



1986

17-Archaeological Investigations at the New Buffalo Weigh Stations, Berrien County, Michigan

William M. Cremin

Western Michigan University

Follow this and additional works at: http://scholarworks.wmich.edu/anthropology_tech_reports



Part of the [Archaeological Anthropology Commons](#)

WMU ScholarWorks Citation

Cremin, William M., "17-Archaeological Investigations at the New Buffalo Weigh Stations, Berrien County, Michigan" (1986).
Archaeological Technical Reports. Paper 15.

http://scholarworks.wmich.edu/anthropology_tech_reports/15

This Report is brought to you for free and open access by the Anthropology at ScholarWorks at WMU. It has been accepted for inclusion in Archaeological Technical Reports by an authorized administrator of ScholarWorks at WMU. For more information, please contact maira.bundza@wmich.edu.



DEPARTMENT OF ANTHROPOLOGY
WESTERN MICHIGAN UNIVERSITY

TECHNICAL REPORT NO. 17

1986

ARCHAEOLOGICAL INVESTIGATIONS AT THE NEW
BUFFALO WEIGH STATIONS, BERRIEN COUNTY, MICHIGAN

A Report of Phase I Site Location Survey and Preliminary
Phase II Test Excavation for the Michigan Department of
Transportation and the Michigan Department of State under
Contract # 85-1115 by Western Michigan University, with
Dr. William M. Cremin as the Project Principal Investigator.

William M. Cremin

ABSTRACT

With the execution of Work Authorizations under Contract # 85-1115 between the Michigan Department of Transportation, the Michigan Department of State, and Western Michigan University, authorizing Phase I and preliminary Phase II archaeological investigations at the New Buffalo Weigh Stations project along I-94 in Berrien County, Michigan, a team of researchers from the Department of Anthropology performed a systematic and intensive site location survey of the project area on 17 Nov 85 and preliminary test excavation of the New Buffalo Weigh Station site (20BE380) on 22-23 Mar 86.

Following our initial visit to the project in November, surveyors were able to clear all but that portion of the project along westbound I-94 where prehistoric lithic debris and fire-cracked rock were noted in a small field occupying about 4,000 m² of uplands on the south side of Squaw Creek where this stream passes through the study area.

Preliminary Phase II investigation of 20BE380 in March commenced with the recollection of the surface of the field followed by excavation of 20 test squares located both in the field and in the 15-20 m wide strip of fallow, grass-covered land between the field and the creek on the north. The recovery of four diagnostic projectile points, together with lithic debitage and FCR, both from the surface of the field and test units, confirm the proposed Archaic (and possibly Woodland) temporal placement of this site. However, our excavations revealed that the cultural material recovered was confined entirely to the disturbed zone resulting from many years of cultivation of the entire site area. Nowhere did we observe midden deposits or cultural features affording the context necessary to identify the nature of the prehistoric occupation(s) of 20BE380, thus seriously compromising the potential significance of the site. In the absence of undisturbed cultural context by which we might assess the potential significance of the site, together with those observations that the research team has recorded, it is not felt that 20BE380 is eligible for inclusion in the National Register of Historic Places.

In the final analysis, 20BE380 appears to represent what might be anticipated of sites occupying the alternating sand ridge/wetland setting in the Galien River Basin given Mangold's (1981) recent assessment of the prehistoric occupation of this drainage. It is in all probability a temporary and seasonal encampment, not unlike the nearby Mulzon site (20BE239) described by Mangold in his recent report.

In light of Mangold's emphasis on the location of the Galien River Basin intermediate between the drainage of the Kankakee River to the south and the valley of the St. Joseph River on the north and its potential role in prehistoric and early historic aboriginal movement and interaction about the head of Lake Michigan, it may be regarded as significant that more than 20% of the lithic assemblage from 20BE380 consists of nonlocal or exotic chert. This observation strongly suggests that human groups occupying the Galien Basin (and the New Buffalo Weigh Station site) had direct access to or were in contact with groups residing in the neighborhood of high quality chert sources in Illinois, Ohio, southeastern Michigan, and nearby Indiana.

ACKNOWLEDGEMENTS

The author wishes to express his appreciation to the members of the Phase I and Phase II research teams and, especially, Mr. David De Fant, who supervised both the survey and test excavation programs and also assumed responsibility for the curation and analysis of the cultural assemblage from the New Buffalo Weigh Station site (20BE380).

W.M.C.

TABLE OF CONTENTS

	Page
Introduction	1
Project Personnel	1
Overview of the General Area of the MDOT Project	2
Previous Research in the Vicinity of the MDOT Project and Rationale for the Proposed Research Program	8
Survey Methodology	9
Results and Recommendations Derived from the Phase I Survey	13
Preliminary Phase II Test Excavation of 20BE380	14
Results of the Preliminary Phase II Test Excavation of 20BE380	22
Significance of Observations	25
Recommendations	27
References Cited	27

TABLES

	Page
Table 1: Lithic Specimens Recovered from the Field During the Phase I survey	13
Table 2: Cultural Material Comprising the Phase II Surface Collection	17
Table 3: Prehistoric Lithic Material and Historic Objects from the Test Squares	23

MAPS

	Page
Map 1: New Buffalo Weigh Stations, Berrien County, Michigan	5
Map 2: New Buffalo Weigh Stations Project, North Half	11
Map 3: New Buffalo Weigh Stations Project, South Half	12
Map 4: 20BE380, New Buffalo Township, Berrien County, Michigan	16

FIGURES

Page

Figure 1: Four Bifaces Recovered During the
Phase II Study 18

INTRODUCTION:

With the execution of Work Authorizations under Contract # 85-1115 (dated 15 Nov 85 and amended 2 Jan 86) between the Michigan Department of Transportation, the Michigan Department of State, and Western Michigan University, authorizing archaeological investigation of the proposed weigh stations on I-94 near New Buffalo, Michigan, archaeologists from the Department of Anthropology undertook a literature, documents, and site file search and surveyed the project area on 17 Nov 85 in order to determine whether construction of weigh station facilities would have an adverse impact on cultural resources. This Phase I study of the MDOT project was, in turn, followed by preliminary test excavation of site 20BE380 on 22-23 Mar 86 in an effort to ascertain whether this site might be eligible for listing on the National Register of Historic Places and, therefore, require additional and more intensive study. There follows a report of the program of research carried out by WMU personnel, together with recommendations based upon our findings.

It should be understood that the opinions, findings, and conclusions expressed in this publication are those of the author and not necessarily those of the Michigan Department of State, or Bureaus thereof, or the Michigan Department of Transportation or the Michigan State Transportation Commission and the United States Department of Transportation or agencies thereof.

PROJECT PERSONNEL:

The following individuals comprise the research teams that undertook the two-phase examination of the project area and site 20BE380:

Project Principal Investigator - Dr. William M. Cremin, Associate Professor of Anthropology, WMU

Phase I Survey Team

Field Supervisor - Mr. David De Fant, M.A., Department of Anthropology, WMU

Field Assistant - Mr. Dale Quattrin, Graduate Student in Anthropology, WMU

Phase II Test Excavation Team

Field Supervisor - Mr. David De Fant, M.A., Department of Anthropology, WMU

Field Assistants - Mr. Dale Quattrin, Graduate Student in Anthropology, WMU

- Ms. Mary Jeakle, M.A. Candidate in Anthropology, WMU

- Mr. Conrad Kaufman, Senior major in Anthropology, WMU

- Ms. Laura Berger, Senior major in Anthropology, WMU

- Ms. Nora Bailo, Senior major in Anthropology, WMU

OVERVIEW OF THE GENERAL AREA OF THE MDOT PROJECT:

The Township of New Buffalo occupies the extreme southwestern corner of Berrien County and is the most westerly township in lower Michigan. It is bounded on the north and east by Chickaming and Three Oaks townships, respectively, and on the south by the Michigan-Indiana state line. Lake Michigan forms the northwestern boundary of the township. Here, the lake shoreline is bordered by a narrow plain supporting a discontinuous belt of sand dunes. This plain rises only 3-5 m above the level of the lake (173.6 m ASL) for the most part, but some dunes reach considerably higher elevations.

Behind this narrow plain is the valley of the Galien River, the principal stream draining the southwestern corner of the state. Formerly,

the lower course of the Galien River was occupied by "Lake Pottawattamie". The largely shallow body of water filled the entire 800 m wide valley floor for a distance of 3.2 km above the river's mouth at the Village of New Buffalo, and at the time of American settlement of the area it is said to have supported dense stands of wild rice that attracted great numbers of waterfowl to the Lower Galien River Valley (Ellis 1880: 270). Today, the lake is gone; it has been replaced by an extensive marsh through which the sluggish and strongly meandering Galien River passes as it flows to Lake Michigan.

The eastern margin of the river valley rises quite abruptly, achieving an elevation of 195 m ASL, or 22 m above the level of the lake, at bluff's edge. The landform that commences here is part of the Lake Border morainal system. While the moraine lies well back from the lake in the vicinity of New Buffalo, at some points to the north it reaches the lake and terminates as lake shore bluffs.

The highest elevation on the moraine in New Buffalo Township is 210.3 m ASL recorded for a location about one km south of the MDOT project. Within the research area of this study, elevations range from 188.8 m ASL along the creek passing through the project to 194.8 m ASL on adjacent uplands.

The aforementioned stream, Squaw Creek, is a tributary of the Galien River and commences near the MDOT project as two intermittent streams. The western branch rises in the NE 1/4 of Section 15, enters the SW 1/4 of Section 11, and proceeds in a generally easterly direction across the project area. It is joined about 200 m east of the project by the second branch, which has its origin near the center of Section 14. Just below the junction of the two branches, Squaw Creek

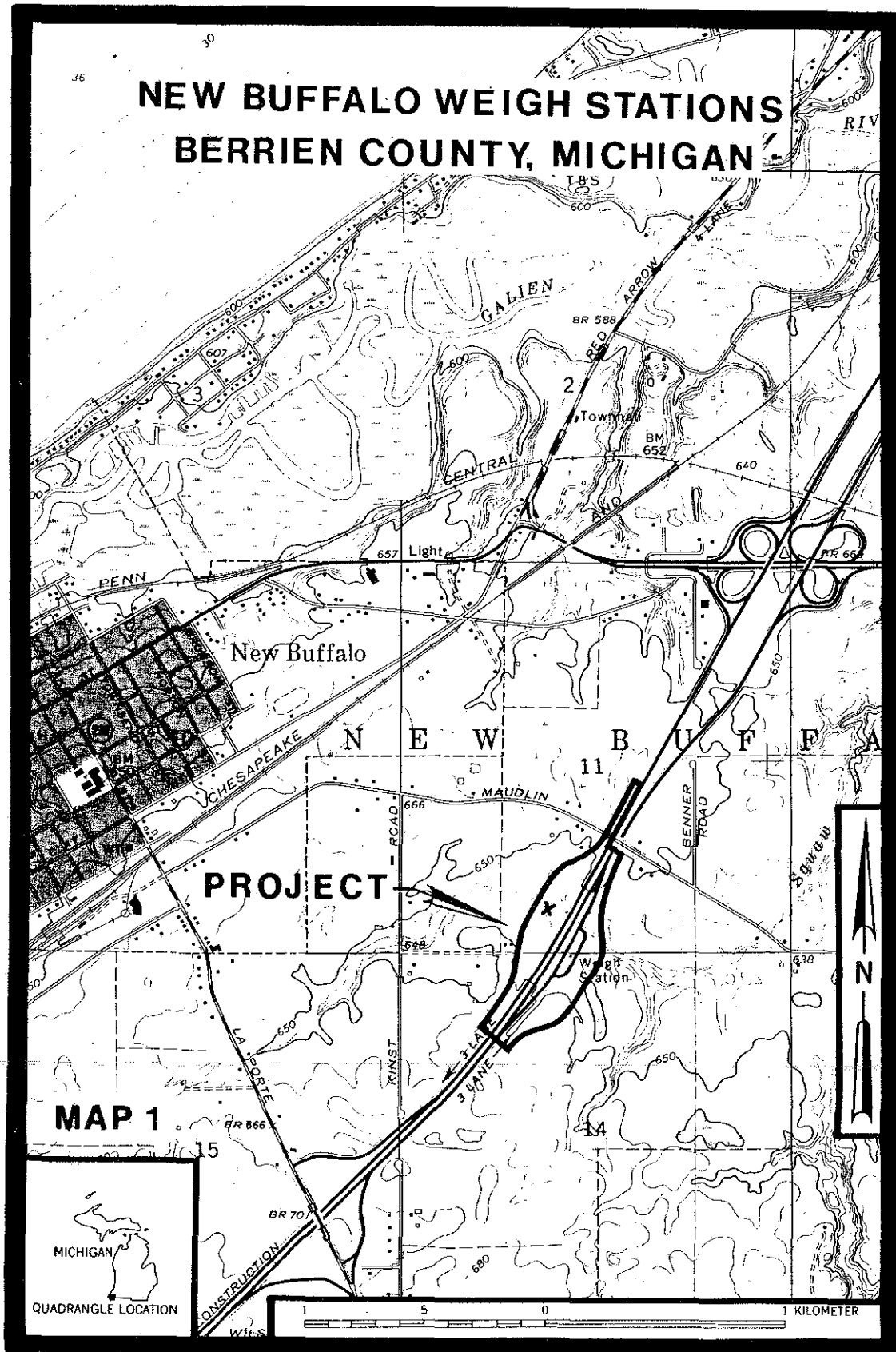
turns sharply to the north and proceeds toward its confluence with the South Branch Galien River about 2.7 km NE of the MDOT project in the SE 1/4 of Section 1.

Southwestern lower Michigan lies within the Carolinian Biotic Province and is characterized by mostly broad-leaved deciduous forest in which the beech-sugar maple community formerly dominated (Brewer 1979). The floral (and faunal) richness of this area is in large measure due to the ameliorating influence of Lake Michigan. Westerly winds coming off the lake result in cooler spring and early summer temperatures, and water-stored energy generated by the heat of the summer sun results in somewhat milder temperatures in fall and winter. Local weather station records indicate an average frost-free period of 187 days, with the first killing frost of autumn occurring about 29 Oct, and the average date for the last hard freeze in spring is 25 Apr. Mean annual precipitation is 90 cm and is well distributed throughout the year, with approximately 56% falling between April and September. An average annual accumulation of 167 cm of snowfall is suggested in the Benton Harbor weather station records (Larson 1980).

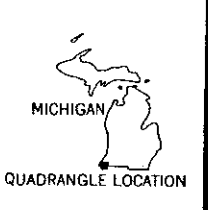
The research area of this study sits atop the Lake Border Moraine at a distance of 2.7 km SE of the Lake Michigan shoreline. It consists of two irregular parcels of land aggregating 16.2 ha (40 acres) on either side of I-94 between Maudlin Road and Kinst Road. It is situated 1.6 km ESE of the Village of New Buffalo in the center of the S 1/2 of Section 11 and the N 1/2, NW 1/4 of Section 14, New Buffalo Township, T8S R21W, Berrien County, Michigan (Map 1).

Brewer (1979) shows this area to have supported beech-sugar maple forest on uplands at the time of Amercian settlement. While this

NEW BUFFALO WEIGH STATIONS BERRIEN COUNTY, MICHIGAN



MAP 1



community was dominated by American beech and sugar maple, basswood and American elm were also prominent species. Smaller numbers of tulip tree, ironwood, black cherry, red oak, shagbark hickory, bitternut hickory, black walnut, butternut, and hackberry also typically occurred throughout. Along the small creek traversing the project, elements of southern swamp forest would have been common. Dominants in this community would have included American beech, red maple, green ash, black ash, and American or slippery elm, with swamp white oak, box elder, and pin oak also being fairly prevalent. The understory in this community included stems of spicebush and various dogwood species, together with immature representatives of the dominant canopy species (Hodler et al. 1981).

During our initial visit to the research area on 17 Nov 85, we observed little in the way of visual evidence supporting Brewer's reconstruction of the presettlement forest. A major portion of the parcel bordering eastbound I-94 was developed and occupied by an operational weigh station, together with entrance and exit ramps and a vehicle inspection area. Behind this facility and its adjacent grassy aprons, in the expanded MDOT project right-of-way, soils consisting of Udipsamments and Udorthents, resulting from the cutting and filling of land where original ridges had been leveled and lower, wetter, and poorly drained depressions had been filled, supported remnant wetland vegetation and a scrubby growth of oak and maple trees. Areas of higher ground, affording drier sites for more developed stands of trees, were characterized by a closed canopy of mature and sometimes stately oak and maple trees. In an area of fine sandy (Oakville Series) soils near the extreme northern end of this parcel bordering Maudlin Road, surveyors observed a small but well established pine plantation

(For a fuller discussion of soils and their common vegetative cover, see Larson 1980).

The parcel of land flanking westbound I-94 supported more varied vegetative cover. The Morocco loamy sand that dominates on uplands here supported northern red oak and pin oak, with some small red maple and American sycamore being present. Near the highway and berm we observed a dense ground cover of grasses and composites, and along old fence lines stands of sumac and brambles were common. In the back of the parcel there was a small field occupying an estimated 4,000 m² of the expanded ROW. This area of cultivated land was bordered on two sides by an occasional mature tree amongst gnarled stems of scrub oak, maple, elm, and hickory that were intertwined with woody vines hanging from the lower branches of the trees. The fence line that separated this field from the property of the landowner who was farming it was lined with lilac bushes. Finally, a 15-20 m wide strip of predominantly grassy cover that is gradually being invaded by sumac and other pioneer plants of secondary succession separated this field from the valley occupied by Squaw Creek on the north.

For a small stream, Squaw Creek has over the years carved a rather pronounced valley, varying from 30-50 m in width and bordered by bluffs rising to a height of 4-5 m above the floodplain. Although the frequently braided channel measured no more than 3-4 m across, water was observed to be moving quite rapidly through the valley at the time of our initial visit to the MDOT project.

The banks of both active and inactive stream channels evidenced much disturbance, with uprooted trees and fallen branches littering stream shorelines. The creek bottoms are characterized, according to

Larson (1980), by sandy loams of the Cohoctah Series. These nearly level, frequently inundated, and poorly drained soils are suited only to a cover of water tolerant trees such as the red maple, silver maple, eastern cottonwood, white ash, swamp white oak, pin oak, American sycamore, and bitternut hickory (i.e. common species of the southern swamp forest). While surveyors observed some evidence of the culling of marketable stems from the creek bottoms, given the species composition of this community it is doubtful that the harvesting of timber was an especially profitable venture for those persons engaged in this activity.

PREVIOUS RESEARCH IN THE VICINITY OF THE MDOT PROJECT AND RATIONALE FOR THE PROPOSED RESEARCH PROGRAM:

An extensive and thorough review of the literature, documents, and state site files prior to the initiation of fieldwork revealed that no archaeological sites have been recorded for the project area. However, William Mangold, while a graduate student at WMU, did undertake an informal and largely informant-based survey of the Galien River Valley as well as limited test excavations at several sites that do have some bearing on the program of research reported herein.

In a recent article reviewing some of the 95 sites recorded during his study, Mangold (1981: 34-35) noted that the sand ridges so common to this drainage system almost always show some evidence of prehistoric occupation. Especially relevant to the rationale for undertaking this research program on behalf of the MDOT is the Mulzon site (20BE239), situated on a prominent sand ridge flanked by two spring systems and overlooking an extinct stream channel at a distance of less than 400 m to the south of the study area. Surface collection and the excavation of six test squares on the site resulted in the

recovery of data indicating PaleoIndian through Woodland occupation of what Mangold has interpreted to be a temporary (seasonal?) camp-site.

In addition, the map provided on page 32 of Mangold's report locates a site on the north bank of Squaw Creek in or very near to the MDOT project. Unfortunately, Mangold provides no information about this site in the text of his published report.

On the basis of the information available to us for the general area of the MDOT project, especially the observations provided by Mangold, a research proposal focusing on that segment of the Squaw Creek Valley included within the limits of the New Buffalo Weigh Station project was submitted to the sponsoring agency. It was felt that this project would afford archaeologists an opportunity to: (1) ascertain whether the second site mentioned above or as yet unreported sites occurred within the proposed zone of impact; and (2) critically evaluate the alternating sand ridge/wetland setting described by Mangold for the Galien River Basin in terms of its prehistoric site potential--a potential that appeared to us to be quite considerable if, in fact, Mangold's statements pertaining to the basin at large held true for tributary streams like Squaw Creek that collectively comprise the larger Galien River drainage.

SURVEY METHODOLOGY:

On-site evaluation of the project area during the Phase I study was accomplished by David De Fant and Dale Quattrin, both experienced surveyors, on 17 Nov 85, with the Principal Investigator being available in the event that any problems or difficulties were encountered

by the survey team. The recovery procedures employed were those outlined in the proposal and project application submitted to the MDOT prior to the awarding of the contract to WMU.

The project area was traversed from north to south along lines of survey (i.e. transects) spaced about 20 m apart, with this interval being reduced by half as surveyors approached to within 50 m of Squaw Creek. In the area of the small field located in the western portion of the project, surface reconnaissance procedures were emphasized, with shovel tests limited to field margins supporting dense ground cover. The land in close proximity to the existing weigh station in the eastern portion of the study area was observed to evidence so much recent disturbance as to warrant but minimal evaluation to establish that this area of the project had already been thoroughly impacted.

Elsewhere, surface visibility was greatly restricted, requiring that the survey team systematically shovel test the remainder of the project. Shovel tests were located at intervals of 20 m along each transect, with the distance between probes again being halved as the survey team neared the creek. Maps 2 and 3 show the approximate locations of 440 shovel tests excavated by surveyors. On uplands, shovel tests routinely involved exposing the soil profile to a depth of 40-60 cm, or to a depth that surveyors judged to be consistent with the post-Pleistocene depositional history of local soils. A small number of deeper shovel tests, extending to a depth of 100 cm or more below the surface, were strategically located across the project area in order to confirm the adequacy of routinely terminating our probes at a shallower depth. Even in the creek bottoms, deeper tests appeared not to be required, given the evidence for frequent inundation and the

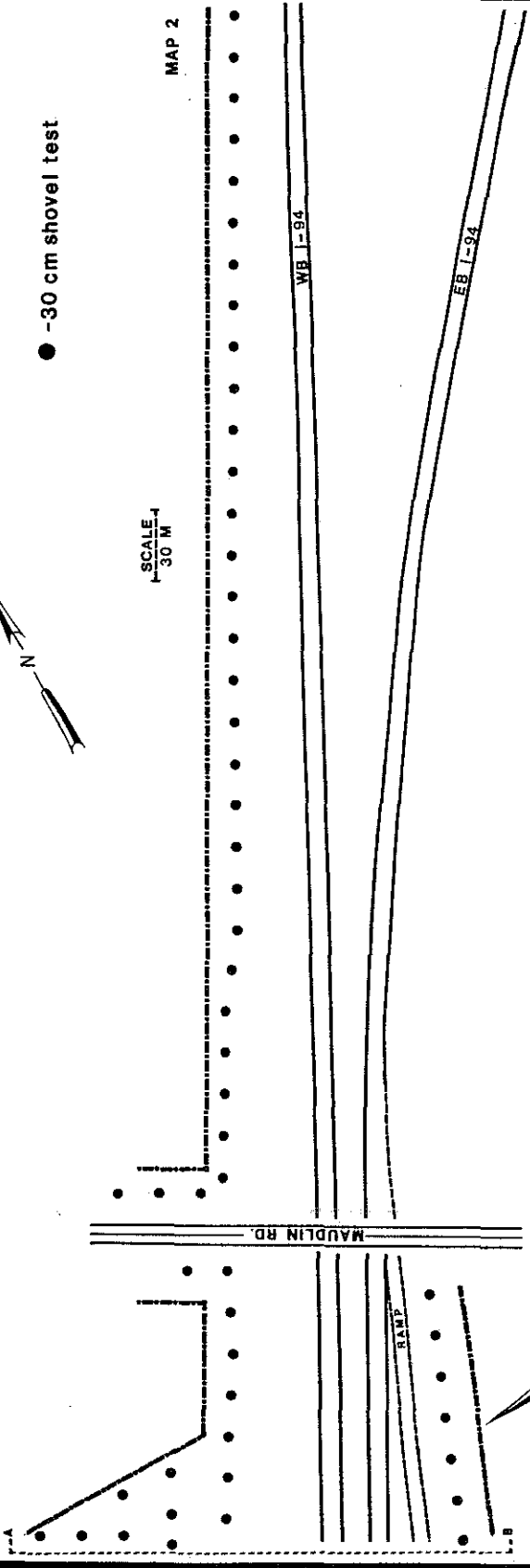
NEW BUFFALO WEIGH STATIONS
PROJECT
NORTH HALF



● -30 cm shovel test

SCALE
30 M

MAP 2



PROJECT LIMITS

MAUDLIN RD

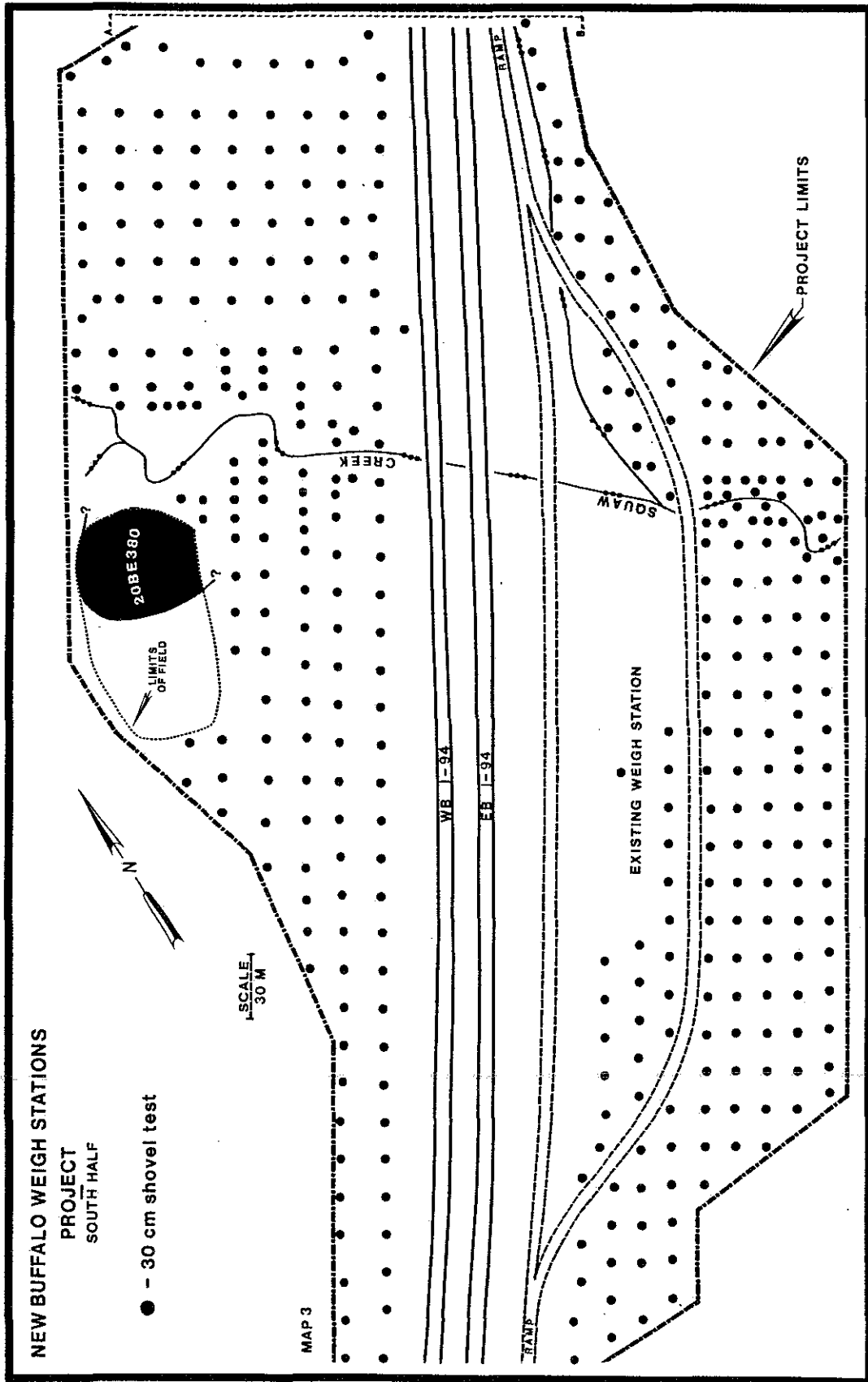
WB I-94

EB I-94

RAMP

A

B



absence of alluvial development (aggradation) in this context of active erosional downcutting (degradation) associated with the comparatively rapid flow of water in the frequently shifting and braided stream channel.

RESULTS AND RECOMMENDATIONS DERIVED FROM THE PHASE I SURVEY:

Through the systematic and intensive application of the aforementioned data recovery procedures, the survey team was able to determine that for most of the MDOT project the proposed construction activities would have no adverse impact on archaeological resources. However, during their examination of the small field located on the south side of Squaw Creek in the western portion of the project area, surveyors did recover some prehistoric lithic specimens and observe a moderately dense scatter of fire-cracked rock over at least the northern half of the field (Map 3). The lithic data are summarized in Table 1 below.

TABLE 1

Lithic specimens recovered from the field during the Phase I survey.

- 1 - utilized flake of Indiana hornstone
- 1 - utilized flake of unidentified (probably local till) chert
- 2 - flakes of Flint Ridge chert
- 1 - flake of local till chert

While no diagnostic cultural items were recovered from the surface of the New Buffalo Weigh Station site (20BE380), the survey team felt that this area within the project required additional evaluation for several reasons; not the least of which were the observations offered by Mangold (1981) in his brief report of research in the Galien River Basin. First, aside from the comments provided by Mangold, we have available to us very little in the way of information upon which to

base any judgement regarding the potential significance of 20BE380. Secondly, surveyors were unable to ascertain whether cultural context might be preserved beneath the plowzone in the field, given the constraints associated with the performance of a Phase I site location survey. And, thirdly, it was not at all clear to the survey team that the site was confined or limited to the cultivated parcel in which the observations were made. It was certainly possible that the site extended into the narrow strip of uncultivated (fallow?) land that separated the field from the bluff overlooking Squaw Creek to the north!

Thus, we concluded, the possibility of recovering data from undisturbed contexts was just too great in this instance to be overlooked, and a proposal recommending preliminary test excavation was prepared and submitted for the agency's consideration on 21 Nov 85.

PRELIMINARY PHASE II TEST EXCAVATION OF 20BE380:

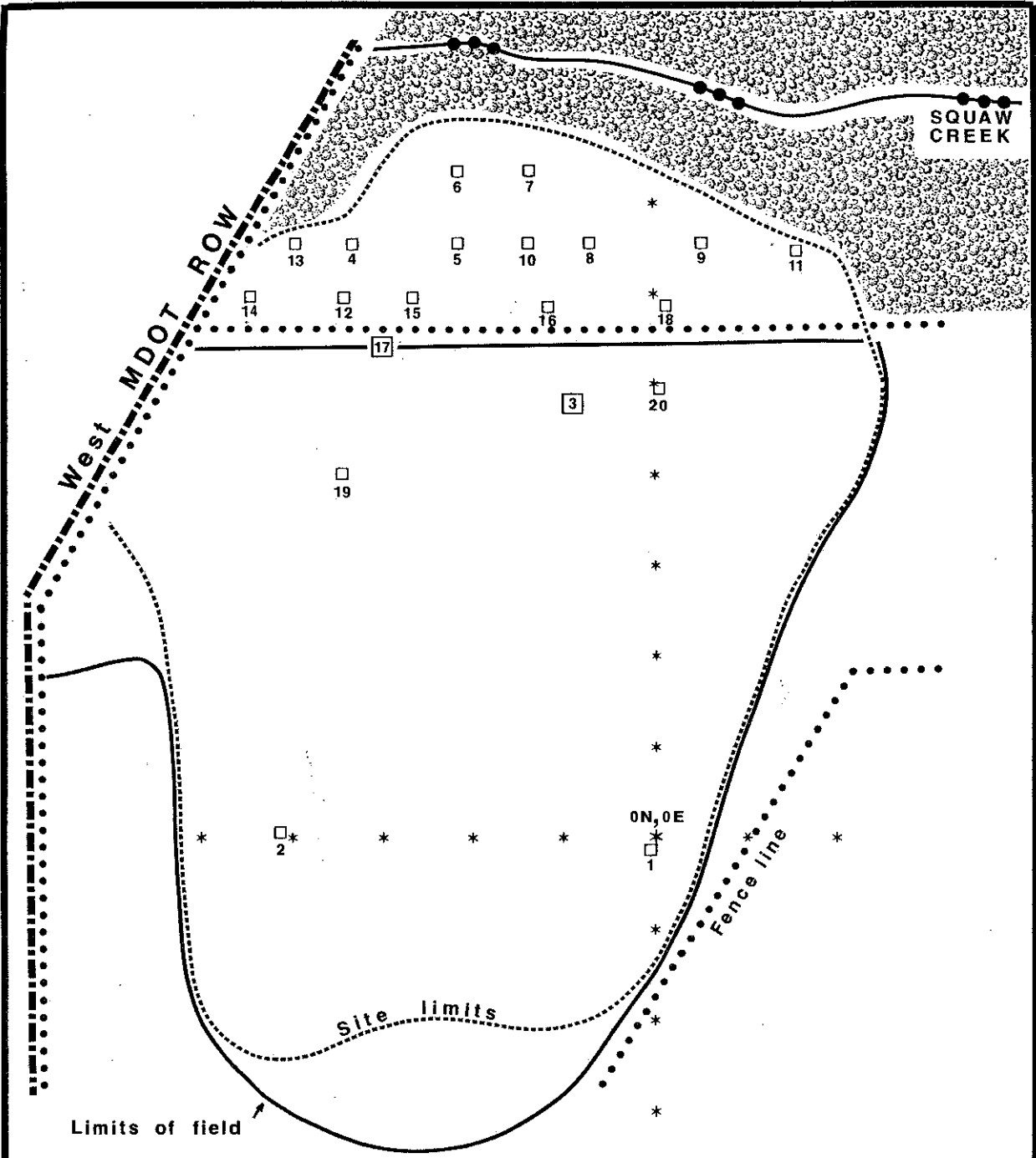
Upon acceptance by the MDOT of the above recommendation, as reflected in the amendment to the Work Authorization dated 2 Jan 86, and with the arrival of appropriate weather and soil conditions to permit fieldwork, a research team consisting of seven persons returned to the project area on 22-23 Mar 86 to undertake preliminary test excavation of 20BE380.

As previously mentioned, this site was observed in the small field located in the western portion of the project and just south of Squaw Creek where it passes from west to east across the study area. To be more precise, 20BE380 is situated at an elevation of approximately 194 m ASL in the NE corner, SW 1/4, SE 1/4, SW 1/4 of Section 11, New Buffalo Township, T8S R21W, Berrien County, Michigan

(UTM zone 16, 523390 4625880). As is shown on Map 4, the site occupies all but the southernmost portion of the 4,000 m² field and extends into the grassy (fallow?) strip of land separating the field from the creek valley on the north. A reasonable estimate of site area, as derived from our Phase II investigation, is 4,800 m².

The site lies in that portion of the project that has been mapped by soil scientists as Morocco loamy sand. This soil series is associated with nearly level uplands that are moderately well drained to poorly drained. The surface layer is very dark grayish brown loamy sand about 23 cm thick, with the subsurface layer being a pale brown mottled sand some 20 cm thick. The underlying mottled, loose sand subsoil is yellowish brown and typically 45 cm in thickness, and this zone is in turn underlaid by light brownish gray, mottled sand, with or without bands of loamy fine sand, to a depth of about 180 cm below the surface (Larson 1980: 44). This typical Morocco loamy sand pedon was verified during excavation of test squares on 20BE380.

Following our arrival on the site, and while the Principal Investigator was establishing the site datum near the eastern limits of the field at a point 197 m NW of the existing weight station on eastbound I-94, the remainder of the research team recollected the surface of the field in an attempt to more precisely determine the extent of the site in this cultivated parcel. Inasmuch as the field had been disked since our last visit in November, and subsequently washed by rains, the distribution of cultural material and FCR proved much easier to discern on this occasion. Moreover, considerably greater quantities of debris were observed, including among the material recovered three bifaces and a number of pieces of exotic

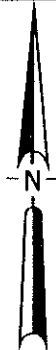


MAP 4

20BE380
NEW BUFFALO TWP.
BERRIEN COUNTY, MI.

1 test square (1x1m & 2x2m)

* 10 m grid interval



chert. The contents of the surface collection made during the Phase II investigation of 20BE380 are listed in Table 2 below.

TABLE 2
Cultural material comprising the Phase II surface collection.

-
- 1 - stemmed biface similar to the Late Archaic-Early Woodland Kramer point (Fig. 1, A)
 - 1 - stemmed biface of probable Archaic affiliation, exhibiting shallow bifurcation (Fig. 1, B)
 - 1 - corner notched projectile point without the hafting element, dating to the Archaic or possibly Middle Woodland period
 - 2 - flakes of Indiana hornstone
 - 1 - flake of Attica chert (northwestern Indiana)
 - 1 - flake of Flint Ridge chert
 - 1 - flake of Bayport chert
 - 8 - flakes of unidentified chert

 - 1 - historic sherd of "flow blue" ceramic ware
-

Having completed the surface collection and established the site datum (ON, OE), the research team set about the task of laying out a 10 m grid over the field and extending across the grassy strip of land bordering the field on the north to the edge of the bluff above Squaw Creek. The display of test squares shown on Map 4 reflects a judgement sample of 1 x 1 m (N = 18) and 2 x 2 m (N = 2) excavation units placed in the field where relatively dense concentrations of FCR were observed and, especially, in the area supporting grass cover along the creek which we anticipated would afford the best opportunity to recover data from undisturbed contexts. In aggregate, 24.0 m² (7.16 m³) of the estimated site area were excavated during two days of fieldwork.

Each test square was excavated using standard data recovery procedures. We began work in the cultivated area, removing the plowzone as a single unit or level. The soil was sifted through 6 mm mesh screen to facilitate the collection of cultural items. Upon reaching

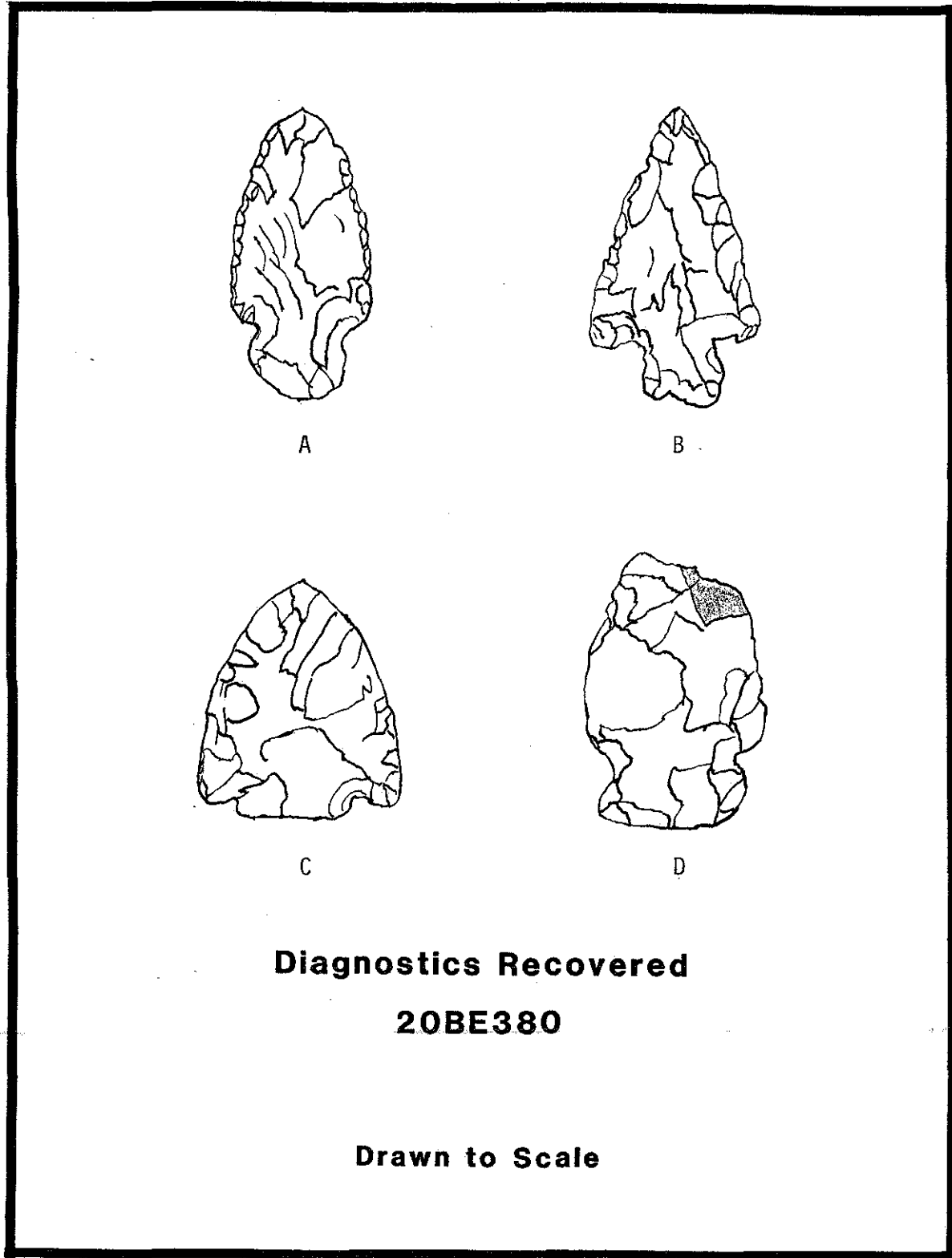


Figure 1: Four bifaces recovered during the Phase II study.

the base of the disturbed zone, the floor of the excavation unit was carefully scraped by shovel and trowel in an effort to discern any soil changes (i.e. staining attributable to either color or textural differences with the surrounding subsoil) that might indicate the presence of a cultural feature extending below the depth to which the plow had penetrated. In the event that no suspicious staining was observed, excavators recorded depth measurements and terminated the test square, but not before probing the floor with either a shovel or our Stam soil tester for an additional 30-60 cm to ensure that good contact with culturally sterile subsoil had been made. In the final analysis, none of the six units excavated in the field produced evidence of the presence of subsurface features.

As the excavations were expanded into the grass covered area bordering the bluff overlooking Squaw Creek, there was considerable expectation on the part of the crew that archaeological material would here be found to occur in well preserved context. The old but well maintained fence on the north edge of the field, the dense grass cover between the field and the creek valley, and the presence of some trees of considerable age among the generally scrubby second growth that fringed the edge of the bluff all pointed to the very strong possibility that this area of the site had not been cultivated--at least not in the recent past! However, our initial excavation (Test Square 4) in this area, and every test square opened thereafter, proved that this was not the case. Disturbance due to plowing was everywhere in evidence.

Assuming the absence of a discernible disturbed zone, our research strategy in this area of the site called for units to be excavated in 10 cm levels, with the cultural material recovered during the sifting

of soil from each level being carefully segregated from that found in other levels within the same test square. When it had become apparent that disturbance resulting from cultivation was also to be a factor in this area of the site, the approach to excavation that we adopted was similar to that employed in the actively cultivated field to the south.

Twelve of 14 excavation units located in the grass covered area revealed plow scars ranging in depth from 15 - 41 cm in depth, with the average depth of the old plowzone being 29.2 cm. These measurements are not markedly dissimilar from those recorded in the present field, where the disturbed zone ranged in depth from 23 - 46 cm and the mean recorded for six test squares is 32.3 cm. Obviously, there has been some accumulation of surface soil deposits across the entire site during the time that it has been under cultivation. There would seem to be no other explanation for the relatively great depths at which excavators observed remnant plow scars in some of our test units. In this regard it is noteworthy that we observed undulations beneath the grass cover that may represent an episode(s) of filling and/or leveling with heavy equipment at some time in the past. It is also possible that this landscape altering activity may be more widespread across the site; albeit undetectable in the area currently under cultivation.

Several excavation units (Test Squares 6, 13, and 15) in the fallow, grass covered portion of the site deserve brief comment. At the base of the remnant plowzone in Test Square 6, at a depth of 41 cm below the modern surface, a heavily mottled stain was encountered in the northern half of the unit. This lens of blackish soil appeared to

be thoroughly impregnated with charcoal and what appeared to the excavators to be small blackish (carbonized?) seeds. Probing with the soil tester around this possible feature failed to delineate a regular outline for this stain, and no meaningful profile could be recognized. Subsequent examination of a small 3 l flotation sample of the soil matrix, while revealing the presence of considerable quantities of red oak charcoal, showed a total of 124 seeds to be uncarbonized fungal nodules and specimens of goosefoot, knotweed, sumac, and other commensal species. Moreover, the flotation sample yielded numerous small particles of a plastic substance. Thus, we have concluded that plow drag is the best probable explanation for the occurrence of this stain, with its mixture of organic/inorganic and carbonized/uncarbonized materials.

Test Square 13 was excavated to a depth of 76 cm below the modern surface as those responsible for this unit followed the occurrence of several small fragments of FCR and lithic debris for 50 cm after the base of the plowzone had been reached. Examination of the test square walls and observations recorded by the excavators as they proceeded downward suggest that bioturbation (i.e. mixing of the soil by plants and/or animals) is the agency most likely responsible for the occurrence of cultural material at depths considerably below the base of the plowzone in this test square.

Finally, Test Square 15 is notable for the recovery of the only diagnostic implement that was not collected from the surface of the site. This artifact, a Berrien corner notched point of Indiana hornstone (Fig. 1, D), like the other diagnostics, strongly suggests an Archaic temporal placement. More specifically, the frequent occurrence of this point type at sites in the US-31 mitigation project in

central Berrien County argues for the Late Archaic-Early Woodland affiliation of the Berrien point, with possible survival into the Middle Woodland period (Clark 1984).

All observations made during the preliminary Phase II testing of 20BE380 were recorded in the project log maintained by the Field Supervisor and also entered on standard test square forms and analytic sample forms kept by the team of excavators responsible for each of the 20 test squares. All cultural material, with the exception of the FCR, was placed in a bag on which were recorded the unit and level from which the contents of the bag had been retrieved and returned to the laboratory in the Department of Anthropology for cleaning, cataloging, and analysis by the Field Supervisor, Mr. De Fant. Fire-cracked rock was examined in the field, with counts and weights being entered on the excavation unit form. Only those specimens identified as possibly having functioned as fabricating or domestic implements (e.g. grinding stones, hammerstones) prior to ending their useful life as hearthstones or sources of indirect heat in the "hot rock cooking" process were retained for further study. Finally, a photographic log was maintained to document our excavation activity as well as to enhance our record of feature data, had we encountered any features.

RESULTS OF THE PRELIMINARY PHASE II TEST EXCAVATION OF 20BE380:

The New Buffalo Weigh Station site encompasses an estimated 4800 m² on uplands immediately adjacent to the valley of Squaw Creek in the western portion of the MDOT project. Excavation of 20 test squares, aggregating 24 m² of site area in both the presently cultivated field and the fallow ground lying between the field and the creek to the north, together with recollection of the surface of the field, has resulted in the recovery of diagnostic implements and lithic debitage

and observations of light to moderate concentrations of FCR (totaling 325 pieces by count and 23.5 kg by weight from the test squares alone) attesting to an Archaic (and possibly Woodland) presence on this site. In addition, nine items of glass and historic ceramic material were retrieved during the Phase II investigation. Table 3 summarizes the 72-piece prehistoric lithic assemblage (and eight historic items) recovered from 20 excavation units.

TABLE 3

Prehistoric lithic material and historic objects from the test squares.

Test Square 1 (2S, 1W)

1 - unidentified flake

Test Square 2 (0N, 42W)

1 - core fragment

1 - flake of local till chert

1 - piece of glass

1 - piece of badly eroded historic ceramic material

Test Square 3 (47N, 10W)

no cultural material

Test Square 4 (65N, 34W)

2 - flakes

1 - piece of mica

Test Square 5 (65N, 22W)

2 - flakes of unidentified chert

Test Square 6 (73N, 22W)

5 - flakes

Test Square 7 (73N, 14W)

no cultural material

Test Square 8 (65N, 5W)

no cultural material

Table 3, cont.

Test Square 9 (65N, 7E)

- 1 - flake
- 1 - piece of glass
- 3 - pieces of historic white ware

Test Square 10 (65N, 13W)

- 1 - flake

Test Square 11 (64N, 15E)

no cultural material

Test Square 12 (59N, 35W)

- 1 - flake
- 1 - ground stone fragment

Test Square 13 (65N, 40W)

- 1 - unifacially retouched flake
- 21 - flakes

Test Square 14 (59N, 45W)

- 1 - flake

Test Square 15 (59N, 27W)

- 1 - Berrien corner notched point of Indiana hornstone (Fig. 1, D)
- 1 - flake of Flint Ridge chert
- 6 - flakes of unidentified material
- 1 - piece of glass

Test Square 16 (58N, 12W)

no cultural material

Test Square 17 (53N, 31W)

- 3 - utilized flakes of Flint Ridge chert
- 1 - flake of Flint Ridge chert
- 1 - flake of Burlington chert
- 12 - flakes of unidentified chert
- 1 - badly eroded historic sherd

Test Square 18 (58N, 1E)

no cultural material

Table 3, cont.

Test Square 19 (52N, 35W)

5 - flakes

Test Square 20 (49N, 0E)

1 - flake of Flint Ridge chert
1 - flake of unidentified chert

SIGNIFICANCE OF OBSERVATIONS:

Our research in the area of the proposed weigh stations along I-94 near the Village of New Buffalo in Berrien County, Michigan has revealed that for the most part this 16.2 ha project lacks cultural resources. However, on a small but prominent sandy bluff rising 4-5 m above the floodplain of Squaw Creek we did observe prehistoric debris signaling the presence of an archaeological site. In light of Mangold's (1981) contentions, cited earlier in this report, and given the possibility that undisturbed context would be located through systematic yet limited evaluation of the site, we proposed preliminary Phase II test excavation of 20BE380.

A series of 20 test units placed within the estimated limits of the site yielded evidence of prehistoric occupation, but no where did excavators observe well preserved contexts. This site has, unfortunately, experienced post-occupation disturbance; not only in the form of plowing, but quite possibly filling and/or leveling through the use of heavy equipment as well.

Clearly, the now apparent absence of undisturbed archaeological context diminishes the potential value of this site for interpreting

culture history and ascertaining site function. And when one also considers the relative paucity of the assemblage recovered through excavation, a case for National Register eligibility just cannot be made.

However, in one very important respect our work at 20BE380 has been enlightening. In his recent report on archaeological research in the Galien River Basin, Mangold (1981) makes much of the potential value of this drainage for furthering our understanding of prehistoric and early historic interaction between populations residing in the Kankakee River Valley of northwestern Indiana and the St. Joseph River Valley located a short distance to the north of the Galien River. Interaction during the Archaic and Woodland periods in the Midwest Riverine/Upper Great Lakes region has often been "measured" in terms of the presence or absence of cherts derived from a source known to be external to the particular area under consideration. At the New Buffalo Weigh Station site, 17 of 83 (20.5%) flaked stone tools and pieces of lithic debitage in the assemblage are derived from nonlocal or exotic cherts. Two identified sources are in Indiana; one is in Illinois; a fourth is in Ohio; and the last is in southeastern Michigan.

Clearly, this is an unusually high percentage of exotic material, especially if one considers the size of the assemblage and the apparent nature of the site from which it was recovered. That this observation has been made at a very small and presumably temporary campsite near the headwaters of a very small stream, certainly piques an archaeologist's interest with respect to the sort of settlement or main habitation area for which 20BE380 was an ancillary or satellite community.

RECOMMENDATIONS:

In light of the findings reported herein, it is apparent to us that no additional evaluation of the New Buffalo Weigh Stations project is warranted. All indications are that no adverse impact on archaeological resources whatsoever will result from planned construction activity in that parcel of land flanking eastbound I-94. And, furthermore, the anticipated loss of data which will result from similar activity in the western portion of the MDOT project will in all probability have a negligible impact on current and future archaeological research relating to the prehistoric occupation of this tributary stream (Squaw Creek) drainage in the Galien River Basin.

REFERENCES CITED:

Brewer, R., compiler

1979 Vegetation of southwestern Michigan at the time of settlement. Department of Biology, Western Michigan University. Kalamazoo.

Clark, C.P.

1984 Typological assessment of the US-31 project projectile points. In E.B. Garland, editor, Archaeological Investigations in the Lower St. Joseph River Valley, Berrien County, Michigan, pp. 112-171. Report submitted to the Michigan Department of Transportation. Kalamazoo.

Ellis, F.

1880 History of Berrien and Van Buren Counties, Michigan. D.W. Ensign and Company, Philadelphia.

Hodler, T.W., R. Brewer, L.G. Brewer, and H.A. Raup, compilers

1981 Presettlement vegetation of Kalamazoo County, Michigan. Department of Geography, Western Michigan University. Kalamazoo.

Larson, J.D.

1980 Soil survey of Berrien County, Michigan. United States Department of Agriculture. Washington, D.C.

Mangold, W.L.

1981 An archaeological survey of the Galien river basin. The Michigan Archaeologist, 27 (1-2): 31-51.