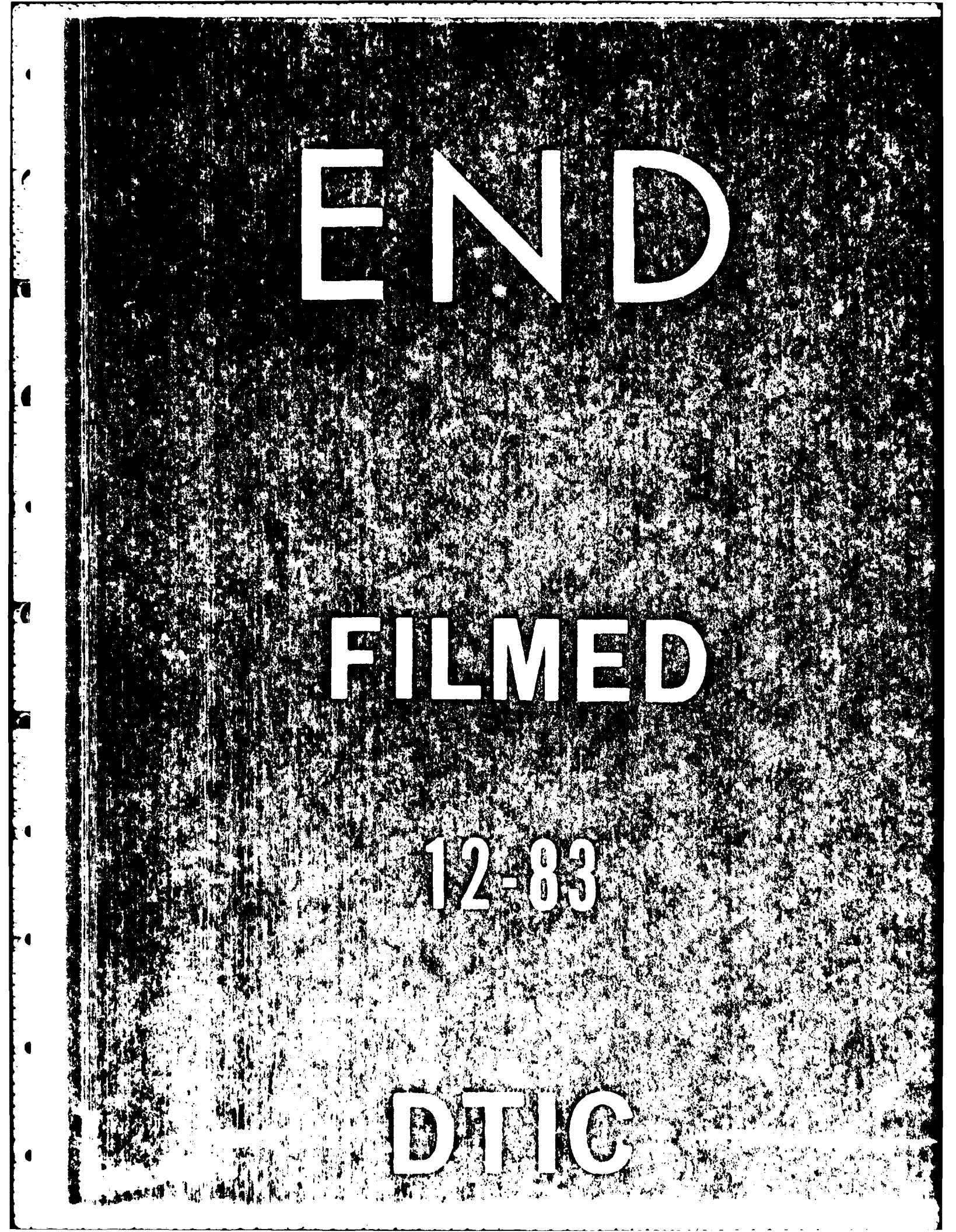
Plate II-23. Bottle from 13PK279.



13PK279-4.

Plate II-24. Clay pipe bowl from 13PK315.

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