1990

23-Archaeological Investigations in the Lower Galien River Valley of Southwest Michigan

William M. Cremin
Western Michigan University

DEPARTMENT OF ANTHROPOLOGY

WESTERN MICHIGAN UNIVERSITY

TECHNICAL REPORT NO. 23

1990

ARCHAEOLOGICAL INVESTIGATIONS IN THE LOWER GALIEN RIVER VALLEY OF SOUTHWEST MICHIGAN

EDITED BY:

WILLIAM M. CREMIN

CONTRIBUTORS:

WILLIAM M. CREMIN

GREGORY R. WALZ

DANIEL B. GOATLEY

ACKNOWLEDGEMENTS

The editor and contributors to this volume gratefully acknowledge the support of Galien River Associates, sponsors of the work reported herein, Resource Management Group of Grand Haven, and especially Mr. David Zuckerman of this firm, who participated fully in the actual fieldwork, the field crew from Western Michigan University responsible for the collection of data from the sites, and the 18 participants of WMU's Spring 1990 archaeological field school, who volunteered many hours in the laboratory processing flotation samples and sorting the contents prior to analysis for inclusion in this report.

W.M.C.
G.R.W.
D.B.G

TABLE OF CONTENTS

TABLE OF CONTENTS, CONTINUED

FIGURES

TABLES

INTRODUCTION TO THE PROJECT

William M. Cremin

Upon receipt of a grant to Western Michigan University and the author on 9 Feb 90 from Galien River Associates to support follow-up investigations on a series of prehistoric sites recorded during archaeological survey of an upland area overlooking the Lower Galien River near New Buffalo, Michigan last fall (Cremin and Walz 1989), a team of archaeologists returned to the original study area in April and May for eight days of intensive study of eight sites previously recorded. The report which follows provides a description of the data recovery methods employed and the sorts of information retrieved, an albeit brief evaluation of the data from the perspective of current knowledge about the southern Lake Michigan basin during the time these sites appear to have been occupied, and recommendations directed at the potential importance of the resource in question in light of both conservation of said resource and future research needs which additional access to the sites might very well satisfy.

PROJECT PERSONNEL:

From the onset of this investigation, the time and resources which could be committed to our program of research were in short supply; hence, the participation of a group of people such as we assembled on short notice was essential to the successful completion of the field phase of our program of study. The individuals comprising our team were no strangers to compliance archaeology, nor were they unfamiliar with the long-term research objectives of the program at WMU. With the singular exception of David Zuckerman, who received his archaeological field training in the Northeast and joined Resource Management Group after successfully completing his M.A. in Geography at WMU and spending several years in the employ of the Michigan Department of Natural Resources, all members of the team had also taken the WMU archaeological field school. And no fewer than three graduate students on the dig had served as Graduate Supervisors in this context, acquiring some valuable experience in teaching field methods to the uninitiated undergraduate and/or graduate student.

The following comprises a list of the research team:

Principal Investigator	- William M. Cremin, Ph.D., Professor of Anthropology, WMU
Project Supervisor	- Gregory R. Walz, M.A. Candidate in Anthropology, WMU
Field Assistants	- Gregory Brubaker, Senior majoring in Anthropology, WMU
	- Lawrence Svendsen, Senior majoring in Anthropology, WMU
	- Jeffrey Bonevich, Graduate Student in Anthropology, WMU
	- Daniel Goatley, Graduate Student in Anthropology, WMU
	- Timothy Knapp, Graduate Student in Anthropology, WMU
	- Lewis Wisser, M.A. Candidate in Anthropology, WMU

– David Zuckerman, M.A., Resource Management Group of Grand Haven, Michigan

DESCRIPTION OF THE STUDY AREA AND REVIEW OF THE SURVEY FIELDWORK CONDUCTED IN NOVEMBER 1989:

The research area consists of morainal uplands overlooking the wetland-choked lower valley of the Galien River (formerly known as "Lake Pottawattamie") in the SW 1/4 of Section 2 and extreme SE 1/4, SE 1/4 of Section 3, New Buffalo Township, T8S R21W, Berrien County, Michigan (Figure 1; here reproduced from the Phase 1 survey report by Cremin and Walz 1989). Encompassing as estimated 70+ acres (28.3 ha), at the time of our visit in November (and this past spring) this parcel supported dense second growth forest and fallow field cover accessible to us by a recently constructed road lying between the marshlands flanking the river and the Penn Central Railroad right-of-way that almost bisects the morainal uplands from east to west (Figure 2; also reproduced from Cremin and Walz 1989).

The study area is further bisected north-south by a steep-sided ravine that here carries water off the uplands to the river. The maximum elevation above sea level exceeds 190 m at bluff's edge and drops rapidly to an elevation of about 178 m ASL in the marsh west of bluffbase. The elevation of the Lake Michigan shoreline, which is here separated from the Lower Galien River Valley by a narrow spit of sandy beach and dunelands rising almost 10 m above the river, is 177 m ASL (Figure 2).

Today the channel occupied by the Galien River meanders quite strongly through a pristine marsh, whereas at the time of settlement the lower course of the river for a distance of some 3.2 km above its mouth was occupied by "Lake Pottawattamie". Filling the floodplain from valley margin to valley margin, this body of water is

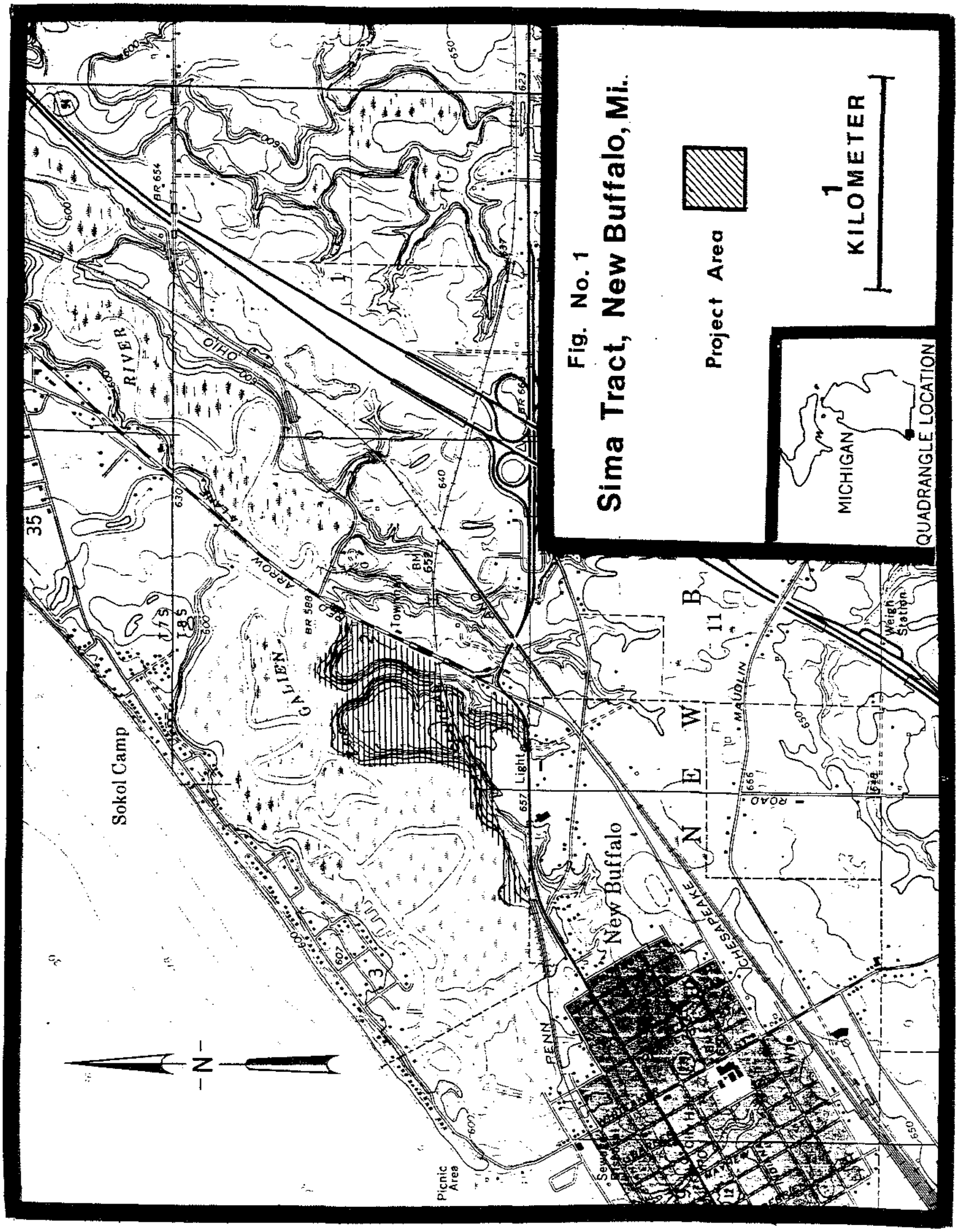


Fig. No. 1
Sima Tract, New Buffalo, Mi.

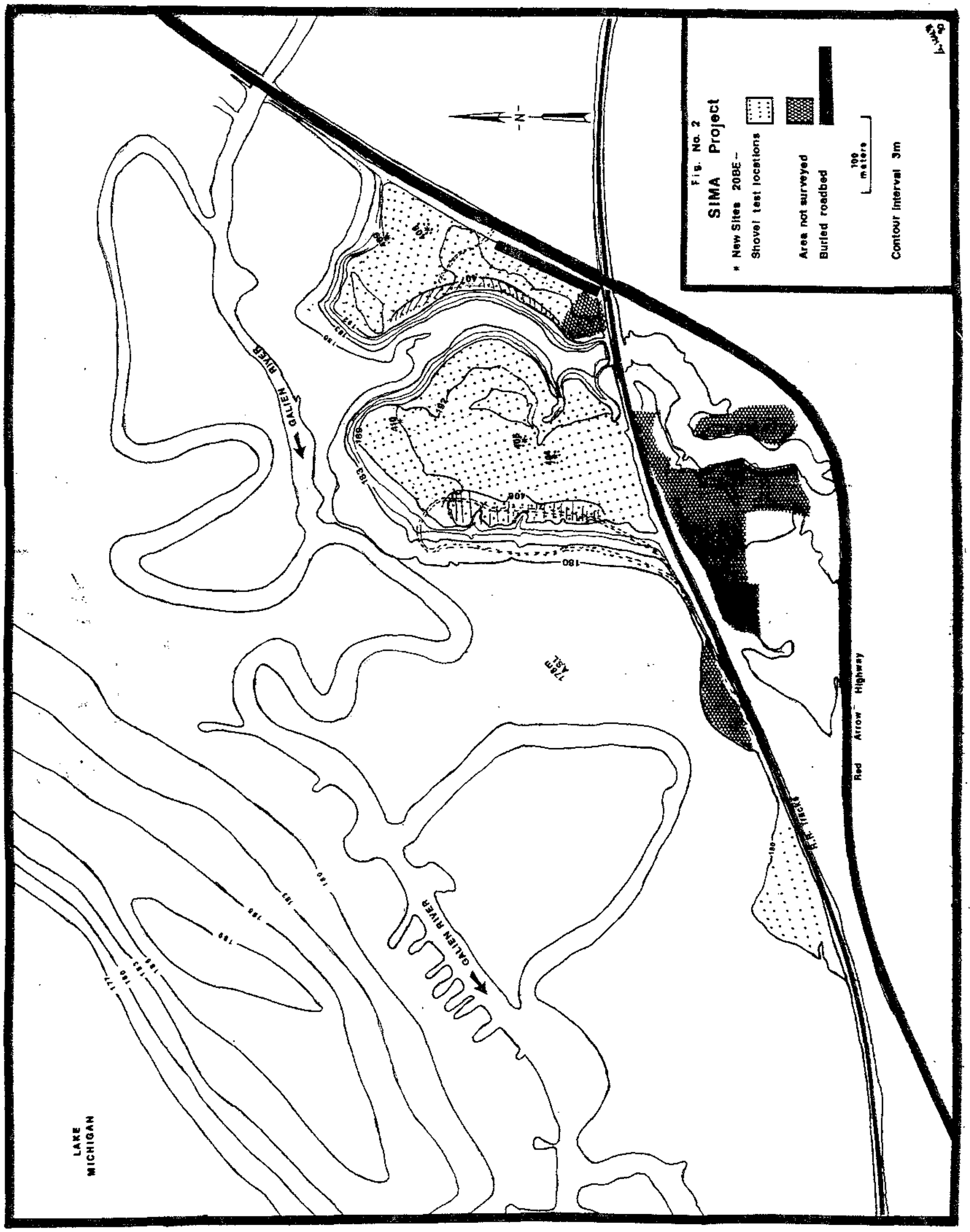


Fig. No. 2
SIMA Project
* New Sites 20BE-
Shovel test locations
Area not surveyed
Buried roadbed
100 meters
Contour interval 3m
GALIEN RIVER
GALIEN RIVER
LAKE MICHIGAN
178m ASL
R.R. Tracks
Red Arrow Highway

said to have supported dense stands of wild rice and teemed with migratory waterfowl (Ellis 1880:270).

Information provided by Resource Management Group suggested that some of the parcel had previously been farmed (and perhaps given over to the raising of orchard crops). Surveyors also noted evidence of limited quarrying and recent land leveling and filling, as well as numerous stumps attesting to the harvesting of marketable timber.

The vegetative cover with which surveyors had to contend consisted of a mixture of grasses and weedy annuals interspersed with a few mature trees, especially along the edges of the bluff overlooking the valley to the north and west, and a dense brambly undergrowth. The present canopy bears little resemblance to the oak-hickory forest that formerly dominanted on uplands flanking the lower course of the Galien. Rather, climax species are now represented by a scattering of hickories and scrub oaks, together with the stems of sassafras, locust, and sumac and in places gnarled stems densely matted with grapevines. As was noted in the survey report, the plant cover here proved to be the most challenging impediment to archaeological fieldwork encountered in our collective experience (Cremin and Walz 1989:5).

Our November fieldwork did not result in complete surveyor coverage of the project area; rather, the combination of extremely dense vegetation and inclement weather forced the survey team to concentrate on the two areas of bluff top formed by the intervening ravine and a small point of lowlying land jutting into the wetlands below the bluffs (Figure 2). In the almost total absence of ground surface visibility, surveyors relied on the placement of more than

300 shovel tests to complete a systematic and intensive examination of that portion of the project area that we were able to study in two very long days (see Figure 2 for the approximate locations of shovel tests in the surveyed portion of the project).

Although we were not able to complete our survey of the entire project, those portions adequately examined did reveal sufficient evidence to warrant recognition of seven (7) prehistoric sites. On a subsequent visit to the project area with a construction survey team, David Zuckerman collected information enabling us to record an eighth site (20BE411) after the Phase I report had been prepared and submitted.

While the eight (8) sites found prior to our return to the study area this past spring are firmly based on the recovery of cultural material, their apparent spatial isolation may be most deceiving due to the vagaries of shovel testing in a most difficult situation. At the conclusion of the Phase I study we remained to be convinced that the entire tops of the two landforms created by the intervening ravine should not be regarded as single site areas coterminus with the limits of each landform (Cremin and Walz 1989: 8).

None of the sites recorded produced diagnostic cultural items, nor were any cultural features observed during the Phase I study. In fact, the total inventory upon which these sites have been recorded includes one biface, three dozen flakes, five pieces of associated FCR, and a small concentration of mussel shell and an unidentified mammal bone recovered from shovel tests. Given our prior experience with the application of shovel testing procedures, especially in light of the heavily vegetated condition of the study area, we could not but regard our success in recovering this evidence of prehistoric occupation as quite remarkable. And, furthermore, we unhesitatingly concluded that the data unearthed probably represented the "tip of the iceberg". Therefore, while fully recognizing that the project area and its population of archaeological sites, in the words of the State Archaeologist, represented an unregulated resource, we strongly encouraged the clients through their representatives at Resource Management Group to permit additional study of these sites in order that we might ascertain their spatial extent and determine whether any cultural context (i.e. site integrity) remained preserved below the surface.

DESIGNING AND IMPLEMENTING THE FOLLOW-UP INVESTIGATION:

In January of this year I was approached by David Zuckerman to prepare a proposal for follow-up investigation of the resource identified in November for submission to the clients of RMG and also the State Archaeologist for his reaction and, hopefully, approval. Typically, archaeological research undertaken to accomplish the previously mentioned objectives involves the application of a combination of intensive survey and limited testing procedures. However, in this case, given the great difficulty the survey team had encountered in dealing with the vegetative cover in the project area, I and my associates regarded the use of "standard" Phase II investigative procedures as being inadequate to the task. We felt that the sites previously recorded were not necessarily isolated from one another and that our identification of eight individual sites on the two landforms might reflect inadequacies in the Phase I sampling strategy as we struggled to attain good survey coverage in a most difficult situation. It was just possible that the spatial distribution of archaeological material was coterminus with each of the two landforms. And we had only to contend with "zero" surface visibility and plant cover that in places was simply too dense to permit passage of a person to demonstrate that this was or was not the case!

To test this assumption in the context of a Phase II program of research, I proposed that we employ minimal machine stripping of vegetation and topsoil along transects across the landforms in conjunction with testing by traditional hand excavation methods within areas delimited by positive shovel tests. The reaction of all parties to this proposal was positive, and Zuckerman and I set about the task of placing transects that were to range in length from 195-425 m and traverse the two landforms from the Penn Central ROW on the south to bluff's edge on the north and from the edges of the ravine to bluff's edge on the west and to Red Arrow Highway on the eastern limits of the study area (Figure 2). Furthermore, the transects were also placed so as to pass through the areas where positive shovel tests had resulted in the definition of seven sites during our survey, as well as the site subsequently recorded by Zuckerman on a later visit to the project.

A budget was prepared that provided for two days of machine stripping under the supervision of Zuckerman and myself, together with two senior crew members, followed by seven days of feature recovery in the blade cuts and hand excavation of test squares where deemed appropriate by a field party consisting of the previously named individuals. This budget was approved by the clients of RMG, and on 9 Feb 90 a grant in the amount requested was awarded to the university. Finally, in a letter to Zuckerman dated 14 Mar 90, Dr. Halsey and his Staff at the Bureau of History indicated acceptance of our Phase I survey report and the methodology proposed for the follow-up investigation.

Late in March, Zuckerman returned to the project area with Mr. Durwood D'Agostino, the individual who would be operating the heavy equipment during the Phase II study. D'Agostino looked the area over and informed Zuckerman that the dense vegetative cover would make it virtually impossible to strip the transects as had been proposed (i.e. without undertaking the massive task of systematically clearing the entire area of all but selected trees through the use of much larger machines than we desired to have on the site).

Given the realistic limits placed on our activity by the proposed scope of work, we then turned to an alternative plan. It was agreed that Zuckerman and D'Agostino would return with a brush-hog that would allow them to selectively clean paths through the plant cover for later stripping with a bulldozer. The clearing would be confined to the westernmost landform and would necessarily follow the "path of least resistance" through the vegetation; yet it would enable us to clear plants and strip the topsoil in the general areas designated as sites as well as in the intervening space between site loci.

The clearing of small trees and undergrowth with the brush-hog provided irregular, discontinuous, and often curving rather than straight paths which nonetheless gave us access to the areas we wished to examine. And on 18-19 Apr 90 four of us, together with the operator and a D-3B bulldozer equipped with an eight foot (2.4 m) wide blade, returned to the study area to commence stripping these "transects".

The stripping operation generally proceeded quite smoothly, with D'Agostino exhibiting considerable skill in removing topsoil from the transects. However, because extremely heavy rains had fallen on the study area between the time of clearing and stripping, he did experience some problems in controlling the depth to which the blade penetrated as soil composition and moisture content varied across the landform. In several areas of higher elevation where sandy well-drained soils supported a grassy ground cover beneath an open canopy (e.g. the areas of 20BE405 and 410), it was possible to strip the topsoil in fine enough increments to permit those supervising the operation to catch a glimpse of subsurface soil staining usually within 20+ cm of ground level. Elsewhere on the landform (e.g. 20BE411), clayey soils proved more difficult to strip by virtue of their wetter condition and the dense root systems put down by the scrubby tree, bramble, and thicket cover more common to such soils. More passes of the blade were required to provide us with a cut through the topsoil clean enough to define soil stains. But not before we had reached a depth of 30 cm or, more typically, 35-36 cm below the surface. Finally, in the case of 20BE404, the paths cleared here for passage of the bulldozer were found to be in standing water. The soil was so thoroughly saturated that it would not support the weight of the bulldozer; hence, this site could not even be investigated. Figure 3 shows those areas on this landform which were successfully cleared of topsoil during the stripping operation.

CONCLUSION OF THE STRIPPING OPERATION AND COMMENCEMENT OF FEATURE EXCAVATION:

Stripping of the transects revealed a total of 46 patches of

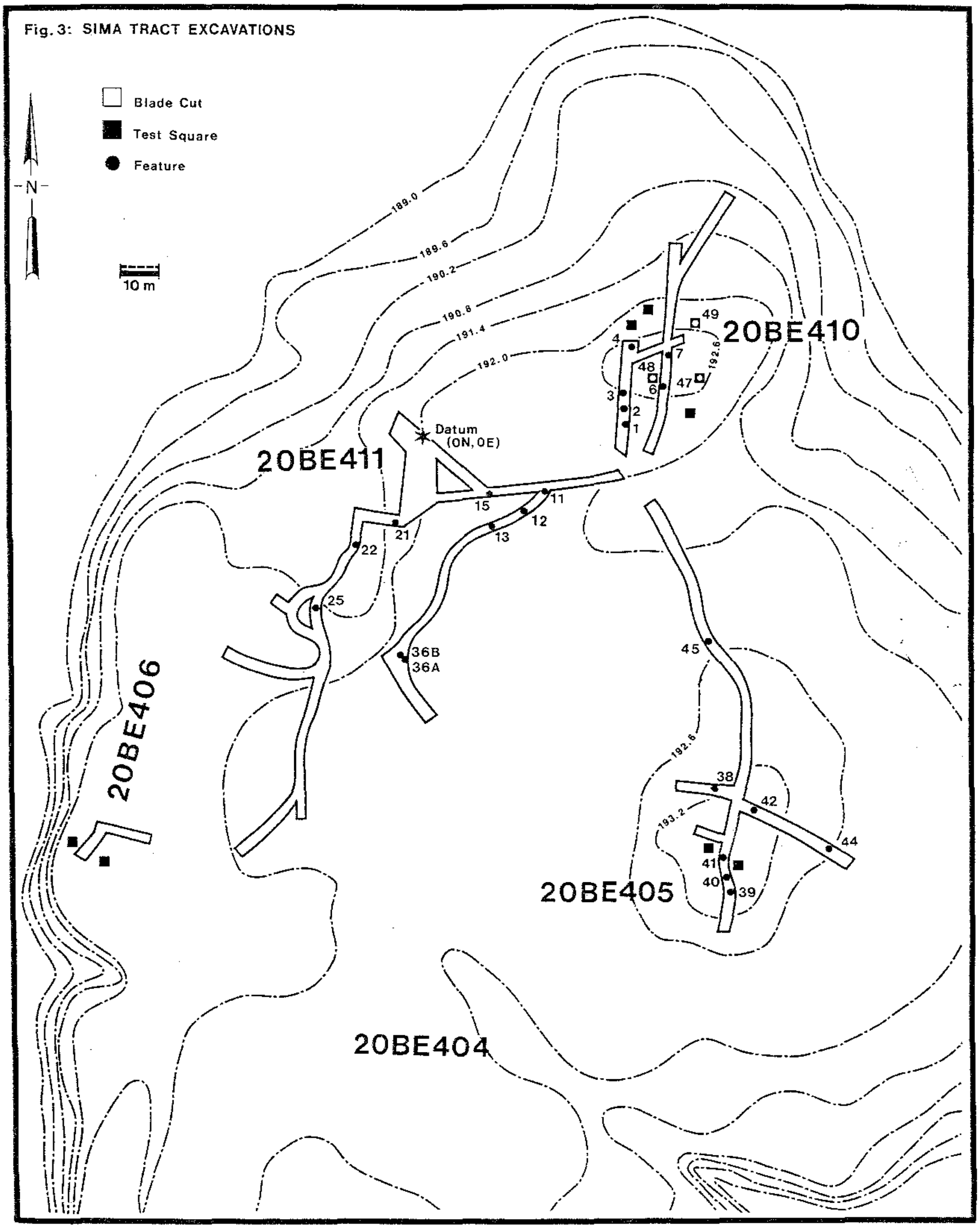


Fig. 3: SIMA TRACT EXCAVATIONS
Blade Cut
Test Square
Feature
N
10 m
189.0
189.6
190.2
190.8
191.4
192.0
192.6
193.2
Datum
(0N, 0E)
20BE410
20BE411
20BE406
20BE405
20BE404
1
2
3
4
6
7
11
12
13
15
21
22
25
36B
36A
38
39
40
41
42
44
45
47
48
49

dark organically stained soil in a matrix of lighter colored sandy or clayey subsoil. Upon careful examination, 22 were assigned feature numbers. Of the remaining 24, a few gentle scraps with the shovel and/or trowel resulted in their disappearance. However, given the depths below surface at which the vast majority of these stain were observed, it is very likely that most also represent cultural features. That most of them were exposed in blade cuts in the area of 20BE411, where stripping typically terminated at depths greater than was the case for either 20BE405 or 410, might be interpreted to confirm our contention that many of these stains represent features too shallow to survive the stripping operation.

Following two days of machine stripping and feature definition, those members of the crew who had participated in this phase of the investigation were joined by four additional people for two days of intensive feature work. However, when the weekend of 20-21 Apr came to and end and the crew returned to WMU for final exams, the project map that is herein reproduced as Figure 3 had been largely completed, but only a handful of the large pits represented by soil stains in blade cuts had been fully recorded and more or less completely excavated.

With the end of Winter Semester, the crew, now having reached its maximum size, returned once again to accomplish everything that could be done in one week (Parenthetically, the annual WMU archaeological field school, involving some of the project participants, was scheduled to begin in the following week, and other members of the crew were committed to leaving the area for fieldwork elsewhere in the Midwest.). We had originally planned to devote much of this week to traditional test excavation in areas of the sites not disturbed by stripping, but with 17 features still exposed and unexcavated in the blade cuts, most of the crew's attention was directed toward retrieving data from these recorded contexts rather than seeking out more features.

During the course of the week, all features exposed by the blade, with the singular exception of Feature 45, were excavated. And we did manage to open 10 excavation units, one meter on a side, as well. Two units on 20BE406, near bluff's edge overlooking an extensive marsh to the west, produced no more in the way of good information than had been observed in two short blade cuts nearby. While some cultural items were collected from the cuts and the two test squares, no tools or features were observed on this site. Similarly, two test squares located on either side of a blade cut in which three features were exposed on the sandy knoll defined as 20BE405 produced little in the way of useful data. But on the smaller knoll to the north, designated 20BE410, three of six excavation units revealed three additional pit features. It is perhaps noteworthy that while two features on the crest of this sandy knoll were encountered just below the humus level at depths of 22 cm and 24 cm, the third pit, located in a test square slightly downslope of the crest, appeared just below the topsoil, but at a depth of 40 cm below the modern surface.

In aggregate, our Phase II investigation of the westernmost landform where prior survey work had resulted in the identification of five sites, when sampled by means of machine stripping and some limited test excavation, has confirmed the presence of preserved archaeological context in the form of subsurface pit features on three of these sites. Additionally, many cultural items, including flintknapping debris, stone tools, some of which are typologically distinctive, and an occasional potsherd, frequently associated with pieces of fire-cracked rock, have been collected from blade cuts both in close proximity to and at some distance from the 25 features recorded to date.

While the archaeological data presented in the following section of this report constitutes a small assemblage, it is a potentially informative one. By and large it is a data set collected under extraordinary conditions; yet difficult field conditions did not adversely affect the controls over the recovery (and analysis) of these data. In the treatment of features, the only evidence for the preservation of context which these sites have so far offered, standard recording and recovery procedures were carefully followed. It was mapped with respect to our project datum (labeled ON, OE in Figure 3) and assigned grid coordinates that represent the approximate center point of the feature as determined from the plan view drawing. Following completion of plan view drawings and photographs, each excavated feature was cross-sectioned for removal of one/half of its contents and the fill passed through 6.3 mm hardware mesh. The exposed profile was then drawn and photographed and the remainder removed by soil zone in order that we might make some meaningful statements about the depositional history of fills and feature function. Standard 10 liter samples of each soil zone were at this time collected for later processing by the flotation procedure to ensure recovery of small-scale remains that might shed light on the subsistence ecology of the users of these prehistoric facilities.

But the bottom line with respect to our program of research can perhaps best be summarized in this manner. While Zuckerman has estimated that the landform on which our work was conducted occupies an area of 24.7 acres (11.1 ha), the data collected by us have been derived from a total area of only 2200 m^2 (0.5 acre; 0.2 ha) that has been either machine stripped or hand excavated. Thus, our sample of the entire area of this landform represents under 2.0%. Perhaps more to the point, I would suspect that had we succeeded in precisely delineating the spatial extent of any or all sites here recorded, that portion of each examined in the manner described previously would probably amount to even less!

FEATURES RECORDED FOR SITES 20BE405, 410, AND 411

William M. Cremin

As noted in the preceding section, a total of 25 subsurface features representing facilities created and used by the prehistoric residents of three sites constitute the only evidence for preserved archaeological context (i.e. site integrity) derived from our Phase II investigations. They are fairly evenly distributed between the sites, with six recorded for 20BE405, nine for 20BE410, and nine for 20BE411. Feature 45 is somewhat removed from the six pits recorded for the knoll we have designated 20BE405, and has not been excavated, but rather only recorded; yet for lack of a better alternative we are including this as a seventh feature assigned to this site (see Figure 3 for the distribution of pit features).

These facilities vary little from site to site, as if to suggest that the nature of activity (and presumably season of occupation) conducted on each was remarkably similar. This is not to say that all features should be assigned to the same functional class of facilities. For most assuredly, this is not the case! Feature morphology and the contents of feature fills point to these pits having been used in different ways, notably as hearths and food processing or storage facilities, prior to their having become recepticles for camp trash. In the discussion which follows, I will first present a brief description of those features that cannot be so easily typed. Terms such as hearth or firepit convey as much information about them as we can presently muster. But for 17 of the features, which bear much in common, both in terms of their morphology and contents, with facilities on a number of late prehistoric sites investigated by us elsewhere in southwest Michigan, we will propose a function that has important implications for our long-term research into the adaptive strategies of people who were, at least in part, dependent upon agriculture for their livelihood. These part-time "farmers" also selectively exploited natural food resources, deriving much of their sustenance from plants and animals common to both aquatic and riparian habitats. And a facility frequently used to process one or more of these foods for consumption we have termed the "deep roaster" (Cremin 1980).

FEATURES OTHER THAN DEEP ROASTING PITS:

Feature 1, located in a blade cut 3.0 m N and 60.0 m E of the project datum in the area designated as 20BE410, is a shallow pit with an irregular floor that was encountered at a depth of 20 cm below surface. It extends to a depth of 13 cm below the plane of origin and in its longest dimension is 105 cm. Only 90 cm of this pit's other dimension is exposed in the cut, but based on the plan view only a very small area remained unexposed outside the scraped surface. In the absence of FCR or a fuel zone and oxidized pit walls and floor indicative of _in situ_ burning, a food processing function cannot be proposed for this facility. Rather, it may represent a shallow storage pit.

Feature 25, located in the area of 20BE411 some 53.5 m S and 34.5 m W of datum, was encountered in a blade cut at a depth of 36 cm below ground surface. This basin-shaped pit is 112 cm X 122 cm in plan and 48 cm deep. It lacks the highly organic soil staining noted for most of the features recorded, produced little FCR, and evidenced no _in situ_ burning. Redeposited fill did have some of the usual sorts of camp trash observed in pit fills elsewhere on these sites. Tentatively, we interpret this facility to represent a thoroughly emptied processing or storage pit.

Feature 38, situated 107.2 m S and 85.0 m E of datum in the area defined as 20BE405, in another shallow basin-shaped pit that was exposed in a blade cut. It was recognized at a depth of 23 cm below the surface and reached a maximum depth of 36 cm below the plane of origin. Oblong in plan, this pit measures 71 cm X 115 cm and is notable for the almost total absence of organic material in the fill. In fact, were it not for the greater moisture retaining quality of its unconsolidated fill, this feature may well have been overlooked during the stripping operation. No function is herein proposed for this facility.

Feature 39, occurring in this same area at a point 135.0 m S and 89.5 m E of the project datum, is a conoidal pit consisting entirely of a brownish-black fill mottled with sand and occasional charcoal and pieces of FCR. Encountered in a blade cut at a depth of 30 cm below surface, this feature extends for an additional 50 cm into the ground. In plan view Feature 39 is also oblong and measures 86 cm X 130 cm. Its use prior to becoming a recepticle for camp trash is uncertain, but a food processing and/or storage function seems likely.

Feature 42 (Figure 6), again in the area of 20BE405 at a distance of 112.4 m S and 97.2 m E of datum, is a deep basin consisting of a homogeneous fill that is black in color and includes quantities of charcoal mixed with many large chunks of fire-cracked rock. At the base of this pit nearly 47 cm below the plane of origin in a blade cut 30 cm beneath the modern surface, is an ash lens that conforms to the rounded bottom of the pit. Measuring 100 cm X 108 cm at the orifice and featuring irregular sloping walls, this facility is suggestive of an earth oven in which indirect cooking by means of heated rocks took place. Certainly, in the absence of a distinct fuel zone(s) and heavily oxidized soil, in situ firing such as characterizes the roasting pits can probably be ruled out. The mixing of fuel residues and FCR in the fill suggests an episode of disposal of debris from a surface fire where rocks were heated near this facility; however, we did not observe evidence for such a fire proximal to this feature within the confines of the blade cut.

Feature 45, observed in a blade cut approaching 20BE405 from the north, cannot be included within the limits of this site with any degree of confidence. Rather, it is simply closer to the knoll where this site occurs than to the other sites presently defined on this landform. Located 68.8 m S and 87.0 m E of datum, this pit measures 126 cm by 156 cm in plan at a depth of 29 cm below surface. This stain shows dense concentrations of charcoal with flecks of burnt sandstone scattered throughout the stain as delineated by shovel scraping. Feature 45 was not profiled due to constraints of time, but probing with the soil tester revealed that the very homogeneous fill terminated a mere 9 cm below the plane of origin. It can be suggested that this very shallow basin most probably function as a hearth.

Feature 48 was encountered in Test Square 1 on 20BE410 at a depth below surface of 40 cm and is located 17.1 m N and 69.3 m E of the project datum. When initially defined, this soil stain featured moderately heavy concentrations of charcoal and FCR in a dark soil matrix measuring 118 cm X 148 cm. Cross-sectioning revealed a basin extending below the plane of origin for 39 cm and consisting of a single fill unit varying little in color and texture from top to bottom. While this is clearly a firepit, its precise function has not been ascertained.

Feature 49 was found in Test Square 7 at a depth of 22 cm below the sandy knoll herein designated 20BE410 and is located 32.8 m N and 80.2 m E of datum. This pit measures only 75 cm by 78 cm in plan and extends to a depth below its point of origin of only 16 cm. Charcoal and ash were noted in the redeposited fill, and the gravelly soil underlying it appears to have been oxidized by exposure to heat. Given its small size and evidence for _in situ_ firing, a hearth function is proposed for this shallow pit.

DEEP ROASTING FACILITIES:

Seventeen (68.0%) of the features identified on three sites are herein assigned to a single functional class; they are "deep roasters" not unlike those reported in recent years by us for a series of late prehistoric sites in this region. Rather than discuss each feature, in the paragraphs which follow I will present the salient characteristics of this class of features, supplemented by tabular and graphic data (see Figures 4-6), and note those observations pertaining to feature contents that suggest to us how these pits were used.

These pits are circular to oblong or oval in plan, and while some profiles have been obscured by slumping walls (or feature re-use), all are basin-shaped to conoidal in cross-section and quite deep relative to ofifice diameter. Pit widths for those for which plan dimensions are fully recorded range from 53 cm to 180 cm (with a mean of 111.5 ± 29.9 cm), and lengths vary between 78-200 cm ($\overline{X} = 135.8 \pm 32.6$ cm). Width/length ratios range from 0.68-0.99 ($\overline{X} = 0.86 \pm 0.10$). Depths below the plane of origin vary between 54-140 cm ($\overline{X} = 88.4 \pm 19.7$ cm), and from the present ground surface they range from 89-180 cm ($\overline{X} = 120.0 \pm 24.4$ cm) in depth. Complete locational and metrical observations are provided in Table 1.

The observed variability in pit size and, to a much lesser extent, cross-sectional form contrasts markedly with the great similarity of contents. The typical profile shows an uppermost soil zone composed of redeposited fill containing varying amounts of camp refuse (Figure 5, Feature 21). Beneath this zone of re-deposited fill there commonly occur concentrations of oxidized sand, either orange, red, or reddish-black in color. Occasionally, this zone takes the form of a continuous lens, but in most pits oxidized or burnt sand is confined to areas along pit walls (Figure 4, Feature 4; Figure 5, Feature 21). Little or no cultural debris occurs in the oxidized zone(s). The basal soil unit is also culturally sterile and consists of a jet-black, often greasy,

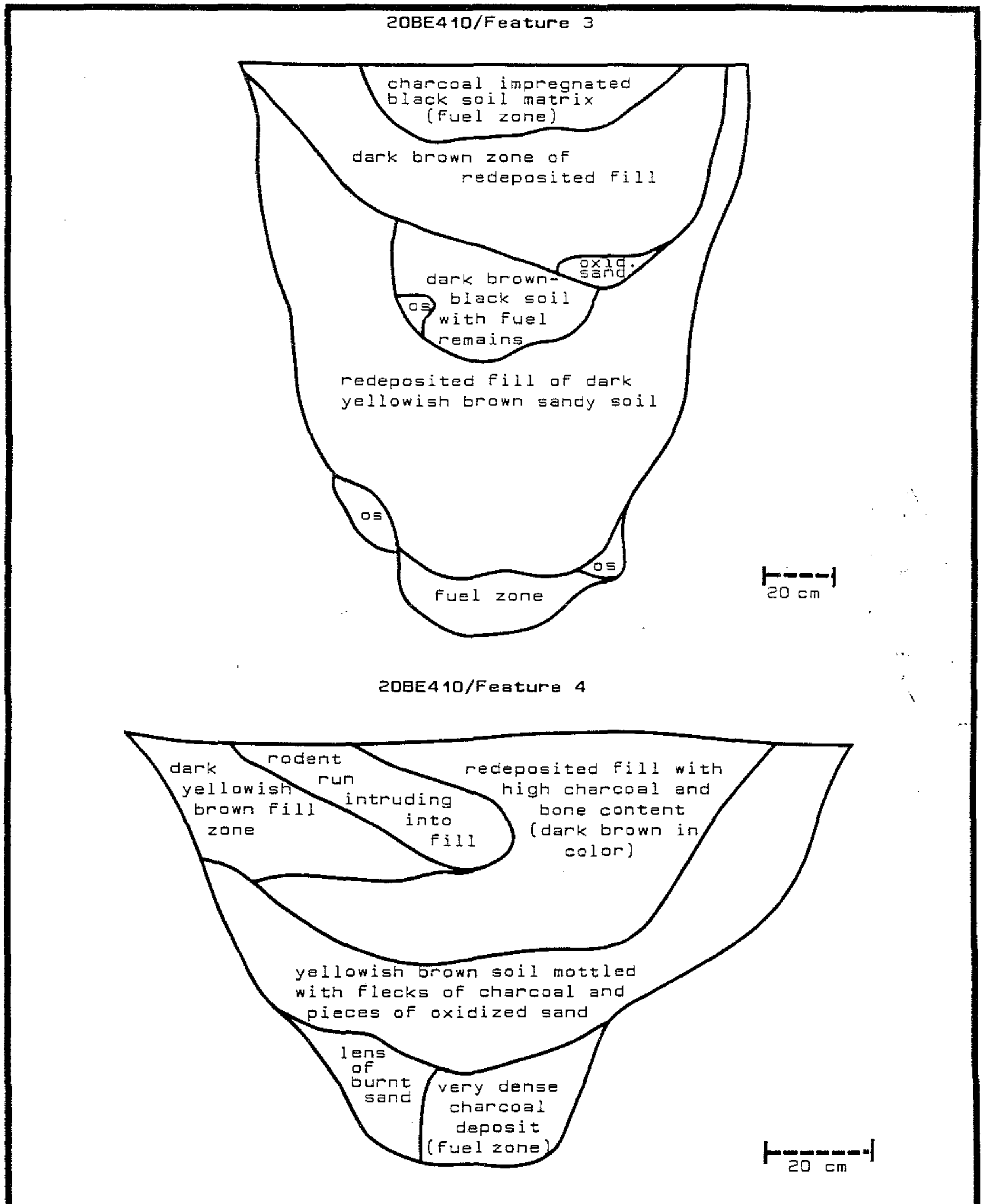
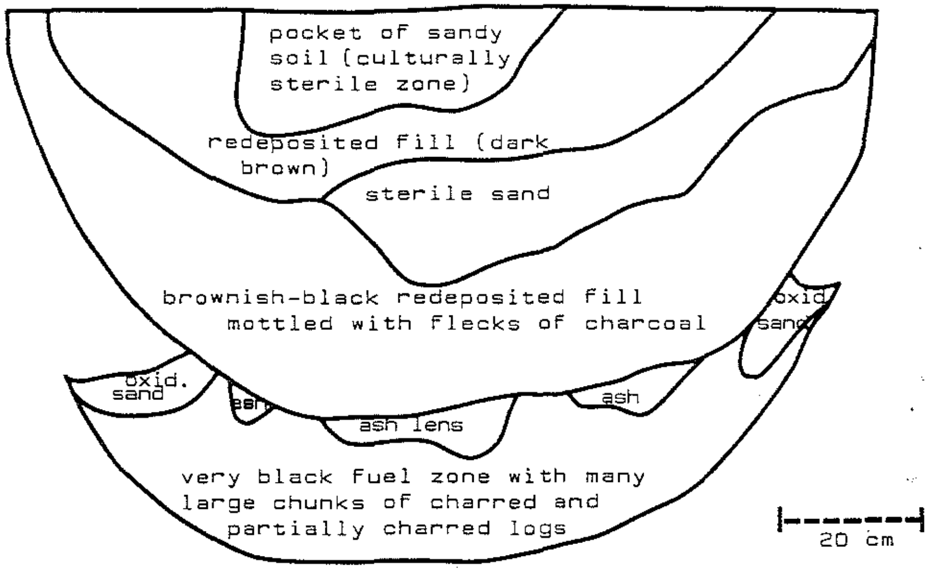


Fig. 4: Representative Feature Profiles.

208E411/Feature 21



208E411/Features 36A and 36B

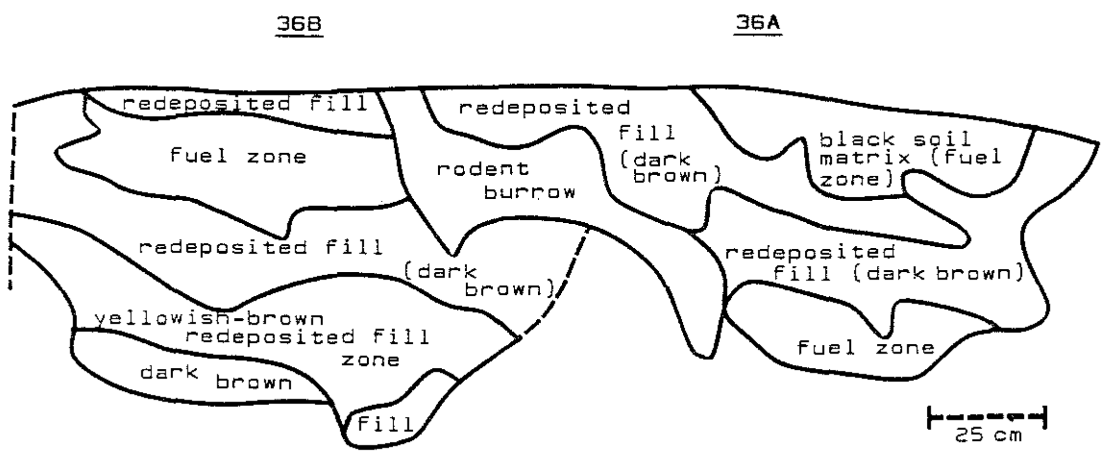


Fig. 5: Representative Feature Profiles.

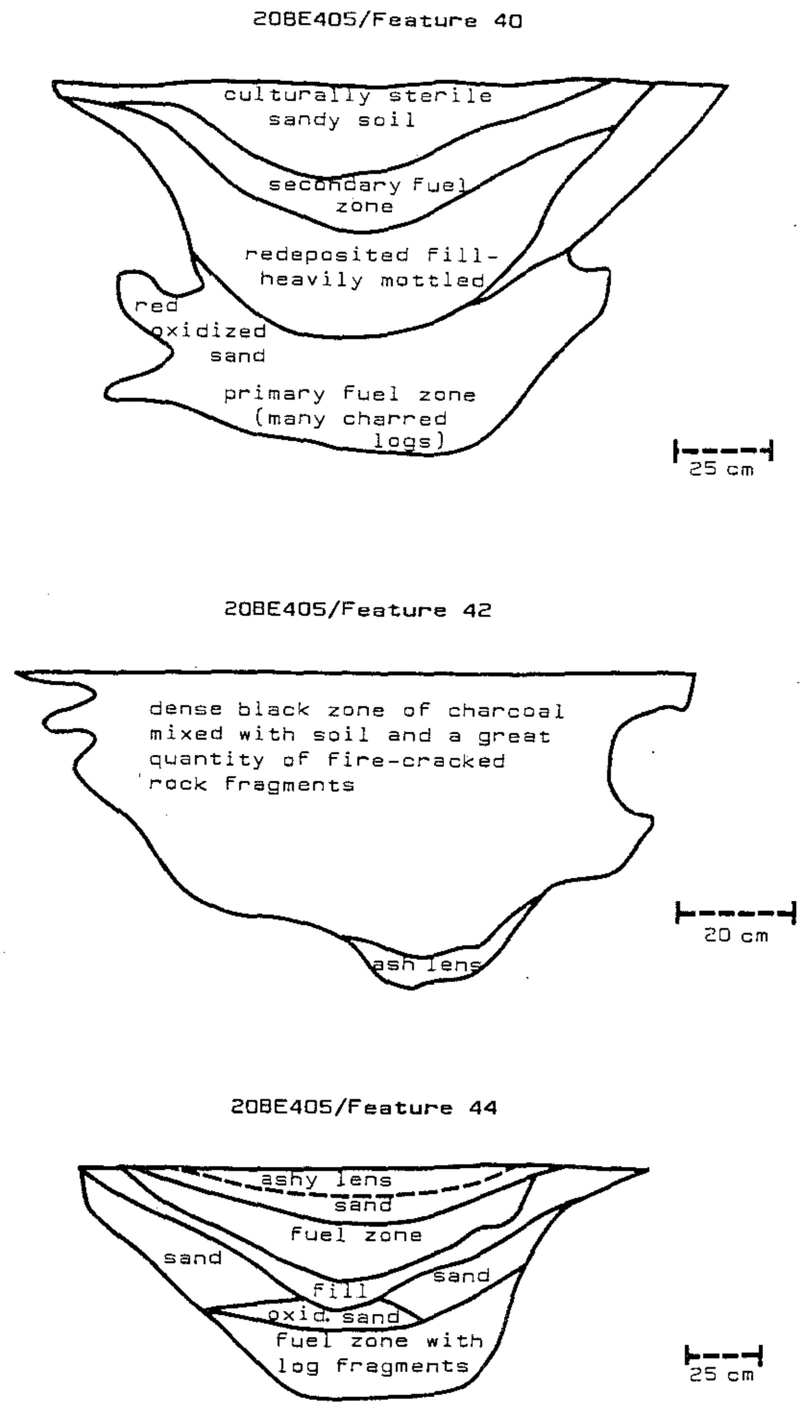


Fig. 6: Representative Feature Profiles.

Table 1: Locational and Metrical Data for 17 Deep Roasting Pits on 20BE405, 410 and 411.

Feature	Site/Grid Coordinates	Depth below Surface (cm)	Recognized Depth (cm)	Width (cm)	Length (cm)	W/L Ratio	Episodes of Use
2	410/8.0 N, 59.5 E (blade cut)	113	85	141	200	0.71	two
3	410/12.8 N, 59.5 E (blade cut)	180	140	124	128	0.97	three
4	410/26.0 N, 62.5 E (blade cut)	?	86	145	150	0.97	one
6	410/15.3 N, 71.6 E (blade cut)	118	83	98	129	0.76	two
7	410/23.7 N, 74.0 E (blade cut)	98	78	102	130	0.78	two
11	411/17.5 S, 35.0 E (blade cut)	123	93	142	145	0.98	two
12	411/21.5 S, 31.0 E (blade cut)	146	110	53	78	0.68	one
13	411/27.0 S, 20.0 E (blade cut)	152	100	117	147	0.80	two
15	411/17.5 S, 19.0 E (blade cut)	146	116	76+	138	--	one

Table 1, cont.

Feature	Site/Grid Coordinates	Depth below Surface (cm)	Recognized Depth (cm)	Width (cm)	Length (cm)	W/L Ratio	Episodes of Use
21	411/27.5 S, 9.0 W (blade cut)	121	80	108+	123	--	one
22	411/32.3 S, 21.3 W (blade cut)	113	78	145	150	0.97	one
36A	411/67.7 S, 6.5 W (blade cut)	89	54	104	114	0.91	two
36B	411/66.5 S, 8.3 W (blade cut)	104	69	111	137	0.81	two
40	405/133.0 S, 88.3 E (blade cut)	100	80	152	180	0.84	two
41	405/126.3 S, 86.7 E (blade cut)	110	90	80	96	0.83	two
44	405/123.5 S, 117.0 E (blade cut)	98	76	150	180	0.83	two (unusual in that the uppermost fuel zone contained 5.0 kg of FCR)
47	410/17.1 N, 82.6 E (Test Square 2)	109	85	83	84	0.99	one

carbonaceous sand thoroughly mixed with flecks of charcoal and incompletely combusted logs (Figure 5, Feature 21; Figure 6, Features 40 and 44).

This zone of fuel residues usually lines the bottom of the facility, but on occasion it may be underlain by a thin deposit of oxidized sand or, as is the case with Feature 42 (Figure 6), a concentration of ashy soil conforming to the rounded bottom of the pit. Concentrations of ash have also been observed taking the form of a discontinuous lens capping the basal fuel zone in Feature 21 (Figure 5).

It is further noteworthy that fire-cracked rock is exceeding rare or absent from these features. The only exception to this observation is Feature 44 (Figure 6), where a considerable number of pieces of FCR were collected from the fuel zone near the top of this pit and presumably represent a reuse of the facility. The presence of FCR may signify that this feature during its second episode of use did not function in the manner for which the pit was originally intended. Perhaps in its later use it had served as a rock hearth placed in the shallow depression formed when the unconsolidated fill had become compressed and settled deeper within the original excavation.

Feature 44 is not the only recorded instance of reuse of such facilities when, following initial use and refilling of the pit, a shallow depression formed after the soil had compressed and settled. Eleven of 17 roasting pits on the three sites display multiple fuel zones, with Feature 3 (Figure 4) evidencing three episodes of use of this facility (see Table 1). Some site revisitation and reuse of these food processing loci over time is further is also indicated by the partial intersection of Features 36A and 36B (Figure 5); this is an observation that can only be accounted for had one pit been excavated at some time prior to the other!

RADIOCARBON DATING THE FEATURES:

Because diagnostic lithic and ceramic artifacts were not abundant on these sites and were rarely observed in feature context, dating the features by radiocarbon became imperative. This was especially important for those features classified as "deep roasters" on the basis of their morphology and contents; for such pits were well known to us from a series of Upper Mississippian sites in northwest Indiana and southwest Michigan assigned to the Huber and Berrien phases, respectively, and, in the case of the latter, dating to A.D. 1400-1600 (Cremin 1980, 1983, and 1989; Faulkner 1972). And, furthermore, while some Huber Phase sites in Greater Chicago-land had produced Early Historic material in association with objects of Native American manufacture, no site assigned to the Berien Phase has yet been shown to cross the threshold into history.

Thus, a major question emerging from our research was "Do the sites in question, even in the absence of convincing artifactual evidence, possibly date to the Berrien Phase? And to answer this question we selected wood charcoal samples from one roasting pit on each of three sites for submission to Beta Analytic.

Wood charcoal samples of approximately 50 g in weight were collected from the basal fuel zones of Feature 4 on 20BE410 and Feature 21 on 20BE411 and from the secondary fuel zone that we interpreted to represent an episode of reuse of Feature 40 on 20BE405. The radiocarbon dates provided by the laboratory were 350 ± 60 years: A.D. 1600 (Beta-37615), 210 ± 50 years: A.D. 1740

(Beta-37616), and 310$\pm$70 years: A.D. 1640 (Beta-37617), respectively. When these dates were subsequently corrected through use of the program developed by the University of Washington (Stuiver and Reimer 1986), the following calibrated ages were obtained:

Feature 4- multiple intercept calibrated ages of A.D. 1494, 1502, 1506, and 1605;

Feature 21-calibrated age of A.D. 1662; and

Feature 40-multiple intercept calibrated ages of A.D. 1529, 1556, and 1634.

In other words, the three Berrien Phase-like roasting facilities from our three sites ranged in age from the late 15th through the mid 17th centuries. It now remained for us to firm up the assignment of these features (and the sites on which they occur) to the Berrien Phase on other grounds before we could confidently extend this late prehistoric cultural manifestation into Early Historic times and perhaps even posit an ethnic identity for the Berrien Phase people.

CERAMICS FROM SITES IN THE PROJECT AREA

Gregory R. Walz

Unfortunately, the small ceramic assemblage collected during our Phase II research program sheds little light on the question posed above. During the course of machine stripping and feature excavation, a total of only 24 potsherds were recovered; seven were retrieved from features and the remainder were collected from blade cuts in various areas on the landform. For the most part these are small body sherds, with little in the way of surface treatment being visible. All are grit-tempered, and the majority exhibit an orange colored paste. Only two specimens do not resemble the majority in paste color. One of these, recovered from Feature 21, has a corkmarked exterior surface and is unique in that it bears the impression of a thumb or finger over the cordmarking. The paste is also much darker in color than the other sherds, being almost black. In addition, there is a small sherd from Feature 22 that appears to be of the same type, and it is here associated with the only rimsherd that we recovered. This small rim is orange in color and appears to bear two small notches or partial punctates as the only decoration. The profile shows this specimen to be very slightly bevelled, with the aforementioned decoration confined to the bevelled surface.

While these ceramic specimens do not, in and of themselves, lend much in the way of interpretative potential to our analysis of the data from these sites, they in no way contradict the late Berrien Phase and/or Early Historic temporal placement of the features from which the radiocarbon dates were obtained.

PRELIMINARY ANALYSIS OF THE PROJECT LITHIC ASSEMBLAGE

Daniel B. Goatley

The lithic assemblage from the project numbers 841 chipped stone pieces and four ground stone tools (hammerstones) weighing 2.25 kg and was retrieved from all 25 features, eight of 10 test squares, and blade cuts and Phase I shovel tests located in the areas of four of fives sites defined on this landform. While a number of recovery methods were employed, most specimens were collected from 6.3 mm hardware mesh during sifting of feature fill. Most of the very small debitage was found in feature floats.

The analysis of lithic material from sites in the study area involved a three-phase approach. First, all lithic items in the assemblage were compared with type specimens of raw material from known sources throughout the Midwest in order that we might better understand patterns of long distance communication and transportation resulting in the movement of this material from source areas to the Lower Galien River Valley. The second involves placement of the lithic debitage in appropriate stages of the reduction process in order to gain some insight into the manner by which the raw material reached the sites, the size and quantity in which it arrived, and the kinds of tools which were fabricated from this material (Garland and Clark 1981:22-23). The final aspect of this study focused on the artifacts, assuming that certain styles or forms, especially of the projectile points, might be assigned to specific time frames; thus, diagnostic implements from the sites in question have the potential to strengthen the temporal placement suggested by the series of three radiocarbon dates obtained from selected features on 20BE405, 20BE410, and 20BE411.

RAW MATERIALS:

Examination of the chipped stone from the sites investigated during the Phase II study resulted in the identification of 22 specific types of chert and quartz in this assemblage. Of 841 pieces of lithic material, 487 (56.8%) have been identified to raw material type (Table 2). These, in turn, can be broken down by source into locally derived material found in till, outwash, and streambed deposits throughout this region and nonlocal or exotic cherts transported here from sources located elsewhere in the Midwest. Sources for chert located outside of southwest

Table 2: Lithic Material from the Project Area by Source and Reduction Stage.

	Reduction Stage				Waste						
	Dec	Pri	Sec	Ter	Frg	Blk	Other	Total	Weight	% of Count	% of Weight
-Attica				1				1	0.10	0.1	0.1
-Bayport	2	2	17	24	3	1		49	27.50	5.8	2.5
-Burlington	1		1	20	14		1	37	17.35	4.4	1.6
-Heat Treated Burlington				1			2	3	5.00	0.4	0.5
-Cobden				4				4	0.65	0.5	0.1
-Cordell	2		2	1				5	9.20	0.6	0.8
-Flint Ridge	2		7	3	1			13	11.65	1.5	1.1
-Kettle Point			1					1	1.10	0.1	0.1
-Lambrix	5	7	13	10	4	1	2	42	40.50	5.0	3.7
-Laurel	6	11	29	12	10		1	69	77.95	8.2	7.1
-Melrose	3	3	12	7	4			29	23.00	3.4	2.1
-Moline			1					1	1.10	0.1	0.1
-Norwood			1	3				4	0.65	0.5	0.1
-Onondaga		1	3	1	2			7	4.45	0.8	0.4
-Pipe Creek				1	1			2	1.55	0.2	0.1
-Upper Mercer	1	2	3	2	8			16	8.00	1.9	0.7
-Wyandotte	1	1	7	10	1		2	22	23.90	2.9	2.9
-Zaleske			1	1	1			3	0.80	0.4	0.1
Total of all exotic chert	23	27	98	101	49	2	8	308	254.35	36.6	23.2
-Deerlick Creek	7	3	10	11	3		1	35	59.91	4.2	5.5
-Olive			3		1			4	7.75	0.5	0.7
-Purple	1	1	2	2	1	1		8	32.95	0.9	3.0
-Quartz			1					1	0.50	0.1	0.1
-Yellow-White	12	18	34	29	24	4	1	122	228.50	14.5	20.8
Total of all local chert	20	22	50	45	26	5	2	170	329.61	20.2	30.1
-Unidentified	59	26	79	140	44	6	9	363	512.32	43.2	46.7
-Identified	43	49	148	146	75	7	10	478	583.96	56.8	53.3
TOTAL	102	75	227	286	119	13	19	841	1096.28	100.0	100.0
% OF TOTAL	12.1	8.9	27.0	34.0	14.5	1.5	2.3	100.0	100.0		

Michigan and identified in this assemblage are shown in Figure 7.

Locally derived raw material is represented by 170 pieces, or 20.2% of the total assemblage. A small stream flowing south of South Haven, Michigan and called Deerlick Creek is the only precisely identified source for a good quality chert that is named after this stream. The three other cherts and quartz obtained locally by knappers could have been collected from till and outwash deposits and found in streambeds throughout the region.

Yellow-white chert represents both the most common local material and the most abundant of all lithic debris comprising the assemblage. Numbering 122 specimens, this chert accounts for 71.8% and 14.5% of the lithic pieces, respectively. It has been observed to occur in the general area of the site and seems to have a distribution coextensive with the coastal zone along the western side of the state. In looking at Yellow-white chert debitage, one was be especially careful in distinguishing natural fractures from those produced by the knapper.

Exotic cherts in the assemblage from these sites number 17, and they account for 36.6% of all lithic specimens. Sources occur as far away as New York on the east, southeastern Ohio, southern Indiana, and southern Illinois to the south, west-central Illinois on the west, and the Upper Peninsula of Michigan to the north.

Laurel chert from east-central Indiana is the single most common nonlocal raw material, numbering 69 specimens (8.2%), followed by Bayport chert from the Saginaw Bay area (49 pieces; 5.8%), Lambrix chert from Oceania County (42 items; 5.0%), and

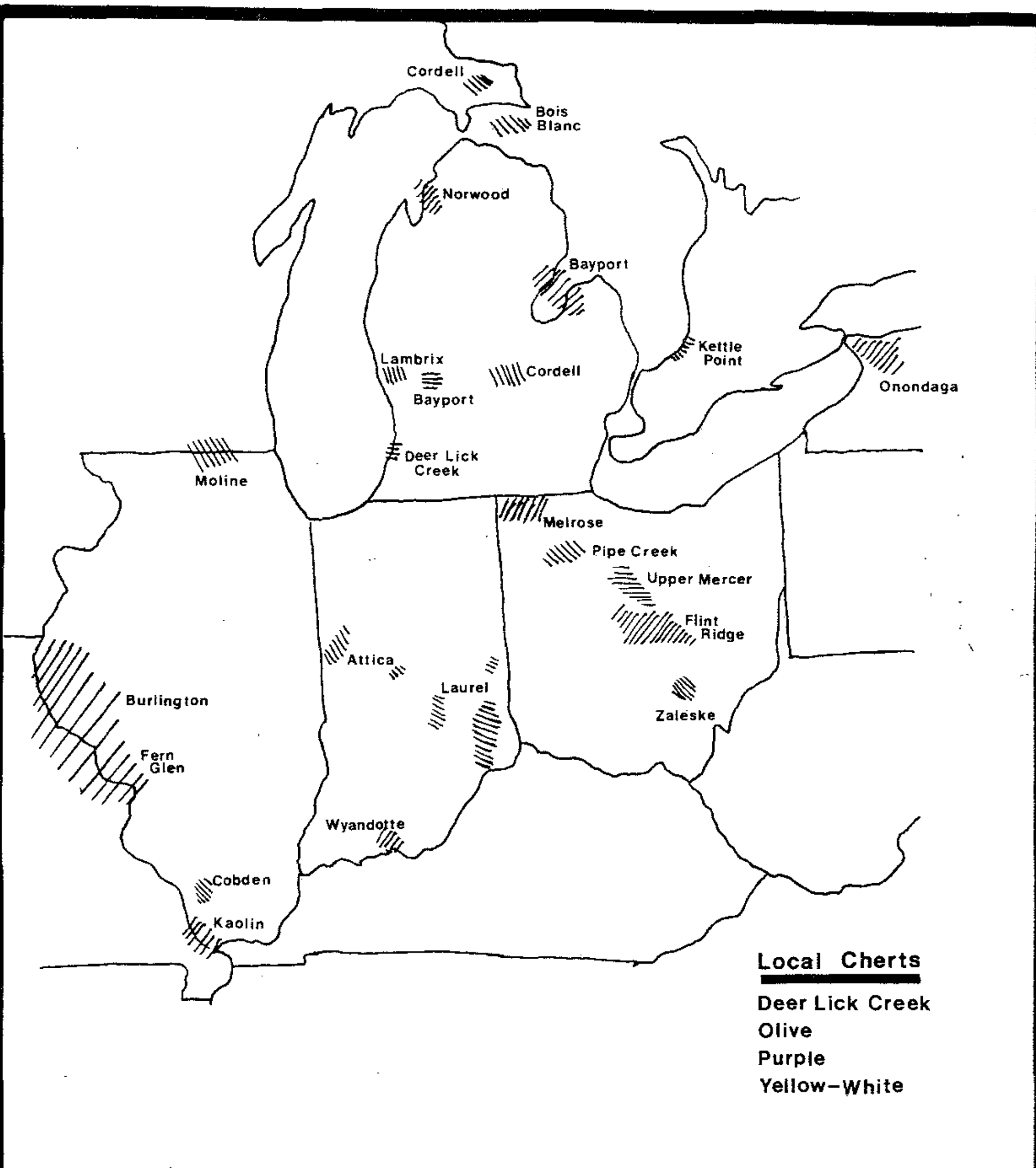


Fig. No. 7: Chert Source Areas