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The Schwerdt Site (20 AE 127) Ceramics: A Berrien Phase Ceramic Assemblage in Allegan County, Michigan

Paul W. McAllister
Western Michigan University

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THE SCHWERDT SITE (20 AE 127) CERAMICS:
A BERRIEN PHASE CERAMIC ASSEMBLAGE
IN ALLEGAN COUNTY, MICHIGAN

by
Paul W. McAllister

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
Degree of Master of Arts
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August 1980
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And finally, I thank my wife, Susie, for putting up with me while I was working on this project. Hello Angeline.

Paul W. McAllister
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A. Background

The Schwerdt ceramic assemblage from southwest Michigan presents a local variant of a larger, diverse cultural and ceramic complex known as the Upper Mississippian. This is a Late Woodland temporal phenomenon beginning as early as 700 A.D. (Overstreet 1978) in some areas and continuing into proto-historic times. This Upper Mississippian phase (Griffin 1943) has been described as encompassing several aspects, including the Fort Ancient, Iroquois, and Oneota (ibid:268), that were related to the expansion of the Middle Mississippian culture centered around the St. Louis area. This relationship is based on the evidence of a more effective corn agriculture base in both areas, and certain ceramic similarities. The most notable and pervasive ceramic similarity into the Upper Mississippian is the use of shell temper. The precise nature of this relationship and the origins of the cultural traits have been the subject of considerable debate over the years. The most recent thoughts downplay the idea of a direct expansion of the Middle Mississippian culture, and see it rather as an indirect expansion of cultural ideas and practices (Smith 1978). Recent work on the Oneota in Wisconsin, which is the aspect that is of most concern to the
southwest Michigan specialist, stresses the indigenous base or origination for this culture and its ceramics (Gibbon 1972; Overstreet 1978).

The relationship of the Schwerdt assemblage to the Oneota in Wisconsin is unclear. That it is related to the Moccasin Bluff site (Bettarel and Smith 1973) some 80 km to the south of Schwerdt has been remarked upon previously (Bettarel and Smith 1973; Faulkner 1972), and the Berrien Phase (A.D. 1400-1600) ceramic assemblage from Moccasin Bluff is the "type" set for the Schwerdt assemblage. This ceramic assemblage, as is Schwerdt's, is characterized by the use of both grit and shell tempers. Many of the diagnostic decorative and technological features do show indigenous influences. Yet, portions of the assemblage are clearly related to materials from the south and west; materials associated with the Oneota Aspect.

The Berrien Phase shell tempered ceramics at Schwerdt and Moccasin Bluff are Huber ware, which has been described as an Oneota ware (Faulkner 1972; Griffin 1943). Other sites containing Huber ceramics have been excavated in northeastern Illinois and northwestern Indiana, in an area centered on the head of Lake Michigan. However, this Huber ware is only a portion of the Berrien Phase assemblage. And while there are definite similarities between the latter and other Oneota assemblages, the complete assemblage clearly is representative of local tradition. Because this is a "mixed" assemblage (in several ways) the position of the Berrien Phase within the Upper Mississippian is tentative at this time. That it belongs to this larger grouping is clear, but its exact affiliation to the Oneota is not.
B. Goals and Objectives

The temporal and spatial placement of the Schwerdt ceramic assemblage was a highly complex task. It would be an understatement to say that it was just a little confusing to try to sort out the often contradictory and/or vague data. Nevertheless, the relationships are intriguing, and the assemblage can be discussed with reference to a series of expanding spheres of relationships.

It is my goal to describe the Schwerdt ceramic assemblage on these varying levels. I will attempt to: (1) describe the assemblage as part of the Berrien Phase ceramic tradition in southwest Michigan; (2) organize it on the basis of Bettarel and Smith's (1973) classificatory scheme; (3) analyze its relationships to other assemblages within the region during late prehistoric times; and (4) include the raw data (Appendix A) for future research.

In order to address myself to these goals, it was necessary to understand the character of the site with respect to considerations other than ceramics. The subsistence-settlement system which Schwerdt is hypothetically a part of provided a model to work with as I attempted to reconstruct the cultural pattern as it is reflected in the ceramics. The following discussion deals with these aspects of the site.
CHAPTER II

THE SITE

A. Location and Excavation

Located on an eroding sand bluff that averages 10.62 m above the present level of the Kalamazoo River, the Schwerdt site (20 AE 127) looks south across the river toward an extensive marshland. About 11 kilometers upstream from where the Kalamazoo River flows into Lake Michigan, it lies in the SE 1/4, NE 1/4 of Section 13, Saugatuck Township, Allegan County, Michigan (Maps 1 & 2).

Schwerdt was first located in the Spring of 1976 by a survey team from Western Michigan University's archaeological field school. The site was observed as a dark brown lens extending across the face of the riverbank for a distance of about 125 m, at a depth of 30 to 115 cm below the bluff top. Upon closer examination, both ceramic and lithic artifacts were observed within the matrix of this lens. During the next year, Dr. William Cremin contacted the landowners and asked permission for the 1977 field school to excavate there. Mr. and Mrs. J. Dale Schwerdt graciously obliged, and in May of 1977 we began our excavations. Six weeks were spent on the site that Spring, and an additional four weeks in the Spring of 1979.

Most of the Schwerdt property is currently under cultivation. However, when we surface collected the freshly plowed field very little cultural material was observed. What little was recovered tended to
MAP 1. Some Sites Mentioned in Text

1. DUMAW CREEK
2. ADA
3. SCHWERDT
4. NORDHOF
5. ALLEGAN DAM
6. ELAM
7. HACKLANDER
8. WYMER
9. MOCASSIN BLUFF
10. IFIELD
11. GRIESMER
12. FISHER
13. GENTLEMAN FARM
14. ZIMMERMAN
15. OAK FOREST
16. ANKER
17. HUBER
18. CARCAJOU POINT
19. MERO
20. SUMMER ISLAND
be concentrated within 50 m of the present bluff edge, and 20-25 m of this strip was in woodlot or field road. Upon shovel testing the latter, we found that the sealed midden extended north from the river for a distance of only 9 to 15 m, terminating in a disturbed zone that commenced about 11 m south of datum (see Maps 3 & 4, and Figure 1). From this point northward the midden blended with the humus and/or plow zone, which comprised the artifactually fertile soil unit over most of the site. This situation turned out to be a mixed blessing. Although this area fronting on the river did contain a largely undisturbed cultural midden, we initially had to avoid disrupting as much of the underbrush and tree growth as possible, since the vegetative cover constituted the only stabilizing force on this actively eroding bank. (The Schwerdts reported that they had lost as much as 2 m of bank to the river in just 11 years.) Fortunately there was enough open space in the woodlot to permit meaningful judgment sampling of the length of the site along the bank. And in 1979 the Schwerdts permitted the clearing of areas between the larger trees so that random sampling could be implemented in this area of the site.

Along the bank the midden extended for 125 m, delimiting the east-west dimensions of the site. The lens varied in thickness from 4 to 22 cm ($\bar{x} = 12.3$ cm for 22 measuring stations spaced evenly along the bank), and extended 30 to 115 cm ($\bar{x} = 58.4$ cm) below the modern surface at the bank's edge. This midden occurred at 189.84 m above sea level and 10.04 m above the Kalamazoo River. The other dimensions of the site were established by surface collection and 22 shovel probes in the plowed field, which yielded increasingly less debris.
EAST WALL PROFILE
TEST UNIT Y (10-15S, 2E)
SCHWERDT SITE (20 AE 127)
and fewer artifacts as we moved northward or away from the bank. In total a mere 178 pieces of cultural material were recovered in this manner, but we were able to establish the northern limits of the site at about 67 m north of datum (Map 3). We estimate the present site size at 1.33 ha, but some minor portion of the site has been washed into the river (Cremin 1977).

In 1977, we excavated 30 arbitrarily placed 2 m x 2 m squares, a 5 m x 20 m block excavation, and several expansion units to expose portions of features extending beyond the limits of the test units. About 269.5 m² or approximately 2% of the site was exposed that Spring. In 1979, 25 additional 2 m x 2 m units (lettered test units) and 78 1 m x 1 m units (numbered test units) were randomly excavated at Schwerdt. An additional 213.5 m² or 1.6% of the site was excavated on this occasion. In total, 483.0 m² or about 3.6% of the estimated site area was excavated during the ten weeks spent at Schwerdt (see Map 4 and Appendix B).

Except during the initial phases of test excavation, as an exercise in technique, the plow zone was removed as a single level. This fill was sifted through 1/4" (6.35 mm) wire mesh. All artifacts recovered from the plow zone are treated as stratigraphically identical. In the area along the bank, the sealed midden was also treated as a stratigraphic unit, after it was established that there was no discernible internal stratification. North of this narrow stip along the bank only sterile sand was found below the humus/plow zone level. Test unit Y (15S-0E) was essentially a linear trench excavated to expose and delineate this transition from sealed midden to humus/plow zone (Figure 1). Note that this unit lies well within the
woodlot, suggesting cultivation of part of this area previous to its present land use. This was subsequently confirmed by the recognition of plow scars in other test units lying within the woodlot.

Block A, a 5 m x 20 m excavation unit, was established in the eastern area of the site in order to expose cultural features and seek feature associational data. The plow zone here was removed rapidly without screening, and those artifacts recovered were collected by hand during the excavation of the block and by cursory examination of the black dirt. A total of 11 features were exposed within and along the margins of this unit. These include 3 postmolds and 8 pit features (Map 4).

B. Features

In many ways the most remarkable "artifacts" found at Schwerdt were the features (see Figures 2 & 3). In total, 46 features were observed; 35 of which have been described by Cremin (1977, 1979) as roasting pits. These pit features became evident as round or oval dark brown stains surrounded by yellow sand after removal of the plow zone. They were seldom discernible within the midden because feature fill and midden deposit were identical in color and texture. Plan views were drawn of the features and they were then cross-sectioned, with the fill from the portion excavated sifted through either 1/4" (6.35 mm) or 1/8" (3.17 mm) mesh. Profiles were then drawn and the second half of the feature was removed by depositional unit. These soil units were screened in a like manner and, in addition, soil samples from each were floated to collect the small floral and
faunal remains which might otherwise have been lost in the usual screening process.

These roasting facilities were basin-shaped in profile. Most follow the basic pattern of features 13 and 14 (Figure 2), exhibiting three soil units. The uppermost lens consisted of redeposited fill of varying textures and colors, mostly medium brown. Grey ashy lens were also observed within or slightly below this lens in some features. The majority of the artifacts recovered from the pit features were found in this lens. Below the redeposited fill there occurred red oxidized sand, usually conforming to the pit walls and the base of the pit, and effectively surrounding the bottom most unit of black carbonized material. This red oxidized sand could often be removed in large solid chunks, suggesting that other materials such as clay particles within the sand and/or fats and oils derived from the materials being processed in the pits combined with sand during use to produce a fusing of the sand grains. The carbonaceous lens comprising the third and lowest unit appeared as a pitch black, greasy material often including incompletely combusted wood (Cremin 1977). The features are comparable to Faulkner's (1972:48) deep roasting pits from the Griesmer site in northwestern Indiana, and some of the fire pits at Mocassin Bluff are also quite similar in appearance (Bettarel & Smith 1973:27). Schwerdt-like roasting pits have also been found at the Elam and Allegan Dam sites in the Kalamazoo River Basin (Barr 1979; Spero 1979).

These pit features range from 76 cm to 140 cm in width (with a mean of 107.3 cm) and vary between 80 and 172 cm in length.
FIGURE 2.

MIDDEN
REDISTRIBUTED FILL

STERILE SAND

LOAM

SOD

REDEPOSITED FILL

PLOW ZONE

RED OXIDIZED CARBONIZED DEPOSIT

20 CM

F-14

F-13

20 CM

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(\bar{x} = 118.4 \text{ cm}). The width/length ratio averages .93, with a range of .67 to 1.00, so they are usually only slightly oval in plan. In depth they range from 34 cm to 83 cm (\bar{x} = 59.2 \text{ cm}). Cremin has estimated their volume to average .63 m$^3$ of fill, with a range of .19 m$^3$ to 1.16 m$^3$.

Within the Block A excavation two sets of overlapping pit features were found. Each feature within these fell within the descriptive range of that given for the pit features mentioned above, the exception being that they are intersected by one another. This was especially evident for features 23A and B (Figure 3). It is suggested that these features 23A and B, and 24A and B, resulted from reuse of the same locus on separate occasions.

These roasting pits are the primary features at Schwerdt and were probably utilized for the processing of food for both immediate consumption and preservation for later use.

In addition to the roasting pits discussed above, one feature (40) was virtually identical, but lacked a fuel lens. Also, 1 rock hearth (feature 4) was uncovered. This shallow feature consisted of fire-cracked rocks in a matrix of oxidized soil. It had been greatly disturbed by the plow, as had been the rock concentration (feature 33) found adjacent to a roasting pit (feature 30). Four post molds (features 19, 20, 25, and 28) were also uncovered. These were extremely shallow, but it must be remembered that the plow zone above these was at least 30 cm deep. Their sporadic spatial distribution may indicate the erection of light, temporary structures such as drying racks (see Map 4). Four amorphic stains (features 3, 10, 32, 37) make up the last of the features delineated.
SELECTED FEATURE PROFILES (20 AE 127)

FIGURE 3.

SANDS

DARK MOTTLED SANDS

CARBONIZED DEPOSIT

RED OXIDIZED

F-23A

F 23B

20 CM
The average elevation for all features was 189.69 m above sea level at the point or origin (range of 189.27 to 190.05 m a.s.l.).

C. Materials Recovered

A great many floral, faunal, lithic, and ceramic remains were recovered at the Schwerdt site. There was excellent recovery especially from the pit features, permitting us to examine a very good sample of subsistence-related residues and in situ cultural artifacts. Flotation was especially effective in the recovery of floral and faunal remains. Many small carbonized seeds and tuber fragments and fish vertebrae and other small bones were recovered with this method. Portions of 33 features were floated. From 8 l to 435 l of fill were floated from each feature, or an average of 55.0 l. In total, 2029.5 l of feature fill was processed in this way.

The faunal materials were exceptionally well preserved and are being analyzed by Michael Higgins. Their excellent condition is probably a product of the near neutral soil at Schwerdt and the relative recency of the site. The soil pH at Schwerdt averages 6.3, with a range of 5.5 to 7.3, for 26 samples collected from the midden and features (Spero 1977). The faunal remains were recovered by several methods: in situ removal, 1/4" (6.35 cm) mesh, 1/8" (3.17 cm) mesh and flotation. Thousands of fragments of bone/shell, aggregating 4.8 kg, of which 3.5 kg are identifiable to the species or class level, were recovered in this manner (Michael Higgins, personal communication).
Mammal remains included white-tailed deer, black bear, muskrat, beaver, raccoon, and small rodent. The black bear remains consisted exclusively of two skulls and mandibular fragments found amidst a mass of food bones and discolored soil suggesting, perhaps, episodes of feasting. No post-cranial bear elements were found on the site. Upon cleaning the braincase and nasal passages of the virtually complete bear skull found in Feature 13, carbonized plan material was found to pack these cavities. The absence of post-cranial elements, the presence of a perforation through the spheroid area of this skull (Higgins 1979), and the carbonized contents of this skull suggest possibly a ceremonial function for the skulls (see Hallowell 1926; Quimby 1966a:169).

Turtles are represented by snapping turtle, Blanding's turtle, box turtle, and painted turtle. Fish included sturgeon, freshwater drum, bass (large or small mouth), rock bass, bluegill-sunfish, bowfin, redhorse, crappie, and catfish. Mussels are represented by *Albema costata* and *Elliptio dilatatus*, as well as many unidentified shell fragments. One wild turkey fragment was also recovered, as were several fragments of unidentified bird bone (Michael Higgins, personal communication).

The faunal materials indicate an aquatic/riparian focus or economic emphasis. The abundance and frequency of sturgeon bones (a minimum of 21 individuals), the most abundant species at the site, strongly suggests a late spring-early summer occupation of the site. It is at this time of year that sturgeon migrate up river from Lake Michigan to spawn (Michael Higgins, personal communication).
The floral remains from Schwerdt are in the process of being analyzed by Dr. William Cremin of Western Michigan University, but based on his preliminary observations, these remains also suggest a narrow focus of plant procurement and specific time of occupation. Several thousand specimens of carbonized wood, seeds, and other plant remains have been recovered at Schwerdt by means of flotation.

The wood, identified by Mr. Fel Brunett, represents at least 4 species. Weighing 405.6 gms, the 16 samples consist of (with their frequency of occurrence): red oak-5; oak (*Quercus* sp.)-5; red pine-2; pine (*Pinus* sp.)-2; and maple (*Acer* sp.)-1. All of these woods could have been collected in the immediate vicinity of the site.

Several fragments of rootstock or tuber have been recovered. Identical specimens from the nearby Elam site have been identified by Mr. Wesley Cowan of the University of Michigan as American lotus (*Nelumbo lutea*). These tubers have been found in flotation samples from 14 roasting pits at Schwerdt. More often than not they occur in association with sturgeon bone, greatly strengthening the argument for a late spring-early summer occupation. This plant prefers an aquatic habitat which further supports the contention of an aquatic/riparian subsistence emphasis.

Other foods identified in the plant residues include: huckleberry, elderberry, wild cherry, bunchberry (?), beechnut shell, and a cap and kernel of acorn. Importantly, there is a conspicuous absence or low frequency of fall ripening nuts. Also, no direct evidence for agriculture has been observed. (For a more complete discussion of the floral remains see Cremin 1979).
Perhaps the most disappointing portion of the assemblage were the lithic materials. The assemblage is very small and stone tools constitute the least well represented artifacts on the site. There were 1814 pieces of chipping debitage recovered from the site, and only 99 stone tools and 30 cores have been observed. Small triangular points similar to those found throughout southwestern Michigan in Late Woodland times constituted the largest single bifacial tool category with 14 specimens recovered. Utilized flakes were also well represented (N=58). In addition, a side-notched point, 5 biface fragments, 3 bifacial scrapers, 8 unifacial scrapers, 5 bifacial knives, 4 hammerstones, and a pitted stone were recovered. All lithics were manufactured from locally available cherts.

However small, the stone tool kit at Schwerdt also suggests an aquatic/riparian subsistence emphasis. This is reflected in the uniface to biface ratio calculated as 66/28 = 2.36. Fitting and Sasse (1969:74) contend that a ratio of 2.00 or more is indicative of a fishing emphasis. A ratio of less than 2.00 indicates a hunting focus. The ratio for Schwerdt is indicative of the former!

D. Radiocarbon Dates

Two wood charcoal samples recovered from the fuel lens of two features were submitted in 1977 to the University of Georgia for dating. Feature 9 was dated at 505 ± 70 years: A.D. 1445 (UGA-1725). Feature 16 yielded a date of 500 ± 120 years: A.D. 1450 (UGA-1726). Due to the sealed and undisturbed nature of the samples, and the correlation of the dates with those suggested by the artifactual
remains which the pits contained, these age determinations are felt to reflect the age of the site quite accurately. In 1979 another radiocarbon sample was submitted. Although the wood charcoal appeared to be contaminated by roots from an adjacent tree, we submitted it inasmuch as feature 41 also contained a Huber Trailed vessel. Regrettably the sample yielded a date of 10 ± 60 years: A.D. 1940 (UGA-3013).

E. Summary

The evidence discussed above strongly suggests that the Schwerdt site is a seasonally occupied, temporary encampment which functioned as a locus for the exploitation of aquatic and riparian foodstuffs, primarily sturgeon and the tuber of the American Lotus.

The scenario put forth for Schwerdt fits that presented by Faulkner (1972) for the Griesmer site, at least in part. Faulkner presents the Upper Mississippian occupation of the Griesmer site as occurring in late May, after the crops had been planted at their upland villages, by "several nuclear families, probably in the same lineage" (Faulkner 1972:116). Once there, they would exploit the surrounding resources, especially the water lily tubers of the adjacent marsh. This site, and others like it, would be abandoned by August or September when the occupants would nucleate at their summer village for the corn harvest. The site could continue to be reoccupied seasonally until the natural productivity of the surrounding area decreased, at which time another base would be sought. It is probable that the Schwerdt site is of an even more specialized nature in that it may have been occupied for as little as a few weeks each
year in order to exploit spring spawning sturgeon, with the gathering of American lotus tubers being of secondary importance. The Moccasin Bluff site is a summer agricultural village (Fitting and Cleland 1969) and may very well be a companion site to Schwerdt. The two sites are in part contemporaneous and, as will be presented in the body of this paper, ceramically related.

The exploitation of fish probably served as an important subsistence activity in this northern area where agriculture was marginal in nature. Fish can be dried for future consumption, and this perhaps provided a major food source during the lean months before harvest in the fall. Also, the lean protein of fish is an excellent supplement in a diet based in large part on corn, beans, and squash (Cremin 1980).
CHAPTER III

THE SCHWERDT CERAMICS

A. Methods and Attributes Measured

A total of 4091 pottery sherds weighing 13,488.5 grams were recovered during the excavations at Schwerdt. The sherds were recovered by three techniques: sifting of the fill through 1/4" (6.35 mm) or 1/8" (3.17 mm) wire mesh, soil sampling for flotation (heavy fraction), and removal by hand. These sherds and other artifacts came from the field in 393 bags. Each bag of artifacts was individually cleaned and the artifacts sorted by type. Rim sherds and body sherds were then separated for analysis.

Rim sherds were used to establish the minimum number of vessels since body sherds were not distinct enough to associate with individual vessels or permit more than gross categorization. Rim form, lip modification, surface finish, and temper type were distinctive enough to permit segregation of individual vessels. The 163 rim sherds represent at least 76 vessels. The ratio of rim sherds to vessels is a little over 2 to 1. Some vessels were represented merely by a single small section of rim while others recovered from the pit features were nearly complete, albeit broken.

The categorization of these vessels follows the format utilized by Bettarel and Smith (1973) in classifying the Moccasin Bluff site ceramics. This format is utilized because the Berrien Phase (A.D.
1400 to 1600) assemblage at Moccasin Bluff is descriptively similar to the ceramic assemblage at Schwerdt. In other words, Moccasin Bluff is the ceramic "type" site for Schwerdt. There are some typological problems with this format, but it is beyond the scope of this report to reformulate the Berrien Phase ceramics from both sites. And due to the single component nature of the Schwerdt site, the assemblage lends itself to examination for intragroup continuity and variation, which may further clarify the Berrien Phase ceramic tradition in southwest Michigan.

After the manner of Bettarel and Smith (1973:52-66), ware groupings below are based upon gross temper distinctions. Thus, their Moccasin Bluff ware included all the Late Woodland and Upper Mississippian grit tempered vessels at Moccasin Bluff. Since the ceramic assemblage at Schwerdt belongs to the Upper Mississippian Berrien Phase, this ware category is also used here. The shell tempered vessels at Moccasin Bluff were classified by Bettarel and Smith as Berrien ware. There exists, however, a descriptive precursor to the Berrien Phase shell tempered ceramics found at Moccasin Bluff, i.e., Huber ware. This basically plain surfaced, shell tempered ware was recognized several years prior to publication of the Moccasin Bluff report, although a clear typology was not established until Faulkner (1972) published his material from northwestern Indiana. In that report, Faulkner assigned this ware category to several site assemblages in northeastern Illinois, northwestern Indiana, and some of the assemblage at Moccasin Bluff, all of which dated to the A.D. 1400-1600 time period. Bettarel and Smith (1973:153) seemingly concurred with Faulkner (1970), as they paraphrased his Ph.D. thesis which was the basis for his 1972
publication: "The Berrien ware groups 1, 2, 3 are good examples of Huber ware." Also, when they discussed the Berrien Phase ceramic assemblage at Moccasin Bluff they noted that one of the "ceramic markers for this phase are the appearance of the Berrien-Huber, shell-tempered, plain surfaced pottery" (Bettarel and Smith 1973:153). That this Huber ware classification is more precise than the Berrien ware classification employing as it does both surface treatment and temper type for delimiting criteria, its earlier classificatory use, and Bettarel and Smith's agreement with this distinction for the shell-tempered Berrien Phase pottery led me to use the Huber ware category.

Within each ware category the Moccasin Bluff vessels were divided "into groups which reflected greater or lesser amounts of similarities and differences" (Bettarel and Smith 1973:51). How they measured and graded these similarities and differences is not clearly stated in the report. Upon examination of the type descriptions it is apparent that they were using temper variation (within the Moccasin Bluff ware category there is some variation in the amount, size, and mineral content of the temper), surface finish, rim and vessel form, and rim decoration as their primary distinguishing characteristics. These categories are sometimes further subdivided on the basis of even more discrete attributes, often subtle variations on the techniques of lip modification utilized, to established third level vessel categories. Thus, Bettarel and Smith (1973) have developed a somewhat ill-defined hierarchy of attributes that clusters vessels on the basis of ever greater similarities as one descends it. Wares are gross clusters of vessels by temper, and in the case of Huber ware also by surface finish. The middle level categories or types clustered vessels further on the
basis of one or several of the attributes mentioned above. The third 26 level clusters, or groups, the vessels on an even finer level of similarity.

The terms for these levels of similarity are arbitrary, and I decline to debate whether they represent types, varieties, groups or whatever other semantic construct others wish to apply. That they do represent varying levels of vessel similarity and difference is reflected in the efficacy of their classification the Schwerdt site assemblage with only minor additions. In applying their classificatory scheme to the Schwerdt ceramics, it is evident that the Moccasin Bluff ware categories can clearly group and differentiate that part of the assemblage. That Bettarel and Smith do not clearly define their method of classification, while not negating the usefulness of the scheme, does prevent a more critical evaluation.

It was necessary on several occasions to add more groups to the Moccasin Bluff ware categories in order to accommodate clusters of vessels showing similarities. In one case this was done to further differentiate a category on the basis of the type of tool used to create a scalloped lip. In another case a new sub-category was proposed in order to accommodate several vessels that descriptively fell within the larger category, types, yet do not readily fall into the groups presented by Bettarel and Smith.

The Huber ware categories at Schwerdt are differentiated on the basis of rim form, lip modification, vessel form, and body decoration. Each cluster of vessels is descriptively similar to such a degree that further differentiation is not constructive.

There were also 3928 body sherds recovered at Schwerdt. These were treated separately from rim sherds since there was no way to
associate these body sherds with their rims unless found in the undisturbed context of pit fill. There was a marked lack of body decoration in the assemblage (only two body sherds and one vessel showed any decoration below the rim area), so this could not be used as a key to vessel reconstruction or to establish a body sherd classificatory scheme. Thus, body sherds from each bag were separated into smaller groups simply by surface treatment and temper type. When distinctive enough, color was also used as a differentiating variable. Sherdlets (sherds less than the diameter of a dime, or 1.8 cm) made up only a small percentage of the assemblage and when present were easily assignable to groups created through the preceding variables. These sorted groups of body sherds were measured for several other salient attributes which are described below. Measurements of these attributes within each group represent either the range for the entire group or were taken from representative sherds.

In the final analysis, body sherds of the same horizontal provenience were combined. The only stratigraphic distinction at the site was between test unit fill and feature fill, so that is the only distinction used in this analysis. Features are treated as separate proveniences since their undisturbed nature provides an area where assemblage continuity and variation can be analyzed.

The salient attributes (see March 1967; Shepard 1956) were measured on all the sherds. In the case of rim sherds it was the measurement and description of these attributes which provided the basis for their placement within the typological scheme previously described. Groups of body sherds were measured after their gross
sorting by temper, surface treatment, and sometimes color. What follows is a listing of the attributes measured, together with a brief description of them.

**Paste:** This variable is used to describe the basic core and fracture properties of the sherds. Two different pastes were observed and they basically followed the shell/grit temper dichotomy.

Mineral (grit) tempered sherds were invariably friable. That is, they broke unevenly and were crumbly. The core appeared rough when broken, although more often than not exhibiting considerable uniformity in texture and color. A few grit tempered sherds were laminar in cross section.

Shell and mixed tempered sherds were laminar in cross section and broke more cleanly. By laminar, I mean that there were a series of plates or layers parallel to the outer surfaces of the sherd, probably created by the paddling of the vessels into shape. Leached out shell "holes" were often discernible in these layers. Core color and texture are also uniform.

**Temper:** Sherds were first placed into the several temper categories listed below. For several of the tables and quantitative analyses these temper types were condensed into the dichotomy of grit (all mineral tempers) and shell (shell and mixed tempers).

**Black:** This consisted of a predominance of small (less than 1 mm in diameter) black crushed rock particles. This substance may be "hornblende with some magnetite, probably deriving from a diorite source" (Bettarel and Smith 1973:52) and/or biotite (Spero 1979:28). This tempering material is not abundant.
Sand: This consisted of beach sands of varying coarseness, usually fine. This temper material was rarely used by itself.

Mica: This consisted of finely crushed golden mica appearing as thin crystalline particles. It was rare.

Quartzitic: This temper is represented by a predominance of clear or creamy quartz crystals in a matrix containing other, less abundant, crushed rock particles. Size varied from fine to coarse. Its source is probably granitic. This temper is well represented in the assemblage.

Granitic: This consisted of crushed granitic rock containing a variety of particles; among them, quartz, feldspar, hornblende, and biotite. The source of this material is granitic. Size varied from fine to coarse. This temper is the predominant temper in the assemblage.

Shell: This consists of crushed freshwater mussel shell. It is usually finely ground, and in most cases is only discernible as surface pits and thin parallel "holes" in the cross-section that remain after the shell has leached out. This leaching is probably due to the percolation of rainwater through the sherds, though some of it is undoubtedly due to spalling during firing.

Mixed: This is any combination of shell and mineral tempers in the same sherds. This is usually a combination of shell and sand.

Temper size was measured in centimeters. Distinctions used in this paper as to fine, medium, or coarse follow Fitting (1965:12). Temper
particles less than .1 cm in size are classified as fine; .1 to .2 cm in size is medium; and larger than .2 cm in size is coarse. Size was established by measuring the diameter of the largest discernible particle in the sherd(s).

**Surface Treatment:** This variable is basically dichotomous and to a significant extent covaries with temper type (Table 4).

**Cordmarked:** This effect is created by the impressing of a cord wrapped paddle or stick to the exterior of the pottery vessels while the clay is still pliable. In most of the cases at Schwerdt there was a partial smoothing of the cordmarking prior to firing. In fact, on several of the vessels and large sherds, both smoothed and unsmoothed cordmarking is present on the same sherd. For this reason smoothed, smoothed over, and unsmoothed cordmarking are all included in this one category for analysis (although all smoothing was noted). Cordmarks are predominantly vertical, although some diagonal and horizontal cordmarking has been observed on some vessels. Only one cordmarked sherd showed any surface decoration. This consisted of two partial oval corded tool punctates on the exterior of a body sherd, possibly made with a paddle edge.

**Plain:** These sherds show no evidence of cordmarking. The surface is smooth and plain. In only two cases is there any body decoration. One vessel (60) has incised vertical lines on its shoulder. One small body sherd has two parallel trailed lines across its exterior. All shell and mixed temper
sherds fall into this category.

Exfoliated: This designation describes sherds whose surface (primarily exterior) has eroded away and the original surface treatment is, therefore, not discernible.

All sherd interior surfaces were plain or smooth where discernible.

Color: Body sherd colors were noted as a range within each group (bag) used in the analysis. This was a visual inspection of the body sherds in order to facilitate quick processing and reflects the range of color that may exist within a single and otherwise homogeneous group of body sherds. Even individual sherds showed a remarkable range of color variation. However, vessels were submitted to a more stringent measurement for comparative purposes. Munsell Soil Color Charts (1954) were used in the analysis of vessels. All sherds fell within the 5YR, 7.5YR, and 10YR ranges. Color, while sometimes used to indicate firing techniques and temperatures, is also a product of the original clay color, use, weathering, and the soil content in which it is buried. I feel it is, therefore, a questionable indicator of firing variability in this assemblage.

Hardness: Moh's hardness scale was used. A scratch test was performed using gypsum for 2, calcite for 3, and flourite for 4. A fingernail was used for 2.5. All sherds fell in the 2 to 3 range.

Thickness: The range of thickness in centimeters was noted for each body sherd grouping. Rim sherds were measured at both the lip and on the body.

Count: Body and rim sherds were counted separately.

Weight: Body and rim sherds were weighed separately in grams.
Although data manipulation was done on the basis of count, this variable gives a more complete idea of the size of the ceramic assemblage.

**Miscellaneous:** This included such things as the presence of encrustation or food residues on the sherds, and similarities of sherds from separate proveniences.

In addition to the above measurements, rim sherds (organized into vessels) were also measured for the following attributes.

**Method of Manufacture:** This was very difficult to establish. No coil breaks were observed but this does not preclude the use of coiling as a construction method (see Shepard 1956:183). The presence of laminar cores in some of the sherds (especially the shell tempered ones) suggests the use of a clay slab in conjunction with the paddle and anvil technique of manufacture.

**Decoration:** Except for vessel 60 all decoration was confined to the lip area. There is quite a variety of lip modification apparent in the assemblage, and this attribute is one of the major classificatory ones utilized. All lip modifications were measured, described, and drawn.

**Rim Profile:** The rim was always drawn, but only the profiles of those rims for which the orientation is unquestionable are illustrated in this report.

**Rim Diameter:** A rim diameter chart was used to measure the size of the vessel opening at the lip in centimeters. It should be noted here that most vessels have constricted necks; some of which
considerably reduce the vessel orifice.

**Neck Angle and Rim Height:** The angle at the juncture of the rim and shoulder was measured with a protractor. These were measured whenever possible. Rim height was measured from this juncture to the lip.

The following sections constitute the descriptions of the vessels and the body sherds. Vessels are typologically described (following Bettarel and Smith 1973) and then analyzed for intrasite continuity and variability. Some hypotheses are presented to account for the discrete variations observed. Body sherds are then briefly described and analyzed with an emphasis toward confirmation or rejection of those hypotheses as presented in the vessel analysis.

**B. Vessels**

1. **Introduction**

One hundred sixty-three rim sherds weighing 2200.4 grams were recovered from Schwerdt. They represent 4.0% of the sherds by count, and 16.3% by weight. These 163 rims represent a minimum of 76 vessels.

Rims were macroscopically separated into vessels and then clustered into a hierarchy of classification. There are three levels of classification in the Moccasin Bluff ware category. First is the gross grit temper ware category itself. Second are subcategories usually distinguished on the basis of lip modification. And third are further subdivisions usually based on subtle variations of those lip modifications. Surface finish and paste are also used to classify vessels in Bettarel and Smith's scheme (1973). There are two levels
of classification in the Huber ware category. The shell temper
ware category itself is the first. The subdivisions of this ware
are based upon lip modification, lip form, body decoration, and
vessel size. These are admittedly rather gross distinctions, but
with a sample of only 12 vessels it was impossible to be more precise.

Lip modification is a major distinguishing characteristic
of the assemblage. Only 13 vessels or 17.1% show no signs of lip
modifications. This situation was also true for the Berrien Phase
assemblage at Moccasin Bluff. It is reasonable to base a classificatory
scheme primarily on the type and technique of lip modification on
a vessel since it is a decorative technique and, therefore, culturally
derived. In both the Schwerdt and Moccasin Bluff assemblages there
is a distinctive pattern as to the placement of lip modification and
the tool used to create the effect. These distinct methods of modifi­
cation are basic to Bettarel and Smith's (1973) classificatory
scheme.

The descriptions in the following section give the attribute
range for each grouping or cluster of vessels. Individual vessels
are described in Appendix A.

2. Vessel Classifications

MOCCASIN BLUFF WARE

This ware is defined by Bettarel and Smith (1973:52) as en­
compassing all the Late Woodland and Upper Mississippian grit tempered
ceramics at the Moccasin Bluff Site. They list several types of this
ware which occur over a relatively long period of time (ca.
A.D. 950 to 1600). Four of these types are represented in the Schwerdt assemblage, but only some of the groups included within these types are present. It may well be that the exclusiveness of the Schwerdt classifications present may be useful in further defining the Moccasin Bluff ware categories of the Berrien phase. The following are descriptions of the Moccasin Bluff ware types present at Schwerdt. For a more complete description of these categories the reader should refer to Bettarel and Smith (1973:52-66).

Moccasin Bluff Modified Lip

Although Bettarel and Smith (1973:153) place this type earlier at Moccasin Bluff and Brems (circa A.D. 950 or even earlier) than the temporal placement of Schwerdt, they also state that there is a "continuation of the earlier grit-tempered pottery" into the Berrien phase (A.D. 1400 to 1600). The vessels from Schwerdt which have been placed in this type are strikingly similar to the ones at Moccasin Bluff. Bettarel and Smith (1973:56-61) divide this type into six groups, of which two are represented at Schwerdt.

Group 1 - cord-wrapped-stick impressions (Plate 1).

This group of 19 rim sherds weighing 90.0 grams represents 5 vessels. The vessel numbers are 18, 27, 53, 66, 67.

Construction:

method of manufacture: No evidence of coiling. Method is indeterminable.

paste: Sherds are easily broken and friable.

temper: Opaque white crushed quartzitic particles predominate. The source is probably granitic. Particle size is coarse.
(0.3 to 0.4 cm) and is present in medium amounts.

color: Color is dark grayish brown (10 YR 4/2) to brown (7.5 YR 5/6) on the interiors. Core colors reflect exterior color.

hardness: The average is 2.5, range 2.0 to 3.0.

Surface Finish Decoration:

All vessels in this group, "cord-wrapped-stick impressions," have smoothed-over exterior surfaces and plain interior surfaces.

Lip modification is, again, the only form of decoration present. These vessels have a small (0.7 cm) folded lip, to which narrow (0.5 cm) cord-wrapped-stick impressions have been applied obliquely across the top or top exterior of the lip at intervals of about 1.5 cm.

Form:

Vessel form appears to be globular to slightly elongated with straight to inverted rims.

rim diameter: This ranges from 14 cm to 22 cm positively, and possibly up to 36 cm.

wall thickness: Lip thickness is 0.60 cm to 0.75 cm. Body thickness ranges from 0.50 to 0.75 cm.

rims: Rims are straight to slightly inverted and curve gently into the body.

neck angle: None.

lips: Lips are cord-wrapped-stick impressed. This modification is quite distinct from that of Schwerdt Scalloped—Group 1. Otherwise the lips are squared or flattened and slightly thickened.

appendages: None

Geographical Range:

Bettarel and Smith (1973) trace similarities of this pottery to other Late Woodland types around the head of Lake Michigan. It
may be that this type is a local variant of a wide ranging ceramic
development from a Middle Woodland base. However, this type has been
specifically identified only at the Moccasin Bluff, Schwerdt, Brems,
and Ada sites.

Relationships:

Bettarel and Smith (1973:151-152) estimate the time that this
ceramic type was introduced into southwestern Michigan at the Moccasin
Bluff site was much earlier than the dates assigned to Schwerdt. They
suggest that the commencement of this type is temporally situated in
the transitional late Middle Woodland--early Late Woodland period
(Brems phase: A.D. 500 to A.D. 950). They (1973:111-112) cite
numerous similarities between this type and pottery found at other
sites in the area, including the Brems site in northwestern Indiana
which has been dated to A.D. 555: 1400 ± 300 (M-48A) and the West
Twin Lake site in western Michigan which has been dated to A.D. 950:
1000 ± 100 (M-1084).

The radiocarbon dates for Schwerdt are much later. However,

it may be that the examples at Schwerdt have more substantial roots
in the earlier Late Woodland Allegan ware (Rogers 1972). Kingsley
(1977:132-134) notes similarity between this type and Allegan
Decorated Lip at the Hacklander site. Spero (1979) places the latter
type well into the 13th century at the Allegan Dam site, which also
produced shell tempered ceramics.

This latter date at Allegan Dam places this decorative technique
closer to the time of the occupation of the Schwerdt site. And, as
previously mentioned, Bettarel and Smith (1973) suggest that at least some of the Moccasin Bluff Lip varieties persist perhaps as late as the 17th century or late Berrien Phase. It is probable that this type is ill-defined temporally and that the different varieties (groups) will ultimately be assigned to more specific time frames. Perhaps the evidence at Schwerdt will help illuminate this problem and refine the temporal placement of the varieties.

The possibility that the occurrence of this type at Schwerdt represents an early Late Woodland component is very unlikely. One of the Moccasin Bluff Modified Lip vessels (18) was retrieved from feature 5, a roasting pit which also produced a Huber ware vessel (4). This further substantiates the late placement of this type at Schwerdt.

Group 3 - finger-nail impressed (Plate 1).

Only one sherd weighing 14.2 grams and representing a single vessel of this type was recovered at Schwerdt. Its number is 8. For the most part this vessel is very similar to those of Group 1, so only the differences will be noted here.

**Construction:**

**method of manufacture:** Same as Group 1.

**paste:** Same as Group 1.

**temper:** Black crushed rock in medium amounts is the primary tempering material. Particle size is medium, less than .2 cm.

**color:** Exterior color is pale brown (10 YR 6/3). Interior color is grayish brown (10 YR 5/2) with some cooking residue present. Core color reflects interior color.

**hardness:** 2.0 to 2.5.
Surface Finish and Decoration:

Surface finish is smoothed cord-marking. This vessel belongs to the "finger-nail impressed" group. These impressions appear obliquely across the exterior edge of the lip. Impressions are .7 cm in width which includes the impression left by the finger tip. These are 1.0 cm apart. There is a shallow cordmarking on the top of the lip.

Form:

Same as Group 1.

rim diameter: It is 23 cm.

wall thickness: Lip thickness varies from .75 cm to .90 cm. Body thickness is .60 cm.

rims: The rim is slightly inverted.

lips: Lip is finger-nail impressed on exterior edge of lip with shallow cordmarking on the top.

appendages: None.

Geographical Range:

Same as Group 1.

Relationships:

Generally the same as in Group 1 although it does not have a corollary in Allegan ware (Kingsley 1977).

Moccasin Bluff Impressed Exterior Lip

This is, again, a varied type that Bettarel and Smith (1973: 62) divide into two groups. They divide this type on the basis of differences in surface finish and paste. Group 1 contains cordmarked and smoothed-over cordmarked vessels. Group 2 vessels have a "smooth"
or "wax-like surface texture." All of the Schwerdt vessels fall into the Group 1 category. The major distinguishing characteristic of this type is a:

series of impressions placed around the exterior lip of the sherd. These impressions can be quite variable. In some cases they are long (up to 1.0 cm), narrow (up to .3 cm), and spaced about .45 cm apart. In other cases they are more circular (diameter about .5 cm) and spaced up to 1.5 cm apart or as close as .5 cm. In still other cases the impressions appear to have been made with the side of a finger. The impressions may be very shallow and faint, only slightly modifying the exterior edge of the lip, or they may extend all the way across the top of the lip to the interior rim of the sherd. In most cases they are placed directly on the lip edge; in several examples, however, they are applied in parallel fashion, diagonally to the edge (Bettarel and Smith 1973:61-62).

A problem arose at this point in my interpretation of the ceramic descriptions given in the Moccasin Bluff report. Moccasin Bluff Modified Lip Groups 4 and 6 can easily be mistaken for the type called Moccasin Bluff Impressed Exterior Lip. Only by examining the Moccasin Bluff assemblage in person was it possible to distinguish the difference. This difference is a matter of degree rather than kind and the secondary characteristics must be carefully assessed. Also, I believe Bettarel and Smith have been influenced by a perceived temporal difference, concluding that the Moccasin Bluff Impressed Exterior Lip type was a later development. The Schwerdt vessels fit into this type quite well, both descriptively and chronologically.

Group 1 - impressed exterior lip (Plates 2-5)

There are 39 rim sherds, weighing 420.1 grams and representing 19 vessels of this type, in the Schwerdt assemblage. The vessel numbers are 20, 21, 22, 26, 29, 32, 41, 43, 44, 45, 46, 47, 48, 49,
50, 51, 52, 54, and 58.

**Construction:**

**Method of manufacture:** No coil breaks are present. Method is unknown.

**Paste:** Sherds are friable and break unevenly. A few have laminar cores.

**Temper:** Temper is granitic (8 vessels), quartzitic (10 vessels), or quartzitic with mica inclusions (1 vessel). All are probably from granitic sources. Particle size ranges from 0.15 cm to 0.60 cm with most vessels containing coarse temper of medium to heavy amount.

**Color:** Color is highly variable, ranging throughout 10 YR grays (3/1), dark grayish browns (4/2), into the browns (5/3, 6/3), and into the 7.5 YR browns (5/4, 6/4) and reddish yellows (6/6); for both exterior and interiors. Some fire clouding and food residue encrustation is present on some vessels. Core color reflects interior color usually.

**Hardness:** 2.0 to 3.0, primarily 2.5.

**Surface Finish and Decoration:**

All exterior surfaces are smoothed cordmarked. All interior surfaces are plain. As with other types in the assemblage, decoration is confined to the lip area. All 19 vessels fall within the Group 1 descriptive range. Most vessels (12) have linear parallel impressions perpendicular and diagonally across the top exterior of the lip. These vary from deep concave impressions to shallower impressions that appear as notches. These latter are apparently caused by fingertip impressions that leave a vertical fingernail notch at the depth of the impression. Four vessels have rounder, deeper impressions that extend across the top of the lip. Three have round impressions across the top exterior of the lip. These impressions vary from 0.30 cm to 0.85 cm in width, and range from 0.30 cm to 1.00 cm apart. The distance
between the impressions is inversely related to the width of the impressions. One vessel (43) has a partially smoothed over collar extending 4 cm below the lip.

**Form:**

All forms are presumed to be wide mouthed globular vessels with constricted necks. Vessel 26, 32, and 43 show this quite effectively.

- **rim diameter:** This ranges from 14 to 28 cm, with the majority (10) falling into the 22 to 28 cm range. Those vessels falling below this latter range have an estimated rim diameter. All discerned vessels have constricted necks.

- **wall thickness:** At the lip this ranges from .40 to .85 cm with a mode (9 vessels) of .70 cm. Body thickness is usually .10 to .20 cm less than at the lip.

- **rims:** All orientable rims are everted (excurvate).

- **neck angle:** Neck angle is 140°, 131°, 105°, and 140° on the four measurable vessels (22, 26, 32, and 43). Rim height is 4.0, 8.0, 4.5, and 7.0 cm, respectively.

- **lips:** Lips are exterior lip impressed with a smooth dowel or stick, side of the finger, or tip of the finger. Lips are rounded or slightly squared; on several the lip is completely altered by the impressions.

- **appendages:** None present.

**Geographical Range:**

The Moccasin Bluff Impressed Exterior Lip type as expressed at the Schwerdt and Moccasin Bluff sites is geographically restricted to the western Michigan area during the Schwerdt time period, although Bettarel and Smith (1973:186) place one rim sherd of this type at the Brems site in northwestern Indiana. Its range is probably very similar to that of Schwerdt Scalloped Group 1.
Relationships:

Lip modification is a well-established trait in all Upper Mississippian wares. However, it is only in southwestern Michigan that this attribute is used as the primary distinguishing characteristic. This is a reflection of the limited presence of body decoration on the Upper Mississippian vessels in this area. It is reasonable to use this as a distinguishing attribute because it is a patterned decorative technique, as illustrated by the various motifs present at Moccasin Bluff and Schwerdt. Yet this type, while discreetly present only at the Moccasin Bluff and Schwerdt sites, does have its relationships to other wares in the general area. I agree with Bettarel and Smith (1973:114) when they state:

The pottery, Moccasin Bluff Impressed Lip which seems to be a local development from earlier Late Woodland material, is closely associated with material from northern Illinois and northwestern Indiana, usually referred to as Upper Mississippian. Upper Mississippian Fisher and Langford material and Oneota-related Huber materials are all intimately connected in this area. Their exact relationship and chronological ordering is not clear at the present time.

Bettarel and Smith (1973:115) go on to say:

that the decoration on Moccasin Bluff Impressed Exterior Lip is probably more closely related to the shell-tempered Fifield material, to the south of Moccasin Bluff than to the Langford material to the west.

It is perhaps notable that feature 39 at the Griesmer site in northwestern Indiana, which contained a Fifield Bold rim sherd was dated to A.D. 1530 ± 130 (IU-130) (Faulkner 1972:53). Furthermore, Faulkner (1973:162) also infers that the type Fifield Trailed falls into the A.D. 1420 to A.D. 1630 time range. And the dates at Schwerdt fall well within this time range.
Moccasin Bluff Scalloped

This category is defined on the basis of rim modification. It is characterized by the impressing of a stick on the top of the lip of the vessel to create a scalloped or wave-like effect. However, Bettarel and Smith (1973:66) state, this is a "somewhat ill-defined class," all within the same group. At Schwerdt, I was able to break this category down into two groupings.

Schwerdt Scalloped pottery is a proposed new group classification. Scalloping appears in several Upper Mississippian wares, but the use of a cord wrapped dowel tool at Schwerdt (and other sites) to create this lip effect is distinct and warrants separate consideration. The Group 1 classification includes this cord wrapped dowel type. The Group 2 designation refers to the plain tool scalloped vessels.

Schwerdt Scalloped: Group 1 - corded tool impressed (Plates 6-9).

This type is represented by 31 rim sherds weighing 655.8. These rim sherds represent 16 vessels. The vessel numbers are 9, 10, 11, 13, 23, 30, 31, 33, 35, 36, 37, 38, 39, 40, 42, and 71.

Construction:

method of manufacture: No coil breaks are present. Method is not discernible.

paste: All vessels are dense and friable.

temper: Medium to heavy amounts of grit tempering. Particle size is large, .20 cm to .40 cm. Material is varied, containing particles suggestive of a granitic composition.

color: Dark color predominates, primarily because of fire clouding and extensive residue build-up. Where actual sherd color is discernible it ranges from yellowish brown (10 YR 5/4) to brown (10 YR 5/3). Core color reflects surface color.
hardness: 2.5 to 3.0.

Surface Finish and Decoration:

All vessels are cordmarked. Some vessels show various degrees of smoothing. However, even on individual sherds the degree of smoothing will vary greatly. Interiors are plain.

Lip modification is the only form of decoration present. It consists of impressions in the top of the lip made with cordwrapped dowel or stick. Cordmarks are evident in the scallop impressions. These impressions vary in depth from .2 cm to .5 cm. Rims from other sites have been reported to have impression depths of up to 1.0 cm. Width ranges from 1.0 cm to 2.0 cm. Impressions usually cause some extrusion of the clay just below the lip. On one vessel this had created a collar-like effect.

Form:

The most common vessel form is the wide mouthed, narrow necked, globular or elongated shape sometimes referred to as a jar. Body shape may be slightly elongated as evidenced by a pot from the Elam site, which was excavated by the 1978 Western Michigan University field school under the direction of Dr. Elizabeth Garland.

rim diameter: This ranges from 14 cm to 36 cm at the lip. However, those rim diameters below 20 cm are estimated. The vessel opening usually narrows at the neck.

wall thickness: This averages .775 cm at the lip (range .70 to .90 cm). Walls thin just below the lip to a .58 cm on the average (range of .45 to .7 cm).

rims: Rims are straight to everted, and gently curve into the body of the vessel. Rim height is 4 cm to 6 cm when measured.

neck angles: It is a gentle curve of 127° on vessel 33, the only measurable example.
lips: These are invariably cordwrapped dowel impressed, creating a scalloping effect.

appendages: No evidence for lugs, strap handles, or applique stips was found.

Geographic Range:

This type has been noted at several other sites in the Kalamazoo River Basin. The Hacklander site, located 2 km down river from Schwerdt, has a minor Upper Mississippian component that is in part represented by rim sherds of the Schwerdt Scalloped Group 1 type (Kingsley 1977). The Elam site, about 19 km upstream from Schwerdt, also contained several vessels of this type, including one nearly complete pot. The latter site is as yet incompletely reported, but may represent an earlier (A.D. 1265 ± 85) component of the same cultural complex as Schwerdt (see Map 2).

Beyond the Kalamazoo River there are two sites that definitely contain vessels of this type. Visual examination of the Moccasin Bluff assemblage has resulted in the recognition of several rims which display this distinctive corded scalloping technique. However, the type, Moccasin Bluff Scalloped, is an "ill-defined class" containing vessels decorated with other scalloping techniques as well. The Dumaw Creek Site, near the Pentwater River in Oceana County (Map 1), also produced pottery of this type (Quimby 1966b:65, Fig. 29). Though the burials at Dumaw Creek have been radiocarbon dated to A.D. 1680 ± 75, the ceramics are generally believed to be somewhat earlier (Bettarel and Smith 1973:118; Fitting 1970:179). Generally, this type is probably coextensive with much of the lake shoreline in western Michigan and is evident in several river basins throughout this area.
Relationships:

Scalloped rims are found on vessels in various Upper Mississippian ceramic assemblages. Faulkner (1972:124, Plage XXIVB) notes a similar lip modification on some of the Fisher ware rim sherds from the Fifield Site in northwestern Indiana. Brose (1970: Plate XXVII) reports scalloped rims at the Summer Island site in Upper Michigan, which he assigns to the type Carcajou Plain. Lip modification of this sort is evident on some of the Carcajou Point site ceramics (Hall 1962). Scalloped rims have also been found within the Oneota component at the Mero site on the Door Peninsula in Wisconsin (Mason 1966:260, Plate XXIV) (See Map 1).

It must be noted that some of the above examples are shell tempered wares and are not reported to be of the cord wrapped dowel impressed type, but one cannot discount the similarities. These examples only partially illustrate the extensiveness of this decorative motif (scalloping) in Upper Mississippian wares.

Schwerdt Scalloped - Group 1 is quite distinctive from the earlier Late Woodland Allegan ware ceramics reported for the Kalamazoo River Basin (Kingsley 1978; Rogers 1972). While some of the Allegan ware rims show cord wrapped stick impressions, these are confined to the exterior edge of the lip, and are much narrower and shallower than on Schwerdt Scalloped - Group 1. It is conceivable that some of the Allegan ware decorative patterns could have been precursors for some of the Schwerdt ceramics motifs, but centuries of modification lie between.
Schwerdt Scalloped is most clearly related to the Upper Mississippian phase. But beyond the western Michigan lakeshore, from the Pentwater River to the St. Joseph River, the exact nature of this relationship is unclear.

**Schwerdt Scalloped: Group 2 - smooth tool impressed (Plate 10)**

This is a companion type to Schwerdt Scalloped - Group 1. It is a generalized type containing all the scalloped vessels at Schwerdt that do not fall into the previous type. Six rim sherds weighing 37.9 grams represent 4 vessels of this type. These vessel numbers are 12, 15, 24, and 76.

**Construction:**
- **method of manufacture:** No coil breaks are discernible. Method is unknown.
- **paste:** Consistency is dense, though when broken it is friable and uneven.
- **temper:** Temper is a finer grit than in Group 1, with most particles ranging from .10 cm to .20 cm (medium). However, some particles range up to .30 cm (coarse). Particles are of various substances, but quartz predominates, and is present in medium amounts.
- **color:** Color is dark grayish brown (10 YR 3/2 or 4/2) on both surfaces for most sherds. The exterior of one vessel is a light gray (10 YR 7/2). Core colors reflect interior surface colors.
- **hardness:** 2.5 to 3.0.

**Surface Finish and Decoration:**
Where discernible the surface is a smoothed-over cordmarked one. There is no body decoration. The lip is the only modified portion of the vessels. This modification consists of perpendicular or diagonal impressions across the top of lip creating a scalloping
effect. In these examples the scalloping is more flowing than the peaked effect characterizing Group 1. The impressions are created with either the side of the finger or a smooth stick. Width of the impressions is about 1.5 cm. Depth is about .4 cm. Some extruding is evident along both the interior and exterior edges of the lip.

Form:
The probable form is the globular, wide mouthed jar.

rim diameter: It is 32 cm on the only discernible example, vessel 24.

wall thickness: At the lip it is .60 cm to .85 cm. Just below this it narrows, ranging from .50 cm to .65 cm.

rim: It is everted on the only discernible example, and the complete profile is probably similar to that described for vessels in Group 1.

neck angle: No discernible examples.

lips: Lips are scalloped by impressing with a smooth stick or the finger. Lips are squared between impressions.

appendages: None observed.

Geographic Range:
The same as Group 1, although this type can be said to be even more wide-spread, since it is a more generalized type.

Relationships:
Same as Group 1. This type is equivalent to the Moccasin Bluff Scalloped generalized category (Bettarel and Smith 1973).

Moccasin Bluff Plain Modified Lip

Bettarel and Smith (1973:110) place this type in the same developmental and temporal context as the Moccasin Bluff Modified
Lip type. The only difference they see is in the surface finish; the latter being cordmarked whereas sherds of this type are plain surfaced. However, my interpretation as derived from the Schwerdt material is that this type is a grit tempered version of the plain shell tempered pottery found at Oneota sites. Some of the finest examples of this type are found in a feature in association with a shell tempered Huber pot.

Bettarel and Smith (1973) subdivided this type into three groups on the basis of lip modification. Two of these groups are represented at Schwerdt. In addition, I have proposed a fourth grouping on the basis of the style and placement of decoration on the lip.

**Group 1 - finger impressed (Plate 11)**

Two vessels of this type, represented by two rim sherds weighing 16.2 grams, were recovered at Schwerdt. Their numbers are 14 and 57.

**Construction:**

**method of manufacture**: No coil breaks are present. And while the method of manufacture cannot be determined, the presence of laminar cores in the sherds suggests that the vessels were paddled into shape.

**paste**: Sherds are friable and laminar.

**temper**: Medium to large amounts of temper are used. Particle size ranges from .20 to .30 cm. Temper type is either granitic or quartzitic, both of granitic source.

**color**: Exterior colors are brown (10 YR 5/3) and grayish brown (10 YR 5/2). Interior colors are grayish brown (10 YR 5/2) and very dark grayish brown (10 YR 3/2). Core color reflects interior surface color.
**hardness:** 2.5 to 3.0.

**Surface Finish and Decoration:**

Both interior and exterior surfaces are plain or smoothed. This type, "finger impressed," has finger tip impressions on the exterior of the lip. The impressions are relatively broad with fingernail notches at the base of the impressions. Impressions are 1.0 cm in width and .6 cm to .7 cm apart. On one example the lip is thickened to facilitate modification, and has reed or cord impressions on the top of the lip.

**Form:**

Vessel form is presumed to be globular, but these two vessels do not have a constricted neck.

**rim diameter:** This dimension is 18 (?) cm and 34 cm.

**wall thickness:** At the rim it is .6 cm to 1.2 cm, and body thickness is .7 cm.

**rims:** The one discernible rim orientation is vertical or slightly inverted.

**neck angle:** None.

**lips:** Lips are finger impressed. The lips are flattened.

**appendages:** None present.

**Geographical Range:**

Specifically, this type has been found only at the Schwerdt, Moccasin Bluff and Brems sites. However, its probable range is the same as that of Schwerdt Scalloped - Group 1 and Moccasin Bluff Impressed Exterior Lip. It is also related to other Upper Mississippian wares on the basis of both the plain surface and the modified lip.
Relationships:

Bettarel and Smith (1973) either ignore this type or include it with the Moccasin Bluff Modified lip. Their decision is not justified inasmuch as this type, in all probability, appears later than Moccasin Bluff Modified Lip pottery. It is a grit tempered version of the shell tempered, plain surfaced Oneota ceramics.

Generally, vessels of this type and similar vessels are found in a number of Upper Mississippian ceramic assemblages. The most notable is the Langford ware Plain type. This ware was created to describe the grit tempered pottery at the Fisher site in Northeastern Illinois. And since the excavation of the Fisher site by Langford (1924) and subsequent description of the ceramics by Griffin (1946), Langford ware has been found at other sites in the area. In fact, it is now seen as "diagnostic for the Langford tradition, a local Upper Mississippi development in northeastern Illinois" (Faulkner 1972:58). At the Fisher Site, Langford ware is diagnostic of the Period B and C occupations (Griffin 1946:122). The Langford phase (tradition) has been assigned to the period A.D. 1200 to A.D. 1500 (Brown et al. 1967), which is certainly in line with the Schwerdt dates. However, most feel that it is a local tradition, largely confined to northeastern Illinois. Following this lead, and noting the relative rarity of Langford pottery at Griesmer, Faulkner (1972:58) states that the Langford pottery at that site is trade ware. Due to the relative abundance of Plain Modified Lip at the Moccasin Bluff and Schwerdt sites, it is unlikely that it is a trade ware. A more likely explanation is that these vessels in
southwestern Michigan represent a local and separate tradition. Also, the Berrien Phase assemblage is markedly different from the Langford tradition assemblage.

Similar ceramics have also been reported at the Mero Site on the Door Peninsula (Mason 1966:173, 261, Fig. 2). Mason regards the grit tempered, decorated lip rim sherds in the Mero I Complex as a regional expression of the Grand River focus of the Oneota aspect. The Door Peninsula area has since been given its own phase or focus designation, the Green Bay Phase (Overstreet 1978). The major ceramic types of the Grand River focus are Carcajou Plain, Grand River Plain, and Grand River Trailed (Hall 1962:63-70). There is clear agreement about the status of this focus as Brose (1970) has placed his grit tempered, scalloped vessels from Summer Island into the Carcajou Plain category. The ceramic assemblages from these two sites also contain shell tempered, Oneota types in the same components as the plain grit tempered vessels. This mixture is similar to the situation observed at Schwerdt.

The above relationships extend around Lake Michigan. But this style is even more wide ranging. Most Oneota tradition ceramic assemblages have some sherds of this style.

**Group 2 - narrow notched (Plate 11)**

Four rim sherds weighing 18.0 grams and representing three vessels were recovered at Schwerdt. The vessels numbered are 17, 25, and 55.
Construction:

method of manufacture: Same as Group 1.

paste: Same as Group 1.

temper: The temper is medium amounts of quartzitic particles.

color: Exterior colors are brown (7.5 YR 5/4), reddish-yellow (7.5 YR 6/6), and yellowish-brown (10 YR 5/4). Interior colors are dark brown (7.5 YR 3/2), reddish-yellow (7/5 YR 6/6), and yellowish-brown (10 YR 5/4). Core color reflects interior colors though slightly grayed.

hardness: 2.0 to 3.0.

Surface Finish Decoration:

Both interior and exterior surfaces are plain. This "narrow noted" lip modification consists of a series of notches placed perpendicularly to the lip on its exterior. In the Schwerdt cases the impressions are .3 to .5 cm in width and .7 to .8 cm apart. The impressions vary from quite shallow to very distinct.

Form:

Same as Group 1, but one vessel may be jar shaped.

rim diameter: This ranges from 20 cm to 27 cm.

wall thickness: At the lip this ranges from .75 cm to .85 cm. Body thickness ranges from .55 cm to .70 cm.

rims: Rims are vertical to slightly outflaring.

neck angle: Indiscernible.

lips: Lips are exterior lip notched, and squared, rounded or beveled.

appendages: None present.

Geographical Range:

Same as Group 1.
Relationships:

Same as Group 1.

Proposed Group 4 - lip top modified (Plate 12)

This proposed group is represented by five vessels at Schwerdt. These vessels were assembled from 28 rim sherds weighing 201.4 grams. Their numbers are 4, 5, 7, 56, and 59.

Construction:

method of manufacture: Same as Group 1.

paste: Same as Group 1

temper: Granitic temper in medium amounts is predominate. However, vessel 4 also contains shell. Particle size is .1 cm to .4 cm. The source is granitic.

color: Exterior colors range from reddish-yellow (5 YR 6/6) through yellowish-brown (10 YR 5/4) to brown (10 YR 5/3). Interior colors show the same extensive range though are slightly darker. Core colors reflect surface colors.

hardness: 2.0 to 2.5.

Surface Finish and Decoration:

This is a heterogeneous category created of necessity. None of the three groups created by Bettarel and Smith could accommodate these vessels from Schwerdt which are for all intents and purposes Plain Modified Lip vessels. Temper, paste, surface treatment and other variables fall well within the range given by Bettarel and Smith (1973:63-65).

Decoration in this group is limited to the top of the lip. Two vessels (7, 59) have shallow, partially obliterated reed or cord impressions on the top of their squared lips. These parallel impressions are close together and perpendicular or slightly
oblique to the edges of the lip. The other vessels (4, 6, 56) have more accentuated impressions on the top of the lip. On vessel 4 the impressions are applied directly to the top with a pointed V-shaped tool. The impressions do not extend to the edges of the lip. The half-moon impressions, created as if the tool was twisted after impressing, are .8 cm in width and .9 cm apart. Those on vessel 6 conform to a deep W-shape and extend across the lip from edge to edge. The lip is thickened in the process. These impressions are .6 cm in width and .4 cm apart. Vessel 56 is a miniature vessel with shallow smooth tool impressions .3 to .5 cm in width and .3 to .5 cm apart. Perhaps this group should be further subdivided because of the observed variation but this will have to wait until a larger sample of vessels is available.

**Form:**

These vessels are more consistently of the jar type.

**rim diameter:** This ranges from 10 cm for the miniature vessel up to 26 cm.

**wall thickness:** Lip thickness ranges from .5 cm to 1.0 cm. Body thickness ranges from .6 cm to .8 cm.

**rims:** All examples are outflaring or everted.

**neck angle:** The neck angle is fairly sharp in this group. It is 135° on vessel 6 and 122° on vessel 56, the only discernible examples.

**lips:** Lips are modified on the top of the lips exclusively, and are flattened or squared.

**appendages:** None present.

**Geographical Range:**

Same as Group 1.
Relationships:

Same as Group 1.

HUBER WARE

This ware is named for the Huber site, where it was first found and described. The Huber component, sometimes called Blue Island (Griffin 1943:284) or Huber focus (Brown et al 1967:36), has been variously described since 1933, but the actual publication of descriptive categories for Huber ware was not accomplished until 1972 (Faulkner 1972).

Faulkner created three tentative types and one proposed type following previously established taxonomic practices for other Oneota tradition wares (Koshkonong, Grand River, Carcajou, among others). He lists these as Huber Plain, Huber Cordmarked, Huber Bold, and Huber Trailed. These types are based upon samples from the Griesmer Site and various other Huber focus sites. Surface finish and body decoration constitute the primary distinguishing characteristics. Since the vessels present at Schwerdt, with a single exception, lack body decoration, I have grouped the Schwerdt sample on the basis of lip modification and vessel form. The four proposed Schwerdt groupings do differ from those used by Faulkner, yet correlate quite nicely with his types. Schwerdt Group 1 is the equivalent of Faulkner's proposed Huber Trailed. Schwerdt Groups 2, 3, and 4 would fall within Faulkner's tentative type, Huber Plain. This departure from Faulkner's typology is undertaken in the interest
of internal consistency, and as a reflection of the sample recovered from the Schwerdt site.

The Schwerdt groupings correlate with types of the Berrien ware in the following manner: Schwerdt Groups 1, 2, and 3 would fit within Berrien ware Groups 1 and 2, albeit those at Schwerdt show more variation in rim height than the Moccasin Bluff sample; and Schwerdt Group 4 would fit into Berrien Group 3, although Bettarel and Smith (1973) do classify miniature vessels separately.

**Schwerdt Group 1 - Huber Trailed (Plate 13)**

Only one vessel of this type was recovered at Schwerdt. Two rim sherds, weighing 310.0 grams, recovered from feature 41 represent this vessel. Feature 41 also yielded vessels of Schwerdt Scalloped Group I, Moccasin Bluff Plain Modified Lip, and Huber ware (designated Schwerdt - Groups 3 and 4). The vessel number is 60.

**Construction:**

**method of manufacture:** No coil breaks are present. The laminar core may indicate that the vessel was modeled into shape with a paddle.

**paste:** Laminar and consistent.

**temper:** A medium to heavy amount of finely crushed shell, as represented by surface pitting and flat parallel holes in the core, is the primary temper. A small amount of sand is also visible in the cross-section.

**color:** Exterior color is pale brown (10 YR 6/3). Interior and core color is brown (7.5 YR 5/4).

**hardness:** 2.0.

**Surface Finish and Decoration:**

Both interior and exterior are plain. A fine gray clay slip
appears to have been applied to both surfaces of the rim.

There is a fine trailing (almost incising) on the shoulder of the vessel. For Huber Trailed, Faulkner (1972:195) states that the trailing "execution is haphazard and the spacing is irregular," but the lines are generally perpendicular to the lip. This is also true for this vessel. These lines are on the fine end of Faulkner's spectrum, or about .1 cm in width.

The grooved lip is impressed with a V-shaped tool that is variously impressed diagonally to the lip edges and perpendicular to them. Occasionally, when notched perpendicularly to the lip, it appears that the tool has been rocked back and forth as it was moved along the lip, creating an almost zig-zag effect. Impressions are about .2 cm in width and .2 to .4 cm apart.

Form:

This appears to be a globular wide-mouthed, constricted neck jar or olla.

rim diameter: Rim diameter is about 29 cm which is somewhat larger than Faulkner's examples.

wall thickness: At the rim and just below this is 1.2 cm. Below the rim this narrows markedly to .4 cm.

rim: It is markedly outflaring.

neck angle: The juncture at the neck is a severe angle of 115°.

lip: The lip is slightly grooved in cross-section, and has been notched.

appendages: At the very end of one rim sherd the lip is thickened and on the exterior there is a depression where a strap handle was attached. The shoulder area where the other end of this handle would have been attached is not present. There are present in the assemblage four strap handle fragments
(Plate 19), one of these fragments is especially expressive of the size and length of these handles.

**Geographical Range:**

Huber ware is an Oneota shell tempered ceramic tradition that was first recorded on several sites in the Chicago area of northwestern Illinois. The first site where this ceramic ware was found and described was, of course, the Huber site. Several other sites producing Huber ware have since been excavated in this general area. The most notable are Oak Forest (Bluhm and Fenner 1961), Anker (Bluhm and Liss 1961), Zimmerman (Brown ed. 1961), Hoxie Farm (Bluhm and Wenner 1961), and Palos (Munson and Munson 1969) in northeastern Illinois. In northwestern Indiana the Griesmer site (Faulkner 1972) has a Huber component as does "the Brems site where a partial vessel was found in a shallow fireplace" (ibid:195). The Moccasin Bluff Site (Bettarel and Smith 1973) and the Wymer Site on the St. Joseph River (Garland and Mangold 1980) also have huber components, locally referred to as Berrien Phase. It must be remembered that several of these sites are very late and have European trade goods in their assemblages. In the Kalamazoo River Basin the Schwerdt site contains Huber ware, and the as yet unanalyzed assemblages from Elam and Nordhof (both sites were excavated by Western Michigan University field schools) possibly contain some Huber vessels.

**Relationships:**

Huber ware has been placed within Oneota aspect by J. B. Griffin (1943:286) who has stated that the Huber component is:
"closer in pottery form and decoration to Orr and Winnebago foci than is the Grand River Focus, and it is also closer to Oneota than the relationship indicated in the suggested placement of the Fisher Focus in the Oneota Aspect."

The Orr focus relationship has been further promoted by Bluhm and Liss (1961:106) and Bluhm and Fenner (1961:145) in their analysis of the ceramics from the Anker and Oak Forest Sites. Resemblances have also been seen with the Koshkonong focus (Hall 1962:155-56). These comparisons illustrate the admixture of ceramics comprising the Oneota aspect. Though these various foci are distinctive in time and space, they are interrelated through ancestry and exchange. And as Faulkner states: "From the foregoing statements it is obvious that the pottery complex of the Huber Focus is as distinctive as those of other Oneota foci in the Upper Mississippi Valley" (1972:64).

Rather than wandering all across Wisconsin, Minnesota and Iowa, perhaps a clue to the origin of Huber ware is closer to home. Brown et al. (1967:36) state that the Fisher A component, which predates Huber, is "clearly affiliated with the Chicago area Oneota or the Blue Island or Huber focus." This presents a picture of developmental continuity from at least A.D. 1200 to contact. For an interesting discussion of the possible relationships between Fisher and Huber, see Faulkner (1972:167-173). Faulkner presents four hypothetical models for the relationships of Fisher and Huber, but regrettably it is impossible to substantiate any of the alternatives he suggests at this time.
However, Faulkner makes several interesting points in his discussion. One has to do with the seriation graph of certain ceramic modes (Fig. 23:170) presented following his discussion of the third model, which proposes a direct phylogenetic relationship. He (1972:171) states:

If Fifield is indeed the earliest site in this sequence, then it can be demonstrated that smoothing gradually replaced cord marking as a final surface treatment, medium and wide trailing gave way to fine trailing, and decoration of the lip became less popular.

While such seriation is not possible for sites in the Kalamazoo Valley at the time, Schwerdt's shell tempered ceramics suggest that this site should fall near the end of the sequence. However, the Schwerdt radiocarbon dates indicate a somewhat earlier placement. Faulkner also supplies some food for thought in his discussion of a fourth model of a developmental sequence for Huber and Fisher.

The Fisher phase would develop primarily from a Woodland base in the upper Illinois Valley and the ancestry of Huber would occur in a similar and presumably closely related Woodland base in a contiguous area such as southern Wisconsin where Oneota influences were much more pervasive (1972:172).

There are other contiguous areas besides southern Wisconsin!

Schwerdt Group 2 - modified lip (Plate 14-15)

There are three vessels of this type represented by seven rim sherds weighing 338.5 grams. Their numbers are 2, 3, and 5.

Construction:

method of manufacture: Same as Schwerdt Group 1.
paste: Same as Schwerdt Group 1.

temper: Same as Schwerdt Group 1 except vessel 5 contains no sand.

color: Exterior colors are brown (7.5 YR 5/4), dark brown (7.5 YR 4/4), and dark yellowish brown (10 YR 4/4). Interior colors are brown to dark brown (7.5 YR 4/2) and brown (10 YR 5/3). Core colors are just a shade darker than interior colors.

hardness: 2.0 to 2.5.

Surface Finish and Decoration:

Both interior and exterior surfaces are plain. There is no body decoration evident. This is a separate group because of the lip modification without body decoration.

Lip modification on vessel 2 consists of narrow notches on the interior edge of the lip. These notches occur at about .3 cm intervals. On vessel 3 modification consists of rectangular punctuations on the top of the lip. These punctuates are about .5 cm in width and .5 to .6 cm apart. The modification characterizing vessel 5 consists of shallow impressions or notches across the top of the lip.

Form:

The same as Schwerdt Group 1.

rim diameter: Rim diameters are 28 cm to 29 cm.

wall thickness: At the lip it is .65 to 1.00 cm. Below the lip it thins to about .6 cm.

rims: All examples are outflaring.

neck angle: The juncture of the rim and body at the neck is quite sharp. Neck angles are 105°, 87°, and 99° respectively.
lips: Lips are squared or slightly beveled.

appendages: None present.

Geographical Range:

Same as Schwerdt Group 1.

Relationships:

Same as Schwerdt Group 1.

Schwerdt Group 3 - plain squared lip (Plate 16)

There are three rims aggregating 23.0 grams from three vessels in this group. Their numbers are 61, 62, and 63.

Construction:

method of manufacture: Same as Schwerdt Group 1.

paste: Same as Schwerdt Group 1.

temper: Two vessels are exclusively shell tempered. One vessel contains both shell and sand.

color: Exterior colors are brown (10 YR 5/3), pale brown (10 YR 6/3), and dark reddish brown (5 YR 3/2). Interior colors are brown (10 YR 5/3), gray brown (10 YR 5/2), and red brown (5 YR 4/4). Core colors are a shade grayer than interior colors.

hardness: 2.5 to 3.0.

Surface Finish and Decoration:

Both interior and exterior surfaces are plain. Lips are squared and plain.

Form:

Same as Schwerdt Group 1.

rim diameter: These are 24 cm and 32 cm on the two discernible vessels (61 and 62).
wall thickness: At the lip it is .7 cm. Below the lip it ranges from .5 cm to 1.1 cm.

rims: All examples are outflaring.

neck angles: On the two discernible examples there are sharp angles of 110° and 130°.

lips: All lips are squared and unmodified.

appendages: None present.

Geographical Range:

Same as Schwerdt Group 1.

Schwerdt Group 4 - miniature vessels (Plate 17)

There are 9 rim sherds weighing 24.7 grams and representing 5 vessels of this type. The vessel numbers are 1, 28, 34, 64, and 65.

Construction:

method of manufacture: Same as Schwerdt Group 1.

paste: Same as Schwerdt Group 1.

temper: Two vessels are solely shell tempered. The others are both shell and sand tempered.

color: Exterior colors range from very dark gray (10 YR 3/1) to light yellowish brown (10 YR 6/4) to yellowish red (5 YR 5/6). Interior colors range from brown (7.5 YR 4/2) to yellowish brown (10 YR 5/4). Core colors are dark browns and gray browns.

hardness: 2.0 to 2.5.

Surface Finish and Decoration:

Both interior and exterior surfaces are plain. Lips are rounded or squared, and plain.
Form:
These are miniature versions of the other Schwerdt Groups.

rim diameters: These are small, ranging from 8 cm to 10 cm.

wall thickness: At the lip it ranges from .30 to .55 cm
Body thickness is .35 to .60 cm.

rims: These are all outflaring or excurvate.

neck angle: The neck angle is still quite sharp, though
more flowing than the previous examples. The angle is 125°
on the only measurable example.

lips: Lips are rounded or squared and plain.

appendages: None present.

Geographical Range:
Same as Schwerdt Group 1.

Relationships:
Same as Schwerdt Group 1.

UNCLASSIFIED (Plate 18)

Several of the vessels could not be typed. Their basic
descriptions are included in Appendix A. These are cordmarked grit
tempered vessels. Some have plain lips; others show faint signs
of castellation. These may very well represent utilitarian carry­
overs from Late Woodland ceramics. However, they are distinctive.
The Schwerdt vessels are much denser in consistency and walls are
thinner than known Late Woodland pottery. Most of the rim sherds
are small so much of the data are equivocal. There are nine untyped
vessels represented by 12 rim sherds weighing 50.6 grams. They are
numbered 16, 19, 68, 69, 70, 72, 73, 74, and 75.
3. Vessel Analysis

The ceramics at the Schwerdt have been assumed in the preceding descriptive section to be intimately related to those associated with the Berrien Phase as Moccasin Bluff. That the descriptive categories used by Bettarel and Smith (1973) readily assimilate the Schwerdt assemblage, with only minor alterations (Table 1), precludes a reexamination of this association. What is unique about Schwerdt is that it represents a single component Berrien Phase occupation, while Moccasin Bluff is multi-component site. The situation at Moccasin Bluff was confused and there was no clear delineation between the several components. The situation at Schwerdt is not nearly so confused and, remarkably, every vessel type present at Schwerdt has its counterpart in the Berrien Phase materials at Moccasin Bluff. In fact, Bettarel and Smith (1973:153) regard the scalloped types and the "Berrien-Huber" pottery as diagnostic of this phase and these are very prominent at Schwerdt. This indicates that Bettarel and Smith were probably correct in their characterization of the Berrien Phase ceramic assemblage at Moccasin Bluff, and that the Schwerdt assemblage represents another Berrien Phase component.

It appears that Bettarel and Smith established their diagnostic artifacts for each phase at Moccasin Bluff on the basis of sherds recovered from features that had been radiocarbon dated. After establishing a few "type" features for each phase they were able to cluster certain artifacts, or in this case, ceramic types by phase. Several of the pit features at Schwerdt are also useful
Table 1
Schwerdt Site: Vessel Type Summary

<table>
<thead>
<tr>
<th>Vessel Types</th>
<th>No. of Vessels</th>
<th>No. of Rim Sherds</th>
<th>Weight (grams)</th>
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<tr>
<td><strong>Moccasin Bluff Ware:</strong></td>
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<tr>
<td>Moccasin Bluff Modified Lip:</td>
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<tr>
<td>Group 1: cord-wrapped stick</td>
<td>5</td>
<td>19</td>
<td>90.0</td>
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<tr>
<td>Group 3: finger-nail</td>
<td>1</td>
<td>1</td>
<td>14.2</td>
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<tr>
<td>Moccasin Bluff Impressed Exterior Lip:</td>
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<tr>
<td>Group 1: impressed exterior lip</td>
<td>19</td>
<td>39</td>
<td>420.1</td>
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<tr>
<td>Moccasin Bluff Scalloped:</td>
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<tr>
<td>Schwerdt Scalloped-Group 1:</td>
<td>16</td>
<td>31</td>
<td>655.8</td>
</tr>
<tr>
<td>Schwerdt Scalloped-Group 2:</td>
<td>4</td>
<td>6</td>
<td>37.9</td>
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<tr>
<td>Moccasin Bluff Plain Modified Lip:</td>
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<tr>
<td>Group 1: finger impressed</td>
<td>2</td>
<td>2</td>
<td>16.2</td>
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<tr>
<td>Group 2: narrow notched</td>
<td>3</td>
<td>4</td>
<td>18.0</td>
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<tr>
<td>Group 4 (proposed): lip top modified</td>
<td>5</td>
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<td><strong>Huber Ware:</strong></td>
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<tr>
<td>Schwerdt Group 1: Huber Trailed</td>
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<td>Schwerdt Group 2: modified lip</td>
<td>3</td>
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<td>Schwerdt Group 3: plain squared lip</td>
<td>3</td>
<td>3</td>
<td>23.0</td>
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<tr>
<td>Schwerdt Group 4: miniature vessels</td>
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<tr>
<td><strong>Totals</strong></td>
<td>76</td>
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in showing this association of ceramic types. Table 2 shows that several of the pit features contained vessels of more than one type. As many as three separate vessel types were recovered from a single feature. When this occurred, it greatly facilitated cross referencing of vessel types. For the most part, the feature fills suggest a single episode of refilling. However, it could be that later sherds were combined with earlier ones as the fill was redeposited in the pits. But the associations do indicate general contemporaneity. As we see in Table 2, Feature 5 contained fragments of Modified Lip, Plain Modified, and Huber miniature vessels. Feature 9, which was radiocarbon dated at 505 ± 70 years: A.D. 1445 (UGA-1725), included a Plain Modified Lip vessel and a Huber vessel. Feature 13 contained vessels of both Schwerdt Scalloped groups. Feature 16, dated at 500 ± 120 years: A.D. 1450 (UGA-1726), combines a Schwerdt Scalloped-Group 1 vessel and a Huber vessel. Feature 23B had vessels of Schwerdt Scalloped-Group 1 and Impressed Exterior Lip. Feature 38 contained vessels of Schwerdt Scalloped-Group 1 and one vessel each from two of the Huber groups. And Feature 41 combined vessels of Schwerdt Scalloped-Group 1, Plain Modified Lip and one Huber vessel. In this manner, virtually all of the Schwerdt ceramic types can be associated. But as previously mentioned, this does not necessarily indicate the absolute contemporaneity of all the types, as will be elaborated upon later.

While the ceramics from Schwerdt and from the Berrien Phase component at Moccasin Bluff are very similar, the sites are different. According to Cremin (1977, 1979), the Schwerdt site
Table 2
Schwerdt Site: Vessel Provenience

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<tr>
<th>Provenience</th>
<th>Schwerdt Scalloped (Group 1)</th>
<th>Schwerdt Scalloped (Group 2)</th>
<th>Moccasin Bluff Modified Lip</th>
<th>Moccasin Bluff Impressed Exterior Lip</th>
<th>Moccasin Bluff Plain Modified Lip</th>
<th>Huber (Schwerdt Group 1)</th>
<th>Huber (Schwerdt Group 2)</th>
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Table 2 (Continued)

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<tr>
<th>Provenience</th>
<th>Schwertd Scalloped (Group 1)</th>
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<th>Moccasin Bluff Modified Lip</th>
<th>Moccasin Bluff Impress Lip</th>
<th>Moccasin Bluff Plain Modified Lip</th>
<th>Huber (Schwerdt Group 1)</th>
<th>Huber (Schwerdt Group 2)</th>
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<tr>
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<tr>
<td>Fea. 31</td>
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<tr>
<td>Totals</td>
<td>16</td>
<td>4</td>
<td>6</td>
<td>19</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>9</td>
</tr>
</tbody>
</table>

TOTAL: 76 vessels

N = vessel catalog numbers

* = vessel from more than one provenience

All features are roasting pits with the exception of features 3 (amorphous stain) and 4 (rock hearth).
represents just one aspect of the seasonal round of subsistence activities, and is ancillary to an agricultural village. And according to Fitting and Cleland (1969), Moccasin Bluff is just such an agricultural settlement. This interpretation is supported by the presence of corn at Moccasin Bluff (Bettarel and Smith 1973), the nature of the faunal assemblage (Cleland 1966), and the relatively intensive occupation of the site as indicated by the vessel to square foot excavated ratio of .11 (or 1.18 vessels per m$^2$ excavated) calculated for the site. Fitting (1969:363) has argued that a densely populated village site of the Woodland time period can be expected to yield a ration of .10 or greater (1.08 vessels/m$^2$). On the other hand, a value of .05 or less (.54 vessel/m$^2$) is interpreted to reflect a low density, extensive occupation, as might be anticipated of a temporary, seasonal campsite. The vessel/ft$^2$ ratio calculated for Schwerdt is .015 (.16 vessel/m$^2$). This supports the characterization of Schwerdt based upon the subsistence data. And in this respect, Schwerdt would appear to reflect a pattern of utilization consistent with a segment of the population abandoning an agricultural village after spring planting in order to gather natural foods with which to supplement their diet until the fall harvest (Cremin 1979:6-8, 24; Faulkner 1972:116). The Schwerdt site represents an occupation by a small population aggregate intent upon exploiting the spring sturgeon run and other aquatic and riparian resources of the Lower Kalamazoo Valley. Together with the agricultural village (e.g., Moccasin Bluff), the Schwerdt fishery is in all probability another
facet of the Upper Mississippian subsistence-settlement system operative in southwestern Michigan during late prehistory (Cremin, 1979).

These differences in site function are reflected in the archaeological record. This is readily evident in the floral and faunal remains which have already been mentioned. The lithics also reflect the task specific nature of the site, as do the features. The ceramics also reflect certain differences from Moccasin Bluff that directly and indirectly are a reflection of site function.

The distribution of vessels across the site may allude to the nature of activities carried out on the site. This would be true if there is a functional difference between the ceramics. Notably, food encrustations were found in some vessels of all ceramic types except the Plain Modified Lip and Huber vessels. Eight samples of scrapings consisting of black carbonaceous residue from both the interiors and exteriors of several vessels were submitted for analysis. The encrustations were determined to contain the methyl esters of fatty acids' methyl palmitate, methyl oleate, and methyl stearate. These are probably of mammalian origin, but they could also be derived from plants. This probably reflects a mixture of food stuffs processed in these vessels (Katie Parachini, personal communication).

Another sample of scraping from a Huber vessel produced different results. Vessel 60 has a gray clay slip on both the interior and exterior of the collar which appears to have been
intentionally applied. It was analyzed as being nonorganic in nature, and did probably serve as a decorative slip, or possibly as a functional sealant for the vessel walls.

The encrusted food residues on some vessels indicate that these types were used in cooking. The lack of these same residues on the Huber and Plain vessels might be interpreted to suggest that they were used as storage or carrying vessels rather than being employed in food preparation. The strap handle base on Vessel 60 might be viewed as being consistent with this interpretation. And, moreover, there were four shell tempered strap handle fragments (Plate 19) in the assemblage as well.

This suggestion of functional variation along the lines of the vessel categories may allow testing for variation in activities across the site. Using data from Table 2, it has been possible to construct several tests with which to look for significant typological clustering of vessels across the site. Some vessels were necessarily eliminated from the several statistical tests in order to test for patterning in the distribution of vessel types across the site; those found during the general surface collection, those from Block A since the plow zone of this area was not screened, and those whose fragments were recovered at several locations. Notably, in all of the tests run, no significant clustering of vessels by type was observed. Indeed, distribution is random across the site for all vessel types.

There does, however, appear to be a concentration of vessels toward the east end of the site. This is indicated by the vessel
distribution in test units (excluding Block A). Here, 28 vessels were recovered in 138.5 m$^2$ of excavation, or a ratio of .20 vessels per m$^2$. To the west, only 14 vessels were found in 225.5 m$^2$ of excavation, providing a ratio of .06. An additional observation is that of the 113 test units (261.75 m$^2$) which contained no sherds for which a vessel could be counted, 89 (198.25 m$^2$) are in the western portion of the site. And, finally, 9 of 12 excavation units containing more than one vessel occur on the east end, further indicating a differential distribution of vessels across the site.

The distribution of vessels in pit features further substantiates this differential concentration of materials. Ten of 15 features containing vessels are on the eastern portion, as are 5 of 8 features containing more than one vessel. Of the 27 features containing no vessels, 14 are found in the western portion of the site. Considering that only 18 features were defined in the latter area, this is a considerable number lacking vessels.

A reasonable explanation for this concentration of materials in one area of the site lies on the idea of regular reoccupation over a number of years. There is other evidence which indicates at least a reuse of some areas of the site; the partial superpositioning of features 23A and B (Figure 3) and the eight occurrences of a second episode of firing in pit features after their having been refilled following primary use. This evidence in itself does not preclude a more intensive single season use of one area. But a more reasonable argument lies in an examination of the character of the population aggregate that occupied Schwerdt.
As previously suggested, this aggregate was small and occupied the site briefly during late spring-early summer. A comparison of the stone tools and pottery vessels indicates that the Schwerdt population had a balanced male/female ratio. This is expressed in the vessel (N=76)/stone tool (N=129) ratio of .59. Fitting (1969:366) has argued that ratios of .20 to 2.00 represent a sexually balanced occupation. A value of less than .20 would indicate a male task oriented occupation, while one greater than 2.00 would indicate an occupation characterized by female tasks. This evidence, plus the presence of miniature vessels at Schwerdt, which may indicate the presence of children, suggests a balanced group such as would characterize a nuclear or perhaps an extended family. If the occupants of Schwerdt comprised a small, familial unit, then it is probable to expect a small, spatially confined distribution of artifacts at the site. Therefore, the distribution of materials at Schwerdt may indicate regular revisitation by the same and/or related group of people.

It may be possible to examine this temporal superpositioning of seasonal occupations by contrasting the occurrence of the vessel types in and out of features. There is one assumption basic to contrasting vessel types in such a way, and that is that the deposition artifacts in and out of features does reflect temporal difference.

I was first exposed to the idea of contrasting the occurrence of vessels in and out of features to test for temporal variation in Faulkner's (1972:74-75) monograph on two Upper Mississippian sites in northwestern Indiana. The basic hypothesis is that those
ceramic types found to occur in greater frequency within features are deposited on the site earlier than those occurring with greater frequency out of features. The rationale is as follows: Initially ceramic debris is deposited across the site with some deposited on the surface and some discarded in features. When the features of the following occupation are excavated by their users, some of the ceramics already deposited about that general locus are displaced around the pit. As the pit is used, the broken ceramics of the people who are using the pit are also deposited around it. When this feature is filled with camp trash and dirt pulled from around the pit, ceramics from both occupations are combined in the same feature fill. Therefore, ceramics from the earlier occupation would be found in both these features and the features of the earlier occupants. At Schwerdt, this scheme of deposition and redeposition may account for the wide variation in the preservation of the vessels within features. For example, some vessels were represented by a single rim sherd, others were nearly complete.

The distribution of vessel types in and out of features can be tested statistically utilizing the Fisher Exact test since the values are low. Under such a construct the null hypothesis would be rejected if there is a significant relationship between the vessel type and its depositional occurrence. The null would be accepted if the types are randomly distributed over the site, therefore, indicating no temporal variation in vessel deposition.

In selecting the sample from Schwerdt, care was taken to eliminate vessels of questionable provenience, and only vessels
within pit features were considered in the sample. Of the 76 total vessels, only 56 have been used. Of all the various clusters, divisions, combinations of types that were processed in such a way, only one clustering of vessel types proved significant below the .05 level. Table 3 shows a contrast of those vessels of the Schwerdt Scalloped-Group 2, Moccasin Bluff Modified Lip, and the Moccasin Bluff Impressed Exterior Lip types, and the Unclassified vessels to the Schwerdt Scalloped-Group 1 vessels, all the Schwerdt Groupings of the Huber ware, and Moccasin Bluff Plain Modified Lip types. The Fishers Exact probability for the given table is .03. This is below the .05 level of significance so we reject the null hypothesis, and state that there is a statistical indication that there is a relationship between the clustered types and their deposition. If our earlier assumption is correct, then it may be that the second cluster of vessel types was deposited on the site earlier than the first.

Table 3

Schwerdt Site: Association of Clustered Vessel Types with Pit Features

<table>
<thead>
<tr>
<th>Vessel Types</th>
<th>Location of Vessels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In Features</td>
</tr>
<tr>
<td>S.S. (G.1), Huber (all), M.B.P.M.L.</td>
<td>16</td>
</tr>
</tbody>
</table>

N=66; df = 1
Fishers Exact probability for the given table = .03.
What these data indicate is that there may have been a differential preference for certain ceramic types during the several occupations. According to Table 3 it appears that Schwerdt Scalloped, Group 2 vessels, Huber vessels, and Plain Modified Lip vessels were deposited on the site earlier than other types. Whether there is a continuum of changing preference, or sharp shift in preference during the occupations is unclear. The dichotomy expressed in Table 3 is artificial and does not necessarily reflect the process of change accurately. This is further complicated by our lack of knowledge of how many seasonal occupations are represented at Schwerdt, and whether they were annually successive or spaced over an unknown number of years.

This temporal distinction of the ceramic types of the Berrien Phase ceramics at Schwerdt cannot be said to be representative of general trends at all sites of the Berrien Phase. The cultural makeup of the Berrien Phase peoples is unknown and to speculate as to just how these cultural constructs are reflected in the ceramic remains would lead to tautological arguments. The data from Moccasin Bluff are equivocal and provide no indices for cultural interpretation. As always, more data are clearly needed to construct a clearer cultural picture based on the ceramics. It is one thing to correlate ceramic style and social unit, and another to establish what those units are.

The following section is a brief discussion of the body sherd data. It is organized so as to further elaborate some of the ideas presented above.
C. Body Sherds

Of the pottery recovered at Schwerdt, 3928 or 96% (11288.1 g or 83.7% by weight) are body sherds. The presence of decoration on only two specimens limits the effectiveness of the body sherd analysis. Only gross categorization by surface treatment is possible, but this is still useful.

One decorated body sherd, a gray specimen with two parallel trailed lines, is typical of a decorative motif found on several types of Upper Mississippian pottery. The exterior surface of the sherd is plain. The trailed lines are .2 cm in width and are .3 cm apart. They were made with a plain round tipped tool. Its location in the plow zone of test unit BB does not provide an association with any vessel or any other plain grit tempered body sherds. This decoration is similar to Bettarel and Smith's (1973:183) motif 1 for body sherds at Moccasin Bluff, and it is also similar in appearance to the motif described by Faulkner (1972:194-5) for Huber Trailed. However, the decoration on the sherd in question is not complete enough to determine its precise affiliation.

The other decorated body sherd is more typical of a Late Woodland decorative motif. The sherd's exterior surface is characterized by smoothed cordmarking and it is grit tempered. The corded tool oval punctates are present only in part, but they appear to have been made with a cordwrapped paddle edge. The sherd is so badly damaged that the probable location of the punctates on the vessel cannot be determined with certainty. Many other cordmarked
sherds were found in test unit M, but no other sherd had body
decoration. This one sherd should not be used to infer a Late
Woodland occupation of the site, although oval corded tool punctates
are typical of Late Woodland Allegan ware. Notably, corded impres­
sions are also present on the lips of some of the Schwerdt vessels
(Schwerdt Scalloped-Group 1 and Moccasin Bluff Modified Lip-Group 1
vessels). This motif is possibly a decorative carryover of some
sort.

Aside from these two body sherds, the only other surface dis­
tinction used in this analysis is the exterior surface treatment.
Three thousand three hundred and sixty-four or 85.6% of the body
sherds are cordmarked or smoothed over cordmarked. Five hundred
and forty nine or 14.0% of the sherds are plain surfaced. Fifteen
or .4% have exfoliated exterior surfaces. All interior surfaces
are plain.

Temper is the other major distinguishing characteristic.
As previously mentioned, I have used seven temper classifications.
The frequency of occurrence of the different temper types in de­
sceding order is: granitic (2814 or 71.6%); quartzitic (666 or
17.0%); mixed (193 or 4.9%); shell (190 or 4.8%) 1 black (51 or
1.3%); mica (11 or .3%); and sand (3 or .1%). Fully 88.6% of the
temper is derived from a crushed granitic source. Cobbles of a
crumbly granite-like rock can be found throughout the morainal areas
of southwestern Michigan. Likewise, the other tempering materials
are probably of local origin. There is quite a variety of tempers
present at Schwerdt, as there was at Moccasin Bluff (Bettarel and
Smith 1973:74, 84-5). Perhaps, a definitive study of the tempers used in this area may provide new means of classification and interpretation of otherwise indistinguishable sherds.

A cross-tabulation of these two primary variables, surface treatment and temper type, is provided in Table 4. There would appear to be a significant relationship between these two variables. For example, most grit (mineral) tempered sherds are cordmarked, and all shell or mixed tempered sherds are plain surfaced. There are also a number of grit tempered, plain surfaced sherds. These ratios compare favorably to the vessel ratios derived from a consideration of surface treatment and temper type. All of the shell and mixed tempered vessels are plain or smooth surfaced at Schwerdt. This is an excellent reason for classifying the Schwerdt shell and mixed temper vessels as Huber ware and not Fisher ware, which are both (Huber and Fisher) not only shell tempered but would also appear to be co-extensive in southwestern Michigan (Bettarel and Smith 1973; Faulkner 1972). As Faulkner (1972:72) states in contrasting Fisher and Huber ceramics:

These two wares are also distinctive, the most distinguishing characteristics including a predominance of cord-marked surfaces in the Fisher ware and smoothed vessel exteriors in the Huber ware.

This characteristic plain surface is also noted at the "type" site, Huber (otherwise known as The Blue Island Component), where "on less than 5 per cent of the sherds is there evidence of any cord marking, and in these instances the surfaces have usually been subsequently smoothed" (Griffin 1943:285). A more extensive
### Table 4
Schwerdt Site: Body Sherds - Surface Treatment vs. Temper Type

<table>
<thead>
<tr>
<th>Surface Treatment</th>
<th>Temper Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
</tr>
<tr>
<td><strong>Cordmarked</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>90.2%</td>
</tr>
<tr>
<td><strong>Plain</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>9.8%</td>
</tr>
<tr>
<td></td>
<td>.1%</td>
</tr>
<tr>
<td><strong>Exfoliated</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>.3%</td>
</tr>
</tbody>
</table>

Total body sherds = 3928
description of Huber ware is included in the previous section of this paper.

As there was with the vessels, there is also an unequal distribution of body sherds over the Schwerdt site. This is readily apparent in Tables 5 and 6. Upon comparison with Map 4 (use Appendix B), it is observed that a great many test units and features contain no ceramics at all, others just a few, and some produced a great many sherds. Table 5 presents the distribution of selected varieties of body sherds by test unit. These varieties are based on combinations of surface treatment and temper material. There is a definite concentration of materials in certain units. On the average for the entire site there are 5.95 body sherds per m² of excavation (excluding Block A, since the plow zone was not screened, and also the body sherds from the features since they are considered separately). This low value is greatly affected by the number of units (50 of 140) which contained no ceramics at all. Of the remaining 90, only 34 test squares produced body sherds in quantities exceeding this average. These units contained 85.6% of the body sherds recovered from test unit fills. They averaged 1854 sherds/112m²=16.55. Twenty-one of these units were in the eastern portion of the site and they produced 1476 sherds, or 68.1% of the total body sherds from test unit fills. This concentration of material is partially an artifact of the sampling strategy. That is, more and larger test squares were dug in this eastern area. But given the fact that these units represent only 23.9% of the screened test unit fills, yet contained 68.1% of the total body sherds found,
Table 5

Schwerdt Site: Test Square - Body Sherd Count (Weight-grams)

<table>
<thead>
<tr>
<th>Test Square No.</th>
<th>Pottery Type: Surface/Temper</th>
<th>Cordmarked Grit</th>
<th>Exfoliated Grit</th>
<th>Plain Grit</th>
<th>Plain Shell</th>
<th>Plain Mixed</th>
</tr>
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<td>2( 5.5)</td>
<td></td>
<td>1( 3.0)</td>
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</tr>
<tr>
<td>4(1)</td>
<td></td>
<td>3( 7.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5(1)</td>
<td></td>
<td>3( 6.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7(1)</td>
<td></td>
<td>1( 5.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 (Part of GG)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td>32( 91.6)</td>
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<tr>
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<td>1( 3.5)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>13(1)</td>
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<td></td>
<td></td>
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</tr>
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<tr>
<td>22(1)</td>
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<td>1( 2.3)</td>
<td></td>
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<tr>
<td>23(1)</td>
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<td>23( 29.7)</td>
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<td>1( 0.5)</td>
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<tr>
<td>57(1)</td>
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<td>1( 8.0)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>58 (Part of III</td>
<td></td>
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<td>7( 42.0)</td>
<td></td>
<td></td>
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<td>6( 28.0)</td>
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<td>1( 4.0)</td>
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<td>5( 22.0)</td>
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<td>1( 2.0)</td>
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<td>70(1)</td>
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<td>38( 84.7)</td>
<td></td>
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</tr>
<tr>
<td>71(1)</td>
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<td>11( 16.0)</td>
<td></td>
<td></td>
<td></td>
<td>1( 2.0)</td>
</tr>
<tr>
<td>Test Square #</td>
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<td>Exfoliated Grit</td>
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<th>Plain Shell</th>
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Table 6

Schwerdt Site: Features - Body Sherd Count (Weight-Grams)

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Totals: 1187(5048.8) 7(2.5) 61(182.6) 76(386.1) 138(231.6)

**GRAND TOTAL:** 1469 (5851.6)

All features are pit features except 3 and 37 (amorphic stains), 4 (rock hearth), and 28 (postmold).
does strongly suggest a meaningful concentration of materials here. Moreover, of those 50 units which contain no body sherds at all, 44 of them occur in the western portion of the site.

The distribution of body sherds in features also reflects this concentration of materials, but to elaborate here would prove redundant. Table 6 lists the locations of the body sherds in features. With the exceptions of features 3, 4, 28, and 37, all of these are regarded as roasting pits (Cremin 1977, 1979). In these roasting pits, the body sherds were confined to the upper feature fill, and on the average each feature produced 44.5 sherds. Thirteen features contained no body sherds at all. Seven contained sherds in excess of the mean for the entire sample. These seven features, themselves, averaged 166.0 sherds and, in aggregate, accounted for 79.1% of all the body sherds recovered from features. One obvious pattern of the distribution of the body sherds is that units containing a relative abundance of ceramics were quite often near if not actually encompassing those features also containing ceramics. While it is true that plow disturbance of feature fill could account for some of this association, it is more likely that areas around features were the food processing and consumption loci and that it was here that pottery was most likely broken and crushed underfoot.

Table 7 is a summary of the body sherd data. It is provided as a convenience to the reader, permitting ready access to distributional data.

The data in Table 3 showed the possibility of a differential distribution of vessel types over time. A similar test can be
Table 7
Schwerdt Site: Body Sherd Summary

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<td>Plain Shell</td>
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<td>166 (396.2g)</td>
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Total Body Sherds = 3928 (11288.1g)

Table 8
Schwerdt Site: Association of Body Sherd Surface Treatments with Features

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<th>In Features</th>
<th>Not in Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cordmarked</td>
<td>1187</td>
<td>2177</td>
</tr>
<tr>
<td></td>
<td>275</td>
<td>274</td>
</tr>
</tbody>
</table>

N=3913; df = 1; \( X^2 = 44.2 \); p < .001
conducted for the body sherd data (Table 8) using the chi-square test since values are large. While the nature of the body sherds does not permit me to test the distribution on the same level as with vessel types, I can contrast the sherds by their surface treatment. However, while the two plain surfaced types occur in the same cluster in Table 3, there was also a cordmarked type, Schwerdt Scalloped-Group 1, in that cluster. Since it is impossible to separate the cordmarked body sherds by vessel type, they all must be clustered together. For this reason, Table 8 cannot actually confirm the observations given in Table 3 since only part of the body sherds representing the second cluster can be included therein, but it may be suggestive.

To summarize the hypothesis tested with data in Tables 3 and 8, it is my contention that the ratio of different sherds occurring in and out of features may indicate a temporal difference in deposition. Specifically, those body sherd types occurring with greater frequency in features are thought to be deposited earlier than those occurring more frequently outside of features.

While admitting that this surface treatment contrast for analyzing body sherds is cruder than using vessel types, any expected skewing of data in Table 8 would be in the direction of reducing the significance of the relationships as shown in Table 3. The chi-square value for these data is very high and the probability well below the .05 level of significance, indicating that there is a significant relationship between the kind of surface finish on the body sherds and their deposition on the site. If the previous
assumption regarding temporal variability is correct, then it would appear that plain surfaced pottery occurs at Schwerdt slightly earlier than most if not all of the cordmarked types.

That the upper portions of some features have been obliterated by plowing and the contents subsequently mixed with test square fills, may in part bias the data in the direction of the "out of feature" variable. But there is no reason to believe that this phenomenon would displace more sherds of one type than the other. If there had been equal proportions of both types in and out of features before plowing, then we might reasonably anticipate equal displacement of both types by the plow. There is also the possibility that plain surfaced pottery, and especially shell tempered pottery, does not survive well outside of features. This would be particularly true for the more heavily disturbed areas. However, it is questionable that differential preservation of grit versus shell tempered pottery is a factor. Shell tempered pottery in many ways is superior to grit tempered pottery, especially with respect to wall strength.

Any real basis for criticism of the two tests conducted utilizing data provided in Tables 3 and 8 lies with the basic assumption underlying the thoughts regarding the manner of artifact deposition in pit features. It may be that an entirely different sort of behavior accounts for this differential deposition. Perhaps, plain surfaced pottery was more often used near these features so that when they broke they were more often deposited in the pits.
However, food residues indicating probable use as cooking vessels are associated only with the cordmarked types.

Be that as it may, we are still faced with recognizing the fact that there is differential distribution of cordmarked and plain surfaced sherds across the site (specifically within and outside of the pit features excavated). It is reasonable in my mind, to see this as a result of temporal preference for certain ceramic types or styles within the Berrien Phase ceramic tradition at Schwerdt. In no way does this interpretation compromise the characterization of the Schwerdt site as a temporary seasonal encampment occupied by a culturally homogeneous group of people.
CHAPTER IV

CONCLUDING REMARKS

A. The Schwerdt Site

There is no aspect of the Schwerdt site ceramic assemblage which contradicts the preliminary interpretation of cultural homogeneity and site function. Subsistence data are consistent, regardless of context, with a procurement strategy emphasizing aquatic and riparian resources (especially spring spawning sturgeon). And the types of artifacts appear to be randomly distributed across the site. There exists no evidence indicating a multi-component (as defined by culturally distinct populations) occupation of the site, in the interpretation of the site as seasonally reoccupied. It has been suggested that the Schwerdt residents may represent a seasonal population aggregate—a group which at other times of the year constituted part of a larger population residing in a semi-permanent agricultural village. It is, of course, entirely possible that the Schwerdt pottery reflects only part of a larger Berrien Phase ceramic assemblage. And differences between these two ceramic assemblages (primarily in frequency of occurrence of the types of pottery recovered) might reflect the fact that only a portion of the culture group is represented at Schwerdt. The differential temporal preference for certain ceramic types as suggested in the
data summarized in Tables 3 and 8, may well be a reflection of the population segment present at Schwerdt at different times.

The subsistence-settlement model proposed by Faulkner (1972:116) for the Greismer site may provide clues to the understanding of the ceramic distribution at Schwerdt. Until now I have mentioned only portions of this model. To elaborate, he (ibid) argues that

The Upper Mississippi Indians seem to have used this site as a seasonal camp in the early summer. A site like Greismer may have been utilized for several years until the natural productivity of the surrounding marsh decreased. . .

Leaving their upland villages in May after the crops had been planted, the Upper Mississippi Indians descended into the marsh, bringing with them needed commodities to use at the camp site.

The marsh sites such as Greismer seem to have been occupied by several nuclear families, probably in the same lineage. There is good evidence entire families were present here since the projectile points mean male hunting activities, the scrapers, abundant pottery, and intense collection of plant food and "slow game" indicate women's work, and the miniature or toy vessels suggest the presence of children.

Such a scheme seems entirely plausible for southwestern Michigan. The Schwerdt site appears to be a seasonal, late spring-early summer occupation, focusing on the surrounding aquatic and riparian resources. Indications are that the site was reoccupied seasonally for several years by a small familial unit or units. It is feasible that this seasonal dispersement occurred along lineage lines, but this cannot now be demonstrated. If this can be demonstrated, then perhaps this preference for ceramic types indicated at Schwerdt may reflect lineage associations. However, there are two methodological problems which

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must be surmounted. The first is that it is not known what the social organization of the Berrien Phase people was like. And, secondly, it is uncertain as to how that social organization is reflected in the present ceramic organization. The data to date are inconclusive.

Schwerdt does differ from Greismer in that it is even more focal with respect to subsistence activities (Cremin 1979; Higgins 1979). The Elam site, further upriver from Schwerdt, may evidence a more diffuse adaptation and, in this sense, be more similar to Greismer than Schwerdt (Barr 1979).

Based on current data, the occupants of Schwerdt either descended the rivers, hence arriving from the interior, or entered the Lower Kalamazoo River Valley from outside the drainage. Hypothetically, the Moccasin Bluff site, or a very similar village site, may have been the location from whence the Schwerdt site people came. There have been no Upper Mississippian villages found in the Kalamazoo River drainage, albeit there are other Upper Mississippian encampments strung out along the river's lower course. The sites are especially important in that they indicate a fairly long period of occupation by Upper Mississippian groups. And their ceramics may provide a developmental scheme useful in analyzing ceramic trends during late prehistory.

B. The Kalamazoo River Valley

Several sites in the Kalamazoo River Basin have shell tempered ceramics (Map 2). Some of them are known only from brief visitation
during survey or limited testing (e.g., Nordhof). On another (Hacklander), the Upper Mississippian component is a minor one and cannot be associated with the bulk of the cultural remains recovered. And on still another (Elam), much of the excavated materials have yet to be analyzed. To date, the only other Upper Mississippian site for which a ceramic analysis has been undertaken is the Allegan Dam site (Spero 1979).

There exists a series of radiocarbon dates for these sites which indicates a time range of about A.D. 1210-1540 (+100 years) for the shell tempered ceramics in the Lower Kalamazoo Valley. It is my considered opinion that the presence of shell tempered vessels marks a cultural change in the Kalamazoo Basin that may involve an influx of new peoples, together with some new ideas and practices. This new cultural system seems to have supplanted the previous Late Woodland one quite rapidly. Whether the previous occupants of this area adopted this new lifeway cannot presently be ascertained.

The subsistence data from these sites show a strong riverine and very secondary upland emphasis, one which contrasts markedly with the earlier Late Woodland exclusive orientation toward upland game (Martin 1976). And the use of shell tempering in pottery is also a distinctive indicator of Upper Mississippian culture, representing a radical shift in ceramic technology which permits the creation of a superior pottery vessel. The advantages shell tempering offers to the ceramicist are in part noted by Stimmel (1978: 226):
Shell tempered pottery is generally thinner walled than grit tempered (Matson 1955:43). The shaping process used causes the laminated shell to align parallel to the vessel walls which results in greater collateral strength thus allowing the potter to reduce wall thickness. This can easily be seen by examination of the pottery matrix. In addition, calcium carbonates such as shell are lighter than most tempering materials of equal volume, decreasing total vessel weight.

However, along with these advantages come some technological complexities. At temperatures greater than 650° C calcium carbonates (Ca CO$_3$) decompose into calcium oxide (CaO) and carbon dioxide (CO$_2$) which causes disintegration of the vessel. However, when firing pottery without the use of a kiln it is very difficult to control firing temperatures which may range up to 900° C (Shepard 1956:81). And indications are that shell tempered pottery is fired to temperatures well in excess of 650° C, as shown by thin-section and x-ray diffraction analyses of some shell tempered ceramics (Porter 1964; Stimmel 1978). Stimmel (1978) also notes the addition of salt as a neutralizer of this spalling effect in shell tempered ceramics. It is perhaps noteworthy that there are no major salt deposits in Wisconsin, northeastern Illinois, or northwestern Indiana, but there are in southwestern Michigan (Stimmel 1978:273, Fig. 1). The presence of salt in southwestern Michigan may have been a factor in accounting for the influx of shell tempered ceramics into this area. No matter what the reason, their appearance in the Lower Kalamazoo Valley is rather abrupt, with their earliest known occurrence being at the Allegan Dam site.

The earliest shell tempered ceramics at Allegan Dam (20 AE 56) have been found in a feature dating to 740 ± 100 years.
A.D. 1210 (M-2230). Dates of 735 ± 60 years: A.D. 1215 (UGA-2629) and 640 ± 100 years: A.D. 1310 (M-2231) have also been obtained for the site. Spero (1979) characterizes the site as a warm weather encampment with subsistence activities oriented toward both upland game and riverine resources. Moreover, Spero's (1979) analysis indicates a ratio of 1:1 for shell and grit tempered ceramics. The observed dichotomy might be interpreted to indicate two components, and if this is true, then the Late Woodland grit tempered Allegan ware ceramics present are probably associated with the upland exploitive pattern common to Late Woodland groups in southwestern Michigan, and the Upper Mississippian shell tempered ceramics are probably associated with the riverine emphasis which is also very evident at other Upper Mississippian sites. If this is a single component site, it may represent a ceramic blending between Late Woodland Allegan ware and Upper Mississippian ceramic types (Spero 1979:113-116). And I must note that Late Woodland wide mouthed, elongated jar, vessel forms are present in the Schwerdt assemblage, so there is even later evidence of woodland influence.

Of interest for the purpose of this analysis are the shell tempered Allegan Dam vessels. Twenty-three shell tempered vessels were recovered and are divided by Spero (1979:53) into 5 groups on the basis of variations in surface finish, lip modification, and body decoration. These vessels appear to be local variations of Fisher A-related ceramics (Griffin 1946) which are comparably dated and are found at sites in northeastern Illinois, northwestern Indiana, and at Moccasin Bluff in southwestern Michigan. The high
frequency of occurrence of cordmarking (78%), rim profiles which are varied in orientation (e.g., a substantial number are vertical), body-lip juncture that is gently curving as often as it is sharp, similar lip shapes (mostly flattened), generally short rim heights, comparable rim diameters, and modified lips are all corresponding aspects of Allegan Dam ware and Fisher wares (Griffin 1946; Spero 1979). The only variable that does not confirm the association is body decoration. There is an almost total absence of body decoration on Allegan Dam ceramics. However, one vessel shows three trailed chevrons with associated punctuations. This form of vessel decoration is very much like Fisher Trailed (Griffin 1946:14) or its later companion type, Fifield Trailed (Faulkner 1972:128). The lack of appendages, especially lug handles, and the pronounced castellations on 30% of the vessels at Allegan Dam do distinguish them from the "classic: Fisher A assemblage," but they do not effectively separate this assemblage from Fisher ware. In the final analysis, these observations appear to support the expansion of Fisher ware ceramics into southwestern Michigan, as recently postulated by Bettarel and Smith (1973:114-116, 153) and Faulkner (1972:155-162, Fig. 21).

If this interpretation is correct, it serves to place Fisher related shell tempered ceramics in southwestern Michigan and the Kalamazoo Basin at a relatively early date, circa A.D. 1200, which is comparable to their occurrence in northwestern Illinois. Once established in the area, shell tempered ceramics persist for at least several centuries. It is as yet unclear whether the ceramic
development reflects a continuum or a series of supplantations of ceramic styles. There is clearly a change between Allegan Dam (A.D. 1210-1310) and Schwerdt (ca. A.D. 1450), with the latter being characterized by shell tempered vessels which are Huber-related. The two assemblages are distinct.

The Elam site (20 AE 195), located just across the river and slightly upstream from Allegan Dam, contains Archaic, Early Woodland, and Upper Mississippian components. The latter has been dated to 685 ± 85 years: A.D. 1265 (UGA-2631). This site contains a mixed ceramic assemblage, with grit tempered ceramics similar to those at Schwerdt and shell tempered ceramics which are both cordmarked and plain. Although this site is nearly 200 years earlier than Schwerdt, it is anticipated that this site will clarify some of the changes in ceramic styles (especially those shell tempered ones) observed between Allegan Dam and Schwerdt.

Barr (1979) characterizes the Elam site as a warm weather occupation, with both upland game and riverine resources being important. This site more closely approximates the Griesmer site as described by Faulkner (1972:116), and lacks the very narrow focus reflected in the emphasis on sturgeon fishing at Schwerdt.

The Nordhof site (20 AE 13) is just upriver from Schwerdt. It has produced a mixed assemblage of grit and shell tempered pottery, and the two radiocarbon dates which have been run are 910 ± 100 years: A.D. 1040 (M-2234), and 410 ± 100 years: A.D. 1540 (M-2235). These samples may date a Late Woodland and Upper Mississippian occupation, respectively. However, upon examination,
the ceramics appear remarkably similar to those from Allegan Dam and Elam. This interpretation is based primarily on decorative motifs and the presence of cordmarked shell tempered sherds which are absent at Schwerdt and the Berrien Phase component at Moccasin Bluff, which should place the site in the 13th or early 14th century. However, the assemblage has yet to be fully analyzed.

The Hacklander site (20 AE 78) is located about 3 kilometers downstream from Schwerdt. It is primarily a Late Woodland (Late Allegan Phase) site; however, several anomalous vessels, which Kingsley (1977) has related to various Moccasin Bluff ware types, were found on the site. These include: 4 vessels of the Moccasin Bluff Scalloped Lip type, 1 Moccasin Bluff Plain Modified Lip-Group 1 vessel, and 1 vessel of Moccasin Bluff Plain Modified Lip-Group 2. In addition, there is at least one rim sherd of the Schwerdt Scalloped-Group 1 type, and some of the untyped grit tempered sherds at Hacklander show wide trailing, one with chevrons, that is very similar to the incising found on Fisher-Fifield shell tempered types. Kingsley speculates that "the few rim sherds and about 5 indistinct shell tempered body sherds from Hacklander indicate a small or transient occupation by these people . . . Mississippian or Oneota" (1977:141).

No other Upper Mississippian sites have been excavated in the Kalamazoo River Valley. However, several sites located during survey in the valley do exhibit shell tempered ceramics. Perhaps one of these will date to the middle or late 14th century, filling the gaps in the ceramic sequence reflected in the aforementioned sites.
No semi-permanent agricultural village or winter hunting camp has been reported for the Lower Kalamazoo Valley. Historically, this area was a "no man's land" occupied by both the Potawatomi and the Ottawa as a winter hunting ground and spring maple sap collecting and fishing area. During the summer the Potawatomi would return to their agricultural villages on the St. Joseph River and the Ottawa to the Straits of Mackinac (Johnson 1880:39-40).

Even though this behavior has been reported for the 19th century, the late prehistoric cultures may have utilized the valley in a similar way. The Moccasin Bluff site on the St. Joseph River has been described as a year round occupation (Cleland 1966) and does contain evidence for corn agriculture (Bettarel and Smith 1973). To the north is the Dumaw Creek site which Quimby (1966b) has described as a village and adjacent cemetery, occupied in spring, summer, and fall. Ceramic affinities with both these sites have already been noted. As an alternate hypothesis it is also possible that agricultural villages lie further up-river in the middle valley, where the flood plain broadens and more extensive areas of alluvium would have been available for tillage. The middle valley is more firmly entrenched in the Carolinian biotic province and is also characterized by prairie remnants which would perhaps make this area more desirable for agricultural villages. In 1979, the Kalamazoo Basin Survey Project surveyed this area but did not find any agricultural village sites (Cremin, Hoxie and Marek 1979). However, this does not negate this hypothesis as a viable alternative since major portions of the middle valley were not surveyed.

C. Western Michigan and the Fisher-Huber Focus

Archaeological sites can be treated on several levels of
analysis; site specific and the ever widening spheres of temporal and spatial interaction. In order to fully understand any specific site it is necessary to examine these spheres. I have already examined the Schwerdt ceramic assemblage and its relation to the subsistence-settlement system in which the site is thought to participate. I have also discussed the various ceramic inter-relationships which appear to exist, but have not examined the levels of interaction these relationships may illustrate.

The Schwerdt site is a single component site occupied during a specific time of the year over an unspecified number of years. The previous discussion has emphasized the ancillary nature of this occupation which necessitates the existence of another site(s) in order to complete the annual subsistence round of people hypothesized to practice a mixed farming-hunting-fishing-gathering way of life. The occupants of Schwerdt probably belong to a social aggregate that seasonally fissioned from a larger group, and at other times fusioned to perform activities that necessitated larger group participation or that did not necessitate dispersion. We would, of course, expect to find ceramics at these larger occupation sites that contain pottery typical of the aggregate represented at Schwerdt and those of other social aggregates comprising the larger community.

As mentioned previously, the Schwerdt site falls into the Berrien Phase (A.D. 1400-1600). Phase used in this sense is based upon established usage in other areas of the New World. Kidder et al. (1946) define it as a cultural complex that is distinct
chronologically from its predecessors and its subsequent manifestation, and spatially from its contemporary neighbors. Willey and Phillips (1958) agree with Kidder but seek to equate the term Phase with McKern's (1939) term Focus. They also emphasize spatial integrity. In McKern's usage the component represents a manifestation of the focus (phase) on a single site.

However, Willey and Phillips (1958:22) state:

A phase may be anything from a thin level in a site reflecting no more than a brief encampment to a prolonged occupation of a large number of sites distributed over a region of very elastic proportions.

This previous statement and the following excerpt from their definition of a phase as "an archaeological unit possessing traits sufficiently characteristic to distinguish it from all other units similarly conceived" (ibid:22), debilitate the term to the place where it is everyone's "catch-all." The term has been used to encompass everything from a brief seasonal occupation of a single site to a group of site components, regionally clustered and encompassing a time period of several hundred years. I especially lament its former usage as being too specific and neglecting Kidder et al.'s purposeful inclusion of the term culture complex in the definition. But this attempt at delimiting a "whole" has also been abused, as J. B. Griffin (1978:xvii) laments:

Many now utilized prehistoric "phases" are given a time span of a hundred years or more, and it is almost futile or even frivolous to present them as though they were a functioning interacting society.

What is lacking in the preceding definitions of a phase are limits on the spatial and temporal framework encompassed.
In my discussion of the Schwerdt site as a component, the site is not, in itself, a phase. The ceramic assemblage and subsistence-settlement practices observed at Schwerdt are aspects of a larger cultural system represented by the established Berrien Phase (A.D. 1400-1600). The Moccasin Bluff Berrien Phase component represents another integral part of this phase. This assignment of the Schwerdt site to the Berrien Phase is reasonable given the ceramic integrity and the hypothesized ancillary relationship between these components.

In my discussion of the Lower Kalamazoo River Valley "locality" I crosscut the temporal aspect of phase, but not necessarily the cultural one. As noted in the previous section there are several cultural characteristics at these several sites which suggest continuity. These include: similar subsistence activities, processing facilities, ceramics (especially the presence of shell tempering), and possibly similar ancillary roles within a larger subsistence-settlement system. The local ceramic sequence for this period is ill-defined at this time, but the evidence can provide the basis for generating testable propositions for the Upper Mississippian occupation of southwestern Michigan.

Southwestern Michigan as far north as the Moccasin Bluff site on the St. Joseph River has been included within the "Fisher-Huber" cultural complex by Faulkner (1972:157, Fig. 2), primarily on the basis of the distribution of ceramics. And given the aforementioned arguments, this may be extended to include the Lower Kalamazoo River Valley. Faulkner utilizes this dual designation
for the complex based both on the coextensive distribution of components of these two designations, and upon an hypothesized relationship between the two ceramic traditions.

Ceramically, these two terms have been previously used separately. As Faulkner (1972:157) states: "In Illinois the term 'Fisher' is now restricted to the earlier Upper Mississippian manifestation at the type site designated Fisher A by J. W. Griffin (1946)." This early Fisher manifestation probably dates to the eleventh or twelfth centuries. However, Faulkner (1972:160-161) hypothesizes a later Fisher ceramic horizon as characterized at the Fifield and Griesmer sites in northwestern Indiana. The ceramics of this later period are the types Fifield Trailed and Fifield Bold which are decorated shell tempered, cordmarked descendants of the earlier Fisher types, and correspond roughly with the temporal distribution of Huber ceramics (ca. A.D. 1400-1700).

In one of his discussions of the relationships between Fisher and Huber Faulkner (1972:173) states:

Fisher Phase would develop from a Woodland base in the upper Illinois Valley and the ancestry of Huber would occur in a similar and presumably closely related Woodland base in a contiguous area such as southern Wisconsin where Oneota influences were much more pervasive.

Yet, others suggest that there is a genetic relationship between the two, among them, Brown et al. (1967:36) who state that this early Fisher A period is "clearly affiliated with the Chicago area Oneota or the Blue Island or Huber focus." The evidence from southwestern Michigan does suggest that there is a relationship
between the two ceramic traditions that goes beyond the coextensive distribution.

I have already related some of the evidence for the existence of Fisher-related ceramics in southwestern Michigan at an early date. At Allegan Dam there are Fisher-related ceramics associated with a date of A.D. 1210. At the Moccasin Bluff site Bettarel and Smith (1973:152) mark the appearance "of the Moccasin Bluff Impressed Exterior Lip type along with some shell-tempered cordmarked pottery related to the Fisher-Fifield series of northwestern Indiana and northeastern Illinois," as indicators for the Moccasin Bluff Phase (A.D. 1050-1300) there. The beginning date for this phase is presently the earliest placement for Fisher materials of which I am aware.

These Fisher-related materials in southwestern Michigan are not confined to shell tempered ceramics. Many of the grit-tempered vessels at Moccasin Bluff show a mixture of Late Woodland and Upper Mississippian ceramic traits. As Bettarel and Smith (1973:114) state: "The pottery, Moccasin Bluff Impressed Exterior Lip which seems to be a local development from earlier Late Woodland material, is closely associated with material from northern Illinois and northwestern Indiana, usually referred to as Upper Mississippian." Several vessels at Moccasin Bluff display the bold or "antler point" trailing over cordmarked exterior surfaces (Bettarel and Smith 1973:plate 25) that are typical of some of the Fisher Trailered (Griffin 1946:15) or Fifield Bold (Faulkner 1972:190-192) types,
yet are grit tempered while those from the other sites are shell. Vessel forms are often of both Late Woodland and Upper Mississippian types. The Late Woodland form, which is basically a wide-mouthed jar with gently curving shoulders and an elongated body, continues well into the Berrien Phase. The Upper Mississippian angular neck and globular bodied jar is also found in both phases.

In southwestern Michigan there appears to be a certain amount of ceramic continuity from the Moccasin Bluff Phase (A.D. 1050-1300) through the Berrien Phase (A.D. 1400-1600). As Bettarel and Smith (1973:153) have noted, there is "a continuation of the earlier grit-tempered pottery" into the latter phase. The major distinguishing ceramic characteristics for the two phases are the two shell tempered types and the appearance of scalloped vessels during the Berrien Phase. Scalloped forms have been found at the Elam site, though. However, these vessels are not directly associated with the A.D. 1265 date which would place this site within the Moccasin Bluff Phase. Elam has also produced shell tempered ceramics that are cordmarked and/or plain surfaced. The materials at Elam may very well represent a transitory ceramic development. They may show that there was an indigenous continuum of ceramic development in southwestern Michigan.

It is not unreasonable to hypothesize that Fisher or Fisher-related ceramics were the precursors for two ceramic traditions. The first may very well be the Fifield tradition that Faulkner (1972) has reported on for northwestern Indiana. The second may
be in southwestern Michigan where we see the development of Huber ceramics.

The beginning date for the Berrien Phase places Huber ceramics at their earliest known occurrence anywhere. Most other reported sites are dated to the 16th or 17th centuries. These Berrien Phase dates follow directly on the heels of those given for the Fisher-related materials, yet there is no shell tempered, cordmarked pottery present in southwestern Michigan after A.D. 1300 or 1400. It is possible that throughout the two Upper Mississippian Phases in southwestern Michigan there was a ceramic dichotomy developing. That is, as time progressed, cordmarking became always associated with grit tempered vessels, and plain exterior surfaces were almost always associated with shell tempering. This may be just the opposite of what was occurring in Indiana and Illinois, where there is a continuation of shell tempered cordmarked varieties well into the 17th century; and the development of grit tempered, primarily plain surfaced pottery in the Langford series.

It may be that this plain surfaced shell tempered ceramic horizon in southwestern Michigan radiated back into areas of northwestern Indiana and northeastern Illinois. This may account for the existence of both ceramic traditions on sites such as Griesmer, Anker, and Hoxie Farm (Faulkner 1972:165) at somewhat later dates than the incipient Huber ware-Berrien Phase in southwestern Michigan.

There is also evidence of ceramic relationships between
southwestern Michigan and the more northerly area of western Michigan. I have already observed certain ceramic similarities between the Schwerdt materials and those further to the north at the Dumaw Creek site. Just how this area fits into the picture is unclear at this time. If there is a separate ceramic tradition to the north, and this is strongly suggested by the lack of shell tempered ceramics at Dumaw Creek, then that would place the Berrien Phase ceramic tradition between two complexes with which it shares common ceramic traits. The shell tempered, plain surfaced Huber vessels would relate to a southern influence, and some of the grit tempered/cordmarked/modified lip pottery to the north. The subsistence patterns also show common traits. Corn agriculture and a marshland focus of exploitation are traits common with Huber sites in Indiana and Illinois. The intensive exploitation of fish runs (notably sturgeon) is a Great Lakes adaptation shared with peoples to the north.

The dynamics of the interrelationships between cultures occupying the region about the head of Lake Michigan and extending up the eastern shore as far as Dumaw Creek is certainly not clear at this time. The ceramic and subsistence data do indicate an intimate and complex one, though. The future will provide some clarification of these problems, and it is hoped that the information provided in this thesis will be a step forward in the understanding of the late prehistory of this area.
D. Recommendations for Future Research

There is a definite need for more data from areas to the north of the Kalamazoo Valley dating to this late prehistoric time period. As it now stands, the data hint at relationships between southwestern Michigan and the more northerly site of Dumaw Creek. There are definite ceramic affinities as well as other artifactual evidence of this relationship (Faulkner 1972:162, 165), but the strength of this relationship cannot be ascertained at this time. Further research in this area will hopefully provide clues to the nature of this articulation.

Two things can be done to confirm or reject the hypothetical ceramic development of Huber ware in southwestern Michigan. The first, as always, is the collection of more data. Perhaps, new sites will be found which show this ceramic transition. Secondly, a ceramic modal seriation study of the key attributes of the ceramic assemblage from previously reported sites and from sites still undergoing analysis should be done when possible. We need some construct to compare and seriate all these various collections. It has been one of my goals in this report to provide data which would permit some standard codification and analysis (Appendix A) of the valuable ceramic assemblage from the Schwerdt site.
Plate 1: Mocassin Bluff Modified Lip rim sherds.
Group 3: vessel 8.
FIGURE 4: Selected Rim Profiles for Plate 1.

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Plate 2: Mocassin Bluff Impressed Exterior Lip rim sherds.
Group 1: vessels 26, 29, 43, 44.
Plate 3: Mocassin Bluff Impressed Exterior Lip rim sherd.
Group 1: vessel 32.
Plate 4: Mocassin Bluff Impressed Exterior Lip rim sherds. 
Group 1: vessels 22, 45, 46, 47, 49, 51, 52.
Plate 5: Mocassin Bluff Impressed Exterior Lip rim sherds.
Group 1: vessels 20, 21, 41, 48, 50, 54, 58.
Figure 5: Selected Rim Profiles for Plates 2 - 5.
Plate 6: Mocassin Bluff Scalloped rim sherd. Schwerdt Scalloped - Group 1: vessel 33.

Plate 8: Mocassin Bluff Scalloped rim sherds. Scherdt Scalloped - Group 1: vessels 9, 11, 13, 35.

Plate 10: Mocassin Bluff Scalloped rim sherds.
Group 2: vessels 12, 15, 24, 76.
FIGURE 6: Selected Rim Profiles for Plates 6, 7, 8 and 10.
Plate 11: Mocasssin Bluff Plain Modified Lip rim sherds.
Group 1: vessels 14, 57.
Group 2: vessels 17, 25, 55.
FIGURE 7: Selected Rim Profiles for Plates 11 and 12.
Plate 13: Huber ware rim sherd.  
Schwerdt Group 1: vessel 60.
Plate 14: Huber ware rim sherd. Schwerdt Group 2: vessel 2.
Plate 15: Huber ware rim sherds.
Schwerdt Group 2: vessels 3, 5.

Plate 16: Huber ware rim sherds.
Schwerdt Group 3: vessels 61, 62, 63.
Plate 17: Huber ware rim sherds.
Schwerdt Group 4: vessels 1, 28, 34, 64, 65.
FIGURE 8: Selected Rim Profiles for Plates 13, 14, 15 and 17.
Plate 18: Unclassified vessels 16, 19, 68, 69, 70, 72, 73, 74, 75.
Plate 19: Shell Tempered Handle Fragments.
APPENDIX A

VESSEL 1

Type: Huber (Schwerdt Group 4)
No. of Sherds: 5 (19.9 gms)
Provenience: T.U.I (2S13E) Fea. 5 (34, 35)

Paste: Friable, Laminar
Temper: Type: Shell Size: Fine
   Yel Br Br to Dk Br Br to Dk Br
Thickness: Rim: .4 - .55 cm Body: .35 cm
Hardness: 2.5
Surface Finish: Plain
Lip: Rounded, plain
Neck Angle: 125°
Rim Diameter: 10 cm (Miniature Vessel)
Rim Height: 2.5 cm
Form: Rim: 2.5 cm Body: Probably Globular
   Neck: Gentle Curve
   Base: ---

VESSEL 2

Type: Huber (Schwerdt Group 2)
No. of Sherds: 5 (299.2 gms)
Provenience: T.U.Z (4S6E) Fea. 9 (121)

Paste: Laminar, Dense, Friable
Temper: Type: Shell/sand Size: Medium/light
   Brown Br to Dk Br Dk Gray Br
Thickness: Rim: .9 - 1.0 cm Body: .6 cm
Hardness: 2.0 - 2.5 cm
Surface Finish: Plain
Lip: Squared or slightly beveled, notching (.3 cm intervals) on
   interior-top of Lip
Neck Angle: 105°
Rim Diameter: 29 cm
Rim Height: 4 cm
Form: Rim: Excurvate Neck: Sharp curve
   Body: Round Base: Globular
VESSEL 3

Type: Huber (Schwerdt Group 2)
No. of Sherds: 1 (29.8 gms)
Provenience: T.U.AA (8S8E) Fea. 16 (130)

Paste: Laminar, friable, dense
Temper: Type: Size:

Color: Exterior: 7.5YR4/4 Interior: 10YR5/3 Core: 10YR5/2
    Dk Brown    Brown    Gray Brown
Thickness: Rim: .9 cm    Body: .6 - .7 cm
Hardness: 2.5
Surface Finish: Plain

Lip: Rectangular punctates in top of lip. Punctates .5 cm in width, .6 cm apart. Lip squared.
Neck Angle: 87°
Rim Diameter: 28 cm
Rim Height: 5 cm
Form: Rim: Excurvate    Neck: Sharp curve.
    Body: ?    Base: ?

VESSEL 4

Type: Moccasin Bluff Plain Modified Lip (Proposed Group 4)
No. of Sherds: 12 (60.4 gms)
Provenience: T.U.I (2SI3E) Fea. 5 (30, 32, 34, 35, 211, 214)

Paste: Friable
Temper: Type: Mixed/Grit/Quartzitic Size: .3 cm/light
    Shell
Color: Exterior: 5YR6/6 Interior: 10YR6/4 Core: 10YR6/4
    Red Yel    Lt Yel Brn    Lt Yel Br
Thickness: Rim: .65 - .75 cm    Body: .6 cm
Hardness: 2.0 - 2.5
Surface Finish: Plain

Lip: Lip top wedge tool impressed. Impressions .8 cm in width, .9 cm apart. Lip squared, thickened
Neck Angle: ?
Rim Diameter: 26 cm
Rim Height: ?
Form: Rim: Excurvate    Neck: ?
    Body: ?    Base: ?
VESSEL 5

Type: Huber (Schwerdt Group 2)
No. of Sherds: 1 (9.5 gms)
Provenience: T.U.Y (155OE) (11)

Paste: Laminar, Friable, Dense
Temper: Type: Shell Size: Medium

Dk Yel Br Brown Brown

Thickness: Rim: .75 cm Body: .6 - 1.0 cm
Hardness: 2.5
Surface Finish: Plain

Lip: Continuous shallow reed or cord impressions on top of lip perpendicular to lip edge. Lip squared

Neck Angle: 99°
Rim Diameter: 28 cm
Rim Height: 2.5 cm
Form: Rim: Excurvate Neck: Sharp curve
Body: ? Base: ?

VESSEL 6

Type: Moccasin Bluff Plain Modified Lip (Proposed Group 4)
No. of Sherds: 3 (51.5 gms)
Provenience: T.U.Z (456E) Fea. 9 (119, 120, 121)

Paste: Friable, dense, slightly laminar
Temper: Type: Grit/Granitic Size: .4 cm

Yel Br Dk Gray Br Dk Gray Br

Thickness: Rim: 1.0 cm Body: .6 - .8 cm
Hardness: 2.5
Surface Finish: Plain

Lip: Lip top wedge tool impressed, impressions .6 cm in width, .4 cm apart. Lip thickened from impressions. Lip squared

Neck Angle: 135°
Rim Diameter: 24 cm
Rim Height: 5 cm
Form: Rim: Excurvate Neck: Sharp curve
Body: Probably globular Base: ?
VESSEL 7

Type: Moccasin Bluff Plain Modified Lip (Proposed Group 4)
No. of Sherds: 8 (78 gms)
Provenience: T.U.W (12S47W), T.U.DD (0N8E), Block A, General Surface (100, 162, 174, 176, 1977, 207)
Paste: Friable, slightly laminar
Temper: Type: Grit/Granitic Size: .2 cm
Lt Yel Br Very Dk Br Dk Grey Br
Thickness: Rim: .9 - 1.0 cm Body: .6 - .7 cm
Hardness: 2.5
Surface Finish: Plain
Lip: Shallow stick (Reed?) impressions diagonally across top of lip. Lip squared
Neck Angle: ?
Rim Diameter: 22 cm
Rim Height: ?
Form: Rim: Incurvate Neck: ?
Body: ? Base: ?

VESSEL 8

Type: Moccasin Bluff Modified Lip (Group 3)
No. of Sherds: 1 (14.2 gms)
Provenience: Block A (177)
Paste: Friable, slightly laminar
Temper: Type: Grit/Granitic Size: .2 cm
Color: Exterior: 10YR6/3 Interior: 10YR5/2 Core: 10YR5/2
Pale Brown Grey Brown Grey Brown
Thickness: Rim: .75 - .9 cm Body: .6 cm
Hardness: 2.0 - 2.5
Surface Finish: Smoothed cordmarking
Lip: Top of lip cordmarked. Lip exterior fingertip impressed. Impressions .7 cm in width, 1.0 cm apart. Lip squared
Neck Angle: --
Rim Diameter: 23 cm
Rim Height: --
Form: Rim: Incurvate Neck: --
Body: ? Base: ?
VESSEL 9

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 3 (5.8 gms)
Provenience: T.U.I. (2S13E), Block A (19, 174, 176)

Paste: Friable
Temper: Type: Grit/Granitic Size: .2 cm

Color: Exterior: 10YR5/2 Interior: 10YR4/1 Core: 10YR4/1
          Grey Br         Dk Grey         Dk Grey
Thickness: Rim: .75 cm Body: .6 cm
Hardness: 2.5
Surface Finish: Smoothed cordmarking

Lip: Corded tool impressed. Top of lip impressions 1.3 cm in width. Some lip folding from impressions
Neck Angle: ?
Rim Diameter: 22 cm
Rim Height: ?
Form: Rim: Excurvate Neck: ?
        Body: ? Base: ?

VESSEL 10

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (5.8 gms)
Provenience: General Surface (208)

Paste: Friable, dense, laminar
Temper: Type: Grit/Granitic Size: .35 cm

Color: Exterior: 10YR4/1 Interior: 10YR5/3 Core: 10YR5/3
          Brown          Brown
Thickness: Rim: .6 - .9 cm Body: .8 cm
Hardness: 2.5 - 3.0
Surface Finish: Smoothed cordmarking

Lip: Lip top cored tool impressed. Impressions 2.0 cm in width.
    Thumb pinching on exterior of lip at peak of scallops. Lip rounded
Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: Excurvate Neck: ?
        Body: ? Base: ?
VESSEL 11

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (36.2 gms)
Provenience: T.U.CC (0N17E) Fea. 13 (154)

Paste: Friable
Temper: Type: Grit/Granitic  Size: .3 cm

Brown  Very Dk Grey  Br  Brown

Thickness: Rim: .75 cm  Body: .5 cm
Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip: Lip top cored tool impressed. Impressions 2.0 cm in width.

Neck Angle: ?
Rim Diameter: 24 cm
Rim Height: ?
Form: Rim: Excurvate  Neck: Gentle curve
Body: ?  Base: ?

VESSEL 12

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 2)
No. of Sherds: 1 (5.0 gms)
Provenience: T.U.F (0N0W) Fea. 4 (16)

Paste: Friable, chalky, slightly laminar
Temper: Type: Grit/Quartzitic  Size: .2 cm

Color: Exterior: 10YR7/2  Interior: 10YR7/2  Core: 10YR7/2
Lt Grey  Lt Grey  Lt Grey

Thickness: Rim: .55 - .9 cm  Body: .5 - .6 cm
Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip: Lip top plain tool impressed. Impressions 3.0 cm in width.
Some interior lip folding from impressions.

Neck Angle: ?
Rim Diameter: 20 cm (?)
Rim Height: ?
Form: Rim: ?  Neck: ?
Body: ?  Base: ?
VESSEL 13

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (31.9 gms)
Provenience: T.U.AA (8S8E) Fea. 16 (129)

Paste: Friable
Temper: Type: Grit/Granitic Size: .35 cm
(Some Mica)
Yel br Very Dk Grey Br Yel br
Thickness: Rim: .75 cm Body: .45 cm
Hardness: 2.5 - 3.0
Surface Finish: Smoothed cordmarking

Lip: Lip top corded tool impressed. Impressions 2.0 cm in width. Some lip folding from impressions.
Neck Angle: ?
Rim Diameter: 22 cm
Rim Height: ?
Form: Rim: Excurvate Neck: Gentle Curve
Body: ? Base: ?

VESSEL 14

Type: Moccasin Bluff Plain Modified Lip (Group 1)
No. of Sherds: 1 (13.2 gms)
Provenience: Block A (176)

Paste: Friable, slightly laminar, dense
Temper: Type: Grit/Quartzitic Size: .2 cm
Brown Very Dk Grey Br Very Dk Grey Br
Thickness: Rim: .6 - 1.2 cm Body: .7 cm
Hardness: 2.5 - 3.0
Surface Finish: Plain

Lip: Lip thickened. Lip exterior fingertip impressed. Top of lip cord or reed impressed. Impression 1.0 cm in width, .6 cm apart.
Neck Angle: ? Lip Flattened
Rim Diameter: 34 cm
Rim Height: ?
Form: Rim: Straight Neck: ?
Body: ? Base: ?
VESSEL 15

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 2)  
No. of Sherds: 1 (2.4 gms)  
Provenience: T.U.CC (ON17E) (140)

Paste: Friable  
Temper: Type: Grit/Quartzitic  
Size: 15 cm

Color: Exterior: 10YR3/2  
Interior: 10YR3/1  
Core: 10YR3/2  
Very Dk Grey Br  
Very Dk Grey  
Very Dk Grey Br

Thickness: Rim: .6 cm  
Body: .5 cm

Hardness: 2.5 - 3.0

Surface Finish: ?

Lip: Lip top plain tool impressed. Impressions 1.7 cm in width.

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: ?  
Neck: ?  
Body: ?  
Base: ?

VESSEL 16

Type: Untyped  
No. of Sherds: 2 (15.4 gms)  
Provenience: Block A, Fea. 24B (194, 198)

Paste: Friable, Dense  
Temper: Type: Grit/Granitic  
Size: .2 cm

Color: Exterior: 10YR3/2  
Interior: 10YR3/1  
Core: 10YR3/2  
Very Dk Gray Br  
Very Dk Grey

Thickness: Rim: .35 cm  
Body: .6 cm

Hardness: 2.5

Surface Finish: Fine cordmarking. Mending hole present on body.

Lip: Squared, possibly cambered

Neck Angle: ?
Rim Diameter: 14 cm
Rim Height: ?
Form: Rim: Excurvate  
Neck: Gentle Curve  
Body: ?  
Base: ?
VESSEL 17

Type: Moccasin Bluff Plain Modified Lip (Group 2)
No. of Sherds: 2 (11.1 gms)
Provenience: T.U.W. (12S47W) (99)

Paste: Friable, chalky
Temper: Type: Grit/Quartzitic Size: .2 cm

Yel Br Yel Br Dk Grey Br

Thickness: Rim: .85 cm Body: .55 cm
Hardness: 2.0
Surface Finish: Plain

Lip: Lip exterior (outside edge of lip) tool impressed. Impressions .5 cm in width, .7 cm apart. Lip beveled.
Neck Angle: --
Rim Diameter: 27 cm
Rim Height: --
Form: Rim: Straight Neck: ?
Body: ? Base: ?

VESSEL 18

Type: Moccasin Bluff Modified Lip (Group 1)
No. of Sherds: 9 (57.4 gms)
Provenience: T.U.I (2S13E) Fea. 5 (31, 32, 35, 211, 212)

Paste: Friable, slightly laminar
Temper: Type: Grit/Granitic Size: .35 cm

Pale Brown Red Yellow Dk Grey Br

Thickness: Rim: .7 cm Body: .5 cm
Hardness: 2.5 - 3.0
Surface Finish: Smoothed cordmarking

Lip: Cord wrapped stick impressions on top exterior of lip. Small collar (.7 cm). Impressions 1.0 cm in width, .7 cm apart.
Neck Angle: --
Rim Diameter: 22 cm
Rim Height: --
Form: Rim: Incurvate Neck: --
Body: Probably globular Base: ?
VESSEL 19

Type: Untyped
No. of Sherds: 3 (12.7 gms)
Provenience: Block A, Fea 23B (190, 192)

Paste: Friable/Dense
Temper: Type: Grit/Granitic  Size: .1 cm

Brown       Brown       Dk Grey Br

Thickness: Rim: .5 cm  Body: .6 cm
Hardness: 2.5
Surface Finish: Fine cordmarking

Lip: Squared, plain

Neck Angle: ?
Rim Diameter: 20 cm
Rim Height: ?
Form: Rim: Excurvate  Neck: Gentle Curve
Body: ?  Base: ?

VESSEL 20

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 4 (18.9 gms)
Provenience: T.U.CC (0N17E) Fea. 13 (146, 150)

Paste: Friable, Slightly laminar, chalky
Temper: Type: Grit/Quartzitic  Size: .4 cm

Dk Greyish Br  Dk Greyish Br  Dk Greyish Br

Thickness: Rim: .7 cm  Body: .5 cm
Hardness: 2.5 - 3.0
Surface Finish: Smoothed cordmarked

Lip: Top-exterior dowel or finger impressed, .85 cm in width, .3 cm apart. Interior punctates .6 cm in width, .5 cm below lip, 1.2 apart. Rim slightly folded from impressions.
Neck Angle: ?
Rim Diameter: 24 cm
Rim Height: ?
Form: Rim: Excurvate  Neck: Gentle Curved
Body: ?  Base: ?
VESSEL 21

Type: Moccasin Bluff Impressed Exterior Lip  
No. of Sherds: 1 (1.8 gms)  
Provenience: T.U.Z (4S6E) (119)

Paste: Friable, dense  
Temper: Type: Grit/Quartzitic  
Size: .15 cm

Color: Exterior: 10YR4/1  
Interior: 10YR4/1  
Core: 10YR4/1

Dk Gray  
Dk Gray  
Dk Gray

Thickness: Rim: .65 cm  
Body: .45 cm

Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip: Top exterior dowel impressed. Impressions .5 cm in width. 
Lip rounded.

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: Rounded  
Neck: ?
Body: ?  
Base: ?

VESSEL 22

Type: Moccasin Bluff Impressed exterior lip  
No. of Sherds: 3 (35.4 gms)  
Provenience: T.U.DD (0N83); Block A, Fea. 23B (162, 174, 190)

Paste: Friable, dense, slightly laminar  
Temper: Type: Grit/Quartzitic  
Size: .2 cm  
(some mics?)

Color: Exterior: 10YR5/4  
Interior: 7.5YR5/4  
Core: 7.5YR5/4

Yel Brown  
Brown  
Brown

Thickness: Rim: .4 cm  
Body: .55 cm

Hardness: 
Surface Finish: Smoothed cordmarking

Lip: Top impressed (notched). Impressions .3 cm in width, 1.0 cm apart. Lip rounded.

Neck Angle: 140°
Rim Diameter: 14 cm
Rim Height: 4.0 cm
Form: Rim: Excurvate  
Neck: Gentle curve
Body: Globular  
Base: ?

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VESSEL 23

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 6 (211.6 gms)
Provenience: Block A, Fea. 23B (190, 193)
Paste: Friable
Temper: Type: Grit/Granitic Size: .4 cm
Yellow Brown Very Dk Gray Br Yellow Brown
Thickness: Rim: .9 cm Body: .7 cm
Hardness: 2.5 - 3.0
Surface Finish: Smoothed cordmarking
Lip: Lip top corded tool impressed. Impressions 1.75 cm in width.

Neck Angle:  
Rim Diameter: 34 cm
Rim Height: 6 cm
Form: Rim: Excurvate Neck: Gentle curve
Body: ? Base: ?

VESSEL 24

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 2)
No. of Sherds: 3 (29.5 gms)
(28, 151, 177)
Paste: Friable, dense, chalky
Temper: Type: Grit/Quartzitic Size: .3 cm
Pale Brown Dk Gray Br Dk Gray Br
Thickness: Rim: .85 cm Body: .65 cm
Hardness: 2.5 - 3.0
Surface Finish: Smoothed cordmarking
Lip: Lip top plain tool impressed. Impressions 1.6 cm in width.

Neck Angle:  
Rim Diameter: 32 cm
Rim Height: ?
Form: Rim: Excurvate Neck: ?
Body: ? Base: ?
VESSEL 25

Type: Moccasin Bluff Plain Modified Lip (Group 2)
No. of Sherds: 1 (3.4 gms)
Provenience: T.U.C (ON60W) Fea. 3 (4)

Paste: Friable, chalky
Temper: Type: Grit/Quartzitic Size: .15 cm

Color: Exterior: 7.5YR6/6 Interior: 7.5YR6/6 Core: 10YR5/2
Red Yellow Red Yellow Gray Brown

Thickness: Rim: .75 cm Body: .55 cm
Hardness: 2.0
Surface Finish: Plain

Lip: Lunate impressions on lip exterior. Impressions .5 cm in diameter, .8 cm apart. Lip rounded, slightly fattened
Neck Angle: ?
Rim Diameter: 24 cm
Rim Height: ?
Form: Rim: Excurvate Neck: ?
Body: ? Base: ?

VESSEL 26

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 3 (115.8 gms)
Provenience: Block A, Fea. 17, general surface (177, 179, 207)

Paste: Friable, dense
Temper: Type: Grit/Quartzitic Size: .55 cm

Color: Exterior: 10YR3/1 Interior: 10YR5/3 Core: 10YR5/3
Very Dk Gray Brown Brown

Thickness: Rim: .7 cm Body: .6 - .7 cm
Hardness: 2.5
Surface Finish: Partially smoothed cordmarking

Lip: Exterior lip impressions. Diagonal and parallel. Impressions .5 cm in width and .5 cm apart. Lip rounded.
Neck Angle: 131°
Rim Diameter: 25 cm
Rim Height: 8 cm
Form: Rim: Excurvate Neck: Gentle Curve
Body: Globular Base: ?
VESSEL 27

Type: Moccasin Bluff Modified Lip (Group 1)
No. of Sherds: 5 (9.1 gms)
Provenience: T.U.M (20S28E) (61, 62)

Paste: Friable, dense
Temper: Type: Grit/Quartzitic Size: .3 cm

       Very Dk Gray Br  Lt Yel Br  Very Dk Gray Br
Thickness: Rim: .65 - .75 cm Body: .65 cm
Hardness: 2.0 - 2.5
Surface Finish: Smoothed cordmarking

Lip: Corded tool impressions on top of lip. Shallow.

Neck Angle: ?
Rim Diameter: 36 cm (?)
Rim Height: ?
Form: Rim: ? Neck: ?
       Body: ? Base: ?

VESSEL 28

Type: Huber (Schwerdt Group 4)
No. of Sherds: 1 (1.3 gms)
Provenience: T.U.J (2S17W) (38)

Paste: Laminar, friable
Temper: Type: Shell Size: Medium

Color: Exterior: 10YR3/1 Interior: 10YR5/4 Core: 10YR3/1
       Very Dk Gray Yellow Brown Very Dk Gray
Thickness: Rim: .4 cm Body: .55 cm
Hardness: 2.5
Surface Finish:

Lip: Plain, rounded

Neck Angle: ?
Rim Diameter: 10 cm (miniature vessel)
Rim Height: ?
Form: Rim: ? Neck: ?
       Body: ? Base: ?
VESSEL 29

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (8.4 gms)
Provenience: Block A, Fea. 23B (190)

Paste: Friable, slightly laminar
Temper: Type: Grit/Granitic Size: .3 cm
Color: Exterior: 10YR3/1 Interior: 10YR4/1 Core: 10YR4/1
Thicknes: Rim: .55 cm Body: .6 cm
Hardness: 2.5
Surface Finish: Partially smoothed cordmarking

Lip: Exterior tool impressions. Impressions .4 cm in width, .7 cm apart. Lip Squared
Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: Excurvate Neck: ?
Body: ? Base: ?

VESSEL 30

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (9.4 gms)
Provenience: Block A (177)

Paste: Friable, chalky
Temper: Type: Grit/Granitic Size: .2 cm
Color: Exterior: 10YR6/3 Interior: 10YR3/1 Core: 10YR3/1
Thicknes: Rim: .8 cm Body: .6 cm
Hardness: 2.5
Surface Finish: Smoothed cordmarking

Lip: Lip top corded tool impressed. Impressions 2.5 cm in width. Thumb pinching on lip exterior at peak of scallops.
Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?
VESSEL 31

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (4.1 gms)
Provenience: T.U.M (20S28E) (62)

Paste: Friable, chalky
Temper: Type: Grit/Granitic
Size: .2 cm

Color: Exterior: 10YR5/2 Interior: 10YR5/2 Core: 10YR5/2
Gray Brown Gray Brown Gray Brown

Thickness: Rim: .65 cm Body: .5 cm

Hardness: 2.0 - 2.5

Surface Finish: Smoothed cordmarking

Lip: Lip to-exterior corded tool impressed. Impressions 2.7 cm in width.

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?

VESSEL 32

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 13 (135.8 gms)
Provenience: T.U.GG (6N29W) Fea. 26 (252, 335, 337, 393)

Paste: Friable
Temper: Type: Grit/Granitic
Size: .3 cm

Color: Exterior: 7.5YR5/4 Interior: 10YR5/2 Core: 10YR5/2
Brown Grayish Br Grayish Br

Thickness: Rim: .7 cm Body: .5 - .7 cm

Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip: Exterior lip impressed with finger tip. Impressions .4 cm in width, .8 cm apart. Lip Rounded.

Neck Angle: 105°
Rim Diameter: 22 cm
Rim Height: 4.5 cm
Form: Rim: Excurvate Neck: Gentle Curve
Body: Globular Base: Rounded
VESSEL 33

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 7 (235.0 gms)

Paste: Friable
Temper: Type: Grit/Granitic  Size: .4 cm
Color: Exterior: 10YR6/4  Interior: 10YR4/1  Core: 10YR4/1
                      Lt Yel Br    Dk Gray    Dk Gray
Thickness: Rim: .5 cm  Body: .9 cm
Hardness: 3
Surface Finish: Smoothed cordmarking

Lip: Lip top corded tool impressed. Impressions 2.5 cm in width.

Neck Angle: 127°
Rim Diameter: 36 cm
Rim Height: 5.5 cm
Form: Rim: Excurvate  Neck: Gentle Curve
       Body: Globular  Base: Round

VESSEL 34

Type: Huber (Schwerdt Group 4)
No. of Sherds: 1 (1.0 gms)
Provenience: T.U. III (17S47W) Fea. 38 (351)

Paste: Laminar
Temper: Type: Shell/Sand  Size: Light/Light
Color: Exterior: 7.5YR6/4  Interior: 7.5YR6/4  Core: 10YR4/1
       Lt Brown    Lt Brown    Dk Gray Br
Thickness: Rim: .3 cm  Body: .4 cm
Hardness: 2.0
Surface Finish: Plain

Lip: Plain, rounded

Neck Angle: ?
Rim Diameter: 8 cm (?) (miniature vessel)
Rim Height: ?
Form: Rim: ?  Neck: ?
       Body: ?  Base: ?
VESSEL 35

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (75.5 gms)
Provenience: T.U. GGG (ON28E) Fea. 36 (381)

Paste: Friable
Temper: Type: Grit/Granitic  Size: .3 cm

Dk Gray Br  Dk Gray Br  Dk Gray Br

Thickness: Rim: .8 cm  Body: .8 cm

Hardness: 2.5

Surface Finish: Partially smoothed cordmarking

Lip: Lip top corded tool impressed. Impressions 2.5 cm in width

Neck Angle: ?
Rim Diameter: 26 cm
Rim Height: ?
Form: Rim: Excurvate  Neck: Gentle Curve
Body: ?  Base: ?

VESSEL 36

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 3 (5.0 gms)
Provenience: T.U. 62 (17S23W) (361)

Paste: Friable
Temper: Type: Grit/Granitic  Size: .3 cm

Color: Exterior: 10YR6/2  Interior: 10YR4/1  Core: 10YR6/2
Lt Gr Gray  Dk Gray  Lt Br Gray

Thickness: Rim: .7 cm  Body: .45 cm

Hardness: 3.0

Surface Finish: Smoothed cordmarking

Lip: Lip top corded tool impressed. Impressions 2.5 cm in width

Neck Angle: ?
Rim Diameter: 17 cm (?)
Rim Height: ?
Form: Rim: ?  Neck: ?
Body: ?  Base: ?
VESSEL 37

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (14.5 gms)
Provenience: T.U. 65 (17S29W) Fea. 41 (387)

Paste: Friable
Temper: Type: Grit/Granitic Size: .4 cm

Brown Yel Brown Yellow Brown

Thickness: Rim: .8 cm Body: .6 cm

Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip: Lip top corded tool impressed. Impressions 3.0 cm in width.
Some lip folding from impressions.

Neck Angle: ?
Rim Diameter: 20 cm
Rim Height: ?
Form: Rim: Excurvate Neck: ?
Body: ? Base: ?

VESSEL 38

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (7.0 gms)
Provenience: T.U. BBB (18.5 S12E) (284)

Paste: Firable
Temper: Type: Grit/Granitic Size: .4 cm

Very Dk Gray Br Very Dk Gray Br Very Dk Gray Br

Thickness: Rim: .75 cm Body: .6 cm

Hardness: 3.0

Surface Finish: Smoothed cordmarking

Lip: Lip top corded tool impressed. Impressions 2.5 cm in width.

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?
VESSEL 39

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (2.5 gms)
Provenience: T.U. 58 (16S46W) (270)

Paste: Friable
Temper: Type: Grit/Granitic Size: .3 cm

Brown Dk Gray Br Brown

Thickness: Rim: .55 cm Body: .6 cm
Hardness: 3.0
Surface Finish: Smoothed cordmarking

Lip: Lip top corded tool impressed. Impressions 3.0 cm in width

Neck Angle: ?
Rim Diameter: 14 cm (?)
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?

VESSEL 40

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (7.0 gms)
Provenience: T.U. KKK (2N26E) (265)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .4 cm

Dk Gray Br Dk Gray Dk Gray Br

Thickness: Rim: .9 cm Body: .9 cm
Hardness: 3.0
Surface Finish: Cordmarked

Lip: Lip top corded tool impressed. Impressions 2.5 cm in width.

Neck Angle: ?
Rim Diameter: 38 cm
Rim Height: ?
Form: Rim: Excurvate Neck: ?
Body: ? Base: ?
VESSEL 41

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 2 (7.0 gms)
Provenience: T.U. YY (7S12E) (283)

Paste: Friable, dense
Temper: Type: Brit/Quartzitic Size: .4 cm

Color: Exterior: 10YR4/1 Interior: 10YR3/1 Core: 10YR3/1
Dk Gray Very Dk Gray Very Dk Gray

Thickness: Rim: .8 cm Body: .6 cm

Hardness: 3

Surface Finish: Smoothed cordmarking (Exterior surface)

Lip: Top exterior lip impressions. Round impressions .5 cm in width, .7 cm apart. Lip squared and cord impressed before tool impressed.

Neck Angle: ?
Rim Diameter: 26 cm
Rim Height: ?
Form: Rim: Excurvate Body: ?
Neck: ? Base: ?

VESSEL 42

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 1)
No. of Sherds: 1 (2.5 gms)
Provenience: T.U. DD (ON8E) (162)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .4 cm

Brown Very Dk Br Brown

Thickness: Rim: .8 cm Body: .7 cm

Hardness:
Surface Finish: Smoothed cordmarking

Lip: Lip top corded tool impressed.

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?
VESSEL 43

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 2 (58.0 gms)
Provenience: T.U. JJJ (9S42W) Fea. 42 (353)

Paste: Friable
Temper: Type: Grit/Granitic  Size: .6 cm

           Brown   Reddish Yel   Brown
Thickness: Rim: .6 cm  Body: .5 cm
Hardness: 2.5
Surface Finish: Smoothed cordmarking. Smoothed collar extending 4 cm below lip on exterior.
Lip: Exterior lip impressed with fingertip. Impressions .8 cm in width, 1.0 cm apart. Lip rounded
Neck Angle: 140°
Rim Diameter: 28 cm
Rim Height: 7 cm
Form: Rim: Excurvate  Neck: Gentle Curve
       Body: Globular  Base: ?

VESSEL 44

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 3 (16.5 gms)
Provenience: T.U. II (10N22E); T.U. FF (10N26E) (244, 246, 249)

Paste: Friable, dense
Temper: Type: Grit/Quartzitic  Size: .3 cm

          Lt Brown   Lt Brown   Lt Brown
Thickness: Rim: .7 cm  Body: .6 cm
Hardness: 3
Surface Finish: Cordmarked
Lip: Exterior lip impressions. Parallel linear impression perpendicular to lip. Impressions .4 cm in width, .5 cm apart. Lip squared.
Neck Angle: ?
Rim Diameter: 22 cm
Rim Height: ?
Form: Rim: Excurvate  Neck: ?
       Body: ?  Base: ?
VESSEL 45

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (5.0 gms)
Provenience: T.U. MM (11N21E) (266)

Paste: Friable, Laminar
Temper: Type: Grit/Quartzitic Size: .2 cm

Color: Exterior: 10YR7/4 Interior: 10YR4/1 Core: 10YR4/1

Very Pale Br Dk Gray Dk Gray

Thickness: Rim: .85 cm Body: .85 cm

Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip: Exterior lip impressions from fingertip. Impressions .3 cm in width, .4 cm apart. Lip squared.

Neck Angle: ?
Rim Diameter: 18 cm
Rim Height: ?

Form: Rim: Excurvate Neck: ?
Body: ? Base: ?

VESSEL 46

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (2.5 gms)
Provenience: T.U. GG (6N29W) (252)

Paste: Friable
Temper: Type: Grit/Granitic Size: .4 cm


Br to Dk Br Br to Dk Br Br to Dk Br

Thickness: Rim: .8 cm Body: .5 cm

Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip: Exterior lip impressed. Lunate impressions .7 cm in diameter, .7 cm apart. Rounded lip.

Neck Angle: ?
Rim Diameter: 24 cm (?)
Rim Height: ?

Form: Rim: Excurvate Neck: ?
Body: ? Base: ?
VESSEL 47

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (3.0 gms)
Provenience: T.U. 75 (17S43W) (297)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .2 cm

Red Br Red Br Red Br

Thickness: Rim: .5 cm Body: .7 cm

Hardness: 2.5
Surface Finish: Smoothed cordmarking

Lip: Exterior lip impressions. Wedge-lip vertical parallel impressions perpendicular to lip. Impressions .6 cm in width, 1.4 cm apart. Lip slightly beveled.

Neck Angle: ?
Rim Diameter: 28 cm (?)
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?

VESSEL 48

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (2.0 gms)
Provenience: General surface (206)

Paste: Friable
Temper: Type: Grit/Granitic Size: .3 cm

Color: Exterior: 10YR6/3 Interior: 10YR6/3 Core: 10YR4/1
Pale Brown Pale Brown Dk Gray

Thickness: Rim: .75 cm Body: .5 cm

Hardness: 2.5
Surface Finish: Smoothed cordmarking

Lip: Impressions on top exterior of lip from fingertip causing some lip folding. Impressions .8 cm in width, .4 cm apart. Lip squared.

Neck Angle: ?
Rim Diameter: 24 cm (?)
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?
VESSEL 49

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (1.0 gm)
Provenience: T.U. I (2S13E) (29)

Paste: Friable
Temper: Type: Grit/Quartitic Size: .3 cm

Color:
Exterior: 7.5YR4/2
Interior: 7.5YR5/4
Core: 7.5YR5/4

Br to Dk Br Brown Brown

Thickness:
Rim: .7 cm
Body: .5 cm

Hardness: 2.0

Surface Finish: Smoothed cordmarking

Lip: Exterior lip impressions with finger tip. Impressions .3 cm in width, .5 cm apart. Lip squared.

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form:
Rim: ? Neck: ?
Body: ? Base: ?

VESSEL 50

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (2.5 gms)
Provenience: T.U. KK (2N26E) (265)

Paste: Friable, dense
Temper: Type: Grit/Granitic Size: .3 cm

Color:
Exterior: 10YR5/4
Interior: 7.5YR5/4
Core: 10YR4/1

Yellow Br Brown Dk Grey

Thickness:
Rim: .7 cm
Body: .6 cm

Hardness: 3

Surface Finish: Smoothed cordmarking

Lip: Shallow exterior lip impressions. Impressions .4 cm in width, .5 cm apart. Lip slightly beveled.

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form:
Rim: Excurvate Neck: ?
Body: ? Base: ?
VESSEL 51

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (2.0 gms)
Provenience: T.U. FF (1ON26E) (249)

Paste: Friable, dense
Temper: Type: Grit/Granitic Size: .3 cm

Yellow Br Yellow Br Dk Grey Br
Thickness: Rim: .7 cm Body: .6 cm
Hardness: 3.0
Surface Finish: Smoothed cordmarking

Lip: Shallow exterior lip impressions. Impressions .4 cm in width, .6 cm apart. Lip squared.
Neck Angle: ?
Rim Diameter: 28 cm (?)
Rim Height: ?
Form: Rim: Excurvate Neck: ?
   Body: ? Base: ?

VESSEL 52

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (1.0 gm)
Provenience: T.U. GG (6N29W) Fea. 26 (335)

Paste: Friable
Temper: Type: Grit/Granitic Size: .2 cm

Very Dk Gray Br Very Dk Gray Br Very Dk Gray Br
Thickness: Rim: .65 cm Body: ?
Hardness: 2.5
Surface Finish: Smoothed cordmarking

Lip: Narrow exterior lip impressions from fingertip. Impressions .2 cm in width, .3 cm apart. Lip squared
Neck Angle: ?
Rim Diameter: 16 cm (?)
Rim Height: ?
Form: Rim: Excurvate Neck: ?
   Body: ? Base: ?
VESSEL 53

Type: Moccasin Bluff Modified Lip (Group 1)
No. of Sherds: 3 (13.0 gms)
Provenience: T.U. 76 (20511W) (309)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .3 cm

       Br to Dk Br        Dk Gray Br        Dk Gray Br
Thickness: Rim: .7 cm Body: .6 cm
Hardness: 2.5
Surface Finish: Smoothed cordmarking

Lip: Corded tool impressed (almost punctated) on top exterior of lip. Impressions .8 cm in width, .5 - .7 cm apart. Lip slightly folded from impressions.
Neck Angle: ?
Rim Diameter: 14 cm
Rim Height: ?
Form: Rim: Straight Neck: ?
       Body: ? Base: ?

VESSEL 54

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (1.5 gms)
Provenience: TS GG (6N29W) (252)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .3 cm

       Dk Gray Br        Dk Gray Br        Dk Gray Br
Thickness: Rim: .7 cm Body: .5 cm
Hardness: 3.0
Surface Finish: Smoothed cordmarking

Lip: Exterior lip lunate impressions. Impressions .7 cm in diameter, .4 cm apart. Lip rounded.
Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: ? Neck: ?
       Body: ? Base: ?
VESSEL 55

Type: Moccasin Bluff Plain Modified Lip (Group 2)
No. of Sherds: 1 (3.5 gms)
Provenience: T. U. KK (2N26E) (265)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .3 cm

Color: Exterior: 7.5YR5/4 Interior: 7.5YR3/2 Core: 10YR5/2
  Brown Dk Brown Gray Br
Thickness: Rim: .8 cm Body: .7 cm
Hardness: 3.0
Surface Finish: Plain

Lip: Exterior lip impressions (possibly fingertip). Top of lip
  appears to have been pinched together then smoothed. Impressions
  .3 cm in width, .7 cm apart.
Neck Angle: ?
Rim Diameter: 20 cm
Rim Height: ?
Form: Rim: Excurvate Neck: ?
  Body: ? Base: ?

VESSEL 56

Type: Moccasin Bluff Plain Modified Lip (Proposed Group 4)
No. of Sherds: 4 (6.0 gms)
Provenience: T. U. 65 (17S29W) Fea. 41 (326)

Paste: Friable, dense
Temper: Type: Grit/Granitic Size: .2 cm

  Red Br Red Br Red Br
Thickness: Rim: .5 cm Body: .6 cm
Hardness: 2.5
Surface Finish: Plain

Lip: Shallow tool impressions on lip top creating slight scalloping
  Impressions .3 - .5 cm in width, .3 - .5 cm apart. Lip beveled.
Neck Angle: 122°
Rim Diameter: 10 cm
Rim Height: 1.5 cm
Form: Rim: Excurvate Neck: Sharp curve
  Body: ? Base: ?
VESSEL 57

Type: Moccasin Bluff Plain Modified Lip (Group 1)
No. of Sherds: 1 (3.0 gms)
Provenience: T.U. CCC (19S5E) (293)

Paste: Friable, dense
Temper: Type: Grit/Granitic  Size: .3 cm

Color:
Exterior: 10YR5/2  Interior: 10YR5/2  Core: 10YR4/2
Gray Brown  Gray Brown  Dk Gray Brown

Thickness:
Rim: .75 cm  Body: .7 cm

Hardness: 2.5

Surface Finish: Plain

Lip: Lip exterior impressed. Impressions .7 cm apart.

Neck Angle: ?
Rim Diameter: 18 cm (?)
Rim Height: ?
Form:
Rim: ?  Neck: ?
Body: ?  Base: ?

VESSEL 58

Type: Moccasin Bluff Impressed Exterior Lip
No. of Sherds: 1 (2.0 gms)
Provenience: T.U. 54 (15S20W) (365)

Paste: Friable
Temper: Type: Grit/Granitic  Size: .2 cm

Color:
Exterior: 7.5YR5/1  Interior: 7.5YR5/4  Core: 7.5YR5/4
Brown  Brown  Brown

Thickness:
Rim: .7 cm  Body: .4 cm

Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip:
Lunate exterior lip impressions causing some lip folding.
Impressions .7 in width, 1.2 cm apart, lip rounded.

Neck Angle: ?
Rim Diameter: 16 cm (?)
Rim Height: ?
Form:
Rim: ?  Neck: ?
Body: ?  Base: ?
VESSEL 59
Type: Moccasin Bluff Plain Modified Lip (Proposed Group 4)
No. of Sherds: 2 (5.5 gms)
Provenience: T.U. MM (11N21E) (266)
Paste: Friable
Temper: Type: Grit/Granitic Size: .4 cm
Brown Dk Brown Dk Brown
Thickness: Rim: .6 cm Body: .6 cm
Hardness: 2.5
Surface Finish: Plain
Lip: Lip top tool impressed then smoothed. Lip squared.
Neck Angle: ?
Rim Diameter: 26 cm (?)
Rim Height: ?
Form: Rim: Incurvate Neck: ?
Body: ? Base: ?

VESSEL 60
Type: Huber (Schwerdt Group 1)
No. of Sherds: 2 (360.0 gms)
Provenience: T.U. 65 (17S29W) Fea. 41 (326, 387)
Paste: Laminar
Temper: Type: Shell/Sand Size: Medium/Light
Color: Exterior: 10YR6/3 Interior: 7.5YR5/4 Core: 7.5YR5/4
Pale Brown Brown Brown
Thickness: Rim: 1.2 cm Body: .4 - 1.2 cm
Hardness: 2.0
Surface Finish: Plain-vertical incising starting at shoulder and extending down body (Huber Incised-Faulkner, 1972).
Lip: Stick or reed impressions on top of lip. Perpendicular and diagonal to lip edge. Impressions .2 cm in width, .2 - .4 cm
Neck Angle: 115° apart. Strap handle attachment. Lip squared
Rim Diameter: 29 cm
Rim Height: 6 cm
Form: Rim: Excurvate, cambered Neck: Sharp curve
Body: Globular Base: ?
VESSEL 61

Type: Huber (Schwerdt Group 3)
No. of Sherds: 1 (4.5 gms)
Provenience: T.U. III (17S47W) Fea. 38 (333)

Paste: Laminar
Temper: Type: Shell Size: Medium

Brown Brown Dk Gray Brown

Thickness: Rim: .7 cm Body: .6 - 1.1 cm
Hardness: 2.5 - 3.0
Surface Finish: Plain

Lip: Plain, squared

Neck Angle: 110°
Rim Diameter: 24 cm
Rim Height: 3 cm
Form: Rim: Excurvate Neck: Sharp curve
Body: ? Base: ?

VESSEL 62

Type: Huber (Schwerdt Group 3)
No. of Sherds: 1 (11.5 gms)
Provenience: T.U. 67 (14S45W) (275)

Paste: Laminar
Temper: Type: Shell Size: Medium

Pale Brown Gray Brown Dk Gray Brown

Thickness: Rim: .7 cm Body: .8 - .9 cm
Hardness: 2.5
Surface Finish: Plain

Lip: Plain, squared

Neck Angle: 130°
Rim Diameter: 32 cm
Rim Height: 2.5 cm
Form: Rim: Excurvate Neck: Sharp curve
Body: ? Base: ?
VESSEL 63

Type: Huber (Schwerdt Group 3)
No. of Sherds: 1 (2.5 gms)
Provenience: T.U. 74 (20S8W) (360)

Paste: Laminar
Temper: Type: Shell/Sand  Size: Medium/Light

Color: Exterior: 5YR3/2  Interior: 5YR4/4  Core: 7.5YR3/2
Dk Red Br  Red Brown  Dk Brown

Thickness: Rim: ?  Body: .5 - .95 cm
Hardness: Plain
Surface Finish:

Lip: Plain, squared

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: ?  Neck: ?
Body: ?  Base: ?

VESSEL 64

Type: Huber (Schwerdt Group 4)
No. of Sherds: 1 (1.0 gms)
Provenience: T.U. 76 (20S11W) (309)

Paste: Laminar
Temper: Type: Shell/Sand  Size: Medium/Light

Color: Exterior: 5YR5/6  Interior: 7.5YR5/4  Core: 7.5YR5/4
Yellow Red  Brown  Brown

Thickness: Rim: .4 cm  Body: .6 cm
Hardness: 2.5
Surface Finish: Plain

Lip: Plain, squared

Neck Angle: ?
Rim Diameter: 10 cm (miniature vessel)
Rim Height: Excurvate
Form: Rim: ?  Neck: ?
Body: ?  Base: ?
VESSEL 65

Type: Huber (Schwerdt Group 4)
No. of Sherds: 1 (1.5 gms)
Provenience: T.U. AA (8S8E) (126)

Paste: Laminar
Temper: Type: Shell/Sand Size: Medium/Light

Color:
Exterior: 10YR5/3
Interior: 10YR5/3
Core: 10YR5/3

Thickness:
Rim: .45 cm
Body: ?

Hardness: 2.0

Surface Finish: Plain

Lip: Plain, squared

Neck Angle: ?
Rim Diameter: 10 cm (miniature vessel)
Rim Height: ?
Form:
Rim: Excurvate
Body: ?
Neck: ?

VESSEL 66

Type: Moccasin Bluff Modified Lip (Group 1)
No. of Sherds: 1 (9.5 gms)
Provenience: General surface (206)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .4 cm

Color:
Exterior: 7.5YR5/6
Interior: 7.5YR5/6
Core: 7.5YR5/6

Thickness:
Rim: .6 cm
Body: .75 cm

Hardness: 2.5 - 3.0

Surface Finish: Smoothed cordmarking

Lip: Top exterior of lip cored tool impressed. Impression 1.4 cm in width, distance between unknown. Small (1.0 cm) collar.

Neck Angle: ?
Rim Diameter: 16 cm (?)
Rim Height: ?
Form:
Rim: ?
Body: ?
Neck: ?
Base: ?
VESSEL 67

Type: Moccasin Bluff Modified Lip (Group 1)
No. of Sherds: 1 (1.0 gms)
Provenience: T.U. 22 (1N14W) (261)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .3 cm
Brown
Dk Gray Brown
Thickness: Rim: ? Body: ?
Hardness: 2.5
Surface Finish: Smoothed cordmarking
Lip: Top exterior of lip corded tool impressed. Small (.6 cm) collar.
Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?

VESSEL 68

Type: Untyped
No. of Sherds: 1 (8.5 gms)
Provenience: T.U. 70 (19S2W) (271)

Paste: Friable
Temper: Type: Grit/Granitic Size: .4 cm
Color: Exterior: 7.5YR5/6 Interior: 7.5YR5/4 Core: 7.5YR5/4
Strong Brown Brown Brown
Thickness: Rim: .7 cm Body: .5 cm
Hardness: 3.0
Surface Finish: Smoothed cordmarking
Lip: Squared, possibly castelated
Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: Excurvate Neck: ?
Body: ? Base: ?
VESSEL 69

Type: Untyped
No. of Sherds: 1 (4.5 gms)
Provenience: T.U.Z. (4S6E) (118)

Paste: Friable
Temper: Type: Grit/Granitic Size: .3 cm

Very Dk Gray Br Very Dk Gray Very Dk Gray Br
Thickness: Rim: .7 cm Body: .7 cm
Hardness: 3.0
Surface Finish: Smoothed cordmarking

Lip: Squared, plain

Neck Angle: ?
Rim Diameter: 24 cm
Rim Height: ?
Form: Rim: Excurvate Neck: ?
Body: ? Base: ?

VESSEL 70

Type: Untyped
No. of Sherds: 1 (1.0 gms)
Provenience: T.U.L. (2S45W) (58)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .2 cm
Some Mica

Brown Brown Brown
Thickness: Rim: .55 cm Body: .5 cm
Hardness: 2.5
Surface Finish: Cordmarked

Lip: Corded, rounded, small lip

Neck Angle: ?
Rim Diameter: 28 cm (?)
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?
VESSEL 71

Type: Schwerdt Scalloped (Group 1)
No. of Sherds: 1 (2.0 gms)
Provenience: T.U. DD (ON8E) (162)

Paste: Friable
Temper: Type: Grit/Granitic  Size: .3 cm
Color:
Very Dk Gray Br  Dk Gray Br  Dk Gray Br
Thickness:
Rim: .85 cm  Body: .65 cm
Hardness: 3.0
Surface Finish: Smoothed cordmarking

Lip: Lip top corded tool impressed. Some lip folding from impressions.

Neck Angle: ?
Rim Diameter: 14 cm (?)
Rim Height: ?
Form:
Rim: ?  Neck: ?
Body: ?  Base: ?

VESSEL 72

Type: Untyped
No. of Sherds: 1 (4.5 gms)
Provenience: T.U. KK (2N26E) (265)

Paste: Friable
Temper: Type: Grit/Quartzitic  Size: .2 cm
Color:
Exterior: 10YR4/2  Interior: 10YR4/2  Core: 10YR4/2
Dk Gray Br  Dk Gray Br  Dk Gray Br
Thickness:
Rim: .7 cm  Body: .5 cm
Hardness: 3.0
Surface Finish: Cordmarked

Lip: Squared, narrow impression on top of lip

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form:
Rim: Excurvate  Neck: ?
Body: ?  Base: ?
VESSEL 73

Type: Untyped
No. of Sherds: 1 (1.5 gms)
Provenience: 1976 Riverbank survey (223)

Paste: Friable
Temper: Type: Grit/Granitic
Size: .2 cm

Yellow Br Yellow Br Yellow Br

Thickness: Rim: .65 cm Body: .5 cm

Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip: Slightly folded

Neck Angle: ?
Rim Diameter: 22 cm
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?

VESSEL 74

Type: Untyped
No. of Sherds: 1 (1.5 gms)
Provenience: T.U. AA (8s8E) (126)

Paste: Friable
Temper: Type: Grit/Granitic
Size:

Very Dk Gray Br Very Dk Gray Br Very Dk Gray Br

Thickness: Rim: .7 cm Body: .5 cm

Hardness: 2.5

Surface Finish: Smoothed cordmarking

Lip: Thickened lip

Neck Angle: ?
Rim Diameter: 24 cm
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?
VESSEL 75

Type: Untyped
No. of Sherds: 1 (1.0 gm)
Provenience: T.U. CCC (19S5E) (293)

Paste: Friable
Temper: Type: Grit/Granitic Size: .2 cm

Dk Gray Brown Dk Brown Dk Gray Brown

Thickness: Rim: .7 cm Body: ?
Hardness: 3.0
Surface Finish: Smoothed cordmarking

Lip: Rounded, pinched

Neck Angle: ?
Rim Diameter: ?
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?

VESSEL 76

Type: Moccasin Bluff Scalloped (Schwerdt Scalloped Group 2)
No. of Sherds: 1 (1.0 gm)
Provenience: T.U. I (2S13E) (19)

Paste: Friable
Temper: Type: Grit/Quartzitic Size: .1 cm

Color: Exterior: 7.5YR4/2 Interior: 7.5YR5/4 Core: 7.5YR4/2
Br to Dk Br Brown Br to Dk Br

Thickness: Rim: .7 cm Body: ?
Hardness: 2.5
Surface Finish: Smoothed cordmarking

Lip: Lip top plain tool impressed. Impressions 1.5 cm in width.

Neck Angle: ?
Rim Diameter: 22 cm
Rim Height: ?
Form: Rim: ? Neck: ?
Body: ? Base: ?
## APPENDIX B

### Schwerdt Site Test Unit and Feature Locations

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<td>13S, 10E</td>
<td>(4)</td>
<td></td>
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<tr>
<td>BBB</td>
<td>18.5S, 12E</td>
<td>(4)</td>
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<tr>
<td>CCC</td>
<td>19S, 5E</td>
<td>(4)</td>
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<tr>
<td>DDD</td>
<td>9S, 0E</td>
<td>(4)</td>
<td></td>
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<tr>
<td>EEE</td>
<td>7S, 14E</td>
<td>(4)</td>
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<td>Test Square</td>
<td>Provenience</td>
<td>Size</td>
<td>Features</td>
<td>Feature Type</td>
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<tr>
<td>FFF</td>
<td>ON, 22E</td>
<td>(4)</td>
<td>37-1N, 22.6E</td>
<td>Amorphous Stain</td>
</tr>
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<td>GGG</td>
<td>ON, 28E</td>
<td>(4)</td>
<td>36-.8N, 30.1E</td>
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<tr>
<td>HHH</td>
<td>12S, 2W</td>
<td>(4)</td>
<td>38-16.2S, 46.2W</td>
<td>Pit</td>
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<tr>
<td>III</td>
<td>17S, 47W</td>
<td>(5)</td>
<td>40-7.2S, 40.5W</td>
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<td>JJJ</td>
<td>9S, 42W</td>
<td>(7)</td>
<td>42-8.6S, 40.3W</td>
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<td>KKK</td>
<td>14S, 31W</td>
<td>(2)</td>
<td>43-13.5S, 30.4W</td>
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<td>Block A</td>
<td>5N, 0E</td>
<td>(115)</td>
<td>17-10.6N, 4E</td>
<td>Pit</td>
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<td>18-5N, .8E</td>
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<td>Post Mold</td>
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<td>20-6.8N, 6.2E</td>
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<td>21-8.4N, 16.6E</td>
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<td>22-5.9N, 17E</td>
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<td>23A-4.1N, 12.1E</td>
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<td>23B-5N, 11.7E</td>
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<td>24A-5.3N, 14.7E</td>
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<td>25-5.3N, 18E</td>
<td>Post Mold</td>
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<td>2 22S, 10E</td>
<td>Pit</td>
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