

JENSEN'S FARM:
A STUDY
IN
REPLICATED SITE SURFACE COLLECTION

BY

SHEILA E. BRADFORD

A thesis
presented to the University of Manitoba
in partial fulfillment of the
requirements for the degree of
Master of Arts, Anthropology Department, University of
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in

Winnipeg, Manitoba

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SHEILA E. BRADFORD

A thesis submitted to the Faculty of Graduate Studies of
the University of Manitoba in partial fulfillment of the requirements
of the degree of

MASTER OF ARTS

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ABSTRACT

In May - June 1978 and 1979 surface collections were undertaken at Jensen's Farm, an early twentieth century homesteading site twenty miles north of Dauphin, Manitoba, to determine the extent to which the results obtained through site surface collection could: 1) be replicated in terms of the frequencies and spatial distributions of artifact classes recovered, and 2) consistently isolate the location, size, shape, and function of the original features known to have existed at Jensen's Farm. Frequency tables, chi-square, and SAS-produced artifact plots were used in conjunction with scale drawings of Jensen's Farm to assess the results obtained. The results suggest that, even on a highly disturbed site such as Jensen's Farm, it is possible to replicate the general rank-order of artifact classes recovered and the general patterns and dispersions of artifacts plotted. Acceptable ranges of variation, rather than results of no significant statistical difference, should be expected given the indeterminate nature of intervening factors and the basic incomparability of artifact fragments as comparative units. Correspondence to the original Jensen's Farm features proved to be a partial one in terms of both the artifact content recovered and the spatial distributions plotted. Based on the results obtained here, it is advocat-

ed that surface collection be conducted wherever irreversible resource management decisions are to be made or where time and funding permit the luxury.

PREFACE

Many people have been involved in the circumstances surrounding this thesis. To those who clearly supported me through its many phases I give my thanks and my appreciation. It was with such generous support that I was able to place the integrity and quality of this thesis into perspective.

In order of appreciations and acknowledgements, I would like first to thank the field students from 1978 and 1979 who collected artifacts as part of the University of Manitoba Archaeological Field School under conditions which were not always the most ideal. I would also like to thank Linda Roberts for conscientiously supervising the collection of the data in 1979, knowing that it would form the basis of my second comparative collection. Access to using the artifacts was granted by the Historic Resources Branch of the Manitoba Department of Culture and Recreation and by Gregory Monks, Anthropology Department, University of Manitoba. I would also like to thank Mr. and Mrs. Alex Kostiew, the current owners of the property on which the site is situated, for directing the archaeological crews to specific site areas, for permission to collect and excavate on their property, for their generosity in providing

shelter, water, telephone, and other such basic necessities, and for being so helpful in providing the background information to Jensen's farm.

I would like to thank Gilbert Paul from the Statistics Department, University of Manitoba, for his common sense view of statistics, clear-headed approaches to problems and techniques, his sense of humour and integrity, and his willingness to speak up on my behalf in a difficult situation. I would also like to thank Louise Sweet of the Anthropology Department, University of Manitoba, for exhorting me to speak up as I felt I should.

Technical support was provided by many different people. The conscientious and friendly assistance I received from the staff at the Computer Centre, University of Manitoba, while attempting to develop and run the several different computer programs involved in this thesis, was always welcome and appreciated. In particular, I would like to thank Harold Laube for his assistance in developing and running the SAS programs used to produce the artifact plots presented in this thesis. I also commend the Centre's position that data bases should remain the property of specific students and be protected as such.

I would like to thank Peter Priess of Parks Canada, Winnipeg, for introducing me to the Parks Canada Historic Artifact Coding System, for his help in providing reference

materials as required, and for two enjoyable seasons of historic archaeology fieldwork. I would also like to thank Jennifer Hamilton, Kevin Lunn, Sharon Keen, Dana Mae Grainger, and Margaret Burnip of Parks Canada for their help in the identification of historic artifacts. Dave Elrick and Judy Zoltai drafted several of the maps and figures for the thesis and Suzanne Doyle assisted with some of the typing. The tedious job of cutting and pasting up the final figures and tables, xeroxing and compiling the final copy proof version of the thesis was tackled by Georgine Pastershank. To her I extend a special appreciation and thanks.

Several people undertook to read this thesis as outside readers. In particular, I would like to acknowledge Leo Pettipas, Provincial Archaeologist, and Rod Burchard, Anthropology Department, University of Manitoba. Each reader provided me with professional and constructive feedback which promoted new ideas and discussion.

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appreciation. To those of you who especially laughed with the rich anticipation of those who know how to courageously stand up in the face of all odds, to you I give a special extra hug. It was your laughter that helped me to laugh too.

As life so often does, this thesis journey took on many ironic twists throughout its duration. It was certainly not the journey I had expected to make and, yet, is one which has ultimately provoked in me all the requisite strengths to do something of significance in life. Throughout the course of this thesis I have had to take several risks of the kind most students would rather not face, risks which repeatedly emphasized to me the value and importance of personal integrity.

In closing, I dedicate this thesis to all thesis students currently engaged in a program or who have recently completed one with the admonition to know your rights, co-ordinate your energies and concerns, and stand up for the kind of democratic and ethical environment all educational environments should be.

University of Manitoba

January 8, 1985.

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I

INTRODUCTION

1.1 STATEMENT OF OBJECTIVES

Surface scatters of artifacts are often assumed to be indicative of the type of site hidden below the surface. If such scatters are systematically collected and the type, location, and dispersion of artifact classes carefully recorded, it is felt that these will help to isolate meaningful patterns of artifact distributions and site use, indicate parameters of a site, time period, and the nature of occupation. Preliminary results based on surface collections are often used to determine the type of site, its relative importance in terms of other sites discovered, whether the site is to be excavated or not and, if it is to be excavated, the kind of research design, sampling and excavation methods to be used. Despite the widespread use of systematic, intensive surface collection in archaeology, there has been little investigation concerning the replicability or usefulness of results obtained through the use of this technique.

The following study is designed to test the replicability of results obtained through intensive, systematic surface

collection. The results from two surface collections of the same site area are compared to:

1. determine if the results between collections are replicable in terms of artifact content and patterns recovered, and
2. determine if such results actually replicate reality in terms of isolating original patterns of structures and site use.

1.2 SOURCE OF THE DATA

The data chosen for analysis originate from an early twentieth century homestead, known as "Jensen's Farm", which was established by Jens Jensen in 1922 twenty miles north of Dauphin, Manitoba (Figure 1). Little remains of the homestead today except for a scatter of artifacts across the surface of a ploughed field and the rubble of an old well buried by brush.

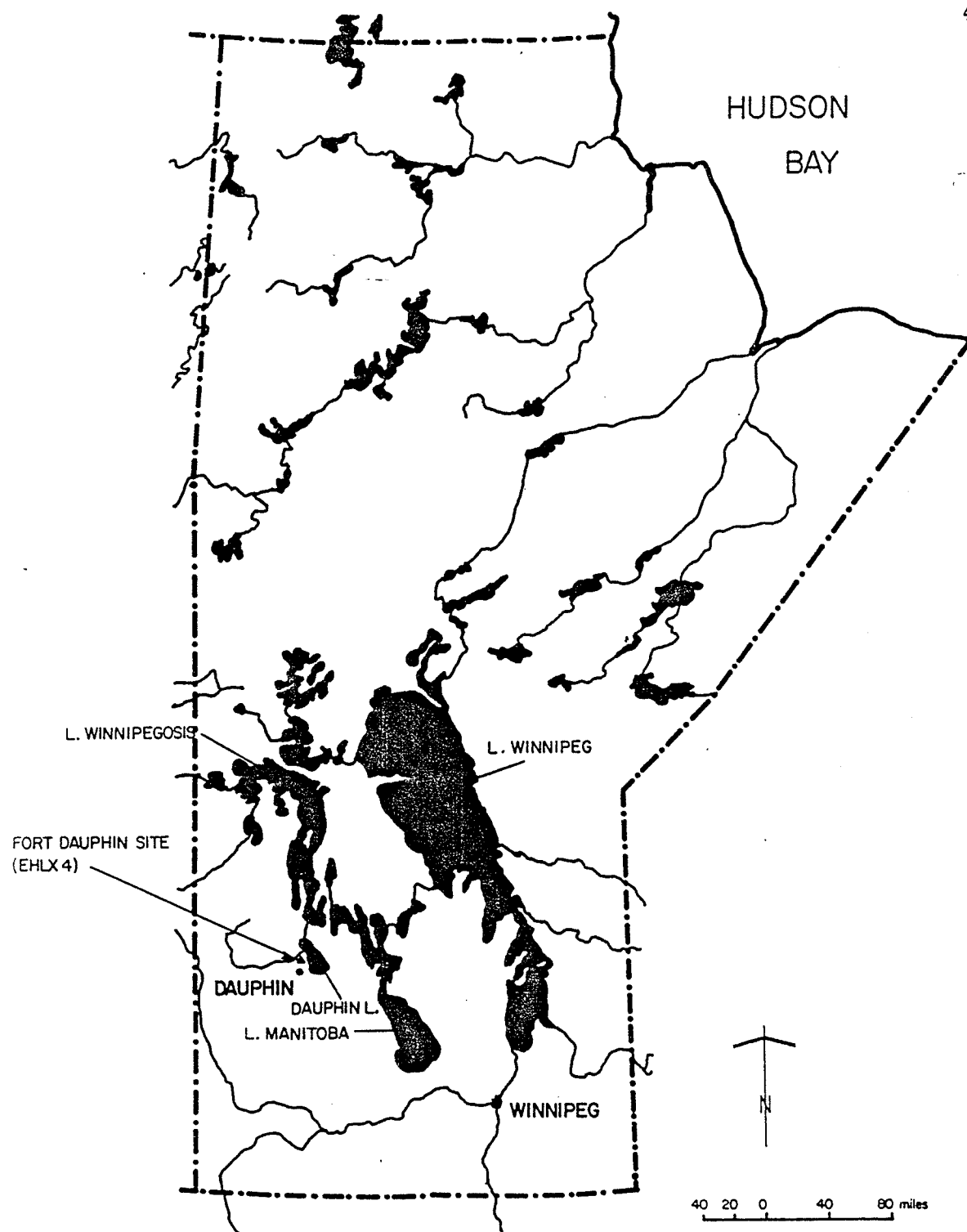
Jensen's Farm was originally an unexpected component of a larger site known as the "Fort Dauphin Site" (EhLx4) where it was expected that the remains of two Hudson Bay and Northwest Company fur trading posts would be uncovered. The site is located at 51°55'N 99°55'W on the west side of Lake Dauphin three miles south of the Valley River (SW 1/4, Section 15, Township 27, Range 18) (Figure 1). In May and June 1978 and 1979 two intensive, systematic surface collections

were undertaken at the site. A judgmental sample of these surface-collected artifacts from the area enclosing the original Jensen homestead has been chosen for analysis. Jensen's Farm represents the densest distribution of materials at the site. Although fur trade and prehistoric artifacts were recovered, their presence in this section of the site is negligible. The sample area enclosing Jensen's Farm is approximately 40 metres by 60 metres in size and produced 4,904 of the total 10,000 artifacts recovered from the site. Of these sample area artifacts 2,248 were recovered in 1978 and 2,656 in 1979.

Ethno-historical information was obtained for Jensen's Farm from both archival sources and from Mr. Alex Kostiew, the current owner who purchased the farm from the Jensen family and who later dismantled the original homestead buildings.

1.3 HYPOTHESES AND ASSUMPTIONS

The following study can be considered a type of "control study" for the examination of results obtained through intensive site surface collection. Since the historical context of the site is known, there is an additional means of verifying the collection results not normally available in the study of prehistoric materials.



(David Elrick; draftsman)

Figure 1: Geographical Location of the Fort Dauphin Site (EhLx4)

The analysis is both methodological and substantive - methodological in the sense that it investigates the replicability of results obtained through site surface collection and substantive in the sense that these results are checked against the ethno-historical information available to assess the degree to which they reflect actual contexts of site pattern and use.

The hypotheses being tested in this thesis are as follow:

1. Each of the 1978 and 1979 surface collections will produce:
 - a) the same types of artifact classes and frequencies of artifacts within those classes, and
 - b) similar patterns and dispersions of artifacts when the spatial distribution of individual artifact classes are plotted.
2. Each of the 1978 and 1979 surface collections will consistently produce:
 - a) classes of artifacts which uniquely reflect the functions of particular feature areas known to have existed at Jensen's Farm, and
 - b) patterns and dispersions of artifact classes which spatially correlate with the known locations, sizes, and shapes of both structural and nonstructural features known to have existed at Jensen's Farm.

It is further postulated that this similarity between years and spatial correlation to original site features can be observed at the level of gross or generalized artifact groupings, specialized subgroupings, and at the level of specific items or artifact-specific attributes such as colour, decorative pattern, or identifiable portion.

A number of basic assumptions underlie these hypotheses. It is assumed that re-collection of a site - known as replicated site surface collection - will produce consistent, replicable results regardless of potentially intervening factors such as artifact size, collection unit size, collector biases, disturbances due to ploughing, etc. (cf. Riordin 1982). It is assumed that surface collected materials can be reliably used as general indicators of below-surface archaeological deposits, and that this surface-subsurface correlation is more pronounced in sites of shallow deposition. Although the archaeological record is recognized as the product of both random and non-random factors, it is also assumed that patterned cultural behaviour is visible in the types of artifacts present and in their spatial distribution across the surface of a site. Such patterns and dispersions are expected to mirror the actual cultural context and to be capable of isolating both structural features and activity areas. It is further assumed that in order for site surface collection to be a useful or meaningful archaeological tool it must be both replicable and able to isolate patterns of actual site use.

The significance of the results obtained in this thesis will be discussed in terms of some of these assumptions and intervening variables underlying the hypotheses. In particular collector bias, collection method, field conditions, and the effect of artifact density on the results obtained will be examined. If time allowed other factors such as lateral displacement due to ploughing, artifact size, and grid collection size would have been measured and discussed in terms of their effect on the degree of replicability between years and the degree of replicability between the archaeological context and the original historical context. Unfortunately within the time constraints of this thesis, these factors could not be examined.

1.4 METHOD OF ANALYSIS

In order to analyze the data, artifacts were identified and coded using a combination of two computerized systems for the coding of historic artifacts - a modified version of the "Parks Canada Historic Artifact Coding System" (unpublished manuscript 1981, Parks Canada, Winnipeg, Manitoba) and an adapted version of South's "Historic Artifact Group and Class System" (South 1977: 95-96). The Parks Canada system provided the means of manipulating and subdividing artifacts in terms of specific attributes such as colour or material type. The South system provided the means of comparing artifact distributions between years, and the nature

of these archaeological distributions to the historical context, in terms of generalized artifact groups and classes. Tables outlining the basic setup of these coding systems can be found in the following chapter (cf. Tables 1 and 2).

The hypotheses stated at the beginning of this thesis essentially demand a between-samples and within-sample type of analysis. The between-samples analysis (Hypothesis 1) posits that each year will produce similar frequencies, patterns, and dispersions of artifact classes. The within-sample analysis (Hypothesis 2) states that each year is expected to produce artifact contents, patterns, and dispersions which are uniquely and spatially correlated to particular structural and non-structural features known to have existed at Jensen's Farm.

In the between-samples analysis (Hypothesis 1), the collections between years are compared in terms of the frequencies of South artifact groups, artifact classes, and selected subgroupings of artifact-specific attributes or items recovered. Chi-square tests are used to ascertain the degree to which the results between years are significantly similar or dissimilar. To determine spatial correspondence between years, SAS-produced density plots (Statistical Analysis System produced plots) of artifact distributions for each year are visually compared in terms of the artifact densities, patterns, and dispersions recovered. A system of arbitrary sample area quadrats and superimposed artifact

density diagrams are used to help facilitate this comparison. The plotted distributions for each year are also briefly compared to those produced when the results from each year are combined. The intention behind this is to assess: 1) whether one surface collection is sufficiently informative, 2) if replicated collections produce results which are informative in similar or different ways, and 3) if combining the results from replicated surface collections produces artifact maps which are different from, or more or less informative than, the results of any one collection.

In the within-sample analysis (Hypothesis 2), the results from each year are compared to the historical context in terms of artifact content and the patterns and dispersions of artifacts recovered to determine the degree to which each year successfully reflects activity-areas, structural, and non-structural features known to have existed at Jensen's Farm. In order to accomodate this type of comparison, a schematic overlay of Jensen's Farm was adapted from an early 1949 aerial photograph. The overlay was drawn to the same scale as the SAS- produced artifact density plots and then superimposed on these plots to determine the amount of spatial correspondence between the historical features and the dispersions, patterns, and density contours described by the archaeologically recovered artifacts. The types of correspondence found between archaeological and historical features are discussed in terms of "focus", the degree to which

a feature can be clearly defined, and "visibility", the amount or density of physical remains present (Deetz 1977: 94).

Once each year's collection results are compared in terms of their spatial correspondence to the historical features, each year is compared to one another and to the plots produced when the results from each year are combined. Again, the intention is to determine if replicated collection produces similar results between years and if combining these results produces clearer and more informative artifact plots than could have been produced by any single year's collection. The frequencies of artifact categories recovered from each historical feature area (such as the Jensen house, barn, yard areas, roadway, and footpath between the house, well, and barn) are also compared to determine: 1) if the type of artifact content recovered is uniquely associated with particular feature areas, 2) if each year produces similar types of artifacts for each feature area, and 3) if the type of artifact content recovered is the kind one would expect to occur given the nature and use of each of these feature areas.

Due to the large volume of information, tables, and figures involved, the analyses were broken down into two separate sections as follow:

1. Statistical Analysis of the Artifact Content Recovered.
2. Spatial Analysis of Artifact Distributions Recovered.

1.5 RELATED LITERATURE

Although uncontrolled (or judgmental) surface collection has been used in archaeology for a long time as a common sense and preliminary exploratory tool, it is only in the last twelve to fifteen years that controlled - or systematic, intensive - surface collection has come into use. Controlled surface collection is a technique which developed out of concerns over adopting a more "scientific" approach to archaeology. The intention underlying this was to make archaeological results more replicable and more reliable. The introduction of hypothesis-testing and the use of statistical sampling methods to acquire more "representative" collections of artifacts has generated extensive debate over archaeological methods and techniques in general and over site survey methods and site sampling techniques in particular. Within the context of this debate controlled surface collection came to be recommended as a valuable, efficient, and indispensable part of "multi-stage" fieldwork and research designs (eg., Redman 1973a, 1973b, 1974; Watson et al 1971; Redman and Watson 1970; Binford et al 1970; Reid et al 1975; Meuller 1974; Flannery 1976; Schiffer 1976; Salmon 1975, 1976; Thomas 1976; Doran and Hodson 1975). Use of

controlled surface collection continues to receive broad acceptance in archaeology but has also triggered debate over its usefulness and reliability. The technique has been questioned particularly in regard to ploughed and disturbed sites where it is felt that the correlation between surface and subsurface materials would be badly affected.

A now classic article by Redman and Watson (1970) explored this surface-subsurface correlation issue in 1970. Redman and Watson systematically collected two prehistoric mounds in SE Turkey (dating from 7,000 and 5,000 B.C.) to determine how closely subsurface features and materials could be predicted from detailed knowledge of surface distributions (Redman and Watson 1970: 279). The sites had been "cultivated with draft animals and wooden plows for an unknown but probably lengthy period of time", a factor Redman and Watson (1970: 280) assumed would have minimal effect on the results. The results they obtained indicate that although "the degree of correlation varies from [excavation] square to [excavation] square, in all six cases [examined] the first fifty centimetres are almost identical to the surface collection" (1970: 290). They cautioned that the degree of surface-subsurface correlation at other sites would probably depend on how rapidly subsurface assemblages changed and on the analytical approach (ie. artifact classifications) utilized. More recent studies have continued to focus on this surface - subsurface relationship but have

reached reverse conclusions to those of Redman and Watson. These articles suggest that surface remains are potentially distorted, if not at times inverted, indicators of subsurface materials (eg., Reid et al 1975; Baker 1978; Tolstoy and Fish 1975; Schiffer 1976; Hirth 1978; Ammerman and Feldman 1978).

Factors affecting the appearance of artifacts on and their collection from the surface of a site have also received attention. Some of these factors include lateral displacement due to ploughing (Roper 1976; Ammerman and Feldman 1978; O'Brien and Lewarch 1981), slope movement (Rick 1976), size of artifacts (Baker 1978; Ammerman and Feldman 1978) and weather conditions (Hirth 1978; Ammerman and Feldman 1978). Riordian (1982: 47 - 48) summarizes the factors affecting surface collection results as having five main sources: 1) ploughing effects, 2) ground conditions, 3) artifact size, 4) collection unit size, and 5) collector biases.

Recently, three key articles have appeared which focus on the replicability of site surface collection (Hirth 1978; Ammerman and Feldman 1978; and Riordian 1982). The question asked by each author is that if the same site area is collected more than once how similar or dissimilar will the results between surface collections prove to be. Their main concern is that if surface collection is to be used as such a critical preliminary tool in the definition, excavation,

and interpretation of archaeological sites then the technique itself must be both replicable and reliable.

Unlike Ammerman and Feldman (1978) or Riordian (1982) who deliberately set out to test the replicability of site collection under field and weather conditions which are as comparable as possible, Hirth (1978) sets out to surface collect under varying field and weather conditions to assess the effect of rainfall and ploughing on the results obtained through site surface collection. He does so out of an attempt to demonstrate that population density estimates based on surface artifact density and surface area are actually more reflections of variations in data collection techniques, or factors affecting these, than genuine demographic variability. To demonstrate this Hirth surface collected a prehistoric site near Chalatzingo, Mexico. The site was collected three times between January and August 1973: a) during the dry season when the land was fallow, b) after the rainy season when no ploughing had occurred, and c) after another dry period when ploughing (by oxen) had occurred. Artifacts (densities of pot sherds) "recovered" were recorded but not actually collected.

In Hirth's first collection relatively little was recovered and densities recorded never exceeded ten artifacts per square meter. In the second collection almost eight times as much material was recovered (due to what Hirth assumes is the "washing effect" of rainfall) accentuating site and tem-

poral boundaries not clearly visible before. Almost as much material was recovered in the third surface collection as in the second. The only significant change between the second and third collections was a decrease in the visibility of surface remains in fields that had been freshly ploughed.

Hirth concludes that rainfall and ploughing were responsible for the higher density of artifacts recovered in the second and third surface collections. He assumes that he has measured both of these factors as causal factors and further concludes that rainfall and ploughing combined will produce higher densities of artifacts, while either rain in the absence of ploughing or ploughing in the absence of rain will result in lower densities of artifacts being recovered. Seasonal rainfall and ploughing are said to be direct influences on the amount of artifactual material observable, and that accurate demarcation of cultural distributions and site boundaries are dependent on the varying degree of influence each of these factors exerts on a given site (Hirth 1978: 130).

Ammerman and Feldman (1978) are interested in the use of replicated surface collection - the repeated collection of the same site surface - as a technique in itself. By testing the technique in different contexts, they hope archaeologists will ultimately arrive at a better understanding of the possible range of variation or consistency in results that can be expected through replicated site surface collec-

tion, and of the mechanics and processes within the archaeological context which affect the appearance of plough zone materials on the surface of a site.

In their study, Ammerman and Feldman (1978) surface-collected two Neolithic sites in southern Italy. Three replicated surface collections were undertaken at one site in October 1974, October 1975, and October 1976. Despite the presence of ploughing on this site, each of the three collections produced counts of obsidian artifacts which were not significantly different from one another. When weights of artifacts collected were compared, however, differences in size categories were noted with much smaller pieces being collected in the second collection than in the first. The second site was also surface collected three times in April 1975, October 1975, and April 1976. At this site the counts of obsidian recovered differed significantly between the first and second, and between the second and third collections. Variation between the first and third collections were relatively high but not significantly different.

Based on their results, Ammerman and Feldman tentatively conclude that the process by which artifacts appear on the surface of a site is not a simple, random, or straightforward occurrence but probably a "biased multinomial sampling process where pieces belonging to different size classes have different chances of making their appearance in surface collections" (1978: 738). They conclude by suggesting that

replicated collection should be explored in an experimental or more "controlled" context, as well as being applied to a broader range of archaeological sites and cultural contexts, in order to determine the degree of variation that might be expected in results obtained through use of the technique.

The most updated, succinct, and clearly written article on the topic of replicated site surface collection is that recently published by Riordian (1982). Like Ammerman and Feldman (1978), Riordian is concerned whether or not the results from surface collection can be successfully replicated. Basing his assumptions on Redman and Watson's hypotheses and conclusions (1970), Riordian postulates that although "the specific number and kinds of artifacts that appear in a given year in a given unit of space may expectably change somewhat...there should be broad similarities from year to year" (1982: 46). Riordian is less concerned about factors affecting surface collection results than in the degree to which surface collection results can actually be replicated:

It is necessary to be concerned about these factors, but it will not always be possible to do more than be aware that they may have affected one's results (1982: 48).

Although Riordian briefly discusses his results in terms of the effects of certain factors such as visibility (artifact size) and the relic collector effect, he does not presume to measure these.

In order to explore the range of variation and similarity which can occur in replicated site surface collection, Rior-dian collected a 200 metre square sample area of a multi-component prehistoric site in SW Ohio in the summers of 1978 and 1979. Artifact distributions at the site consisted of a continuous scatter of light to moderate density. The 60 by 70 metre sample area was collected using a stratified random sampling design and three metre square units. The field was planted in two metre high corn in each year and overnight rain occurred in both years. Frequencies of pottery, utilized and unutilized flakes, stone tools, cores, fire-cracked rock, and historic artifacts were compared between years. Simple inspection led to several conclusions:

(1) certain artifact classes were either rare or absent in both collections, including pottery, bone, cores, and ground stone (absent); (2) the patterning of some artifact classes was quite different in the two years, especially pottery, so in this respect the expectation of chance differences [due to low artifact density] may be correct; on the other hand, (3) there was a similarly low artifact density in both years, and some overall similarity in the patterning of this density (1982: 49).

In each year the western site of the site, and especially the SW corner, was shown to have a high, nonrandom density of artifacts which, when excavated later, proved to overlie the largest midden area at the site.

The "unexpected result of the second collection was that the actual frequencies of artifacts collected markedly increased" (1982: 49). Although the average density in each

year was less than one artifact per square metre, a total of 2949 artifacts were recovered in 1979 as opposed to the 1440 artifacts recovered in 1978. On closer examination, it was found that the number of waste flakes (particularly unutilized waste flakes) recovered in 1979 far outnumbered those recovered in 1978 and constituted the most significant difference in the artifact classes recovered between years. When these were deleted from the tables artifact counts between years were quite close (261 in 1978 and 340 in 1979). Riordian briefly examines the results to see if visibility (or artifact size) can explain the differences between years. There is only "shakey empirical evidence" for this and Riordian concludes that size has only a small effect on whether an artifact was picked up or not. Using Student's *t*, Riordian observes:

When comparing total artifact counts within collection units as paired observations, the collections are found to be significantly different ($p > .001$). When unutilized flakes are omitted from consideration, the two collections are found to be essentially similar ($p < .9 > .5$) (1982: 51).

He concludes that "even on a site with only a light scatter of artifacts it is possible to replicate a surface collection in its more generalized aspects" (1982: 53). He suggests that, ideally, sampling strata should utilize artifact classes that occur both rarely and frequently in order to isolate distinct cultural locii (1982: 53). He cautions against using specific artifact classes when making sampling decisions, particularly where sites are multicomponent and

artifact densities low. He feels three metre square units are good for collection but too small for comparison or pattern analysis, and suggests six metre square units are better in that these will reduce the effect of lateral displacement due to ploughing. Riordian concludes his article by advocating multiple surface collections be undertaken before excavation "where circumstances permit this luxury" (1982: 53).

This thesis represents one more step in this continuing dialogue concerning the replicability of site surface collection. As was stated earlier, this thesis can be considered a type of "control study" for the examination of results obtained through intensive site surface collection. The analysis is both methodological and substantive - methodological, in the sense that it investigates the replication of results obtained through surface collection and, substantive, in the sense that these results are checked against the ethno-historical information available to determine the degree to which they reflect actual contexts of site pattern and use. Whereas previous research has been concerned with surface-subsurface correlation (Redman and Watson 1970), factors affecting collection results (Rick 1976; Roper 1976; Baker 1978; Hirth 1978; Tolstoy and Fish 1975), or the general replicability between years (Ammerman and Feldman 1978; Riordian 1982), this study is concerned with both the general replicability of results between surface collections, and

the ability of these results to replicate reality - not in terms of subsurface remains but in terms of the original above-surface historical (or systemic, cultural) context.

Jensen's Farm provides a unique opportunity to test this. Unlike studies done to date the original cultural context is known. Although the buildings are no longer extant and the only visible remains are the rubble of Jensen's well and the scatter of artifacts across the surface of a ploughed field, the original location, relative size, shape, and interrelationships of structures and site use areas are known and can be schematically superimposed on plotted distributions of collection results. The area surrounding Jensen's Farm contains a moderate to high density of surface artifacts, averaging 1.0 artifacts per square metre in 1978 and 1.25 in 1979. The densest distribution of artifacts within the Jensen Farm sample area are found in the part of the site originally containing the Jensen house. In this area artifact densities are fairly high and range from 3.75 to 13.25 artifacts per square metre in 1978 and from 3.25 to 11.25 in 1979. The types of artifacts recovered are diverse and consist of historic glass, ceramic, metal, and composite materials which can be meaningfully subdivided and manipulated at various levels of generalized or specific artifact groupings. This situation is quite unlike those characterizing studies done to date where the original historical context is unknown and where artifacts consist of a light scatter of

prehistoric materials (mostly either pottery or worked stone).

Although Hirth (1978) includes diagrams showing the spatial distribution of artifacts recovered, the spatial patterns between years receive only cursory discussion. Ammerman and Feldman (1978) do not discuss spatial patterns perhaps because of the large spatial grids (twelve metres square) in which artifacts were collected (supposedly to "hold down the level of random variation occurring in surface materials which is presumed to increase as collection square size decreases" (1978: 735)). Such large spatial grids would prohibit any significant discussion of spatial distributions. Riordian (1982) briefly mentions spatial patterns but does not deal with them at any length probably due to the low density of artifacts collected.

At Jensen's Farm artifacts were collected in two metre square units and can be compared in any increment of this unit. As a result, it is possible not only to map and compare spatial distributions between years but to compare these resulting patterns with patterns of original use and interrelationships of buildings. As such, this thesis is the first study of the replicability of site surface collection within a known historical context, utilizing artifacts with diverse and known functional uses that can be manipulated at several different levels of generalization or specification, and where results between years are compared not

only in terms of frequency and percentages of artifact classes recovered, but in terms of their spatial distributions and the relationships of artifact content and distributions to the location and function of known historical features and structures.

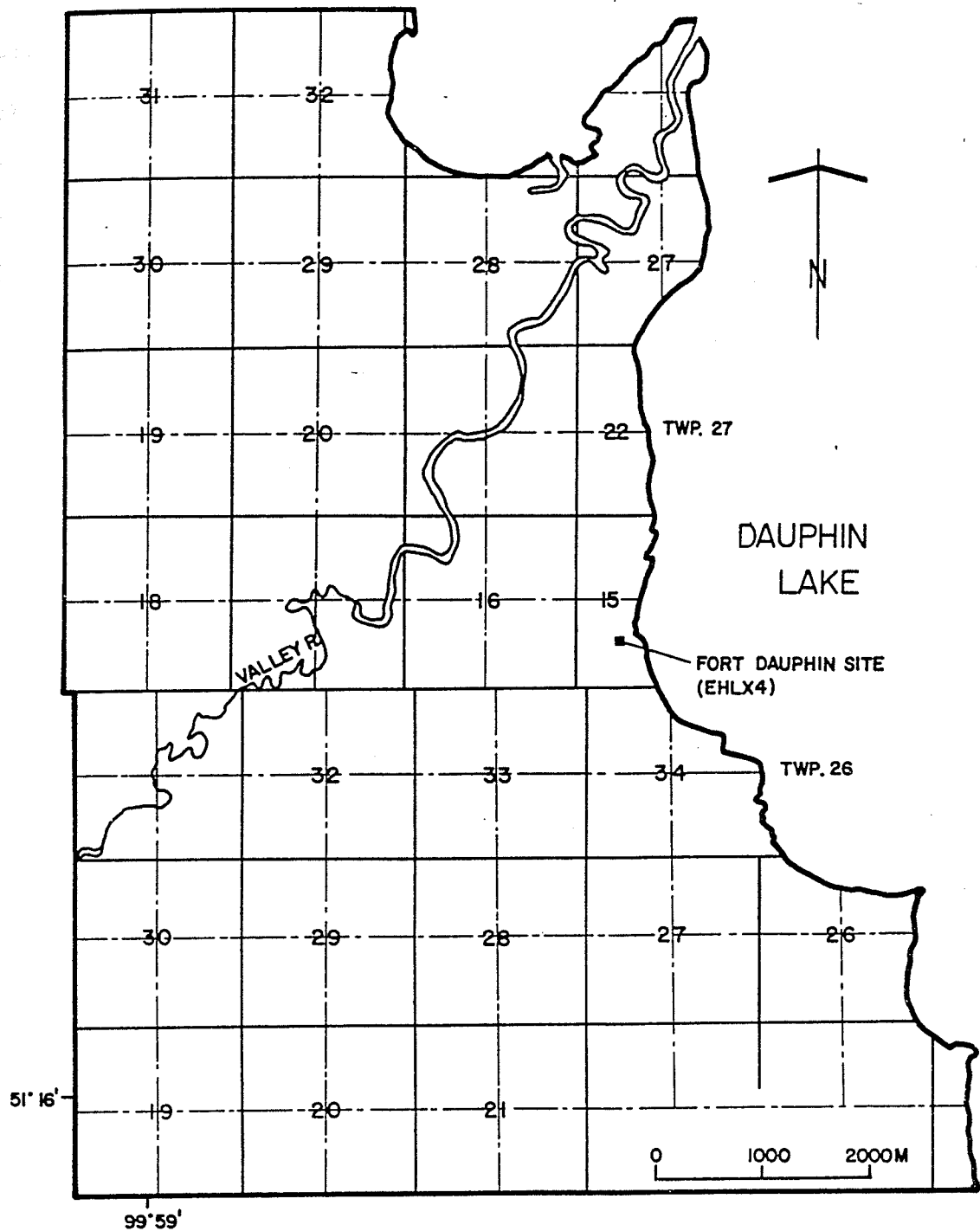
As such, this study draws on and is of interest to other studies in sampling methods, spatial analysis, and pattern recognition (eg., Clarke 1977; Collins 1975; Deetz 1977; Mueller 1975; Hodder and Orton 1976, 1978; Plog 1978; Rathje et al 1977; Redman and Watson 1970; Redman 1973, 1974; South 1978, 1977a, 1977b; Whallon 1972, 1973, 1974), historical archaeology, ethnoarchaeology, and experimental archaeology (eg., Ascher 1961, 1968, 1971; Bonnicksen 1973; Coles 1973; Deetz 1971; Gould 1971a, 1971b; Longacre et al 1968; Rathje 1974; Rathje et al 1977; Reid et al 1975; Yellen 1977; Prager 1980; Schuyler 1978; South 1977a, 1977b, 1978), use of computers, computerized graphics, and mapping techniques in archaeology (eg., Fischer 1982; Upham 1979; Doran and Hodson 1975; Hodder 1978), types of artifact classification systems used (eg., Chenhall 1975, 1978), and issues surrounding cultural resource management and the prioritization of site areas (eg., Butler 1979; Schiffer and Gummerman 1977).

II

SITE BACKGROUND AND DATA

2.1 SITE LOCATION AND BACKGROUND

"Jensen's Farm" is part of a larger multi-component site known as the "Fort Dauphin Site" (EHLX4) located twenty miles north of Dauphin, Manitoba, and three miles south of the Valley River on the west side of Lake Dauphin (51°55'N 99°55'W, SW quarter of Section 15, Township 27, Range 18) (Figures 1 and 2). The site was systematically surface-collected and excavated during May and June 1978 and 1979 as part of the University of Manitoba Archaeological Field School under the direction of Dr. Gregory Monks. Crew collection and excavation were supervised by the author in 1978 and by Linda Roberts in 1979 (Monks, Bradford, and Roberts 1983). The site was originally brought to the attention of the University by the Provincial Archaeologist, Leo Pettipas, and site excavation was conducted with funding jointly from the University of Manitoba and the Manitoba Historic Resources Branch. The site has been surface-collected since 1975 and was previously test-trenched in September and October 1977 by the Dauphin Chapter of the Manitoba Archaeological Society under the direction of Dr. Leigh Syms (Robertson 1983).



(David Elrick; draftsman)

Figure 2: Township and Range Location for the Fort Dauphin Site

The site is located on a broad glacial Lake Agassiz beach ridge, approximately 100 metres from the shore of Lake Dauphin, and is perhaps only 2.0 to 3.0 metres higher in elevation than the shoreline itself. Overall, the land in the area is low-lying with several depressions which run parallel to the beach ridge and are prone to flooding and the retention of water from heavy rains or spring thaws. The land is currently under heavy agricultural cultivation and there is little to suggest the presence of an archaeological site except for the surface scatter of artifacts.

Jensen's Farm was an unanticipated component of what was originally believed to be a single component site containing the remains of three cultural elements - a nineteenth century Hudson's Bay Co. fur trading post, a competing Northwest Company fur trading post, and an associated Native occupation (Monks, Bradford, and Roberts 1983: 9) Upon initial surveying the site rapidly proved to contain four different temporal components:

1. a prehistoric component dating back some 2,000 years as characterized by Pelican Lake projectile points,
2. an early historic fur trading component (c. 1819 - 1823/24),
3. a late historic component (c.1920 - 1950) consisting of an early twentieth century homestead known as "Jensen's Farm", and

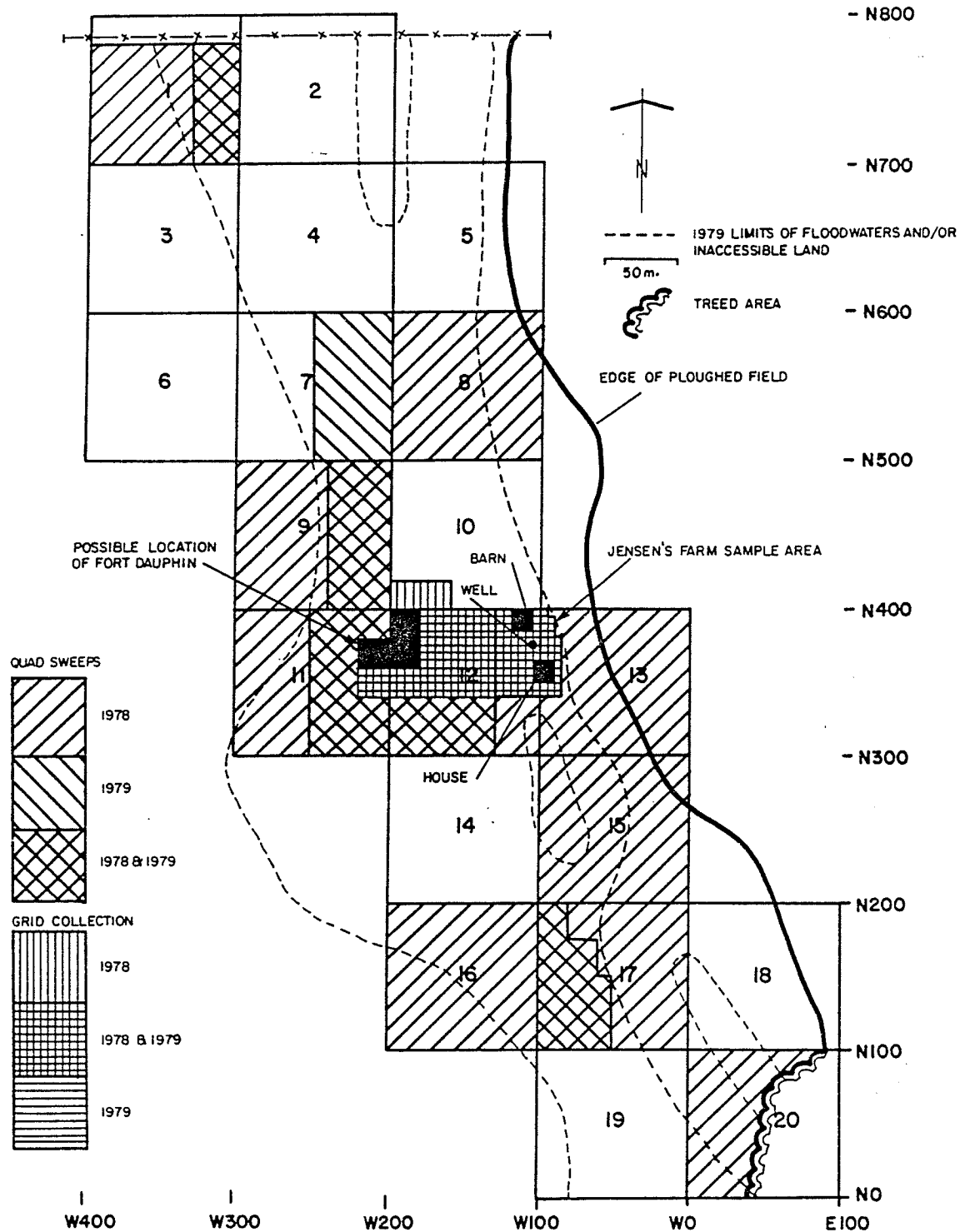
4. a contemporary component consisting of modern farming activities.

Of these components, Jensen's Farm proved to be the major source of surface materials recovered. As a result, this replicated site surface collection study ceased to be one of a fur trade site and rapidly became one of an early twentieth century Manitoba homestead.

Each of the temporal components is fairly distinct both spatially and in terms of the artifact categories recovered. Prehistoric artifacts (mostly lithics and some faunal material) are thinly distributed over the western, northern, and southern sections of the site and overlap slightly with the areas along the western edge of the site believed to contain the original fur trading posts (Figure 3). Only four small pieces of lithic detritus were recovered from the extreme western edge of the area containing Jensen's Farm. Distributions of materials associated with Jensen's Farm on the eastern edge of the site are also fairly distinct from those believed to be associated with the fur trade posts on the western edge of the site. Some admixing of materials does occur in the 20 to 30 metre wide land depression which separates the two components (Figure 3 and 4) but this area is very low in artifact density and falls outside the sample area containing Jensen's Farm. Within the Jensen Farm area, however, there is some admixing of modern and homestead materials. The modern artifacts consist mostly of items such

as glass bottle fragments, farm machinery parts, and plastic food packaging. Some concentrations and distributions of homestead artifacts may also be modern "artifacts" as well - artifacts resulting from demolition and land-levelling activities by the current owner, Mr. Alex Kostiew, in his endeavour to convert the homestead site back into arable land.

The Fort Dauphin Site (EHLX4) provides a case study in patterns of European exploration, settlement, and development that is typical for much of southern Manitoba. The history of European colonization and development in Manitoba is a short one, hardly more than 125 years as contrasted to the more than 2,000 years of unrecorded native history. Originally the site served as a native stopover during long trips. In all likelihood the low-lying shoreline during that period probably attracted as many species of waterfowl as it does today, providing an excellent provisioning ground as well. Fort Dauphin, like many other fur trade posts, was set up to intercept these native movements for trading purposes. Settlers soon followed behind the fur traders and set up homesteads in the vicinity of the fort.



(David Elrick; draftsperson)

Figure 3: Location of Collection Quadrats and Grids

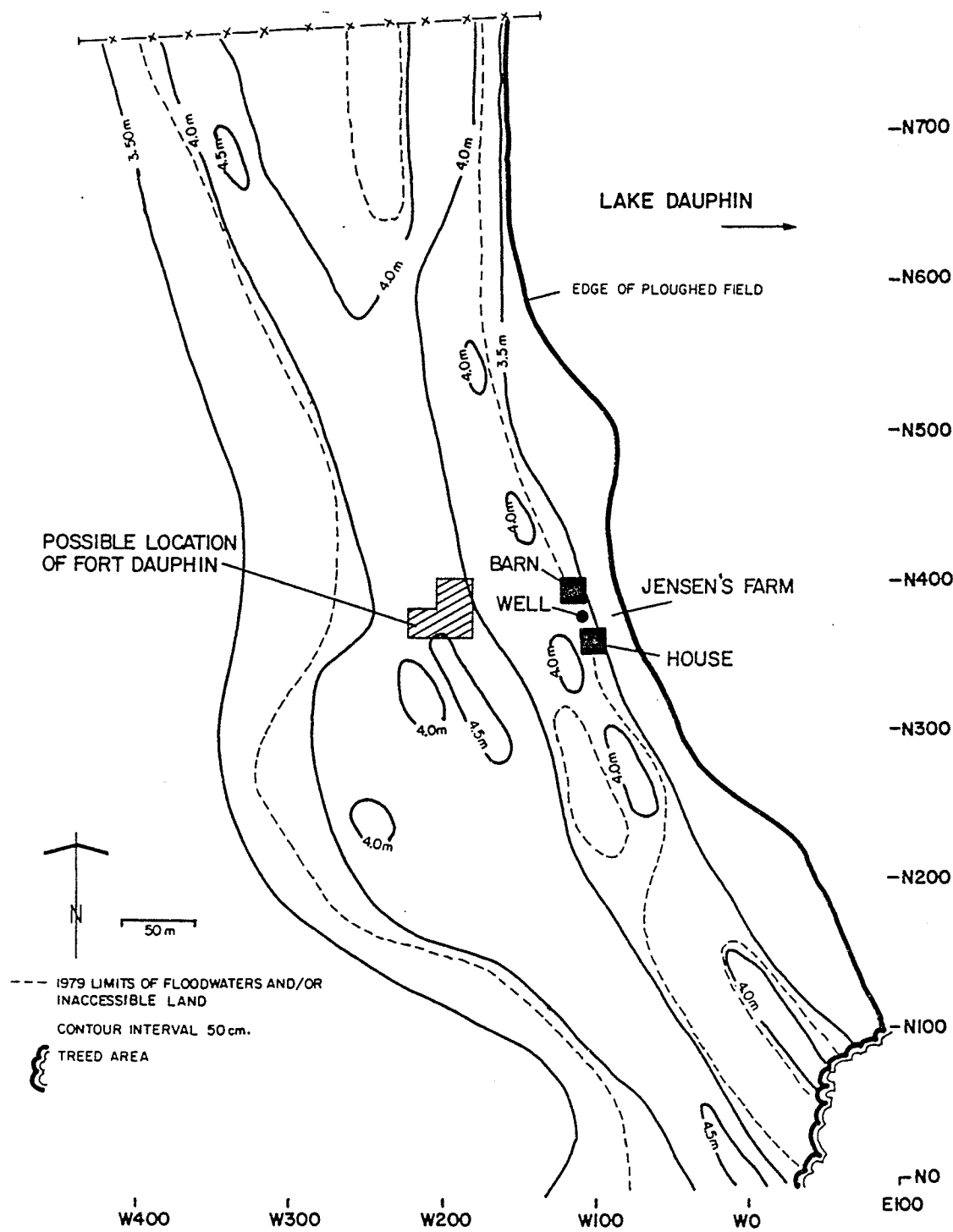


Figure 4: Contour Map of the Fort Dauphin Site (EHLX4)

Although homesteads were surveyed in the Fort Dauphin area very early on, Jens Jensen did not actually homestead on the site until 1922. Not surprisingly, Jensen constructed his farm buildings close to the original location of the fort as it is the only high point of land in the area relatively free from flooding. He even constructed a root cellar in a pre-existing depression on the western edge of the site which was probably one of the remains of one of the original Fort structures. Jensen's road into the homestead from the south followed along the original cart track created at the time of the fort's occupation. Although this track is hardly visible today, Mr. Kostiew still uses it to drive his tractor out into the field. The archaeological crew in each year also unconsciously used it on their way to and from the excavation site and camp every day.

2.2 FIELD COLLECTION TECHNIQUES, CONDITIONS, AND RESULTS

2.2.1 Field Collection Techniques

The Fort Dauphin site area was originally designated on the basis of visible distributions of surface artifacts, historical information relating to the fur trade posts which suggested their locations relative to topographical features at the time of their construction, the natural topography as it is today, and existing agricultural section boundaries (Monks, Bradford, and Roberts 1983: 11). The result was the definition of a long, narrow site area approximately 300 by

800 metres (or 240,000 square metres) in size running parallel to the shoreline and Glacial Lake Agassiz beach ridges (Figure 3).

The unexpectedly large site area defined made complete surface collection of the entire site unfeasible. As a result, the site area was divided into twenty quadrats, each 100 metres by 100 metres in size. A simple random sample of these quadrats were chosen for collection. Ten quadrats, or a 50% sample (without replacement), were successfully collected before collections were curtailed due to crop growth (Figure 3). Quadrats were collected in "sweeps" by a line of people spaced five metres apart and moving forward together one metre at a time (Monks, Bradford, and Roberts 1983: 12). Artifacts were collected in north-south lines and bagged according to their co-ordinates north and west of the base line and their corresponding collection quadrat co-ordinates. Where concentrations of surface artifacts were encountered, the concentrations were flagged and left for collection by a more intensive collection method. "Concentrations" were arbitrarily defined where any three neighbouring collectors in the "sweep" line each discovered three to four artifacts in their corresponding locations.

Once flagged, the concentrations were returned to and a system of 20 metre by 20 metre grids (each grid containing one hundred 2 metre by 2 metre units) were surveyed in (Figure 3). Grids and units were each designated by their

south-west corner. Although grid stakes were surveyed in, the actual 2 metre by 2 metre collection units were laid out using metre tapes. Seventeen collection grids were established effectively enclosing an area 120 by 60 metres (or 7,200 square metres) in size. These gridded areas represent approximately 3.6% of the total site area and enclose those areas of the site containing the remains of Jensen's Farm on the east and what is believed to be the remains of the Hudson's Bay Co. and Northwest Co. fur trade posts on the west (Figure 3).

2.2.2 Field Conditions and Technical Problems

Although artifact collection conditions were intended to be comparable between years, several unanticipated factors intervened. Some of these factors relate to weather and field conditions while others are more technical in nature. In May 1978 when surface collection began, the land was free of stubble and had been recently disced. Although the ground was wet in places, most notably the south-east corner of the site (Figure 3 and 4), it was possible to collect all of the quadrats selected for sampling. In May 1979 when collection began, the field was still in stubble (from the previous year's rape crop) and unusually high floodwaters had affected portions of the site (Figure 3 and 4). The remaining crop stubble impaired visibility and was overcome by utilizing metal rakes to rake away the straw from the sur-

face of each unit as it was collected. The straw in turn was also checked to ensure no artifacts had been accidentally removed along with it (Monks, Bradford, and Roberts 1983: 13). While floodwaters prevented collection of some quadrat areas, most of the gridded areas were minimally affected (Figure 4). Except for these two factors, all other aspects of the collection method used in 1978 remained constant in 1979. Ploughing by heavy agricultural machinery and crop growth intervened in each year,^{1a} and each year was also subject to other factors such as winter snow, frost, spring melt, as well as both heavy and light rainfall during surface collections.

Two technical problems also affected the nature of the collections between years and at times threatened to make this thesis as much a study in overcoming technical problems as being a study of replicated site surface collection. The first problem involved the main survey stake. When the site was returned to in 1979, it was discovered that this stake had been destroyed. Even once the stake's position had been approximated from other surviving features, there were problems which plagued the transit apparatus, and probably the beginning students learning to use it. The end result was that the 1979 collection grids were surveyed in ten metres further east and two metres further north than they were in 1978.

^{1a} 1978 collection made after cultivation, before planting of crop; 1979 - collection made in stubble after cultivation, planting and harvesting of crop.

After much examination during analysis, it was finally possible to realign the gridded sections of the site between years. The location of Jensen's well and the fence line at the extreme northern edge of the site had been recorded in each year and these pieces of locational information facilitated aligning the grids. In this thesis, the 1978 grids have been aligned to those surveyed in 1979 since important pieces of diagrammatic information were recorded in 1979. As a result, although the original 2 metre by 2 metre grid units can still be used for plotting artifact distributions between years, the original grid and quadrat collection systems cannot be used for comparative purposes. This is unfortunate as the different sized grid units - quadrats, grids, and units - were originally intended to allow the comparison of surface results in terms of different spatial grid sizes. Instead, an arbitrary system of quadrats (cf. Chapter four) had to be established on top of the areas selected for analysis in this thesis. Another technical problem which affected the large scale collection of the site, but not the gridded areas considered for analysis here, is the fact that some of the collection quadrats in 1979 were misnumbered. This resulted in the collection of some quadrats not collected in 1978 and the omission of some quadrats that were collected in 1978.

2.2.3 Collection Results

Over 10,000 artifacts and an equivalent amount of faunal material - much of it sawn bone - were collected from the site. Approximately 60% to 70% of the artifactual material was recovered from the area enclosing Jensen's Farm on the eastern section of the site and consists of both early and late twentieth century artifacts. Most of the faunal material, on the other hand, was recovered from the extreme western edge of the site behind the area believed to contain the remains of the fur trading posts. Artifact density over the entire site area varies from zero and low density areas in the northern section of the site to extremely high artifact densities in the vicinity of the original Jensen farmhouse (Figure 3).

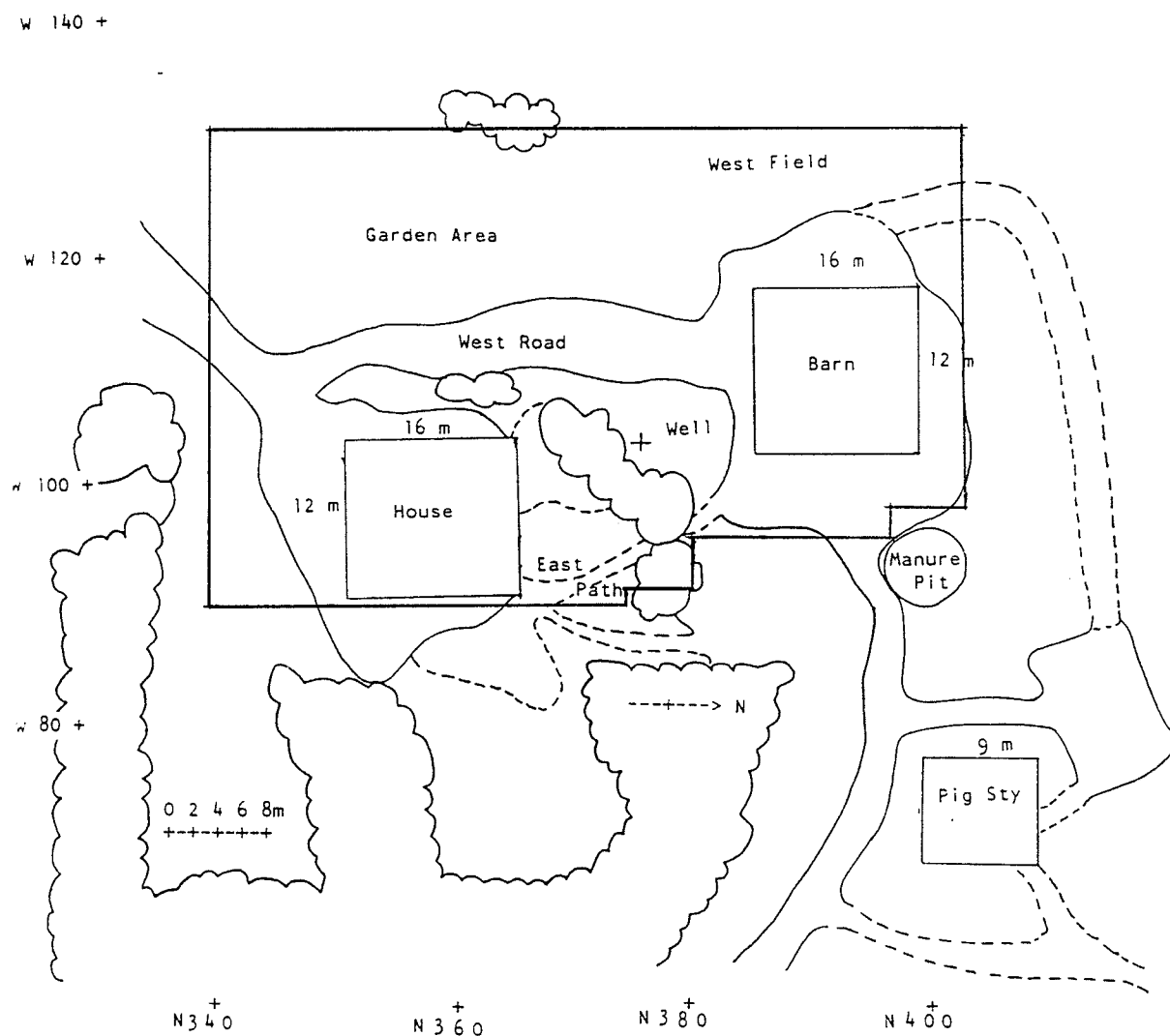
Prehistoric materials recovered consisted mainly of lithic material. Some spiral-fractured faunal material was also recovered and may date either to early prehistoric occupations or occupations contemporary with those of the fur trading posts. Overall, the recovery of prehistoric materials was negligible. With a few exceptions, very little artifactual material was recovered during surface collection which could be readily assigned to the fur trade. Excavations conducted to locate the original fur trading posts at the site were inconclusive. It is known that an earlier fur trade site, an earlier Northwest Co. post occupied between 1805 and 1819, is located on the extreme western edge of Mr.

Kostiew's quarter section and surface scatters from this are visible (Figure 2). There is, however, little visible evidence for the Fort Dauphin it was hoped the archaeological project would uncover.

2.3 THE THESIS SAMPLE AREA

For the purposes of this thesis, a 40 metre by 60 metre area of the site was judgmentally chosen for analysis. This area encloses those parts of Jensen's Farm which were most intensively collected in each year and which were most responsible for the densest distribution of materials at the site (Figures 3 and 5). Figure 5 shows the boundaries of the sample area defined. In each year the areas immediately surrounding the remains of Jensen's well were left uncollected due to brush. This shows up as a "bald spot" in the centre of most artifact distribution plots. Any areas affected by the floodwaters in 1979 (cf. Figure 3) were also deleted from comparisons between years. The deletion of these areas account for the jogs in the northeast corner of the sample area visible in Figure 5.

A total of 4,904 artifacts - 2,248 in 1978 and 2,656 in 1979 - were recovered from this sample area. Almost all of this material is historic in nature and consists of mostly glass, ceramic, and metal artifacts. Some of this historic material is contemporary - a mixture of modern surface debris such as glass 7-up bottles, coke cans, farm machinery



(Based on an early 1949 Aerial Photograph
of Jensen's Farm.)

Figure 5: Schematic Presentation of the Jensen Farm Sample Area

parts, and plastic packaging. Although fur trade and prehistoric materials were recovered from the site, their presence in this sample area is negligible. The four pieces of prehistoric lithic detritus, and the few pieces of earlier historic ceramics which were recovered, were all found along the extreme western edge of the sample area bordering the land depression separating Jensen's Farm from the fur trade location.

The average artifact density for the sample area is 1.0 artifacts per square metre in 1978 and 1.25 per square metre in 1979. The maximum artifact density is 13.25 artifacts per square metre in 1978 and 11.25 per square metre in 1979. In both years the densest distribution of materials occurs in the centre of the original house location. When the results from each year are combined, the average density for the sample area is 2.2 artifacts per square metre and the maximum density is 24.0 artifacts per square metre. Once analyzed, the Jensen house proved to be not only the densest distribution of materials at the site, but also the main source of most artifact distributions within the sample area.

2.4 THE NATURE OF THE STRUCTURES AND OCCUPATIONS AT JENSEN'S FARM

The following information is based on early aerial photos of Jensen's Farm and Mr. Alex Kostiew's recall of the buildings, surroundings, and history of Jensen's Farm. According to archival information, Jens Jensen received his homesteading licence for the property in 1922 although he may have homesteaded for some time before that date. The house and farm served a family of eight and the cultivated fields were not as extensive as they are today. Two surviving members of the Jensen family - two of the six children (three of whom were girls and three boys) - still live in Manitoba. Both are women in their eighties, one of whom lives with her son, Mr. Jack Secord, in Dauphin and the other in Winnipeg. Had time allowed, it would have been both interesting and informative to have interviewed both of these women.

According to Mr. Kostiew, the farm was temporarily abandoned during the Depression with the family's belongings intact. The family intended to return and, at a later date, one of the sons, Ab Jensen, returned and continued farming the land alone. He farmed it alone until Mr. Kostiew bought the farm in 1952. The 1949 aerial photo shows the interrelationship of buildings, pathways, roads, vehicle use areas, etc., as they were used at the time Ab Jensen farmed the site. In the 1962 photo most of these features are still visible. The main difference is that by this time Mr. Kos-

tiew had moved the Jensen house to the extreme southeast corner of the property in order to use it as one his out-buildings. Shortly after this photo was taken the Jensen house was destroyed by a grass fire. Other noticeable features are the decrease in the amount of tree vegetation and more extensive cultivation of the property.

The original Jensen house was a two storey wooden frame structure approximately 16 metres N-S by 12 metres E-W in size, with a full-sized but shallow and rough-hewn basement approximately 1.4 metres in depth. The front of the house faced south and, according to Mr. Kostiew, the basement and the yard areas surrounding both the house and the barn were very clean and free of debris (such as glass, machinery parts, etc.). Several vehicle yards or park areas can be seen in the early 1949 photograph (Figure 5). One area is located on the south side of the house, another on the east side of the barn, another less used one behind the pig sty, and yet another several metres south of the southern edge of the windbreak. The main garden area was located on the west side of the road into the farm (Figure 5). This road takes a fork some distance south of the farm yard with one fork of the road continuing south along the original cart track, and the other fork turning west to meet up with the section road. A windbreak of trees and bushes, some of which appear to be part of the original brush lining the shore, surrounds the house area. Another part of this windbreak surrounds an

open area just south of the house. There is no evidence for any windbreak in the vicinity of the barn.¹

The original barn was located approximately 19 metres north of the house. It was a two storey log structure with squared timbers and chinking. According to Mr. Kościw, the barn was used for cattle and horses. The manure pit, which is still visible on the surface of the field as a dark discoloured soil area mixed with straw, was approximately 6 metres in diameter and was located approximately 6 metres due east of the barn. The pig sty, a structure approximately 9 metres square, was located some 12 metres east of the manure pit and 18 metres east of the barn.

The sample area in this thesis encloses the house and barn areas and some of the other features associated with them. These include the remains of Jensen's well, located at N374W104 midway between the house and barn, the vehicle park area south of the house, the apparently trampled areas around the house, the vehicle park area east of the barn, the trampled areas surrounding the barn, the road, garden, and field areas west of the house, the pathway around the east side of the well between the house and barn, and one small fragment of the windbreak (or hedge) immediately north of the house in the vicinity of the well. In 1978 the area

¹ This is one of the main differences between the Jensen Farm schematic presented here and the schematic presented in the 1983 Preliminary Report for the Fort Dauphin Site (Monks, Bradford, and Roberts 1983).

enclosing the manure pit was collected; in 1979 this area was under floodwaters and was not collected. Many other related features not included in the sample area, such as other roads and pathways, can be seen in the 1948 aerial photo.

The farmstead remained relatively untouched for about five years after Mr. Kostiew bought the farm in 1952. By 1962 the house had been moved - literally dragged across the fields - to the extreme southeast corner where, as mentioned earlier, it was destroyed during a grass fire. Although Mr. Kostiew did not deliberately fill the shallow basement of the house with debris from the farm, he did use the surrounding soil as fill. This may have resulted in a concentration of materials inside, and a broad smearing around the outside, of the house area which are more reflections of Mr. Kostiew's bulldozing and land-levelling activities than of occupational use. The potential effect of these factors on the surface materials recovered will be discussed in Chapter five.

Approximately two or three years afterwards (around 1964 - 1965) the barn collapsed and the debris was removed. Probably around the same time as the debris was removed from the barn area, the windbreak was uprooted and removed, and the entire area (including the manure pit and pig sty) levelled by tractor. Along with other debris, the cement structure covering the well was pushed into the well opening in order to seal it. Today the remains of the well are sur-

rounded by an uncultivated area of brush (approximately 6 metres by 4 metres in size). The exact location of the well is marked by an old metal harrow seat Mr. Kostiew planted in the middle of it. The end result of Mr. Kostiew's land levelling activities was to produce an arable piece of land which contains no readily visible evidence for the homestead which originally occupied it.

Some of the cultural and disturbance factors that need to be considered in an analysis of Jensen's Farm are occupational use, random loss during use, abandonment with the intention of return, return, abandonment with no intention of return, post-abandonment deposition/ vandalism, removal and subsequent (although short-lived reuse of the house), collapse and demolition of the original barn, uprooting of the original windbreak, landlevelling and bulldozing activities (by tractor), and reuse of the land for cultivation purposes.

2.5 ARTIFACT IDENTIFICATION AND COMPUTER CODING

Two computerized coding systems for the identification and analysis of historic artifacts were simultaneously utilized in this thesis - a modified version of the Parks Canada Historic Artifact Coding System (Parks Canada 1981), and a modified version of South's Historic Artifact Group and Class System (South 1977). Tables 1 and 2 present the basic formats used to identify and computer-code the historic ar-

tifacts collected from Jensen's Farm. Identifications were originally conducted using the reference materials available at the Parks Canada office, (621 Academy Rd., Winnipeg). Later on, as materials were identified, samples were drawn from the site materials and a site reference collection was established. Out of the many attributes which could have been coded using these systems, only those specific attributes useful to this analysis were coded. Identification and coding of historic artifacts is an exceptionally time-consuming and detailed endeavour due to the amount of verifiable and recognizable information known about them. In this thesis a minimum of nine to ten artifact-specific attributes were coded for each artifact.

Combining the two artifact coding systems provided a means of manipulating data in a variety of ways. The Parks Canada system provided a ready-made means of recording and manipulating extensive detail concerning artifact attributes. It is basically a "cataloguing" system based in part on Chenhall's (1978) system of cataloguing historic artifacts. Some categories within the system are functionally based; others are catchall categories based more on material type than on function (cf. Table 1). There are nine main categories of material within this system as it is used here - Prehistoric (originally "Lithic" in the Parks Canada system), Glass, Ceramics, Nails, Metal Fastenings, Other Metal, Arms and Ammunition, Metal Containers, and Miscellaneous.

TABLE 1	
Modified Parks Canada Historical Artifact Coding System	
PREHISTORIC 01	Lithic, ceramic, bone artifacts
GLASS 02	All artifacts manufactured from glass
CERAMICS 03	All ceramic artifacts except prehistoric ceramics
NAILS 04	All nails/ spikes
METAL FASTENINGS 05	Screws, bolts, nuts, staples, etc..
OTHER METAL 08	All metal artifacts not included under nails, fastenings, or metal containers. Broken down into the following subgroups: - Unidentified - Building Hardware - Non-mechanized Transportation - Mechanized Transportation and Machinery - Domestic Shelter - Personal Effects - Riding Tack and Harness - Hand Tools - Other/ Miscellaneous
ARMS AND AMMUNITIONS 12	Shot, shells, musket/ rifle/ gun parts and accessories

(continued)

METAL CONTAINERS 14

Tin cans, metal food/ non-food storage containers, buckets, pots, kettles, ladles, basins, etc.

MISCELLANEOUS 99

Natural materials (bark, etc.), manufactured/ synthetic materials, composite manufactured items, ethno-botanical materials (seed, etc.).

Broken down into the following subgroups:

- Structures
- Personal artifacts
- Tools and Equipment
- Communications artifacts
- Transportation artifacts
- Recreational artifacts
- Packaging and Containers
- Unclassifiable
- Unidentified

TABLE 2
South-based Functional Artifact Groups and Classes

PREHISTORIC ARTIFACT GROUP 01

- 01 Lithic
- 02 Ceramic
- 03 Bone
- 04 Other

KITCHEN ARTIFACT GROUP 02

- 10 Table/Servingware
- 11 Alcohol Bottles
- 12 Unidentified Glass Jars or Containers
- 13 Unidentified Bottle Glass
- 14 Non-alcohol Bottles
- 15 Pharmaceutical Bottles
- 16 Glassware
- 17 Flatware
- 18 Kitchenware/ Cookingware
- 19 Tin Can/ Food Packaging
- 20 Housekeeping/ Miscellaneous Domestic
- 21 Equipment

BONE GROUP 03

- 25 Bone Fragments

ARCHITECTURAL GROUP 04

- 30 Window Glass
- 31 Nails/ Spikes
- 32 Metal Construction/ Electrical Hardware
- 33 Door/ Lock Parts
- 34 Non-metal Construction/ Electrical Materials
- 35 Chinking

FURNITURE GROUP 05

- 40 Furniture Hardware
- 41 Furnishings

ARMS GROUP 06	
45	Musket Balls/ Shot/ Sprue
46	Gunflints/ Gunspalls
47	Gun Parts/ Bullet Moulds
48	Modern Ammunition
49	Gun Accessories
CLOTHING GROUP 07	
50	Clothing Attachments
51	Tailoring/ Sewing/ Knitting
52	Clothing Apparell and Accessories
PERSONAL GROUP 08	
60	Personal Effects
61	Toiletry Items
TOBACCO PIPE GROUP 09	
65	Tobacco Pipes
ACTIVITIES GROUP 10	
70	Construction Tools
71	Farm Tools
72	Toys/ Recreation
73	Fishing/ Trapping Gear
74	Storage Items
75	Ethnobotanical
76	Stable and Barn
77	Miscellaneous Hardware
78	Other/ Miscellaneous
79	Chemical/ Medical/ Scientific
80	Miscellaneous Packaging and Containers
81	Transportation and Machinery
82	Fur Trade
UNIDENTIFIED 11	
100	Glass
101	Ceramic
102	Metal
103	Manmade/ Natural/ Composite Materials
104	Other

The artifacts which fall under these categories are defined in Table 1 . The set up of the coding system and attributes coded were modified slightly to suit the purposes of this study.

Although the Parks Canada system is a good means of recording detailed information, it is unwieldy for manipulating data in terms of functionally based groupings which can reflect site structures and use. It was for this reason that the South Historic Artifact Coding System (Table 2) was employed (South 1977: 93). This coding system was also modified to suit the purpose of this study.

The South-based system used here consists of eleven generalized groupings of functionally based artifacts designed to reflect generalized behavioural activities in the original cultural context (South 1977: 93). These South artifact groups are: Prehistoric, Kitchen, Bone, Architectural, Furniture, Arms, Clothing, Personal, Tobacco Pipe, Activities, and Unidentified. Unidentified was a category South did not include in his system. In this thesis the amount of unidentifiable or unidentified material is often a measure of the degree of artifact shatter present at the site and an indicator of the degree of trampling or perhaps land levelling disturbance. Often the percentage of material which is unidentifiable is overlooked in archaeological studies. Bone is a category that was deleted during analysis since no faunal material was coded. For purposes of simplicity the

clothing, personal, and tobacco pipe groups were combined into one during discussions. Only two tobacco pipe fragments were recovered and the overall counts of clothing and personal items were low.

Artifact classes within each South Artifact Group are based on form, and occasionally function, and were originally designed by South to answer questions concerning "nationalistic and ethnic origin, trade routes, culture contact, and idiosyncratic behaviour" (South 1977: 93 - 94). Although each of these historic artifact coding systems - the Parks Canada and South systems - has its own unique technical problems and drawbacks, they are two of the most readily accessible systems for identifying and coding artifacts. The South-based Artifact Group and Class system is the main system used for comparisons throughout the analysis. Unique subgroupings of material within these South artifact groups and classes were created by selecting certain artifact-specific attributes coded using the Parks Canada artifact system.

III

ANALYSIS A: STATISTICAL ANALYSIS OF THE ARTIFACT CONTENT RECOVERED

3.1 HYPOTHESES AND METHOD OF ANALYSIS

In this section of the analysis, the artifact content recovered in each year is compared to determine: a) whether each year samples the same or significantly different populations of artifacts between years, and b) if the results obtained reflect the original nature and use of Jensen's Farm. The hypotheses can be stated as follow:²

1. Each of the 1978 and 1979 surface collections will produce results which are the same in respect of:
 - a) the South artifact groups and classes recovered, and
 - b) the frequencies of artifacts recovered within those groups and classes.
2. Each of the 1978 and 1979 surface collections will contain South artifact groups which:
 - a) are uniquely associated with specific historical structural and and nonstructural feature areas,

² These hypotheses are tested within the assumptions and limitations of the data as already outlined in Chapters one and two and as discussed in Chapter five.

- b) reflect the functional use of those specific feature areas, and
- c) are the same in terms of the frequencies of artifacts recovered from each feature area in each year.

Chi-square is used to assess the degree to which the frequencies of South artifact groups recovered in each year reflect the same or different populations of artifacts. The tables, chi-square values, and their corresponding significance levels were generated using the SPSS (Statistical Package for the Social Sciences) crosstabs program, and a significance level of 0.05 was arbitrarily chosen as the cut-off point indicating significantly different populations of artifacts. Each year is compared in terms of the general South artifact groups recovered and in terms of the artifact classes each artifact group contains. These comparisons are made, first, at the level of the entire site area and, then, in terms of specific within-site areas corresponding to the original Jensen Farm structural and non-structural features. Jensen Farm features were defined on the basis of Figure 5, Chapter 2 (cf. Figure 14, Appendix B). These feature areas are used to test the hypothesis that artifact content recovered: a) is uniquely associated with individual features, b) reflects the functional use of specific features, and c) is the same for each feature area in each year.

3.2 COMPARISON OF THE ARTIFACT GROUPS AND CLASSES RECOVERED BETWEEN YEARS

3.2.1 Comparison of the Artifact Groups Recovered Between Years

Table 3 gives the basic distribution of Artifact groups recovered in each year. A total of 4,904 artifacts were collected from the Jensen Farm sample area - 2,248 in 1978 and 2,656 (or 408 more artifacts) in 1979. This result was the reverse of what might have been expected given that the site had already been collected once before. The chi-square value obtained for Table 3 indicates that each year does sample significantly different populations of artifacts. Despite this lack of statistical significance, however, there are also some broad similarities between years.

In each year, the Kitchen artifact group is the largest group of artifacts recovered, accounting for 55.2% of all site artifacts in 1978 and 47.2% of all site artifacts in 1979. Tables 23 and 24 in Appendix A indicate that this group also accounts for the largest percentages of the three key material types recovered in each year. Between 51.9 and 54.3% of all glass artifacts, 78.6 and 88.7% of all ceramic artifacts, and between 90.7 and 92.9% of all metal container artifacts fall within the Kitchen artifact group. The Unidentified artifact group (an indication of the degree of artifact shatter present at the site) is the next largest group recovered in each year, accounting for 17.0% of all artifacts in 1978 and 20.3% in 1979. This is followed by

Architectural group artifacts which account for 16.9% of all artifacts in 1978 and 18.2% in 1979 and by the Activities group artifacts which account for a meagre 6.9% in 1978 and 9.1% in 1979. The Personal/Tobacco pipe, Clothing, Furniture, and Arms group artifacts together account for only 4.0% of all artifacts in 1978 and 5.2% in 1979.

The most significant differences between the 1978 and 1979 collections lie in the proportions of unidentified, architectural, activities, and clothing group artifacts recovered. In 1979 approximately one-third more artifacts were recovered in each of these categories than were recovered in 1978. As can be seen from the following Artifact class tables and from Tables 23 and 24 in Appendix A, it is the differences in number of metal artifacts recovered in each of these categories which is responsible for the most significant differences between years.

TABLE 3
SOUTH ARTIFACT GROUPS BY YEAR

SOUTH ARTIFACT GROUP	COUNT ROW PCT COL PCT TOT PCT	YEAR		ROW TOTAL	
		1978	1979		
		1	2		
		I	I		
PREHISTORIC	1	I	I	I	4
		I	I	I	0.1
		I	I	I	
		I	I	I	
KITCHEN	2	I	I	I	2495
		I	I	I	50.9
		I	I	I	
		I	I	I	
ARCHITECTURAL	4	I	I	I	862
		I	I	I	17.6
		I	I	I	
		I	I	I	
FURNITURE	5	I	I	I	37
		I	I	I	0.8
		I	I	I	
		I	I	I	
ARMS	6	I	I	I	24
		I	I	I	0.5
		I	I	I	
		I	I	I	
CLOTHING	7	I	I	I	94
		I	I	I	1.9
		I	I	I	
		I	I	I	
PERSONAL	8	I	I	I	70
		I	I	I	1.4
		I	I	I	
		I	I	I	
TOBACCO PIPE	9	I	I	I	1
		I	I	I	0.0
		I	I	I	
		I	I	I	
ACTIVITIES	10	I	I	I	397
		I	I	I	8.1
		I	I	I	
		I	I	I	
UNIDENTIFIED	11	I	I	I	920
		I	I	I	18.8
		I	I	I	
		I	I	I	
COLUMN TOTAL		2248 45.8	2656 54.2	4904 100.0	

RAW CHI SQUARE = 43.12872 WITH 9 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0000

3.2.2 Kitchen Group Artifact Classes

3.2.2.1 In General

The total number of Kitchen artifacts recovered in each year are almost the same. In 1978, 1240 artifacts were recovered while in 1979, 1,255 (or 15 more) artifacts were recovered. Each year, however, is still significantly different in terms of the frequencies of each artifact class recovered (Table 4). The most significant differences lie in the proportion of tin can/ food packaging and tableware ceramics recovered in 1979. About one-quarter more tin can/ food packaging artifacts and one-quarter less tableware ceramics were recovered in 1979 than in 1978. In general, the 1978 collection produced more ceramic tableware items, slightly more unidentified jars/containers, unidentified bottles, and pharmaceutical bottles than in 1979. The 1979 collection produced more tin can/food packaging, and slightly more alcohol bottles, cookware, and housekeeping items. Glassware, nonalcoholic bottles, flatware, and kitchen equipment (eg. metal stove parts) were recovered in equivalent numbers between years.

Despite the significantly different recovery of Kitchen artifact classes between years, there are also broad similarities between years. In each year unidentified glass bottles, tin can/food packaging, and ceramic tableware items (in decreasing order of occurrence) account for over 80.0% of all Kitchen artifacts recovered (82.4% in 1978 and 81.9% in

TABLE 4
KITCHEN ARTIFACT GROUP CLASSES BY YEAR

KITCHEN ARTIFACT CLASS	COUNT ROW COL TOT	PCT PCT PCT	YEAR			ROW TOTAL		
			1978		1979			
			I	1	I		2	I
			I	I	I		I	I
TABLEWARE/ SERVINGWARE	10	I	252	I	206	I	458	
		I	55.0	I	45.0	I	18.4	
		I	20.3	I	16.4	I		
		I	10.1	I	8.3	I		
ALCOHOL BOTTLES	11	I	9	I	18	I	27	
		I	33.3	I	66.7	I	1.1	
		I	0.7	I	1.4	I		
		I	0.4	I	0.7	I		
UNIDENTIFIED GLASS JARS/ CONTAINERS	12	I	98	I	72	I	170	
		I	57.6	I	42.4	I	6.8	
		I	7.9	I	5.7	I		
		I	3.9	I	2.9	I		
UNIDENTIFIED BOTTLES	13	I	468	I	446	I	914	
		I	51.2	I	48.8	I	36.6	
		I	37.7	I	35.5	I		
		I	18.8	I	17.9	I		
NONALCOHOL BOTTLES	14	I	8	I	8	I	16	
		I	50.0	I	50.0	I	0.6	
		I	0.6	I	0.6	I		
		I	0.3	I	0.3	I		
PHARMACEUTICAL BOTTLES	15	I	16	I	8	I	24	
		I	66.7	I	33.3	I	1.0	
		I	1.3	I	0.6	I		
		I	0.6	I	0.3	I		
GLASSWARE	16	I	32	I	36	I	68	
		I	47.1	I	52.9	I	2.7	
		I	2.6	I	2.9	I		
		I	1.3	I	1.4	I		
FLATWARE	17	I	4	I	3	I	7	
		I	57.1	I	42.9	I	0.3	
		I	0.3	I	0.2	I		
		I	0.2	I	0.1	I		
KITCHEN COOKWARE	18	I	40	I	61	I	101	
		I	39.6	I	60.4	I	4.0	
		I	3.2	I	4.9	I		
		I	1.6	I	2.4	I		
TINCAN/FOOD PACKAGING	19	I	302	I	377	I	679	
		I	44.5	I	55.5	I	27.2	
		I	24.4	I	30.0	I		
		I	12.1	I	15.1	I		
HOUSEKEEPING/ DOMESTIC ITEMS	20	I	6	I	14	I	20	
		I	30.0	I	70.0	I	0.8	
		I	0.5	I	1.1	I		
		I	0.2	I	0.6	I		
KITCHEN EQUIPMENT	21	I	5	I	6	I	11	
		I	45.5	I	54.5	I	0.4	
		I	0.4	I	0.5	I		
		I	0.2	I	0.2	I		
COLUMN TOTAL			1240 49.7		1255 50.3		2495 100.0	
RAW CHI SQUARE =		31.02322		WITH		11 DEGREES		
OF FREEDOM.		SIGNIFICANCE = 0.0011						

1979). If these artifact classes are run alone, the chi-square value obtained is lower (15.3 at $p=0.0005$ and two degrees of freedom) but still indicates significant differences between years (Table 19, Appendix A). The other nine Kitchen artifact classes make up the other 17.6% of Kitchen artifacts collected in 1978 and the other 18.1% collected in 1979. Since the Kitchen artifact group is the largest category of artifacts recovered at the site, was recovered in similar numbers in each year, and is responsible for the majority of the three key types of material recovered at the site - glass, ceramic, and metal containers - it was decided to further examine the distribution of these materials to see if significant differences would occur in terms of: a) the frequency of specific types of glass, ceramic, and metal container Kitchen artifacts recovered (eg., different types of glass bottles, tableware items, etc.), and b) the frequency of specific attributes (such as bottle colour, identifiable portions, and decorative method, etc.) (cf. Tables 15 to 19, Appendix A).

3.2.2.2 Glass Artifacts

In 1978, artifacts made out of glass accounted for 53.6% of all Kitchen artifacts recovered. In 1979, they accounted for 50.0%. These kitchen glass artifacts also account for approximately 54.3% of all types of glass artifacts recov-

ered from the site in 1978 and 51.9% recovered in 1979³ (Tables 23 and 24, Appendix A). Table 15 in Appendix A shows the Kitchen artifact classes these glass artifacts fall into in each year.

As can be seen from Table 15, Appendix A, the distribution of glass Kitchen artifacts between years is close but still significantly different between years. Collapsing some of these categories, such as identifiable bottle functions into one category, results in a chi-square value (4.2 at $p=0.5$ with five degrees of freedom) which indicates the distribution of Kitchen glass artifacts is not significantly different between years.

In each year unidentified glass bottle fragments form the largest percentage of Kitchen glass artifacts recovered (over 70.0% in each year), followed by unidentified jars/containers (approximately 12.0% of all glass Kitchen artifacts recovered in each year). Each of these categories can be also taken as an indication of the large amount of glass artifact shatter present at the site. Glassware and bottle fragments identifiable to function constitute another approximately 10.0% of all glass Kitchen artifacts recovered in each year.

³ The Architectural artifact group (window glass) accounts for another 22.5% of all site glass recovered in 1978 and 20.8% in 1979. Unidentified group artifacts (unidentified glass shatter) accounts for another 21.0% in 1978 and 25.3% in 1979.

The numbers of Kitchen glass bottle fragments recovered in each year were almost the same. In 1978, 514 bottle fragments were recovered; in 1979, 494 were recovered. When Kitchen glass bottle fragments were examined in terms of bottle function, identifiable portions recovered, and bottle colour each year presented both similar and dissimilar results. In Table 15 in Appendix A, the only identifiable bottle category recovered in similar numbers between years is the "nonalcoholic bottle" category. In 1978 twice as many pharmaceutical bottles were recovered than in 1979 and in 1979 twice as many alcohol bottles were recovered. The numbers of food packaging bottles (condiment and milk bottles) were close between years. These figures have to be interpreted with caution as identifications for bottle function were based for the most part on producer's marks. While bottle fragments bearing parts of producer's marks were usually identifiable, other fragments bearing illegible parts of these marks or no marks (such as upper body fragments or glass bottle bases) could not be assigned as to their function. Therefore, the numbers of fragments belonging to the identifiable bottle classes are probably not accurate reflections of the actual numbers of these types of bottles present. This situation illustrates the kind of comparative problems that can be caused by differential artifact fragmentation.

Similar identifiable portions of glass bottles were recovered in each year. Not surprisingly bottle body fragments form the largest percentage of fragments recovered (82.1% in 1978 and 83.8% in 1979). Bottle bases account for 10.5% in 1978 and 11.5% in 1979, and bottle finishes for 6.2% in 1978 and 4.0% in 1979. Only five complete or nearly complete items were recovered in 1978 (1.0%) and two in 1979 (0.4%). (A chi-square value of 5.0 with 5 degrees of freedom and $p=0.4$ was obtained when identifiable bottle portions were compared by year). In terms of bottle colours recovered, there are some significant differences between years (a chi-square value of 25.5 was obtained for a table with 8 degrees of freedom at $p=0.0013$). The most significant difference lies in the higher percentage of colourless and turquoise-tint bottle glass recovered in 1978 and the higher percentages of green-yellow and green bottle glass recovered in 1979.

In 1978, 62.5% of all Kitchen bottle fragments were colourless, 19.1% were amber, 8.0% green-yellow, 5.8% turquoise tint, 2.5% green, 1.6% manganese-tint, and another 0.6% dark olive green or blue bottle glass. In 1979, 54.0% were colourless, 19.8% were amber, 11.7% green-yellow, 3.4% turquoise-tint, 7.5% green, 2.6% manganese tint, and another 0.8% dark olive green or blue bottle glass. Despite specific differences in bottle colours recovered between years (and which may again reflect differential artifact fragmen-

tation rather than proportions of bottle glass colours originally deposited), there are some broad similarities between years. In each year colourless bottle glass is the highest category of bottle colour recovered, followed by amber bottle glass, green-yellow bottle glass, green, and turquoise-tinted glass. Manganese-tinted glass is rare (and has a restricted spatial distribution, cf. Appendix B) in each year.

3.2.2.3 Ceramic Artifacts

Ceramic artifacts constitute 21.9% of all 1978 Kitchen artifacts and 18.8% of all 1979 Kitchen artifacts. Table 16, Appendix A, gives the distribution of these Kitchen ceramic artifacts in terms of artifact classes. Only two Kitchen classes contain ceramics - the Table/servingware class and the Cookware class. In each year the Tableware class accounts for most Kitchen ceramics (92.6% in 1978 and 86.9% in 1979) and the Cookware class for the least percentage of Kitchen ceramics (7.4% in 1978 and 13.1% in 1979). Statistically, however, each year is shown to be significantly different. (A chi-square value of 4.0 with 1 degree of freedom and $p=0.05$ was obtained for the distribution of these two artifact classes between years). Each class tends to contain different kinds of waretypes and have fairly unique spatial distributions (cf. Appendix B).

In 1978, 66.9% of Tableware ceramics consist of white earthenware, 30.7% of porcelain, and 2.4% of other earthen-

ware categories. In 1979, 59.5% are white earthenware, 37.1% are porcelain, and 3.4% are made out of other earthenwares. (A chi-square value of 2.8 with 2 degrees of freedom and $p=0.3$ was obtained when each year was compared in terms of the tableware waretypes recovered.). Cookware ceramics consist of 70.0% stoneware and 30.0% earthenware in 1978, and of 64.5% stoneware and 35.5% earthenware in 1979. This distribution of cookware resulted in a chi-square value of 0.2 with 2 degrees of freedom and $p=0.9$. These Kitchen ceramic artifacts are responsible for 21.9% of all 1978 Kitchen artifacts and 18.8% of all 1979 Kitchen artifacts.

When tableware ceramics are compared in terms of specific items or artifact specific attributes recovered, each year is shown to produce similar types of items, identifiable portions, and patterned versus unpatterned earthenware or porcelain objects. Plate/platter fragments were the most frequently recovered items (24.3% in 1978 and 28.3% in 1979). Hollow-ware items (ie. dish-shaped fragments which could not be definitely identified as being bowl or cup fragments) were the next most frequently recovered items accounting for 20.3% of all tableware ceramics in 1978 and 21.5% in 1979. Unidentified tableware accounted for an additional 13.5% in 1978 and 15.1% in 1979, cups/mugs for 14.3 and 14.6%, saucers for 15.5 and 12.7%, bowls for 7.6 and 3.4%, and other miscellaneous categories (eg. egg cups, pitchers, pots, etc) for 4.5 and 4.4% (Table 18, Appendix

A). The chi-square value obtained for the distribution of tableware items between years was 9.1 with 11 degrees of freedom and $p=0.6$.

In terms of identifiable portions recovered, 39.4% in 1978 and 43.9% in 1979 were rim fragments, 26.7 and 27.3% were body fragments, 26.7 and 22.9% were base fragments, 6.8 and 5.9% were miscellaneous handle, lid, spout, or unidentified fragments. Only one complete item was recovered in 1978. The chi-square value obtained for the distribution of identifiable portions between years was 8.8 with 7 degrees of freedom and $p=0.3$. In 1978, 68.5% of all tableware ceramics had some kind of decorative pattern while another 31.5% were plain. In 1979, 61.6% were patterned and 38.4% were plain. Patterned white earthenware accounted for the largest percentage of patterned ceramics in each year (67.3% in 1978 and 61.5% in 1979), while plain ceramics were almost equally divided between white earthenware and porcelain tableware ceramics in each year. The distribution of patterned and plain white earthenware/porcelain categories between years is not significantly different (a chi-square value of 3.4 with 3 degrees of freedom and $p=0.3$).

3.2.2.4 Metal Container Artifacts

Metal container artifacts make up 23.4% of all 1978 and 30.3% of all 1979 Kitchen artifacts (Tables 23 and 24, Appendix A). The majority of these fall under the tin can/

food packaging category (98.6% in 1978 and 96.1% in 1979). Overall, 1979 produced more metal container artifacts than the 1978 collection did. (In 1979, 380 were collected as opposed to 290 in 1978). Of these, 271 in 1978 and 355 in 1979 were tin can fragments and consisted primarily of unidentifiable, unseamed body fragments (74.2% in 1978 and 74.9% in 1979). Only 25.8% in 1978 and 25.1% in 1979 consisted of identifiable seamed body fragments, bases or tops, sealers, or complete bodies. In 1978, 14 complete tin cans were recovered while only one was recovered in 1979. The recovery of more complete items and fewer sealers in 1978 is the main internal difference between years. Overall, the distribution of identifiable tin can portions recovered between years is significantly different. (A chi-square value of 25.6 with 4 degrees of freedom and $p=0.0$ was obtained when these distributions were compared).

3.2.2.5 Summary

Although the total numbers of Kitchen Group artifacts recovered between years are almost the same, both similarities and significant differences exist between years in terms of the frequency of Kitchen artifact classes, specific types of artifacts, and artifact-specific attributes recovered. In the above examination of Kitchen glass artifacts, for example, the types of bottles and bottle colours recovered were significantly different between years while the distribution

of identifiable bottle portions were not. Kitchen ceramic classes and identifiable tableware portions recovered between years were significantly different while the distribution of ceramic waretypes for both tableware and cookware ceramics, specific items, and patterned versus plain ceramics were not. The frequencies of identifiable tin can portions recovered in each year were also significantly different. Despite any statistical differences, however, when Kitchen artifact classes, specific types of artifacts, and artifact-specific attributes are ranked in order of their frequencies of occurrence, each year is shown to have the same rank-order of artifacts between years.

3.2.3 Architectural Group Artifact Classes

The Architectural group is the third largest artifact group present at the site, accounting for 16.9% of all 1978 and 18.1% of all 1979 artifactual material recovered. Significantly different frequencies of Architectural artifacts were recovered between years both in relation to other Artifact groups and in relation to specific Architectural artifact classes recovered between years (Tables 3 and 5). The 1979 collection produced almost four times the number of nails and three times the number of metal construction hardware items. The 1978 collection, on the other hand, produced slightly more window glass, nonmetal construction materials, and chinking. Despite the significant statistical

differences between years, however, window glass represents the largest category of architectural material recovered in each year (72.4% in 1978 and 52.1% in 1979). In 1978, nails account for 10.0% and chinking for 9.2% of the architectural artifacts recovered. Metal construction hardware only accounts for 4.2%. In 1979, nails account for 30.3% and metal construction hardware for 10.6% of all architectural materials recovered. Chinking accounts for only 5.8% .

3.2.4 Clothing, Personal, and Tobacco Pipe Groups Artifact Classes

The Clothing, Personal and Tobacco Pipe artifact groups combined account for 2.9% of all 1978 and 3.7% of all 1979 artifacts recovered at the site (Table 3). Table 6 gives the breakdown of Clothing, Personal and Tobacco Pipe group artifacts by artifact classes. The table indicates that each year samples significantly different classes of artifacts. In 1979, far more clothing-related artifacts were recovered - particularly clothing attachments (consisting of such items as metal buttons, eyelets/grommets, and buckles) and clothing apparel (especially leather and rubber-backed cloth shoe parts). More personal effects were also recovered in 1979. In 1978, more toiletry items (consisting mostly of ceramic chamber set items, and perfume/toiletry/cosmetic bottles and containers) were recovered than in 1979. Except for these toiletry items and the tobacco pipe class, the 1979 collection produced about twice the number

of items in every artifact class than were recovered in 1978.

TABLE 5
ARCHITECTURAL ARTIFACT CLASSES BY YEAR

ARCHIT'L ARTIFACT CLASS	COUNT		YEAR		ROW TOTAL
	ROW	PCT	1978	1979	
	COL	PCT			
	TOT	PCT	1	2	
WINDOW GLASS	30	I	275	I 251	I 526
		I	52.3	I 47.7	I 61.0
		I	72.4	I 52.1	I
		I	31.9	I 29.1	I
NAILS/SPIKES	31	I	38	I 146	I 184
		I	20.7	I 79.3	I 21.3
		I	10.0	I 30.3	I
		I	4.4	I 16.9	I
METAL CONSTRUCTION HARDWARE	32	I	16	I 51	I 67
		I	23.9	I 76.1	I 7.8
		I	4.2	I 10.6	I
		I	1.9	I 5.9	I
DOOR/LOCK PARTS	33	I	0	I 3	I 3
		I	0.0	I 100.0	I 0.3
		I	0.0	I 0.6	I
		I	0.0	I 0.3	I
NONMETAL CONSTRUCTION MATERIALS	34	I	16	I 3	I 19
		I	84.2	I 15.8	I 2.2
		I	4.2	I 0.6	I
		I	1.9	I 0.3	I
CHINKING	35	I	35	I 28	I 63
		I	55.6	I 44.4	I 7.3
		I	9.2	I 5.8	I
		I	4.1	I 3.2	I
COLUMN			380	482	862
TOTAL			44.1	55.9	100.0

RAW CHI SQUARE = 84.55669 WITH 5 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0000

TABLE 6
CLOTHING, PERSONAL AND TOBACCO PIPE ARTIFACT CLASSES
BY YEAR

		YEAR						
	COUNT	I						
CLOTHING	ROW PCT	I	1978		1979		ROW	
PERSONAL	COL PCT	I					TOTAL	
ARTIFACT	TOT PCT	I	1	I	2	I		
CLASS	-----	I	-----	I	-----	I		
	50	I	9	I	21	I	30	
CLOTHING		I	30.0	I	70.0	I	17.5	
ATTACHMENTS		I	13.2	I	20.4	I		
		I	5.3	I	12.3	I		
	51	I	0	I	2	I	2	
TAILOR/SEWING		I	0.0	I	100.0	I	1.2	
KNITTING ITEMS		I	0.0	I	1.9	I		
		I	0.0	I	1.2	I		
	52	I	20	I	42	I	62	
CLOTHING		I	32.3	I	67.7	I	36.3	
APPARELL		I	29.4	I	40.8	I		
		I	11.7	I	24.6	I		
	60	I	3	I	11	I	14	
PERSONAL EFFECTS		I	21.4	I	78.6	I	8.2	
		I	4.4	I	10.7	I		
		I	1.8	I	6.4	I		
	61	I	34	I	27	I	61	
TOILETRY ITEMS		I	55.7	I	44.3	I	35.7	
		I	50.0	I	26.2	I		
		I	19.9	I	15.8	I		
	65	I	2	I	0	I	2	
TOBACCO PIPES		I	100.0	I	0.0	I	1.2	
		I	2.9	I	0.0	I		
		I	1.2	I	0.0	I		
	COLUMN	I	68	I	103	I	171	
	TOTAL		39.8		60.2		100.0	

RAW CHI SQUARE = 15.46529 WITH 5 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0085

3.2.5 Activities Group Artifact Classes

The Activities group accounts for 6.9% of all 1978 artifacts and 9.1% of all 1979 artifacts collected. Table 7 gives the breakdown of all Activities-related classes recovered. Approximately one and a half times more activities-related artifacts were recovered in 1979 than in 1978 with the main differences between years occurring in the number of metal artifact categories recovered (eg., stable/barn artifacts, miscellaneous metal hardware, and transportation-related artifacts). Despite the statistically significant differences between Activities group classes indicated by this table, there are also general similarities between years. In each year, the Transportation class (automotive body and battery parts) forms the largest percentage of materials recovered (44.9% in 1978 and 33.6% in 1979). The stable/barn and farm tools classes together (the only indication of farming at the site) account for the next largest percentage of materials recovered (16.6% in 1978 and 17.0% in 1979).

3.2.6 Unidentified Group Artifact Classes

The Unidentified artifact group accounts for 16.9% of all 1978 artifacts and 20.3% of all 1979 artifacts collected. Far more of this type of artifact shatter was recovered in 1979 (approximately 1.5 times more). Table 8 indicates that the most significant difference between years again occurs

in the number of metal artifacts (unidentified metal fragments) recovered in 1979. Over four times the number of unidentified metal fragments were recovered in 1979 than in 1978. Slightly more glass fragments and slightly less ceramic fragments were also recovered in 1979 than in 1978.

Differential artifact fragmentation for each of these main artifact material classes can be observed from Tables 23 and 24 in Appendix A. In 1978, 29.0% of all metal artifacts, 21.0% of all glass, 20.3% of all machine-made/composite materials (miscellaneous materials), and 14.2% of all ceramics consist of unidentified artifact shatter. In 1979, 48.3% of all metal artifacts, 25.3% of all glass, 17.6% of all machine-made/composite materials (miscellaneous materials), and 5.6% of all ceramics consist of unidentified artifact shatter. In each year, metal artifacts are the most prone to fragmentation, followed by glass and machine-made/composite materials. Ceramics appear the least prone to artifact fragmentation.

TABLE 7
ACTIVITIES ARTIFACT GROUP CLASSES BY YEAR

ACTIVITIES ARTIFACT CLASS	COUNT ROW COL TOT PCT	YEAR		ROW TOTAL			
		I	I				
			1978		1979		
					1	2	I
CONSTRUCTION TOOLS	70	I	1	I	0	I	1
		I	100.0	I	0.0	I	0.3
		I	0.6	I	0.0	I	
		I	0.3	I	0.0	I	
FARM TOOLS	71	I	8	I	10	I	18
		I	44.4	I	55.6	I	4.5
		I	5.1	I	4.1	I	
		I	2.0	I	2.5	I	
TOYS/RECREATION	72	I	4	I	6	I	10
		I	40.0	I	60.0	I	2.5
		I	2.6	I	2.5	I	
		I	1.0	I	1.5	I	
STORAGE	74	I	2	I	0	I	2
		I	100.0	I	0.0	I	0.5
		I	1.3	I	0.0	I	
		I	0.5	I	0.0	I	
ETHNOBOTANICAL	75	I	1	I	0	I	1
		I	100.0	I	0.0	I	0.3
		I	0.6	I	0.0	I	
		I	0.3	I	0.0	I	
STABLE/BARN	76	I	18	I	31	I	49
		I	36.7	I	63.3	I	12.3
		I	11.5	I	12.9	I	
		I	4.5	I	7.8	I	
MISCELLANEOUS HARDWARE	77	I	10	I	50	I	60
		I	16.7	I	83.3	I	15.1
		I	6.4	I	20.7	I	
		I	2.5	I	12.6	I	
OTHER/ MISCELLANEOUS	78	I	5	I	13	I	18
		I	27.8	I	72.2	I	4.5
		I	3.2	I	5.4	I	
		I	1.3	I	3.3	I	
CHEMICAL/ MEDICAL/ SCIENTIFIC	79	I	1	I	1	I	2
		I	50.0	I	50.0	I	0.5
		I	0.6	I	0.4	I	
		I	0.3	I	0.3	I	
MISCELLANEOUS PACKAGING	80	I	36	I	49	I	85
		I	42.4	I	57.6	I	21.4
		I	23.1	I	20.3	I	
		I	9.1	I	12.3	I	
TRANSPORTATION	81	I	70	I	81	I	151
		I	46.4	I	53.6	I	38.0
		I	44.9	I	33.6	I	
		I	17.6	I	20.4	I	
COLUMN		156		241		397	
TOTAL		39.3		60.7		100.0	

RAW CHI SQUARE = 23.98334 WITH 10 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0076

TABLE 8
UNIDENTIFIED ARTIFACT GROUP CLASSES BY YEAR

UNID ARTIFACT CLASS	COUNT		YEAR			ROW TOTAL
	ROW	PCT	1978	1979		
	COL	PCT				
	TOT	PCT	1	2		
	100		258	306		564
UNIDENTIFIED			45.7	54.3		61.3
GLASS			67.7	56.8		
			28.0	33.3		
	101		48	15		63
UNIDENTIFIED			76.2	23.8		6.8
CERAMIC			12.6	2.8		
			5.2	1.6		
	102		40	185		225
UNIDENTIFIED			17.8	82.2		24.5
METAL			10.5	34.3		
			4.3	20.1		
	103		33	30		63
UNIDENTIFIED			52.4	47.6		6.8
NATURAL/MACHINE-			8.7	5.6		
MADE/COMPOSITE			3.6	3.3		
MATERIALS						
	104		2	3		5
UNIDENTIFIED			40.0	60.0		0.5
OTHER			0.5	0.6		
			0.2	0.3		
	COLUMN		381	539		920
	TOTAL		41.4	58.6		100.0

RAW CHI SQUARE = 90.69835 WITH 4 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0000

3.2.7 Summary

When the distribution of South artifact groups and classes are examined for the entire site area between years, the results prove to be significantly different between years. Each year does not sample the same populations of surface artifacts. The main differences lie repeatedly in the greater number of metal artifacts recovered in 1979 than in 1978. Despite these statistical differences, however, broad similarities can be seen between years in terms of the rank-order of percentages of each artifact group or class recovered. These broad similarities between years are also visible at the level of artifact-specific attributes or items (as was observed within Kitchen-related glass, ceramic, and tin can packaging artifacts).

3.3 EXAMINATION OF THE ARTIFACT GROUPS RECOVERED BY FEATURE AREAS BETWEEN YEARS

3.3.1 Overall Comparison of Artifact Content Recovered By Feature Areas

Tables 9 and 10 give the basic distribution of Artifact groups recovered by each historical feature area for each year's surface collection. In terms of the overall percentage of artifacts recovered for each feature area (Figure 14, Appendix B), each year indicates a similar general pattern of recovery. In each year, the house area accounts for the largest percentage of artifacts recovered (45.3% of all artifacts in 1978 and 36.8% of all artifacts in 1979) and the

house yard area surrounding the original house feature for the next largest percentage of artifacts recovered (18.5% in 1978 and 16.9% in 1979). Together these two feature areas account for over half of all artifactual material recovered (63.8% in 1978 and 53.7% in 1979). All other feature areas together account for the remaining percentages of artifacts recovered.

The west road area accounts for 11.2% in 1978 and 14.7% in 1979, the garden area for 10.7% in 1978 and 9.1% in 1979, the barn yard for 5.1% in 1978 and 7.6% in 1979, the west field area for 5.0% in 1978 and 4.7% in 1979, the barn area for 2.4% in 1978 and 5.2% in 1979, and the east path area for 1.8% in 1978 and for 4.8% in 1979. It is obvious that the most productive areas in terms of artifactual materials recovered were the house and house-related areas and the least productive areas were those associated with the original barn feature itself - the barn, the barn yard, the original ploughed field area west of the barn, and the pathway between the house and barn on the east side of the well area (cf. Figure 5, Chapter 2, and Figure 14, Appendix B).

When these feature areas are examined internally in each year (Tables 9 and 10), there is very little in terms of artifact content which can be used to differentiate one feature area from another in either year. Each area essentially contains the same types of artifactual materials. Kitchen group artifacts form the largest category of arti-

TABLE 9

1978 SOUTH ARTIFACT GROUPS BY HISTORICAL FEATURE

			HISTORICAL FEATURE AREA																						
SOUTH ARTIFACT GROUP	COUNT		I	HOUSE	I	HOUSE YARD	I	3	I	BARN YARD	I	4	I	WEST ROAD	I	5	I	6	I	7	I	8	I	ROW TOTAL	
	ROW	PCT																							
	TOT	PCT																							
PREHISTORIC	1			0		0		0		0		0		0		0		0		0		1		0.0	
			0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		100.0				
			0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0				
			0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0				
KITCHEN	2		555		229		28		68		130		22		147		61						1240		55.2
			44.8		18.5		2.3		5.5		10.5		1.8		11.9		4.9								
			54.6		55.2		51.9		59.1		51.8		53.7		61.0		54.5								
			24.7		10.2		1.2		3.0		5.8		1.0		6.5		2.7								
ARCHITECTURAL	4		168		79		15		28		44		10		25		10						379		16.9
			44.3		20.8		4.0		7.4		11.6		2.6		6.6		2.6								
			16.5		19.0		27.8		24.3		17.5		24.4		10.4		8.9								
			7.5		3.5		0.7		1.2		2.0		0.4		1.1		0.4								
FURNITURE	5		7		2		0		1		1		0		2		0						13		0.6
			53.8		15.4		0.0		7.7		7.7		0.0		15.4		0.0								
			0.7		0.5		0.0		0.9		0.4		0.0		0.8		0.0								
			0.3		0.1		0.0		0.0		0.0		0.0		0.1		0.0								
ARMS	6		7		3		0		0		1		0		0		0						11		0.5
			63.6		27.3		0.0		0.0		9.1		0.0		0.0		0.0								
			0.7		0.7		0.0		0.0		0.4		0.0		0.0		0.0								
			0.3		0.1		0.0		0.0		0.0		0.0		0.0		0.0								
CLOTHING	7		11		3		1		3		5		2		2		2						29		1.3
			37.9		10.3		3.4		10.3		17.2		6.9		6.9		6.9								
			1.1		0.7		1.9		2.6		2.0		4.9		0.8		1.8								
			0.5		0.1		0.0		0.1		0.2		0.1		0.1		0.1								
PERSONAL	8		17		4		1		1		5		0		5		3						36		1.6
			47.2		11.1		2.8		2.8		13.9		0.0		13.9		8.3								
			1.7		1.0		1.9		0.9		2.0		0.0		2.1		2.7								
			0.8		0.2		0.0		0.0		0.2		0.0		0.2		0.1								
TOBACCO PIPE	9		0		0		0		0		0		0		0		1						1		0.0
			0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0								
			0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0								
			0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0								
ACTIVITIES	10		54		28		3		3		29		1		24		14						156		6.9
			34.6		17.9		1.9		1.9		18.6		0.6		15.4		9.0								
			5.3		6.7		5.6		2.6		11.6		2.4		10.0		12.5								
			2.4		1.2		0.1		0.1		1.3		0.0		1.1		0.6								
UNIDENTIFIED	11		199		67		6		11		36		6		36		20						381		17.0
			52.2		17.6		1.6		2.9		9.4		1.6		9.4		5.2								
			19.5		16.1		11.1		9.6		14.3		14.6		14.9		17.9								
			8.9		3.0		0.3		0.5		1.6		0.3		1.6		0.9								
COLUMN TOTAL				1018		415		54		115		251		41		241		112				2247		100.0	
				45.3		18.5		2.4		5.1		11.2		1.8		10.7		5.0							

RAW CHI SQUARE = 114.55838 WITH 63 DEGREES OF FREEDOM. SIGNIFICANCE = 0.0001

TABLE 10
1979 SOUTH ARTIFACT GROUPS BY HISTORICAL FEATURE AREA

HISTORICAL FEATURE AREA														ROW TOTAL
SOUTH ARTIFACT GROUP	COUNT		HOUSE 1	HOUSE YARD 2	BARN 3	BARN YARD 4	WEST ROAD 5	EAST PATH 6	GARDEN 7	WEST FIELD 8				
	ROW COL TOT	PCT PCT												
PREHISTORIC	1		0	0	0	0	3	0	0	0	0	3		
		0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.1			
		0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0				
		0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0				
KITCHEN	2		462	211	49	87	182	66	129	69	1255			
		36.8	16.8	3.9	6.9	14.5	5.3	10.3	5.5	47.2				
		47.2	46.9	35.3	42.9	46.7	51.6	53.3	54.8					
		17.4	7.9	1.8	3.3	6.8	2.5	4.9	2.6					
ARCHITECTURAL	4		170	93	41	47	74	17	22	19	483			
		35.2	19.3	8.5	9.7	15.3	3.5	4.6	3.9	18.2				
		17.4	20.7	29.5	23.2	19.0	13.3	9.1	15.1					
		6.4	3.5	1.5	1.8	2.8	0.6	0.8	0.7					
FURNITURE	5		11	4	1	0	3	2	3	0	24			
		45.8	16.7	4.2	0.0	12.5	8.3	12.5	0.0	0.9				
		1.1	0.9	0.7	0.0	0.8	1.6	1.2	0.0					
		0.4	0.2	0.0	0.0	0.1	0.1	0.1	0.0					
ARMS	6		8	1	0	1	1	0	2	0	13			
		61.5	7.7	0.0	7.7	7.7	0.0	15.4	0.0	0.5				
		0.8	0.2	0.0	0.5	0.3	0.0	0.8	0.0					
		0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0					
CLOTHING	7		22	10	11	10	3	5	1	3	65			
		33.8	15.4	16.9	15.4	4.6	7.7	1.5	4.6	2.4				
		2.2	2.2	7.9	4.9	0.8	3.9	0.4	2.4					
		0.8	0.4	0.4	0.4	0.1	0.2	0.0	0.1					
PERSONAL	8		18	2	0	1	6	0	5	2	34			
		52.9	5.9	0.0	2.9	17.6	0.0	14.7	5.9	1.3				
		1.8	0.4	0.0	0.5	1.5	0.0	2.1	1.6					
		0.7	0.1	0.0	0.0	0.2	0.0	0.2	0.1					
ACTIVITIES	10		73	41	13	14	38	14	38	10	241			
		30.3	17.0	5.4	5.8	15.8	5.8	15.8	4.1	9.1				
		7.5	9.1	9.4	6.9	9.7	10.9	15.7	7.9					
		2.7	1.5	0.5	0.5	1.4	0.5	1.4	0.4					
UNIDENTIFIED	11		215	88	24	43	80	24	42	23	539			
		39.9	16.3	4.5	8.0	14.8	4.5	7.8	4.3	20.3				
		22.0	19.6	17.3	21.2	20.5	18.8	17.4	18.3					
		8.1	3.3	0.9	1.6	3.0	0.9	1.6	0.9					
COLUMN TOTAL			979	450	139	203	390	128	242	126	2657			
			36.8	16.9	5.2	7.6	14.7	4.8	9.1	4.7	100.0			

RAW CHI SQUARE = 127.47433 WITH 56 DEGREES OF FREEDOM. SIGNIFICANCE = 0.0000

facts recovered in each area, accounting for between 35.1% and 60.0% of all artifactual material recovered depending on the area and collection year examined. Architectural group artifacts tend to form the next largest percentage of artifactual material recovered in each area, accounting for between 10.0% and 29.0% , while Unidentified group artifacts tend to form the third largest percentage of artifactual materials recovered, accounting for between 10.0% and 22.0% . The only exceptions to this pattern of distribution are the garden and west field areas where greater amounts of Unidentified artifact materials (ie., artifact shatter) were recovered than Architectural artifact materials.

Each feature area accounts for different percentages of the total number of artifacts recovered in each artifact group. These differences in total percentages are the only discernible differences between feature areas. The house and house areas together account for the largest percentages of all Kitchen (63.3% in 1978 and 53.6% in 1979), Architectural (65.1% in 1978 and 54.5% in 1979), Activities (52.5% in 1978 and 47.3% in 1979), and Unidentified (69.8% in 1978 and 56.2% in 1979) artifact groups recovered in each year, and for most of the Furniture, Arms, Clothing, and Personal/Tobacco Pipe group artifacts recovered (between 50.0% and 65.0% in each year). The barn area contains the lowest percentage of Kitchen artifacts (2.3% in 1978 and 3.9% in 1979) and some of the lowest percentages of Architectural (4.0% in

1978 and 8.5% in 1979), Activities (1.9% in 1978 and 5.4% in 1979), and Unidentified (1.6% in 1978 and 4.5% in 1979) artifacts.

Next to the house and house yard areas, the west road area contained the next highest percentages of Kitchen (10.5% in 1978 and 14.5% in 1979), Architectural (11.6% in 1978 and 15.3% in 1979), Activities (18.6% in 1978 and 15.8% in 1979), and Unidentified (7.7% in 1978 and 12.5% in 1979) artifact groups, and accounted for some of the Furniture, Arms, Clothing, and Personal group artifacts (between 4.5% and 17.0% in each year). This feature area was followed by the garden area which contained the next highest percentage of Activities artifacts (15.4% in 1978 and 15.8% in 1979) and Unidentified artifact shatter (9.4% in 1978 and 7.8% in 1979). The barn yard, like the barn area itself, produced extremely little of the total Kitchen, Architectural, Activities, and Unidentified artifacts recovered (less than 10.0% and as little as 2.0% of each artifact group in each year).

Regardless of which historical feature area is examined, each feature area indicates a domestic type of site high in Kitchen and Architectural-related artifacts and characterized by a high degree of artifact shatter (or "trampling"). The only structural feature suggested appears to be that associated with the original house itself. There is little to indicate the presence of the equally important barn feature either in terms of architectural evidence or activities as-

sociated with use of the barn/ barnyard areas. Only the Activities group (in particular, the Stable/barn and Farm tools classes including such items as riding tack, harness items, farm machinery/tools, etc.) is the only artifact group which could have definitively indicated the presence of a farming component at Jensen's Farm. This group, however, accounts for only 6.9% of all 1978 and 9.1% of all 1979 artifacts and was recovered mainly from the west road, garden, and house/house yard areas rather than from the vicinity of the barn/barn yard areas. In sum, there is little to differentiate one historical feature area from one another in terms of artifact content, and almost all feature areas reflect the same domestic nature of the original house feature rather than feature-specific uses or activities. In Analysis B (Chapter four), the spatial distribution of these artifact groups and specific artifact classes are examined in relation to the original historical feature areas.

3.3.2 Comparison of the Artifact Groups Recovered By Specific Feature Areas Between Years

Tables 11 and 12 in this chapter and tables 25, 26, 27, 28, 29, 30, and 31 in Appendix A present the results obtained when the artifact content is compared between years in terms of individual feature areas. The intent is to determine if the results between years are the same or significantly different when compared in terms of specific culturally-meaningful feature areas. In all feature area tables,

the chi-square values obtained for the frequencies of artifact groups recovered between years are much lower than the value obtained when artifact content is compared between years for the entire site sample area (Table 3). Despite these lower chi-square values, however, there are still significant differences between years. In all feature areas except the house area, more artifacts were collected in 1979 than in 1978. The most pronounced differences between years lie in the number of Unidentified, Architectural, Kitchen, and Activities related artifacts recovered from the barn, barn yard, east path, and west road feature areas. Many of these proved to be metal artifacts such as unidentified metal fragments, nails, metal construction hardware, tin can container fragments, and metal Activities related artifacts (Tables 23 and 24, Appendix A).

Despite the fact that the 1979 collection produced more artifacts overall, for the house area more artifacts were collected in 1978 than in 1979. Examining table 11 reveals that it is the Kitchen group which is mainly responsible for this difference between years and that, in fact, the 1979 collection produced more of almost every other category except this Kitchen group. It is interesting to note that equivalent numbers of Architectural artifacts were recovered for this feature area when they differ drastically between years for other feature areas and for the overall site area in general. For the house area there is a decrease of 4.0%

in terms of the total number of artifacts collected in 1979 and a 16.8% decrease in the number of Kitchen artifacts recovered in 1979. This contrasts the 18.1% increase in the total number of 1979 artifacts recovered for the entire site area and the maximum increase of 26.8% for any particular artifact group (the Architectural group) recovered.

In table 12, the 1979 collection produced only a few more artifacts overall for the house yard feature area. This time the 1979 collection produced more Architectural artifacts for this area as well as more Clothing, Activities, and Unidentified group artifacts. The 1979 collection also produced slightly less Kitchen artifacts than the 1978 collection. The greater number of 1979 artifacts recovered for this area only represents a 8.4% increase over the number of artifacts collected in 1978. The greatest difference between years for this feature area lies in the number of Unidentified group artifacts recovered (an increase of 31.3% in the number of 1979 Unidentified artifacts recovered).

In 1979 approximately 2.5 times as many artifacts were collected from the barn area than were collected in 1978 (Table 25, Appendix A). More of almost every artifact group was collected in 1979 particularly the Unidentified, Architectural, Kitchen, and Activities groups. In the barn yard area (Table 26, Appendix A), the 1979 collection again produced nearly twice the number of artifacts than the 1978 collection. The main differences between years are also

TABLE 11

HOUSE AREA: SOUTH ARTIFACT GROUPS RECOVERED BY YEAR

SOUTH ARTIFACT GROUP	COUNT		HISTORICAL FEATURE AREA			ROW TOTAL	
	ROW	PCT	1978	1979			
	COL	PCT	HOUSE	HOUSE			
	TOT	PCT	I	I	I		
			11	12			
KITCHEN	2	I	555	I	462	I	1017
		I	54.6	I	45.4	I	50.9
		I	54.5	I	47.2	I	
		I	27.8	I	23.1	I	
ARCHITECTURAL	4	I	169	I	169	I	338
		I	50.0	I	50.0	I	16.9
		I	16.6	I	17.3	I	
		I	8.5	I	8.5	I	
FURNITURE	5	I	7	I	11	I	18
		I	38.9	I	61.1	I	0.9
		I	0.7	I	1.1	I	
		I	0.4	I	0.6	I	
ARMS	6	I	7	I	8	I	15
		I	46.7	I	53.3	I	0.8
		I	0.7	I	0.8	I	
		I	0.4	I	0.4	I	
CLOTHING	7	I	11	I	22	I	33
		I	33.3	I	66.7	I	1.7
		I	1.1	I	2.2	I	
		I	0.6	I	1.1	I	
PERSONAL	8	I	17	I	18	I	35
		I	48.6	I	51.4	I	1.8
		I	1.7	I	1.8	I	
		I	0.9	I	0.9	I	
ACTIVITIES	10	I	54	I	73	I	127
		I	42.5	I	57.5	I	6.4
		I	5.3	I	7.5	I	
		I	2.7	I	3.7	I	
UNIDENTIFIED	11	I	199	I	215	I	414
		I	48.1	I	51.9	I	20.7
		I	19.5	I	22.0	I	
		I	10.0	I	10.8	I	
COLUMN		1019	978			1997	
TOTAL		51.0	49.0			100.0	

RAW CHI SQUARE = 15.78099 WITH 7 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0272

TABLE 12

HOUSE YARD: SOUTH ARTIFACT GROUPS BY YEAR

SOUTH ARTIFACT GROUP	COUNT		HISTORICAL FEATURE AREA		ROW TOTAL
	ROW	PCT	1978	1979	
	COL	PCT	HOUSE	HOUSE	
	TOT	PCT	YARD	YARD	
KITCHEN	2	I	229	211	440
		I	52.0	48.0	50.9
		I	55.2	46.9	
		I	26.5	24.4	
ARCHITECTURAL	4	I	79	93	172
		I	45.9	54.1	19.9
		I	19.0	20.7	
		I	9.1	10.8	
FURNITURE	5	I	2	4	6
		I	33.3	66.7	0.7
		I	0.5	0.9	
		I	0.2	0.5	
ARMS	6	I	3	1	4
		I	75.0	25.0	0.5
		I	0.7	0.2	
		I	0.3	0.1	
CLOTHING	7	I	3	10	13
		I	23.1	76.9	1.5
		I	0.7	2.2	
		I	0.3	1.2	
PERSONAL	8	I	4	2	6
		I	66.7	33.3	0.7
		I	1.0	0.4	
		I	0.5	0.2	
ACTIVITIES	10	I	28	41	69
		I	40.6	59.4	8.0
		I	6.7	9.1	
		I	3.2	4.7	
UNIDENTIFIED	11	I	67	88	155
		I	43.2	56.8	17.9
		I	16.1	19.6	
		I	7.7	10.2	
COLUMN			415	450	865
TOTAL			48.0	52.0	100.0

RAW CHI SQUARE = 11.87615 WITH 7 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.1047

found in the number of Unidentified, Architectural, Kitchen, and Activities artifacts recovered. The same situation is true of the west road area where 1.5 times as many 1979 artifacts were recovered and in the east path area where approximately three times the number of artifacts were recovered in 1979 than were recovered in 1978 (Tables 27 and 30, Appendix A).

In the west field area (Table 29, Appendix A), the increase in the total number of 1979 artifacts recovered is less pronounced. An increase of only 12.5% is present and is mainly due to the greater number of Architectural artifacts recovered in 1979. In the garden area (Table 28, Appendix A), the difference between years is even less pronounced. Almost exactly the same number of artifacts were recovered from this area in each year, although there are slight differences in the number of Kitchen, Activities, and Unidentified artifacts recovered.

3.4 CONCLUSION

An analysis of the artifact content between years shows that:

1. each year produces significantly different frequencies of artifact groups between years at both the overall general site level and at the level of individual cultural feature areas, and

2. artifact groups collected by culturally-meaningful feature areas in each year do not accurately reflect the nature and use of all original features but instead consistently reflect the domestic and structural nature of the main Jensen house feature.

When artifact content is compared between years in terms of the artifact groups collected for the overall site area, the chi-square value obtained is high. Significantly more artifacts were collected in almost every artifact group in 1979 than in 1978. Overall, an increase of 18.1% is observed in the total number of artifacts collected in 1979 than were collected in 1978. When artifact content is compared in terms of culturally-meaningful feature areas the chi-square values obtained are lower than that obtained for the overall site area, but still indicate significant differences between years. Only when each year is compared in terms of the rank-order of the percentages of artifact groups recovered, is each year shown to have similar distributions of artifact content both at the overall site level and at the level of individual feature areas.

When artifact content is examined by historical feature areas to determine if the artifact content recovered reflects the original nature and use of each individual feature area, it is found that each area in each year consistently indicates the same type of feature - the domestic and structural nature of the original Jensen house - rather than

unique feature-specific distributions of artifacts. These results are discussed further in Chapter five.

IV

ANALYSIS B: SPATIAL ANALYSIS OF ARTIFACT DISTRIBUTIONS RECOVERED

4.1 HYPOTHESES AND METHOD OF ANALYSIS

4.1.1 Hypotheses

In this section of the analysis the spatial distribution of artifacts recovered in each year are compared to determine: a) if they are the same between years, and b) if they can accurately reflect the spatial relationships of the original Jensen's Farm feature areas. The hypotheses can be stated as follow:⁴

1. Each of the 1978 and 1979 surface collections will produce plotted distributions of South artifact groups and classes which are the same in terms of:
 - a) patterns of high and low artifact density,
 - b) dispersions of artifacts over the entire site sample area and within certain subsections of the site sample area, and
 - c) densities of artifacts recovered from the entire site sample area and from specific subsections of the site sample area. (cf. Dacey 1973a).

⁴ These hypotheses are tested within the assumptions and limitations of the data as already outlined in Chapters one and two and as discussed in Chapter five.

2. Each of the 1978 and 1979 surface collections will produce plotted distributions of South artifact groups and classes which consistently isolate:
 - a) patterns which describe the shape and interrelationships of original site features,
 - b) dispersions which indicate the size, shape, and location of those site features, and
 - c) concentrations of artifacts which are uniquely associated with particular site feature areas.

4.1.2 Method

4.1.2.1 Comparing the Spatial Distribution of Artifact Groups Between Years

In the first part of this analysis, spatial distributions of artifacts are compared between years to determine if their distributions are similar in terms of three different, independent components of spatial distributions - pattern, dispersion, and density. Dacey (1973a: 135) defines these as follow:

The pattern of a spatial distribution is the areal or geometric arrangement of the geographic facts within a study area without regard to the size of the study area.

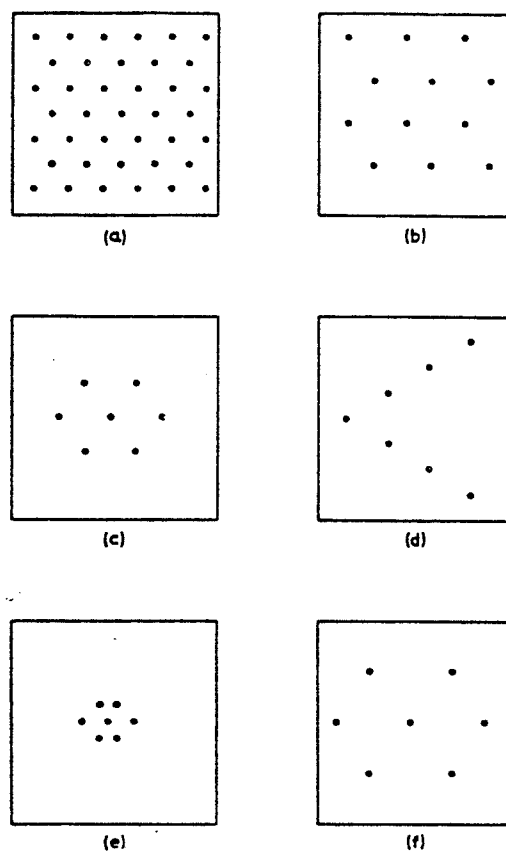
The density of a spatial distribution is the overall frequency of occurrence of a phenomenon within a study area relative to the size of the study area.

The dispersion of a spatial distribution is the extent of the spread of geographic facts within a study area relative to the size of the study area.

Figure 6 demonstrates the interrelationships among and the ways in which these three independent spatial components can vary with one another (Dacey 1973a: 136).

If each pair of diagrams in Figure 6 below is used as an example of the kinds of archaeological results possible from replicated site surface collection, diagrams a and b would represent a situation in which each collection effectively isolates the size, shape, and location of an archaeological feature despite differences in the density of artifacts recovered. Diagrams c and d would represent a situation in which no archaeologically meaningful pattern is visible despite the similarity in both density and dispersion between collections, and diagrams e and f a situation in which the pattern or shape of a particular feature is visible but not its size or exact location. Obviously each component has a different effect on the type of spatial distribution recovered. Cell density alone (or in this case the density of artifacts recovered) and any statistical test based on cell density (eg., chi-square) cannot be used to effectively isolate spatial distributions which are intuitively and visually significantly similar or dissimilar to one another (Dacey 1973a:136). At the present time, there are no statistical tools available which effectively combine and measure these three different components of spatial distribution and it is beyond the scope of this thesis to develop⁵ one. The meth-

⁵ In a 1973 article Dacey (1973b) developed an alternative method for spatial comparisons using a combination of var-



These diagrams are adapted from Thomas (1965) and Dacey (1973a) in order to illustrate the independent variation of the three basic components of spatial distributions:

Diagrams a and b have the same patterns and dispersions but differ in density.
 Diagrams c and d have the same densities and dispersions but differ in pattern.
 Diagrams e and f have the same densities and patterns but differ in dispersion. (Dacey 1973a: 136).

Figure 6: Illustration of the Independent Variation of Pattern, Dispersion, and Density in Spatial Distributions

odology which follows therefore is both visual and nonstatistical.

Archaeologically, the most significant or ideal result possible between replicated site surface collections would be the recovery of artifact distributions which are similar in pattern, density, and dispersion (ie., both collections would exhibit patterns of artifact distributions which are the same in shape, size, location, and density and which allow clear, unambiguous and spatially overlapping demarcation of site features). This is rarely the case, however, and instead archaeologists tend to obtain results where the patterns (ie., the shapes of artifact distributions) may be similar or partially similar, where the densities of artifacts recovered tend to be different, and where the dispersions of artifact distributions (ie., the size and locations of those patterns) may or may not be similar (eg., Hirth 1978; Ammerman and Feldman 1978; Riordian 1982).

iance-mean ratios, contingency tables, and contiguity ratios from cell counts. This was used in an experimental and exploratory fashion on a sample of scrapers from a single component archaeological site. Although this method may be useful for small sample sizes and small site areas, the technique is prohibitively cumbersome to apply to a data base as large as the one used here or to use for the kinds of multiple spatial comparisons undertaken here. It is also doubtful that the method would indicate much more than is already obvious from the chi-square tests conducted in Analysis A (Chapter 3). (Dr. G.I. Paul 1984: personal communication).

From Analysis A (Chapter 3), it is already apparent that the overall densities of artifact categories recovered in each year are not the same. What can be examined here, however, is:

1. whether or not patterns (ie., the contour shapes created by the contrasting areas of low or zero and high artifact densities) and dispersions (ie., the size and location of those patterns) are similar between years despite differences in overall densities (eg., Figure 6 a and b above),
2. if certain sub-areas of the sample area studied are more or less responsible for the differences in artifact densities already observed in Analysis A, and
3. if differences in density appear to affect the clarity with which patterns or dispersions can be defined.

In order to facilitate an internal examination of artifact densities, patterns, and dispersions the sample area has been broken down into four main sub-areas or quadrats (quads) named after their directional orientation (ie., NW, SW, NE, and SE) (Figure 15, Appendix B). Figures 7 to 10 exemplify the use of these sample quads. A mylar overlay of these sample area quadrats can be found in the back pocket of the thesis jacket for use in conjunction with the other main artifact group plots printed in Appendix B. In the SAS-plots produced for comparison in this thesis, artifacts were plotted in terms of the two metre square units they

were collected in. The SAS-plots are oriented north-south horizontally across the page and density symbols represent different total numbers of artifacts in each plot (as can be seen from the legend at the bottom of each plot).

In this section of the analysis, SAS-plots for each main South Artifact Group are examined between years first, to determine if their patterns are similar, secondly to determine if their dispersions over the site sample area are similar, and thirdly to determine if the relationship between pattern and dispersion are similar in each year. Once artifact distributions have been compared between years, the distributions in each year are compared to the artifact plot produced when the results from each year are combined in order to determine if combining the results from replicated site surface collection produces archaeologically similar, more or less informative, or dissimilar artifact distributions to those produced when the results from either year are plotted individually. The assumption underlying this is that if replicated site surface collection is to be anything more than a luxury, it must produce results which are archaeologically more informative or significant than those produced through single site surface collections. Sampling theory suggests that replicated collection or repeated sampling should produce more representative information. Archaeologically, however, this remains to be tested.

Throughout the following analysis patterns are said to be similar between years if the interrelationships of the geometric outline shapes created by contrasting areas of high and low or zero density areas are similar in each year. These patterns can differ in density and/or dispersion (ie. size and location) and still be similar to one another (cf. Figure 6 c and d). Dispersions between years are said to be similar if the distributions of artifacts in each year are as geographically extensive in terms of a) each individual sub-area or quadrat, and b) the overall site sample⁶ area. The relationship between pattern and dispersion (ie., the definition of features which are similar in shape, size, and location) between years is examined through the use of superimposed contour line overlays of the highest artifact density areas recovered for each South artifact group in each year. If the size, shape, and location of these contour lines spatially overlap between years, each year is said to be similar in terms of both pattern and dispersion. Where artifact density is low (as is often the case in the north half of the sample area or in the plotting of certain artifact groups such as the Furniture, Arms and Ammunition, and Personal artifact groups), overlap is defined as the mapping of an artifact cluster or concentration within one to two collection units (two to four metres) of one another.

⁶ In some cases, particularly where artifact density is extremely low (eg. the Furniture, Arms and Ammunition, and Personal artifact groups), it is difficult to keep this discussion of artifact patterns and dispersion separate since in many ways they become one and the same.

Where artifact densities are high (as they tend to be in the SE quad), artifact distributions are said to be similar between years if they map within one collection unit (two metres) of one another. Where artifact distributions overlap in some areas and not in others (eg., overlap in the south half but not the north half of the sample area), the correspondence between years is said to be one of partial similarity. Where the size, shape, and location of artifact distributions do not overlap spatially, the plotted distributions between years are said to be dissimilar.

4.1.2.2 Comparing the Spatial Distribution of Artifacts to the Known Structural and Nonstructural Features

In the second section of this analysis, SAS-plots showing the spatial distributions for each main South artifact group, selected artifact classes, attributes, or items are compared to the positions and interrelationships of the original Jensen Farm structural and nonstructural features. These structural and nonstructural features were presented earlier in a schematic diagram of Jensen's Farm (Figure 5) in Chapter 2 and consist of the house, barn, west road, house yard, barn yard, garden, west field, and east path areas. In this section of the analysis, a mylar overlay of this Jensen's Farm schematic (Figure 16, Appendix B) was reproduced and superimposed on the SAS-plots produced for each artifact group, class, or item examined. A copy of this overlay can be found in the back pocket of the thesis jacket

for use in conjunction with the SAS-plots found in Appendix B. Figures 11 to 13 exemplify the use of this overlay.

From Analysis A (Chapter 3), it is already known that the ratios and types of artifacts recovered from each original feature area do not indicate uniquely different functions or uses but consistently reflect the domestic and structural nature of the original Jensen's Farm house. Despite the rather homogeneous and apparently unrepresentative artifact content Analysis A seems to suggest for each feature area, the spatial distributions for these different artifact groups, classes, or items are examined here to determine if each can potentially define unique boundaries or distributions associated with the size, shape, locations, and interrelationships of the original feature areas. The method used is again a visual and nonstatistical one. If artifact distributions are shown to fall within one collection unit (two metres) of the boundaries of the original feature area (eg., the house or barn areas), then artifact distributions are said to show good spatial correspondence to those original features.

The relationship of artifact density to the definition of these feature areas is examined in terms of Deetz's concepts of "visibility" (the visible amount or density of artifacts present) and "focus" (the clarity with which the outline shape of those remains can be defined and identified) (Deetz 1977). It is possible for several different situations to

occur - ie., features may have high artifact visibility and low focus, low visibility and high focus (ie., present a kind of "negative" image when plotted), high visibility and high focus (ie., a strong "positive" image when plotted), or low visibility and low focus. Different parts of the site and different features may have higher or lower focus at any given time depending on the artifact group, class, or item plotted and its corresponding density. Spatial grid size, while not examined here, could also be expected to have an effect on the visibility and focus of artifact distributions plotted. Many more SAS-plots were originally examined than could be included here. Those included represent a good cross-section of the types of distributions encountered.

4.2 COMPARING THE SPATIAL DISTRIBUTIONS OF ARTIFACT GROUPS BETWEEN YEARS

4.2.1 All Artifact Groups Combined

Figures 7 to 10 exemplify the approach used to determine the degree of correspondence between the plotted distributions of artifacts recovered in the first year to those recovered in the second, and between the distributions plotted for each year and those produced when the results from each year are combined. Figures 8 and 9 show the spatial distributions of all artifacts (all artifact groups combined) recovered from the site sample area in each year; Figure 7 presents the plotted distribution which is produced when the results from each year are combined; and Figure 10 shows the

degree of spatial overlap which occurs when the plotted distributions from each year are superimposed on top of one another. Figure 7 presents the clearest, best defined example of the types of patterns and dispersions which can be expected at the site. Almost all other artifact plots present variations on these patterns and dispersions.

When the SAS-plots for all artifacts recovered in each year (Figures 8 and 9) are compared the patterns observed are both similar and dissimilar at the same time. The greatest correspondence between years occurs in the south half of the site sample area where artifact densities are roughly comparable between years. It is in the north half of the site sample area, where the differences in the densities of artifacts recovered are most pronounced, that the patterns suggested in each year are dissimilar.

In the south half of the site sample area, each year shows a dense square-shaped concentration of artifacts in the north-central section of the SE quad surrounded by a "shadow" concentration of lesser density which extends westwards into the central SW quad. In 1978, the size of this main concentration area is approximately 16 by 12 metres in size with a density of between 19 to 25 artifacts per two metre collection unit (or 5 to 6 artifacts per square metre). In 1979, the size of the main concentration is approximately 18 by 16 metres in size with a density of between 17 to 22 artifacts per two metre collection unit (or

4.5 to 5.5 artifacts per square metre). The lower density shadow concentration shown as surrounding this main concentration area ranges between 4 to 9 artifacts per two metre collection unit (or 1 to 2.25 artifacts per square metre) in both 1978 and 1979.

In 1978, seemingly random clusters of artifacts are scattered throughout the north half of the sample area with one small concentration occurring in the NE corner of the NE quad. In 1979, however, artifact clusters found in the north half of the site sample area form part of two linear bands which project northwards off the shadow concentration surrounding the main concentration. These linear bands continue northwards around the west and east sides of the uncollected well area and into the central north half of the sample area where they define the boundaries of a square-shaped low to zero density area. Although this particular feature is not as clearly defined in 1978, a similar zero density area does exist in the same location in 1978. In each year, artifacts rapidly decrease as one goes further north and north-west of the main artifact concentration in the SE quad.

Overall, dispersions are similar in each year with artifact scatters covering most of the site sample area. The one exception to this is that while artifacts were recovered from the NW corner of the NW quad in 1978, none were recovered from this vicinity in 1979. If the "dispersions" or

extent of individual density contour areas are considered, variations also exist between years in terms of the size and extent of the shadow concentration between years. The size and extent of this shadow concentration and the shapes which it defines are the major differences revealed between years.

When artifact distributions are superimposed (Figure 10), the overlap between the location, size, and shape of the main artifact concentration in the SE quad and the shadow concentration in the SE and SW quads is found to be excellent between years. In the north half of the sample area the apparently more random clusters visible in the 1978 artifact plot tend to either spatially overlap with, or map adjacently to, the better defined linear shaped concentrations found in 1979. In conclusion, then, when the artifact patterns and dispersions of all artifacts recovered in each year are compared, each year is found to describe very similar patterns of concentration in the south half of the site, to have good general correspondence in terms of the dispersion of artifacts, good spatial overlap in terms of the size, shape, and location of concentrations in the south half of the site, and good partial correspondence for the locations (if not the size and shape) of artifact clusters found in the north half of the site.⁷

⁷ While artifact clusters found in 1978 do not describe any particular pattern in and of themselves, these clusters do occur within the confines of the size and shape of artifact clusters plotted in 1979.

When the artifacts recovered in each year are combined, the resulting SAS-plot (Figure 7) most closely resembles that for 1979 (Figure 9). Overall, combining the results from each year produces an artifact plot in which almost all of the features or patterns visible in Figures 8 and 9 are more clearly and more solidly defined. Combining the results from each year is more informative than either 1978 or 1979. Where information recovered in 1979 provides more information on artifact distributions in the north half of the site, combining the results between years produces a map which is even more informative concerning these distributions.

The result is both "additive" (ie., the main concentration area, the shadow concentration surrounding it, and the square-shaped low density area in the central north half of the site all become more solidly and clearly defined due to the spatial overlap of artifact concentrations between years) and "averaging" (ie., the linear bands of artifact concentrations which extend northwards into the north half of the sample area become narrower and more linear in appearance due to the averaging of artifact densities recovered in this area in each year). Although these patterns and dispersions will be examined further in the second part of this spatial analysis, the features so clearly mapped in these all-artifact plots do in fact correspond with some of the original Jensen's Farm features. The dense, square-

shaped concentration in the north-central section of the SE quad corresponds with the approximate size, shape, and location of the original Jensen's Farm house and the shadow concentration around it to the boundaries of the house yard itself. The linear arms projecting northwards from the shadow concentration around the west and east sides of the well area also correspond to the west road, east path, and barn yard areas. The low density area which they define in the central section of the north half of the sample area also corresponds to the location, approximate size, and shape of the original Jensen barn.

4.2.2 Kitchen Artifact Group

Kitchen artifacts represent 55.2% of all 1978 and 47.3% of all 1979 artifacts collected. As a result, plotting their distributions (Figures 22 to 25 in Appendix B) produces results which closely resemble the plots produced above for all artifact groups combined (Figures 7 to 10). Each year again shows a dense, square-shaped concentration of artifacts in the north-central section of the SE quad surrounded by a shadow concentration of lesser density which stretches westwards into the north-central section of the SW quad. Again only random artifact clusters occur in the north half of the sample area in 1978, while in 1979 these clusters tend to define two linear-shaped bands projecting northwards off the main body of the shadow concentration and

around the west and east sides of the well area into the north-central section of the sample area where they again define a square-shaped low density area.

The size and shape of the main concentration areas defined by the Kitchen artifacts in each year are very similar to those defined in the all-artifact plots for each year (Figures 8 and 9) even though the densities plotted of the Kitchen artifacts plotted are lower. The same observations made concerning the dispersions and spatial overlap for the all-artifact plots and for the result obtained when the Kitchen artifacts collected in each year are combined can also be made here for the Kitchen group artifact distributions.

4.2.3 Architectural Artifact Group

Architectural-related artifacts represent 16.9% of all 1978 and 18.1% of all 1979 artifacts. When plotted (Figures 26 to 29, Appendix B), each year again indicates a dense, square-shaped concentration in the north-central section of the SE quad although the concentrations suggested here are not as large as those plotted in the all-artifact or Kitchen artifact plots. The shape of this concentration of architectural artifacts in the SE quad is a little different between years but when these are superimposed the artifact distributions are shown to spatially overlap between years and together define an even clearer, more square-shaped con-

centration than is visible in either year (Figure 29, Appendix B). The shadow concentration visible in the all-artifact or Kitchen artifact plots becomes a broken ring of artifact clusters immediately surrounding the main concentration area in the architectural group artifact plots that is shown as stretching westwards only as far as the easternmost edge of the SW quad.

In 1978, the artifact density drops off rapidly in all directions past this broken ring of artifacts. There is only one other small clustering of artifacts in the north half of the sample area which appear to cluster around a poorly defined circular-shaped area of zero density. In 1979, however, the broken ring of artifact clusters continue northwards away from the main concentration area into the central north half of the sample area in similar-shaped linear strands to those observed earlier. Where these linear strands meet, they define a square-shaped concentration of artifact clusters not visible in the 1978 architectural artifacts plot.

Although the dispersions of architectural artifacts in the south half of the sample area are similar between years, their dispersions and densities are in the north half of the sample area are noticeably different between years. In 1978, artifacts were only recovered from the NW corner of the NW quad and from the west-central area of the NE quad. In 1979, artifacts were recovered from the entire north half

of the site with the exception of the NW corner of the NW quad.

When the distributions of architectural artifacts in each year are superimposed (Figure 29, Appendix B), the spatial overlap for the main concentration is good in terms of its location, size, and shape between years. Artifact clusters elsewhere tend to map adjacently to one another or within one collection unit (two metres) of one another. Combining the results of each year into a single artifact plot (Figure 26 in Appendix B) produces a sharper definition of the square-shaped concentration in the SE quad than is visible in either year. However, the ring-like dispersion of artifacts around the west and east sides of the well area and the square-shaped concentration of artifacts in the central north half of the site sample area which were visible in 1979 are no longer as clearly defined due to the averaging of the differential densities between years. The combined artifact plot, therefore, is obviously both additive and averaging in nature.

4.2.4 Furniture, Arms and Ammunition, Clothing and Personal Artifact Groups

The Furniture, Arms and Ammunition, Clothing, and Personal artifact groups are all low in density and have unique or restricted distributions. The Furniture and Arms and Ammunition artifact groups (Figures 30 to 35 in Appendix B) are

essentially restricted to the north- central section of the SE quad corresponding to the main artifact concentration already observed in the all-artifact and Kitchen plots. When mapped individually for each year, the Furniture artifacts recovered do not suggest any particular shape or size to the relatively non-descript clustering of artifacts which occurs in the north-central SE quad. However, when these clusters visible in each year are combined to produce a third artifact plot (Figure 30, Appendix B), the shape, size, and location of their clustering becomes much more clearly and solidly defined. Because the artifact clusters in each year map adjacently to one another, when they are combined together they define a square-shaped concentration which is not visible in the plots for either year.

When the Arms and Ammunition group artifacts (which consist almost entirely of fired cartridges) are plotted (Figures 34 and 35, Appendix B) a similar situation is observed. In each year the artifacts cluster in the north-central section of the SE quad and are too low in density and too scattered to suggest much in the way of shape, size, or explicit location. However, because these artifacts tend to map adjacently between years, when the artifacts recovered in each year are combined the shape, size, and location of these clusters become more clearly and more solidly defined (Figure 33, Appendix B). The end result is a pattern and dispersion of artifacts which were not clearly visible in either year.

Clothing group artifacts (Figures 36 to 39, Appendix B) present a curious distribution in each year where most artifacts cluster in an east-west linear fashion in the north-central section of the SE quad. Other artifacts elsewhere tend to arc around this concentration and the west, north, and east sides of the well area in a ring-like distribution. The definition of this pattern is clearer in the 1979 Clothing artifact plot (Figure 38, Appendix B) as the density of artifacts recovered in 1979 is greater than the density of artifacts recovered in 1978 (Figure 34, Appendix B).

Dispersions of Clothing artifacts are roughly similar between years although the overall dispersion of 1979 artifacts is more extensive. This dispersion of artifacts is probably one affected by the differential recovery of artifacts between years. In terms of spatial overlap (Figure 39, Appendix B), most artifacts between years either map adjacently to one another or within one collection unit (two metres) of one another. When the results between years are combined (Figure 36, Appendix B), the plot produced suggests a type of pattern which most closely resembles the patterns recovered in 1979. Again, combining the results between years clarifies and accentuates the definition of artifact distributions visible in either year. Unlike other artifact groups, the clothing group in this plot defines a long, narrow rectangular-shaped concentration rather than a square-shaped concentration in the SE quad. The ring-like disper-

sion of artifacts around this concentration and the west, north, and east sides of the well area correspond to the location of the shadow concentration and the linear bands visible in the all-artifact and Kitchen artifact plots examined earlier.

Personal group artifacts, like Furniture artifacts, tend to be restricted in each year to the small square-shaped concentration in the north-central section of the SE quad (Figures 40 to 43 in Appendix B). Other artifacts elsewhere seem to scatter randomly west and north of this concentration in no particular pattern in 1978 and in a V-shaped distribution in 1979. When personal group artifact distributions are superimposed on top of one another (Figure 43, Appendix B), the artifacts tend to spatially overlap or map adjacently to one another in terms of the main concentration area but show little spatial correspondence elsewhere throughout the sample area.

When the personal artifacts recovered in each year are combined to produce a third artifact plot (Figure 40, Appendix B), the distributions produced are obviously a hybrid of the two years. The main concentration becomes slightly more elongated and more densely defined while artifact scatters elsewhere appear to be more frequent and randomly scattered than in either year.

4.2.5 Activities Artifact Group

When the Activities group artifacts are plotted for each year (Figures 45 and 46, Appendix B), each year indicates a square-shaped concentration (more square-shaped in 1979 than in 1978) in the north-central section of the SE quad with a lower density scattering of artifact clusters to the south and west of it.⁸ Although the dispersions and patterns are roughly similar in the south half of the site sample area (despite obvious differences in the densities of artifacts recovered), the north half exhibits more differences and variations. In 1978, artifacts appear randomly scattered throughout the SW corner of the NW quad and throughout the NE corner of the NE quad. In 1979, most artifacts occur east of the east half of the NW quad and define a type of artifact clustering which is clearly related to the linear shaped bands of artifacts observed earlier in the 1979 all-artifact and Kitchen artifact plots. These clusters in the north half in 1979 also crudely define a small square-shaped zero density area which corresponds in size, shape, and location to the one defined in the 1979 all-artifact and Kitchen artifact plots. Neither the linear-shaped artifact

⁸ The Activities group is actually a group made up of several different classes which represent diverse kinds of activities. When these Activities classes are plotted separately (eg., Transportation artifacts and Stable/ Barn/ and Farm Tool artifacts in Figure 69 in Appendix B), they prove to have fairly unique distributions. What is being plotted here in the Activities group plots is a composite view of all these different distributions. Perhaps this is why the distribution of artifacts plotted here appears so random.

clustering or the zero density area are visible in the 1978 Activities artifact plot.

When the distributions visible in each year are superimposed (Figure 47, Appendix B), the main concentration in the SE quad appears in the same location in each year although the sizes and shapes of the concentrations they describe are not exactly the same. Together, each year's artifact distribution defines a clearer and more solidly defined square-shaped concentration than is visible in either year alone (cf. Figure 44, Appendix B). Clusters of artifacts south, west, and north of this concentration tend to map adjacently or within one to two collection units (two to four metres) of one another between years wherever the clusters co-occur. Combining the results between years (Figure 44, Appendix B) produces a map which is both additive and averaging in nature. Overall, the plot most resembles that produced for 1979 except that the main concentration area is more sharply defined and scatters of artifacts throughout the north half of the sample area are even more poorly defined.

4.2.6 Unidentified Artifact Group

Unidentified group artifacts (essentially an indicator of the amount of artifact trampling or shatter present at the site) constitute 16.9% of all 1978 and 20.3% of all 1979 artifacts. The distributions produced when these unidentified artifact fragments are plotted for each year (Figures 49 and

50 in Appendix B) are very similar to those produced for Architectural artifacts (Figures 27 and 28, Appendix B). Once again, a square-shaped concentration is shown as occurring in the north-central section of the SE quad. Although the size of the concentration is smaller in 1978, when the distributions in each year are superimposed (Figure 51, Appendix B) there is good spatial overlap between the 1978 concentration and its adjacent artifact clusters and the overall size of the 1979 concentration.

Besides the main concentration in the SE quad, each year also shows a dispersion of artifact clusters to the south and west of the main concentration which also map adjacently to one another when superimposed. In the north half of the sample area the dispersions and patterns shown in each year are different. The 1978 artifacts are dispersed further into the NW corner of the NW quad than they are in 1979 and suggest no particular patterning to the light scattering of artifacts characterizing this area. In 1979, the linear bands of artifact clusters visible in the 1979 all-artifact, Kitchen, and Architectural artifact plots and which occur around the west, north, and east sides of the well area are also visible here as scattered clusters of artifacts within bands of very low artifact density (1 to 2 artifacts per two metre square collection unit). These clusters and patterns are not visible in the 1978 plot. When superimposed (Figure 51, Appendix B), the artifact clusters in 1978 and 1979 show little correspondence to one another.

The result of combining the above artifact distributions between years (Figure 48, Appendix B) is that the plot produced resembles parts of both years. The size, shape, and location of the main concentration in the SE quad and the clusters south and west of this most closely resemble the distributions visible in the 1978 plot. Dispersions and patterns in the north half, however, most closely resemble those in 1979. In this case, combining the results between years produces a plot which is additive in nature and which is capable of isolating patterns and dispersions of artifacts which are only partially visible in the plots for either year.

4.2.7 Conclusion

When the patterns and dispersions for each main artifact group are examined between years the overall general correspondence between years is surprisingly good. This correspondence between years (and between the different distributions for each artifact group) are most pronounced for the south half of the sample area where the densities between years tend to be comparable. More variations and discrepancies exist for the north half of the sample area where the densities of artifacts recovered between years tend to be significantly different. Artifact distributions recovered, then, can be simultaneously both similar and dissimilar between years depending on the artifact group plotted and the section of the sample area examined.

Almost all patterns presented in each artifact group plot correspond to the patterns presented in the all-artifact plots (Figures 7 to 9). Each year and each artifact group consistently indicates a dense square-shaped concentration of artifacts in the north-central section of the SE quad. The particular size of this concentration may vary but its location and shape are basically the same regardless of which year or artifact group is examined. A shadow concentration or ring-like dispersion of artifact clusters of lesser density is often shown as surrounding this dense, square-shaped concentration in the SE quad.

In the north half of the sample area most 1979 artifact group plots show two linear bands or a ring-like distribution of artifact clusters projecting northwards off this shadow concentration around the west and east sides of the well area. Where these linear bands or artifact clusters meet in the central north half of the sample area they tend to define the boundaries of a square-shaped low (or zero) density area. Neither the linear bands or the square-shaped low density area are visible in the 1978 plots. Artifact clusters which do occur in the north half of the sample area in 1978 often do map within the spatial confines of these patterns defined in 1979 but never do they suggest the actual patterns themselves.

When the artifact plots for each year are superimposed, each year is often found to show good spatial overlap for

the size, shape, and location of the main concentration area in the SE quad and for the lesser density shadow concentration (or artifact clusters) surrounding it. In the north half of the sample area artifact clusters tend to map adjacently between years or within one to two collection units (two to four metres) of one another. Still, despite this fairly good spatial contiguity, it is the 1979 artifact clusters which define the overall size, shape, and location of patterns in the north half of the site sample area.

When the results between years are combined, the plots produced are usually "additive" in nature - expanding and clarifying definitions of the size, shape, and location of artifact distributions and patterns (such as the main concentration in the SE quad and the shadow concentration surrounding it). Occasionally, the results are also "averaging" in nature - averaging the shape, size, and location of patterns to ones mid-way between the sizes and shapes described by individual distributions in each year. This usually occurs where the artifact densities are dramatically different between years (as they are in the north half of the sample area) and where the definition of patterns in each year is obviously affected by differential recovery of artifacts.

Although combining the results from each year tends to produce a third artifact distribution which is both an expansion of and hybrid of distributions found in either year,

combined artifact plots tend to bear more resemblance to the spatial distributions visible in the 1979 artifact plots than in the 1978 artifact plots. The main reason for this is again the better definition of the 1979 artifact patterns in the north half of the site sample area and the better artifact recovery rate in 1979 than in 1978. Very rarely are patterns defined by plotted distributions in either year lost or obscured by combining the results between years.

In the analysis conducted here the results support the idea that replicated site surface collection may be more capable of isolating important site artifact patterns and dispersions under conditions of extremely low artifact density than single site surface collection. Where artifact density is high, as it is in the south half of the sample area here, replicated site surface collection may not be as critical to the recovery and isolation of site artifact patterns and dispersions. In this study, replicated collection of high density areas only served to accenuate patterns and dispersions already visible in the artifact plots for each individual year's collection. Although some historical artifact groups had more restricted distributions than others, in this analysis all artifact groups examined consistently defined very similar patterns and dispersions. Given this situation, it is difficult to say that any one artifact group is any better or more critical than another in defining the overall patterns and dispersions present at the site.

4.3 COMPARING THE SPATIAL DISTRIBUTION OF ARTIFACTS TO THE KNOWN STRUCTURAL AND NONSTRUCTURAL FEATURES AT JENSEN'S FARM

4.3.1 Introduction

The all-artifact plots for each year and both years combined (Figures 11 to 13) present the best "general" view of the types of correspondences which can be observed between the archaeological surface distributions at the site and the original historical structural and nonstructural features associated with Jensen's Farm. Individual artifact group, class, or item plots (cf. Figures 22 to 82, Appendix B) present more unique variations on the types of correspondences observed in these all-artifact plots. Although some of the surface distributions examined may show good spatial overlap in terms of the locations, sizes, and shapes of the original feature areas when the Jensen's Farm schematic is superimposed on them, isolating some of these features without prior knowledge of their locations, sizes, shapes, structural nature, and use would probably be difficult, if not impossible.

In the first part of this spatial analysis (comparing the spatial distribution of artifact groups between years), it was found that each year consistently indicates similar patterns and dispersions of artifacts for the south half of the sample area where artifact densities are high and where artifact recovery is comparable between years. However, in the north half of the sample area where the density of arti-

facts recovered in each year is significantly different, the correspondences between the patterns and dispersions suggested in each year are much less pronounced. In this half of the sample area, the 1979 artifact plots were consistently shown to have better defined and more extensive patterns and dispersions than the 1978 artifact plots. Likewise, when the spatial distributions in each year are compared to the location of the original Jensen's Farm features, each year shows similar types of correspondences for the south half of the sample area but not for the north half of the sample area. The 1979 artifact plots consistently show better correspondences between the artifact distributions and the locations of the original feature areas than the majority of the plots produced for the 1978 artifacts. This is primarily due to the higher artifact recovery rate and better definition of artifact distributions in the north half of the site sample area in 1979. The combined years artifact plots also show better correspondences to these feature areas than the majority of the 1978 artifact plots.

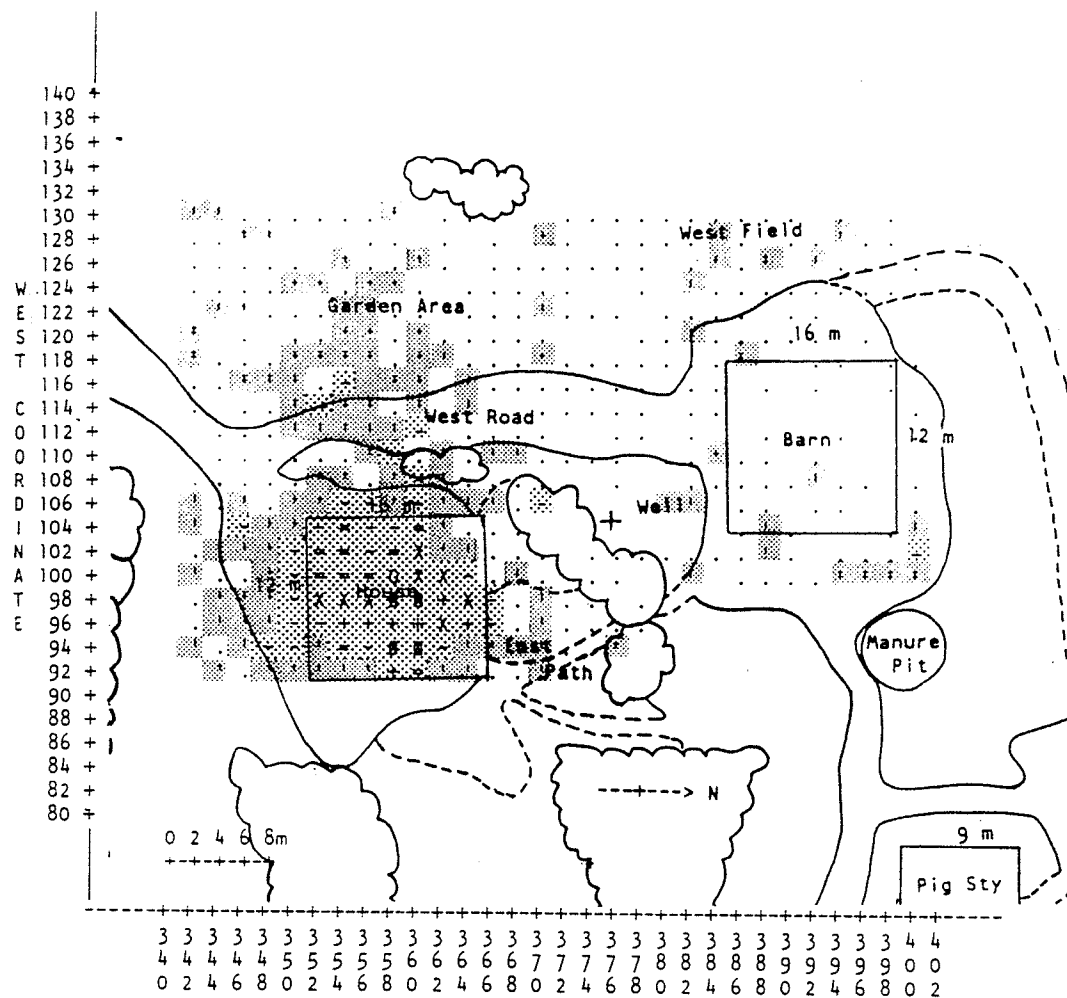
4.3.2 All Artifact Groups Combined

When the all-artifact plots for each year and the combined years are examined (Figures 11 to 13), artifact distributions in each plot show exceptionally good correspondence to the size, shape, and location of the original Jensen farmhouse, fairly good correspondence to the loca-

tion, size, and shape of the barn feature, and good partial correspondence to the locations of other feature areas such as the house yard, barn yard, garden, west road, east path, and west field areas. Each year's all-artifact plots show similar types of correspondences for the south half of the sample area where artifact densities are high and the artifact recovery between years is comparable. The density and definition of artifact distributions and features in the north half of the sample area are much better defined in the 1979 and combined years all-artifact plots than in the 1978 plot. As a result, combining the two years produces an artifact plot (Figure 11) which most closely resembles that for 1979 but which generally has better and more solidly defined feature areas.

The Jensen house feature corresponds to the dense, square-shaped concentration so clearly visible in the SE section of the site sample area in almost all artifact plots (cf. pp. 86 -118). In the all-artifact plots for each year, this house feature area is both high in visibility (the visible amount of materials present) and in focus (the clarity with which the distribution of these materials defines the boundaries of a particular feature). The image presented is a "positive" one - a high density area surrounded by contrasting areas of lower artifact density (the "shadow" concentration often referred to in the preceeding pages). In all three all-artifact plots this high density distribution

FIGURE 12:
1978
SPATIAL DISTRIBUTION
OF ALL ARTIFACT GROUPS
RECOVERED RELATIVE TO THE
ORIGINAL JENSEN FARM FEATURES



NORTH COORDINATE					
SYMBOL	ARTIFACT	DENSITY	SYMBOL	ARTIFACT	DENSITY
.....	1 -	3	000000	28 -	32
	4 -	9	XXXXXX	33 -	38
-----	10 -	15	000000	39 -	44
=====	16 -	21	000000	45 -	50
+++++	22 -	27	000000	51 -	53

TOTAL NUMBER OF ARTIFACTS PLOTTED: 2248

Figure 12: 1978 Spatial Distribution of All Artifact Groups Recovered Relative To The Original Jensen Farm Features

corresponds closely to the location, size, and shape of the original house feature. In 1978, the artifact concentration plotted is slightly smaller than the original house dimensions and indicates a small concentration as occurring along the south edge of the house (an area corresponding to the front entrance to the house). In 1979, the correspondence to the house dimensions is better and the concentration along the south edge of the house smaller. The combined years plot accentuates the types of distributions and correspondences observed in both of the plots.

In contrast to the house feature, artifact distributions corresponding to the original barn area present a feature which is low in visibility (ie., characterized by little visible surface material) and which ranges from poor focus in the 1978 all-artifact plot to good focus in the 1979 and combined years artifact plots. The image each figure presents is a "negative" one in which the low to zero artifact density area corresponding to the barn is defined by a surrounding area of higher artifact density (an area which defines not only the location, size, and shape of the barn but of the barn yard area as well). The dimensions of the barn are roughly approximated by all three of the all-artifact plots but are best defined by the 1979 and combined years artifact plots where the contrast between the high and low density areas is more pronounced.

The barn feature is one of the most important structural features at the site and potentially the only one which could indicate that the site is actually a farming component. However, due to its extremely low visibility (low to zero artifact density) it is also a feature which could be very easily overlooked. In this case, a significant feature is mapped by the absence rather than the presence of artifact concentrations. In contrast to the wood frame construction of the house, the Jensen barn was a chinked log structure which would have been regularly shovelled out. Architecturally little would remain and any items lost or discarded inside the barn would be more likely to end up in the manure pile or scattered over the field areas rather than inside the barn area itself (cf. Chapter 5).

Other Jensen's Farm features such as the house yard, barn yard, west road, garden, west field, and east path areas are not as clearly mapped in the all-artifact plots as the house and barn features above. Where artifact density is higher, as it generally tends to be in the 1979 and combined years artifact plots, the correspondences to the outlines and locations of these feature areas are more easily seen. The correspondences for these feature areas are always partial ones. It is mostly the road and pathway areas (or potential pathway areas) and the yard areas associated with dense people or vehicle traffic which tend to be mapped the most clearly. Concentrations defining these feature areas tend

to map within the boundaries of the original feature areas or along the grassy edges bordering them. The road/pathway areas most frequently mapped include the areas in front of the house (the south side of the house), the backyard of the house between the house and well, and between the house yard on the east and the garden area on the west (and the mid-section of the west road between these areas). The "shadow" concentration observed earlier as surrounding the house concentration and as stretching northwards around the well area is primarily responsible for defining these road/pathway/yard areas. In each year, the garden area shows up as a concentration of artifacts running parallel to the west road area while the west field is visible as a widely dispersed and low density distribution of artifacts.

Although the artifact distributions in each year tend to map the kinds of distributions one might intuitively expect to occur within each feature area, it would be difficult to isolate feature areas other than the house area without the aid of the Jensen's Farm overlay (cf. Figures 18 to 20, Appendix B). Most of the other features, and most often the house yard and barn yard areas, look simply like smearings of artifacts away from the main concentration areas (perhaps one due to the lateral displacement of artifacts through ploughing). The history of abandonment and destruction at Jensen's Farm in fact suggests that a number of factors may underlie the types of deposition and distributions of arti-

facts visible at the site. Loss, discard, occupation, abandonment, re-use, destruction of the original buildings, and land-levelling and land-filling activities all influenced the depositions observed at Jensen's Farm . The potential influence of each of these factors is further discussed in Chapter 5.

4.3.3 Kitchen Artifact Group

The artifact plots for the Kitchen group (Figures 22 to 24, Appendix B) produce results which are almost identical to those in the all-artifact plots examined above. As a result, with a few minor variations, the same observations and conclusions drawn concerning the all-artifact plots can also be made here for the Kitchen artifact group. At the outset of this study, a number of different Kitchen artifact classes and items were examined to see if their spatial distributions would map uniquely from one another or were associated with particular site areas or features. The result was disappointing. There are few truly unique distributions of artifacts which map special site areas (eg., refuse areas which might have occurred around the house or barn). A cross-section of the types of artifact classes or items plotted can be found in Appendix B.

Most Kitchen artifacts are made of glass, ceramic, or metal. Bottles account for most of the glass, tableware and cookware for most of the ceramics, and tin can fragments for

most of the metal (Tables 4, 15 -17, 23 and 24). Although the artifact plots for each of these classes (Figures 52 to 64, Appendix B) vary slightly in the densities of artifacts plotted, each plot essentially presents similar patterns of distribution and resembles reduced versions of the overall Kitchen artifact group plots. The distribution of cookware ceramics shows a slight variation to this, clustering more in and along the mid-section of the west road area (in the grassy edges of the garden and backyard areas bordering the road). Initially it was hoped that items such as tincans and glass bottle fragments would isolate potential midden areas and tableware ceramics the house or house-related areas. Instead, each class consistently maps similar areas. It is the house feature that is most densely mapped, followed by the house yard, and path/roadway areas (or the grassy edges of areas such as the garden which border on these paths/roadways). The barn area is mapped as a zero density area relatively devoid of Kitchen-related artifacts.

Figures 54 to 59 in Appendix B show the distributions which result when different types of bottle functions and colours are plotted. There are few observable differences. Alcohol bottle fragments tend to map within the confines of the house feature with a few fragments scattered to the south of the house (the front entrance to the house). Pharmaceutical bottles follow a similar pattern concentrating inside the house area with most scatters elsewhere occurring

along the grassy edges of the road area west of the house. Food bottles (consisting of condiment and milk bottles) tend to scatter more throughout the north half than the south half of the sample area. They are found inside the north half of the house, in the grassy areas near the well and in the backyard of the house, and along the grassy edges of the barnyard and west field areas.

Different bottle colours are also potential indicators of function. Although not universally true on the site, amber coloured glass tends to be associated with beer bottle glass and green-yellow/green bottle glass with modern soft-drink bottles such as 7-up (and, therefore, potentially an indication of post-abandonment deposition). Turquoise-tinted and manganese-tinted glass, on the other hand, tend to be associated with older types of bottle glass and, therefore, potentially indicate earlier deposition patterns associated with the Jensen family occupation.

Again, when these different types of bottle colours are plotted (Figures 55 to 59, Appendix B), there is little difference between their distributions. Each bottle colour maps most densely inside the house area and to varying degrees inside or along the grassy edges of the roads/paths in the house yard, west road, barnyard, and east path areas. Manganese-tinted bottle glass tends to be restricted to the house area while green-yellow/green bottle glass tends to have the most extensive distribution stretching

well into the north half of the sample area. Amber coloured and turquoise-tinted glass concentrate inside the house and within the central sections of the site sample area.

The distribution of bottle bases were originally examined in an attempt to isolate core areas of deposition. It was assumed that such heavy, thick fragments of bottle glass would be less prone to artifact fragmentation and lateral displacement due to ploughing than the small body fragments which constitute so much of the bottle glass collected. When plotted (Figure 53, Appendix B) two areas of concentration were isolated. The main concentration of bottle bases occur inside the house feature while a smaller concentration is shown as occurring in the garden area along the edge of the road west of the house feature. When these concentrations are compared to the distribution of all bottle glass (an indication of the amount of shatter and displacement characterizing distributions at the site) (Figure 52, Appendix B), it can be seen that all other bottle glass disperses outwards from around the edges of these two concentration areas.

In a similar manner, the distribution of all Tableware ceramic plate fragments and all Tableware plate bases (Figures 62 and 63 in Appendix B) were plotted and compared. The results are quite similar to those produced for the all-Kitchen artifact and Kitchen Tableware artifact plots (Figures 22 to 24 and 60). Other types of ceramic tableware

items (such as bowls, cups, saucers, etc.) also present similar types of distributions. Plate bases, like bottle bases, were also assumed to be less prone to artifact fragmentation and lateral displacement due to ploughing and, therefore, good potential indicators of core deposition areas. The results obtained show that the core area of concentration occurs inside the centre of the house area with one small concentration occurring immediately outside the NE corner of the house near the east path area. Few scatters were found elsewhere. When the all-plate fragment and ceramic tableware plots are compared to these plate base plots, the dispersions observed are more broadly dispersed outwards away from these centres of deposition but few scatters appear elsewhere.

In conclusion, the Kitchen group artifact plots (like the all-artifact plots) most densely and most clearly map the house feature as a feature high in visibility and focus. The barn area is mapped as a low to zero density area almost completely free of Kitchen-related artifacts and surrounded by a low density scattering of artifacts which define its periphery and the extent of the barnyard. Partial correspondences can be found elsewhere along areas corresponding to the house yard, garden area, and grassy edges along the road and pathway areas.

When individual classes, items, or artifact-specific attributes are plotted, the patterns produced are similar to

those observed in the Kitchen artifact group plots but their locus of concentration (and possibly original deposition) are more clearly defined. The main locus of concentration/deposition is found to be inside the centre of the house with smaller areas of concentration occurring immediately south of the house (the front entrance to the house) and to the north of the house (the backyard area). Scatters elsewhere tend to occur within the house yard area and along the grassy areas bordering the edges of the road/pathway areas in the vicinity of the garden area (eg., the cookware ceramics and green-yellow/green bottle glass artifact plots, Appendix B). Different Kitchen classes, items, or attributes do not tend to map separately from one another in unique areas (such as potential refuse areas). Instead, all plots most clearly suggest the house feature. This feature is easily seen whether the original features are known or not. Other feature areas are more difficult to discern.

4.3.4 Architectural Artifact Group

Figures 26 to 28 in Appendix B present the plotted distributions for all architectural group artifacts. The results are again similar to the all-artifact plots although the densities plotted are lower, the dispersions not as extensive, and the areas of concentration generally more spatially delimited. The plots for each year clearly suggest two areas of concentration - one in the SE section of the

sample area corresponding to the Jensen' Farm house and one in the north half of the sample area corresponding to the barn/barn yard area.

When the Jensen's Farm schematic is superimposed on these distributions the house location, size, and shape is closely approximated. In each year, it appears as a high density area surrounded by a lesser density clustering of artifacts. The image presented is a positive one, high in visibility and high in focus. Although artifact scatters are generally visible in the vicinity of the barn in the 1978 Architectural artifact group plot, none of these clearly delineate the barn feature itself. In the 1979 plot, the artifact scatters fall in and around the barn feature but do not clearly define the location, shape, or size of the feature. Unlike the all-artifact plots, these Architectural group plots map the barn area as an area of concentration rather than as a low to zero density area surrounded by a higher density area of artifacts.

In 1978, a small concentration of artifacts is suggested along the south edge of the house (the front entrance area) and at the back north-east corner of the house. Although most artifact scatters tend to map within the confines of the house yard, barn yard, and west road areas or in the grassy edges along their periphery, these features are only vaguely suggested by the artifact distributions. The same observations can be made concerning the 1979 artifact plot

except that in this plot the artifact density is higher in all areas.

In the combined years plot (Figure 26, Appendix B), all feature areas become more clearly and more densely defined. The high density area corresponding to the house area is better defined in terms of its size, shape, and location. The house yard, west road, and barn yard areas and the tendency for artifacts to cluster along their peripheries are more solidly and densely defined. The garden and west field areas exhibit more random scatterings of artifacts. The most significant difference between the combined years plot and those for each year is the definition of the barn area. In the combined years plot, the barn area is characterized by more visible artifact clusterings both inside and just around the outside of the feature on the west and south-east. Although the shape and size of this barn feature is not suggested, the location is better defined than it was in either year. The location of this clustering is clearly visible even without the Jensen's Farm overlay.

As in the Kitchen artifact group, specific Architectural artifact classes were mapped to see if they would show unique distributions which would be helpful in isolating the original feature areas. Figures 65 to 68 in Appendix B present the artifact distributions for nails, all window glass, metal reinforced window glass, and mortar/chinking fragments.

Nails represent 10.0% of all 1978 and 30.3% of all 1979 architectural artifacts (Table 5). Nails were recovered in significantly different numbers in each year with the 1979 collection recovering nearly four times as many nails. These differences between years are clearly visible when nails are plotted for each year. In 1978, clusters of nails are only found inside the house area and to the south of it (the front entrance). In 1979, the distribution of nails is denser everywhere and maps not only the main house area and the south edge corresponding to the front entrance but clusters corresponding to the house yard, barn yard, west road, east path areas and the grassy edges along their peripheries (particularly the west road and house yard areas). Clusters of nails are found along the west edge and south-east corner of the barn vaguely suggesting its location and size (something not obvious if the overlay is removed). In this case, if the 1978 collection had been the only surface collection made, the results produced would have been misleading concerning the spatial distribution of nails. The combined years plot, of course, is almost identical to the 1979 plot.

Window glass was the most frequently recovered architectural material (72.4% in 1978 and 52.1% in 1979) (Table 5). The distribution of window glass is roughly similar in each year. Each year indicates the densest concentration of window glass as occurring inside the house area with some scatters to the south and west of this concentration (within the

house yard area). A second and quite separate concentration is located in the north half of the sample area in the vicinity of the barn but the distributions for this are slightly different in each year. In 1978, the densest concentration in this area is found inside the east half of the barn and throughout the east half of the barnyard (in the vicinity of the original barn entrance and main vehicle park area). In 1979, clusters occur inside the barn area and in the barnyard around it. Both years vaguely suggest the location of the barn feature but not its exact location, size, or shape. Combining the results between years produces an artifact plot for window glass which accenuates the shape, size, and location of the house feature and also clearly suggests the extent, size, shape, and location of the house yard, west road, and barn yard areas. The concentrations both in and around the barn are more pronounced but its size, shape, and location are not clear.

Metal-reinforced window glass (Figure 68, Appendix B) is a sub-category of window glass which does map uniquely in each year either inside or around the periphery of the barn. The distribution of this material is best observed in the combined years artifact plot. Mortar/chinking is also an architectural material which maps uniquely in each year. Two areas of clustering occur - one either inside or around the periphery of the barn and another at the junction of the west road and house yard areas. Although the patterns and

dispersions for each year are a little different, they are complimentary. When the results from each year are combined, the distributions already observed become even more clearly defined. Of all artifact groups, classes, items, or artifact-specific attributes examined, mortar/chinking and metal reinforced window glass are the only two artifactual materials which uniquely map the barn area itself. It is a feature difficult to discern no matter what type of artifactual material is plotted. In contrast, many types of artifacts either uniquely or clearly map the house feature and its location, size, or shape are almost always easy to isolate.

4.3.5 Furniture, Arms and Ammunition, Clothing and Personal Artifact Groups

Both the Furniture and Arms groups (Figures 30 to 35, Appendix B) are low density groups which uniquely map either the inside or the periphery of the house area. The arms group (consisting of fired cartridges) probably represents post-abandonment use, perhaps as a hunting blind as the shoreline of Lake Dauphin is not far from the house. When the results from each year are combined for both of these artifact groups, the plot produced is a better, more accented version of the pattern visible in either year. The location, size, and shape of the house feature are more clearly suggested as a result.

The 1979 collection produced more than twice the number of Clothing group artifacts than were collected in 1978 (cf. Table 3). This is clearly visible when the Clothing group artifacts are plotted (Figures 37 and 38, Appendix B). Most clothing items (consisting mostly of shoe fragments, clothing apparel fragments, or clothing attachments such as buttons, buckles, eyelets, or grommets) tend to cluster most densely inside the central house area indicating the right location, approximating the size, but poorly suggesting the shape of this feature. Scatters spread out elsewhere away from this area in a ring-like dispersion which tends to map the edges of the house feature, the east path between the house and barn, the south edge of the house yard and the garden/west field areas bordering the west road and barn yard. A few scatters are found inside the barn in 1979 but are too few to suggest any kind of feature. Overall, the 1979 plot presents a better definition of these patterns and correspondences. The combined years Clothing artifact group plot (Figure 36, Appendix B) accentuates these patterns and correspondences. Without the Jensen's Farm overlay, all of these patterns are clearly visible and may suggest "pathways" of some kind but their correspondence to or definition of particular features is not clear.

The 1978 and 1979 collections produced comparable numbers of Personal group artifacts (cf. Table 3). When plotted (Figures 41 and 42, Appendix B), the results produced are

both similar and dissimilar. In each year, the majority of Personal artifacts fall either within the house area (particularly the south half) or near the house feature. They clearly suggest the location and hint at the shape of the house feature but suggest one slightly smaller than the actual house dimensions. In 1978, scatters of clothing artifacts elsewhere appear restricted to the garden/west field areas and house yard areas (particularly west and north of the house) bordering the west road and barnyard areas. In 1979, these scatters fan out westwards from the house concentration in a V-like pattern which maps the mid-section of the west road area and the south end of the garden area bordering the road leading out of the farm to the south. Combining the results from each year produces an artifact plot (Figure 40, Appendix B) which is a blending of these two types of distributions and which accentuates the observations already made above.

4.3.6 Activities Artifact Group

The Activities group is also a group where major discrepancies were observed in the number of artifacts collected in each year (cf. Table 3). About one and half times the number of Activities artifacts were recovered in 1979 than were recovered in 1978. This is apparent in their distributions when the Activities artifacts from each year are plotted (Figures 45 and 46, Appendix B). In each year, the densest

concentration of artifacts again occurs inside the house feature area, mapping the location but poorly suggesting the size and shape of the feature. Artifact scatters elsewhere tend to follow along and fall within the borders defining the house yard, barn yard, west road, and garden/west field areas bordering the west road.

In each year, very few artifacts actually fall within the barn feature itself, although in the 1979 plot the barn is again defined as a zero to low density area surrounded by a scattering of artifacts which loosely define its location, size, and shape. In the 1979 plot, the house feature is high in visibility and relatively low in focus while, ironically, the barn area is one which is almost nil in visibility and yet higher in focus than the house area. In the 1978 plot, the barn feature is not suggested at all. Combining the results from each year produces a plot (Figure 44, Appendix B) which accentuates the distributions and correspondences observed in the 1979 plot. The house area becomes more clearly and more densely defined as do the scatters around the barn area and along the length of the west road area (and along the garden/west field areas bordering it). Two smaller concentrations of artifacts are also shown as occurring to the south-east and north-east of the house (in the vicinity of the house entrances). These areas of clustering were not visible in the individual plots for each year.

The Activities group is a group made up of several different types of artifact classes. Transportation related artifacts were the largest class of Activities artifacts recovered in each year. These consist mostly of battery fragments and metal related auto body fragments (cf. Table 7). Figure 69 in Appendix B presents the transportation artifact plot for the combined years. The densest concentration area again proves to be the house area and artifacts elsewhere scatter most densely westwards from here defining the extent of the house yard and west road areas and clustering densely along the edge of the road in the garden/ west field areas. Very few transportation artifacts were found in the vicinity of the barn. More had originally been expected to occur in this area. Battery fragments (plot not included here) tend to map the inside of the house area (perhaps representing post-abandonment storage use or dumping). Metal automotive body fragments (plot not included here) tend to map the areas of clustering observed above in the garden/west field areas bordering the west road area. Although metal fastenings such as bolts, screws, nuts, etc. were coded as Architectural hardware, examining Figure 79 in Appendix B suggests that perhaps these fastenings are transportation related and represent vehicle loss since they so clearly map the shape and location of the west road area.

Stable/barn and Farm tools classes were classes which were originally expected to map the barn, barnyard, garden,

and west field related areas. When the artifacts from the site were processed and coded, they were found to consist of primarily fence wire, farm machinery, and harness related items (cf. Table 21 Appendix A). Figure 69 in Appendix B shows the overall distribution of these stable/barn and farm tool artifacts. In this case, very few artifacts fall inside the house or the barn. Most of the artifact scatters occur in the backyard area behind the house, along the east path area, and west of the house in the mid west road and garden areas. Although the distributions of transportation related artifacts and stable/barn and farm tool artifacts are slightly different, they are complimentary. The hope that the two types of distributions would isolate particular feature areas - especially the barn and barnyard areas - is not realized in these artifact plots. Again, the artifact plots reflect similar, consistent types of patterns and correspondences not uniquely different ones.

4.3.7 Unidentified Artifact Group

The Unidentified artifact group represents 16.9% of all 1978 and 20.3% of all 1979 artifactual materials recovered from Jensen's Farm. It also represents some indication of the kind of artifact shatter present at the site. Given the higher number of unidentified artifact fragments recovered in 1979 (cf. Table 3), the artifact plot for this year shows denser and more extensive scatters of artifacts than the

1978 plot (Figures 49 and 50, Appendix B). In each year, the densest concentration of artifact fragments occur inside the house feature with small clusters occurring to the south and north of it (in areas corresponding to the entrance ways). The house size, shape, and location are very well defined in the 1978 plot and less clearly defined in the 1979 plot where a more linear shaped distribution is suggested. Scatters elsewhere follow a similar pattern to those already observed, mapping the extent of and along the boundaries of the house yard, west road, and barn yard areas. Clustering occurs most frequently along the edge of the west road areas. In contrast to the fairly high visibility, good focus, and positive image with which the house feature is defined, the barn feature is not suggested at all. Even combining the results between years (Figure 48, Appendix B) does not suggest the barn feature. The house area and the clusters along the edges of the garden/west field and house yard areas, on the other hand, are all much better defined by the combined years plot.

Unidentified glass fragments were the most frequently recovered accounting for 67.7% of all 1978 and 56.8% of all 1979 unidentified materials (Table 8). When plotted (Figure 70, Appendix B), the results produced are very similar to the Unidentified artifact group plots. When unidentified metal fragments are plotted (Figure 71 to 73, Appendix B), the results are little different. Unidentified metal ac-

counts for 10.5% of the 1978 and 34.3% of the 1979 unidentified artifactual material. The dramatic difference in the recovery rate between years is clearly noticeable in the artifact plots presented in Appendix B. In 1978, unidentified metal fragments were recovered from the central house area and in a few random scatters west of this feature. In 1979, the distribution of unidentified metal is much denser and more extensive and resembles a reduced version of the Unidentified group plot describing much the same types of patterns and correspondences to the original features. The combined years plot for unidentified metal also resembles the distributions observed in the 1979 Unidentified artifact group plot.

4.3.8 Melted and Burnt Artifactual Material

Melted and burnt artifactual materials are a unique category representing 4.5% of all 1978 and 3.7% of all 1979 artifacts recovered from the site (Table 20). Glass and ceramic artifacts are the only artifacts which exhibit heat treatment or burning at the site. When the distribution of melted glass is plotted (Figure 74, Appendix B), artifacts tend to exclusively map the house feature. In each year, this distribution closely approximates the size, shape, and location of the house feature. The combined years plot accentuates this correspondence and the house feature appears as a solidly and clearly defined square-shaped concentra-

tion. Some artifacts appear randomly scattered around this concentration particularly to the south and the west (in the house yard and and mid west road areas). If this concentration, represents a centre of burning, then these scatters elsewhere may well be an indication of the degree of lateral displacement due to ploughing. Although Mr. Kostiew did not mention burning whatever debris was left behind after the house was moved and the area levelled, the concentration plotted in Figure 74 suggests that this did happen. The plotted distributions for burnt ceramic materials present much the same kinds of distributions and patterns (Figure 75, Appendix B).

4.3.9 Straw, Manure, and Soil Discolourations

In 1978 when the site was first surface collected, concentrations of straw, manure, wood chips, stone, bark, and dark soil discolourations were noticed in the vicinity of what is now known to have been Jensen's Farm. Figure 76 in Appendix B shows these distributions with the Jensen's Farm schematic superimposed on top of them. The correspondence for these "noncollectibles" to the Jensen's Farm features is a fairly good one. Although it was originally expected that the wood/bark concentration might correspond to the barn area and the wood/stone/manure/discoloured soil area with the manure pit, it is found that the first corresponds to the location of a small clump of trees or bushes just west

of the garden area and the latter concentration to the location of the barn and the barn yard area just east of the barn.

4.3.10 Conclusion

When the spatial distributions for different artifact groups, classes, items, or artifact-specific attributes are plotted and compared to the original Jensen's Farm features the results obtained simply represent variations of the types of patterns and correspondences visible in the all-artifact plots (Figures 11 to 13). Besides the house feature, there are very few other unique distributions which are mapped.

Almost every artifact plot examined here and included in Appendix B clearly maps the location of the house feature. It is almost always a feature high in visibility (the visible density of remains present) and focus (the clarity with which the feature's boundaries are defined). It is presented either as a solitary concentration of artifacts or as a concentration of artifacts surrounded by lesser density concentrations or clusters of artifacts. As such, it always presents a "positive" image. The plots which most clearly delineate the size, shape, and location of the house feature are the all-artifact plots, the Kitchen group, class, and items plots, the Architectural group, and the Unidentified artifact group plots. Originally it was hoped that differ-

ent types of artifacts would map separately from one another, uniquely indicating specific Jensen's Farm features or special site areas (such as refuse pits) not visible in the aerial photos of Jensen's Farm. For example, it was hoped that tincans and glass bottle fragments would map the refuse area. Instead, they map the inside of the house feature.

Distributions for specific items such as bottle bases and ceramic tableware plate bases were plotted in the hope that these would indicate core areas of concentration or deposition. It was assumed that being heavier, bulkier fragments they would be less prone to artifact fragmentation and lateral placement due to ploughing than the smaller, more fragile body fragments. The area they indicate also corresponds to the house area. All other bottle glass and ceramic tableware fragments disperse outwards from around this core area.

Melted glass, burnt ceramics, furniture, and arms and ammunition artifact plots also uniquely isolate the house feature. The melted and burnt materials probably represent the post-removal stage for the house area - a period when Mr. Kostiew appears to have piled up and burnt any remaining debris. Judging from the good definition these melted materials present for the house feature and the few artifact scatters found past it, it would appear that the amount of ongoing lateral displacement due to ploughing is minimal at

the site. The house was removed in 1962 and the debris left behind probably burned shortly after. (There are no visible remains of either in the 1962 aerial photograph). The area has been ploughed almost continually since that time. Arms and Ammunition artifacts (fired cartridges) also probably reflect post-abandonment use of the house. As already noted, the house may well have been used as a hunting blind as it is close to the shore of the lake where waterfowl are plentiful.

Unlike the house area, the barn area is almost always mapped by an absence of artifacts. In the all-artifact and Kitchen group plots, for example, it is mapped as a low to zero density area surrounded and defined by a higher density clustering of artifacts which, in turn, often define the extent of the original barn yard area. Typically, the barn is a feature low to nil in terms of visibility and which ranges from low to good focus depending on the artifact plots examined. The image presented in both the all-artifact and Kitchen artifact plots is a "negative" one as opposed to the "positive" image appearance of the house feature area. In the Architectural group plots a slightly different situation is presented. Here the general location but not the exact shape or size of the barn is indicated by a clustering rather than an absence of artifacts which map separately from the artifact distributions associated with the house feature. Of all artifact groups, classes, items, or artifact-

specific attributes examined, architectural-related chinking/mortar and metal reinforced window glass are the only two artifactual materials which are uniquely associated with the barn. The "noncollectible" surface soil discolourations and concentrations of straw, manure, stone, and wood observed in 1978 also correspond to the location of the original barn.

Artifact scatters and clusters elsewhere throughout the site sample area tend to map either within or around the grassy edges of the house yard, barn yard, west road, and garden/ west field areas. Most often it appears that these clusters tend to be associated with either actual paths/roadways (such as the east path between the house and the barn) or with potential ones (such as the area between the house and the garden area west of it, or the areas around the well). Next to the house area, the next densest clustering of artifacts appears to occur in the central area of the farm - the house yard west of the house, the mid-section of the west road, and the edges of the garden area bordering it. Other minor clusterings of artifacts also sometimes appear south and north of the house in areas associated with the original entrances to the house, east of the barn in the area associated with the barn entrance and main vehicle park area, and in the garden/west field areas bordering the west road.

Generally speaking, artifact densities tend to be higher in the south half of the sample area and Jensen's Farm features associated with artifact distributions in this half of the site are both more densely and clearly defined than features associated with the lighter artifact distributions in the north half of the sample area. Overall, more artifacts were recovered in 1979 than in 1978. When different artifact distributions are plotted, the differences in the number of artifacts recovered in each year appears to have originated from a differential artifact recovery rate in the north half of the site sample area. The 1979 plots show a denser and more extensive distribution of artifacts in this area. This also means that definition of the original features tends to be better in the 1979 artifact plots particularly in the north half of the site sample area. The greatest discrepancies observed between years occur in the architectural nails and unidentified metal artifact plots. In these plots the 1978 distributions are restricted to the south half of the site in or near the house feature while the distributions in 1979 are more extensive and better associated with all Jensen Farm feature areas. Combining the results from each year produces plots which accentuate and clarify distributions and their correspondences to the original Jensen Farm features. Occasionally, the combined years plots also indicate a feature (eg. the barn) which was not clearly visible in the plots for either year.

The analysis conducted here suggests that replicated collection may be necessary to isolate low artifact density features such as the barn in this study. Due to the differential recovery of artifacts in each year the 1979 artifact plots consistently show more extensive and denser distributions of artifacts which tend to correspond more closely with the original Jensen's Farm features. Combining the results from each year produces plots here which most closely resemble those for 1979 but in which features become better and more clearly defined than they were in the plots for either year.

In Analysis A, the artifact content for each feature area consistently reflected the domestic, structural nature of the house feature. Here in the different artifact plots, it is the house and house-related areas which are the most densely and most clearly defined. The house appears to be the main source of artifacts recovered and the main feature mapped. The barn is defined by a paucity of domestic related artifacts and by its own unique concentration of architectural chinking/ mortar and metal reinforced window glass.

It is difficult to say how much of this correspondence observed between the different artifact distributions and the original Jensen's Farm features is a reflection of the original uses and locations or how much of this correspondence is artificially produced by Mr. Kostiew's building removal/ destruction, land-filling, and land-levelling activi-

ties. The house concentration with its high density and clearly defined outlines seems suspiciously too well defined. Tincans and glass bottles which might have been expected to occur outside the house, occur inside the house. Filling in the shallow basement area underlying the house with surrounding soil and debris may have caused part of this high concentration of artifacts and the clarity with which the house can be defined. The well defined concentration of melted materials in this area also suggests that debris was pushed into or piled on top of the original basement area and then burned.

The scattering of artifacts around, within, and along the road/pathway areas associated with the house yard, west road, and garden/west field areas may also be a reflection of Mr. Kostiew's land-levelling activities (ie., the use of his tractor along these same roadways). Perhaps the clearest indication of this are the Unidentified artifact group and Unidentified artifact class plots. The Unidentified artifact plots are a good indication of the amount of artifact shatter or "trampling" present at the site. In this case, they suggest a smearing of artifacts outwards around and west of the house feature. There are almost none in the vicinity of the barn. Collapse and removal of the barn post-dates the removal of the original house by about one year. (In the 1962 aerial photograph available for Jensen's Farm, the house has been moved to the far south end of the quar-

ter-section and its original foundations scarified and levelled. The barn, however, was still left standing.). The barn is often mapped as a "negative" area (ie. an area low to zero in artifact density) surrounded and defined by higher density clusterings of artifacts - very similar to the flow of floodwaters and the subsequent deposit of river silts around a standing structure. Some of these aspects will be discussed further in the following chapter.

DISCUSSION

5.1 THE STATISTICAL COMPARISON OF ARTIFACT CONTENT BETWEEN YEARS

In hindsight it may have been better to postulate that "broad general similarities" would be discovered between years (cf. Riordan 1982), rather than results with no significant statistical differences. Where statistical tests were conducted in this thesis (Chapter 3), the results obtained consistently indicate that each year samples different populations of artifacts. Statistically-speaking, the results for each year are different in terms of the number and kinds of artifacts recovered. Archaeologically-speaking, however, there are broad similarities between years in terms of the most to least abundant groups of artifacts recovered.

In each year, the Kitchen artifact group accounts for almost half of all artifactual materials collected (55.2% in 1978 and 47.2% in 1979). Unidentified artifacts (or artifact shatter) account for the next largest group of artifacts (17.0% in 1978 and 20.3% in 1979), followed by Architectural related materials (16.9% in 1978 and 18.2% in 1979). Activities group artifacts (which include the main

indicators for the presence of farming at the site) make up less than 10.0% of the artifacts collected in each year (6.9% in 1978 and 9.1% in 1979), while Personal/Tobacco pipe, clothing, furniture, and arms groups together make up the other approximately 5.0% of artifacts recovered in each year (4.0% in 1978 and 5.2% in 1979) (Table 3, chapter 3).

In this study it is the range and nature of variation between collection results which is more revealing than the actual chi-square values obtained or statistical tests applied. Implicated in the results obtained here is the issue of "comparable units" (cf. Naroll and Cohen 1970), an issue which plagues all statistical analysis in archaeology. It goes without saying that one artifact does not, in fact, equal ONE artifact. By their very nature, archaeological artifacts are fragments; rarely are artifacts complete objects. Since the degree of artifact fragmentation is dependent on the type of material and the shattering action involved, no object is subject to the same degree of fragmentation. This means that at the most basic level of analysis, artifacts being compared are not, in fact, comparable. In order to do analysis as archaeologists we must assume they are. This introduces a basic bias into archaeological analysis that cannot be controlled or compensated for and which alternatives such as artifact weight do not resolve. Often the alternatives archaeologists use in an attempt to overcome this problem only re-state the problem in a new way.

Archaeologists in their zeal to produce significant, and hopefully scientific, results often seem to lose sight of this basic fact, and along with it the caution which should attend any application of statistics. Fishing for significant statistical results by indiscriminately applying a barrage of statistical tests is un-statistical at best, and defeatist or misleading at worst. Statistics are an aid to explanation not the explanation itself. They should never dismiss, deny, or overwhelm common sense. Had only the statistical tests and results been of any meaning or relevance here, some important archaeological but statistically insignificant results would have been overlooked or dismissed. As it is, some of the statistical results obtained here may be more a reflection of artifact fragmentation and the problem of "comparable units", than reflections of the variations inherent in replicated site surface collection (cf. Naroll and Cohen 1970).

In the present analysis, the 1979 surface collection produced approximately 18.1% more (or 408 artifacts more) than the 1978 collection. Although the hypothesis of artifact fragmentation cannot completely explain this large a difference in collection results, it probably has an indeterminate effect on them. Looking at the basic differences in the number and percentages of "artifacts" collected in each year can help to illustrate this point.

The main differences between the two surface collections lies in the number of Architectural, Unidentified, and Activities group artifacts collected. Of the 408 additional artifacts collected in 1979, 102 were architectural artifacts, 158 were from the unidentified artifact group, 85 were activities-related artifacts, and the rest were randomly distributed throughout the rest of the artifact groups examined. The increase in these groups in 1979 represents an increase of 26.8% in architectural artifacts, 41.5% in unidentified artifacts, and an increase of 54.5% in activities-related artifacts over those collected in 1978. Upon closer examination, it was found that the major differences between these groups in each year were due to the far greater number of metal artifacts recovered in 1979.

Within the Unidentified artifact group, unidentified metal artifact fragments account for the greatest single increase in artifact counts between years. In 1978 only 40 of these extremely friable metal fragments were recovered in contrast to the 185 fragments recovered in 1979 (Table 8, chapter 3). The ease with which these metal fragments broke posed a problem during artifact identification and coding, as no doubt they had before they ever reached the lab (in perhaps several more pieces than they were collected in). In a case like this, artifact fragmentation obviously has an effect on the results obtained. However, the difference in the numbers recovered in each year is too dramatic to only

be the result of artifact fragmentation. There may be other factors, such as collection method discussed below, which are also responsible for some of this variation.

In terms of the Activities group artifacts collected, it is again the artifacts made out of metal which account for most of the differences between years (cf. Tables 10 and 11, Appendix A.3). In 1978, 87 metal activities-related artifacts were recovered while in 1979, 181 were recovered. These metal artifacts belong to categories such as metal auto body parts (transportation), stable/barn related items (in particular, fence wire), and miscellaneous metal hardware items (Table 7, chapter 3). In 1979 significantly more nails and metal construction hardware items (fastenings such as nuts, bolts, screws, etc.) were recovered than in 1978. Only 38 nails and 16 metal construction hardware items were recovered in 1978 in contrast to the 146 nails and 51 metal construction hardware items recovered in 1979. Altogether the difference in unidentified, activities-related, and architectural-related metal artifacts account for 332 (or 81.4%) of the 408 more artifacts recovered in 1979.

While artifact fragmentation or fragility may be a factor underlying the differences in unidentified metal artifacts recovered, it is less of a factor underlying differences in the number of nails, metal fastenings or construction hardware, etc. recovered in the other artifact categories. Artifact visibility in terms of colour or artifact size also

do not seem plausible explanations. If anything, the crop cover in 1979 should have resulted in much worse overall visibility (let alone visibility in terms of colour) than in 1978 when there was no crop stubble to hamper collection. Yet, it is in 1979 that the largest number of metal artifacts were recovered. During coding only nails were measured and, despite the large difference in numbers, the range of sizes recovered were much the same in each year. In terms of other metal objects, such as metal auto body parts, the pieces recovered in each year appeared to be of the same size ranges but were also far more numerous in 1979. The argument originally put forward by Ammerman and Feldman (1978: 736) that artifacts of larger size tend to be collected in the first collection and smaller pieces in the second collection does not seem to be supported here, just as it was not supported by Riordian's examination of surface-collected materials (Riordian 1982).

The situation in this study is comparable to that found in Riordian's study (1982). Riordian also found that it was the second collection, and not the first surface collection made one year earlier, which produced significantly more artifacts. This result was as unexpected for Riordian as it was here. When Riordian examined his surface collection results more closely the number of lithic waste flakes, particularly unutilized flakes, proved to be the major difference between collections. Artifact visibility (ie.,

artifact size) did not satisfactorily explain these differences and there seemed no individual factor which could satisfactorily explain the differences in the results observed between years. When Riordian deleted waste flakes from his comparisons between collections, the resulting collections were much more similar to one another.

In this study when metal artifacts are deleted from the comparison of artifact groups between years (Table 13), the chi-square value obtained is much lower than that obtained for the same table earlier (Table 3, chapter 3). The chi-square value still indicates that the collections sample significantly different populations of artifacts, but this time the difference is due to the greater number of nonmetal artifacts recovered in 1978 than in 1979. The differences in counts between years are not as dramatic as those for metal and nonmetal artifact groups, and on closer examination proved to be differences in the number of Kitchen tableware ceramics, Kitchen glass bottle fragments, and architectural-related window glass, nonmetal construction materials, and chinking recovered between years. These artifacts are all composed of fairly fragile material subject to differential breakage, an aspect which again may help to explain at least part of the differences observed between years. On the other hand, it is still obvious that 1979 produced more Clothing artifacts - those rubber-backed cloth and leather shoe fragments which some collectors in 1978 did not look upon with great relish. "Collector bias" may be a

TABLE 13
NONMETAL SOUTH ARTIFACT GROUPS BY YEAR

SOUTH ARTIFACT GROUP	COUNT		YEAR		ROW TOTAL
	ROW	PCT	1978	1979	
	COL	PCT			
	TOT	PCT	1	2	
PREHISTORIC	1	I	I	I	4
		I	25.0	I 75.0	0.1
		I	0.1	I 0.2	
		I	0.0	I 0.1	
KITCHEN	2	I	I	I	1804
		I	938	I 866	52.7
		I	52.0	I 48.0	
		I	53.5	I 51.9	
ARCHITECTURAL	4	I	I	I	608
		I	326	I 282	17.8
		I	53.6	I 46.4	
		I	18.6	I 16.9	
FURNITURE	5	I	I	I	25
		I	10	I 15	0.7
		I	40.0	I 60.0	
		I	0.6	I 0.9	
ARMS	6	I	I	I	24
		I	11	I 13	0.7
		I	45.8	I 54.2	
		I	0.6	I 0.8	
CLOTHING	7	I	I	I	70
		I	23	I 47	2.0
		I	32.9	I 67.1	
		I	1.3	I 2.8	
PERSONAL	8	I	I	I	63
		I	33	I 30	1.8
		I	52.4	I 47.6	
		I	1.9	I 1.8	
TOBACCO PIPE	9	I	I	I	1
		I	1	I 0	0.0
		I	100.0	I 0.0	
		I	0.1	I 0.0	
ACTIVITIES	10	I	I	I	129
		I	69	I 60	3.8
		I	53.5	I 46.5	
		I	3.9	I 3.6	
UNIDENTIFIED	11	I	I	I	693
		I	341	I 352	20.3
		I	49.2	I 50.8	
		I	19.5	I 21.1	
COLUMN			1753	1668	3421
TOTAL			51.2	48.8	100.0

RAW CHI SQUARE = 16.29651 WITH 9 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0609

factor which affected several different categories of artifacts collected in 1978.

In 1978 when surface collections were conducted, field crews were looking for the remains of an early fur trading post not the rubbish from Jensen's Farm. Common rusty nails (one of the most significant differences between years) and items like disintegrating shoe parts were definitely less appealing than ceramic and glass items which might date to the fort occupation. In 1978 common nails were often found left behind by the collectors. They were collected on double-checks. Although the intent was to collect everything from the surface of every grid unit, there is little doubt that this was not always the case in 1978.

Another factor which deserves serious consideration, especially with regard to the recovery of metal artifacts, is "collection method". In 1978 the collection methods were being established for the first time and generalized collection "sweeps" were made of the area before concentrations were flagged and collected in grids. There was some ambiguity as to what to call a "concentration" in the north half of the sample area and some materials (not more than sixty items) were collected here before gridded collection began. All of these factors may have lead to an underrepresentation of certain artifacts in the north half of the sample area.

In 1979 the collection methods were well established and the area was entirely collected in grids. By this time it was known that the Jensen homestead was the main feature at the site and that the historic fort materials formed a very small proportion of the materials present. This probably resulted in a more complete collection of the more "modern" Jensen's Farm materials. In contrast to 1978, the field areas to be collected were covered with stubble and collectors were forced to use metal rakes instead of collecting by hand. Metal objects which often tend to become buried in and blend in with the soil are more likely to flip out when raked or make a tell-tale clink of metal on metal when struck. Both collector bias in 1978 and the differences in collection methods between years may have resulted in more metal artifacts being collected in 1979 than in 1978.

Other factors which archaeologists have suggested as affecting surface collection results (cf. Riordan 1982) are ploughing, ground and weather conditions, and collection unit size. Ploughing is often assumed to increase the visibility and likelihood of surface artifacts being collected (eg., Hirth 1978). If such is the case, the results obtained here are something of an exception since more - not less - artifacts were recovered in 1979 under conditions of a) no ploughing and b) crop stubble while fewer artifacts were recovered in 1978 under a) fresh ploughing and b) no crop growth. If there is any evidence for lateral displace-

ment due to ploughing, perhaps this is more visible in areas with very low artifact density (such as the north half of the sample area originally containing the barn) rather than in areas characterized by high artifact density. Lateral displacement may have been one of the factors underlying the differential correspondence in spatial patterns between years for the north and south halves of the sample area. In SAS-produced density plots, the shape, size, and location of the densest concentration of materials in the south half of the sample area (the house feature) are very similar between years. It is in the low density areas in the north half of the sample area (the barn feature) where spatial patterns are either not clearly defined or fail to overlap spatially between years.

Both Riordian (1982) and Hirth (1978) recovered more material in their second surface collection than in their first. In Riordian's case, twice as much material was recovered in the second collection. In Hirth's study, nearly eight times as much as was recovered in the first collection, was recovered in each of the second and third collections. For whatever reasons, recovery of greater numbers of artifacts in the second and subsequent surface collections may be more the rule than the exception in replicated site surface collection. Only further studies of surface collection will provide information otherwise.

It should be noted that despite the significant differences observed in the collection results there are also good, broad similarities between years not only for the four main artifact groups recovered (Kitchen, Unidentified, Architectural, and Activities groups) but for the numbers and percentages of artifact classes, specific items, and certain artifact-specific attributes recovered. When Kitchen ceramic tableware was examined, for example, similar percentages were recovered between years for specific tableware items, portions of items, waretypes, patterned versus plain ceramics, and the distribution of gild-banded and Blue Willow patterned ceramics (cf. Appendix A).

In conclusion, then, if the results obtained here are any kind of indication: although archaeologists can expect significant statistical differences in artifact content between replicated site surface collections, there should also be broad similarities in terms of the rank-order of both generalized artifact groups and of more specific subgroupings of artifacts, specific items, or artifact-specific attributes.

5.2 THE SPATIAL COMPARISON OF ARTIFACT DISTRIBUTIONS BETWEEN YEARS

No study of replicated site surface collection to date has really examined the correspondence between the spatial dispersions and patterns of artifacts recovered in one collection to those recovered in another. This seems odd in

view of the fact that surface collection is generally used as a preliminary and essentially visual tool for determining the parameters of a site, the patterns and features present, and the type of sampling designs and excavation procedures appropriate. Somehow in replicated site surface studies these more "visual" aspects of replicated site surface collection have been overlooked.

This may be due in part to the fact that studies to date have either examined limited spatial areas, sites of low artifact density, or used spatial collection grids too large to facilitate any kind of sensitive or detailed mapping (eg., Ammerman and Feldman 1978; Riordian 1982). It may also be due to the fact that visual comparisons are not as amenable to statistical study, are inherently more subjective in interpretation, and the results extremely difficult to present and articulate. There has also been a failure on the part of many archaeologists to differentiate between the three independent components of spatial distributions - pattern, dispersion, and density (cf. Dacey 1973a) - and to recognize the fact that measuring one of these components (eg., measuring artifact densities between years via chi-square tests) does not necessarily measure the other two components (eg. the dispersions of artifacts in space or the patterns which they describe). Given the independence of these three components, it is entirely possible for two replicated surface collections to have significantly different

densities and yet have similar spatial dispersions and describe similar shaped patterns of high/low concentration, as is the case in this thesis. To date, there is no readily available statistic which can be used to measure and compare the interrelationship between all three of these components of spatial distribution. The only basic means of comparison at our disposal is simple visual inspection. Despite the problems involved in such an approach, a number of these types of comparisons were undertaken in this thesis.

In Chapter four, a number of SAS-produced artifact-specific density plots were compared for each year's surface collection results. Besides comparing the plots between years, the results from each year were also combined and plotted to produce a third, amalgamated version of artifact distributions. The intention was to assess the degree to which artifact dispersions and patterns found in each year are similar or different from one another, and from the maps produced when the results from each year are combined. Artifact distributions were said to be similar if the shape, size, and location of high/low density concentrations or contours spatially overlapped between years. Determining the degree of overlap was accomplished by superimposing each year's plotted distributions one on top of the other. Where artifact density was low (as it is in the north half of the sample area), if artifact clusters mapped within one or two collection units (two or four metres) of one another

between years, their spatial distributions were said to be similar. Where artifact patterns and dispersions did not overlap spatially, or where very different outlines and locations for concentrations were suggested, the plotted distributions between years were said to be dissimilar. Collection results were compared both in terms of arbitrary sample area quadrats and in terms of their overall sample area dispersion and patterns.

The most significant observation that can be made about the spatial distributions examined between years is that the correspondence between years is almost always at least a partial one. This degree of correspondence is affected by artifact density, which is in turn affected by a number of factors such as collector bias and collection method discussed above, and the structures or behavioural activities originally present at the site. The effect of different types of building structures and their uses will be discussed briefly in the section comparing artifact content and spatial distributions to the original historical features. Where artifact density was high (eg., the south half of the sample area and, in particular, the SE section containing the original house feature), the spatial correspondence between years was much better than in areas of low artifact density (eg., the north half of the sample area containing the original barn feature). The densest area of concentration indicated in each year (corresponding to the location

of the original house feature) was consistently shown as overlapping between years in terms of its shape, size, and location. Where artifact density was low (the north half of the sample area), artifact dispersions and patterns were not as well defined and the correspondence between years poor. Density, then, while not the main criteria for determining spatial similarity, does have some effect on the results obtained.

When the plotted distributions for the four major groups of artifacts - Kitchen, Architectural, Activities, and Unidentified artifact groups - were compared between years, each year consistently indicated a well-defined, square-shaped high density concentration in the SE corner of the sample area, surrounded by a shadow concentration of lesser density. This shadow concentration was shown as stretching westwards into the SW section of the sample area and northwards around the east and west sides of the uncollected well area. At this point the artifact density rapidly drops off and artifact distributions become much thinner. Unlike the south half of the sample area where a feature of some kind (the house) is clearly indicated, there is no readily discernible feature in the north half of the sample area. Only the all-category maps for each year and the Architectural maps suggest that some kind of feature (the barn) may be present in this area. Each of the Personal/ Tobacco Pipe, Clothing, Furniture, and Arms group artifact maps for each

year tend to have fairly unique, restricted dispersions which correspond to the dense concentration in the SE corner of the sample area already indicated by the major artifact groups recovered.

The areas of artifact clustering which do occur in the north half of the sample area rarely overlap and present no clearly defined pattern in themselves, except that in some maps they do seem to cluster around a square-shaped area of low to zero artifact density (an area which does correspond to the original location of the Jensen barn). Where artifact clusters do map adjacently in this area, they map within two or three units (four to six meters) of each other between years (as they do for the all-category and Kitchen maps). In a few cases (eg., the Architectural maps), the clusters in one year map around the periphery of those in the other year. Internal examinations of different artifact classes, items, and artifact-specific attributes (such as the distribution of Kitchen tableware ceramics, tin can fragments, and bottle glass (Appendix B)), proved to be less dense versions - or extrapolations - of the patterns observed above for the general South artifact groups. The clearest, best-defined example of the types of patterns presented by the artifact distributions for Jensen's Farm are to be found in the all-artifact maps for each year and for the all-artifact map produced when the results from each year are combined. The differential density and clarity of

artifact distributions in the south and north halves of the sample area inevitably mean that spatial distributions between years are usually both similar and dissimilar at the same time.

When the results between years are combined the maps produced for any given category of artifacts may be either "additive" or "averaging" in nature - expanding the presentation of one or both years or averaging the results between years into a new spatial configuration - or both at the same time. The result can be a map which looks like an expanded version of each year, one or the other year, or neither. Results tend to be additive in nature when the densities between years are similar and/or the spatial configurations are contiguous. Results tend to be averaging in nature when the distribution of materials is exceptionally dense in both years (eg., Figure 18) or where there are dramatic differences in the density of an area between years. For the most part, when the results between years are combined the definitions of features and the nature of dispersions are accentuated, becoming much better and more clearly defined. Only rarely does merging the results between years produce a map in which a feature, pattern of dispersion, or concentration is obscured.

As mentioned earlier, the main difference in artifact collections between years lies in the greater number of metal artifacts collected in 1979. From the SAS plots of arti-

fact distributions, it appears that it is mainly in the north half of the sample area that this difference between years occurs. This can be seen particularly in the Architectural group maps, the maps for the distribution of nails, and the Unidentified metal artifact maps (cf. Chapter 4; Appendix B). It is not just overall artifact density, but the factors such as collector bias and collection method which affected the recovery of artifacts in each year, which also affects the degree to which spatial dispersions and patterns correspond between years. Another factor - the nature of the original structural remains and area use - also affects the nature of artifact distributions recovered in either year. This will be discussed in the following section.

5.3 THE COMPARISON OF SPATIAL DISTRIBUTIONS AND ARTIFACT CONTENT TO THE KNOWN HISTORICAL CONTEXT

If one did not know the historical background for Jensen's Farm, on the basis of the above results it would appear that there is only one main, central feature in the SE section of the sample area surrounded by what appears to be a lateral displacement of artifacts from the central feature (either through ploughing or as the result of some other undetermined factor). Due to the high content of kitchen, domestic-related, and architecturally-related artifacts, and unidentified artifact shatter, it would appear that the feature in question is probably domestic in nature, may be an architectural feature, is probably the only main feature at

the site, and is characterized as containing and being surrounded by a high degree of artifact shatter (perhaps the result of "trampling" or some other kind of heavy disturbance). If excavation decisions were based on these observations alone, excavation would indeed uncover one of the main features at Jensen's Farm (the homestead house), but it would also miss some of the other features (especially the barn in the north half of the sample area) which characterize Jensen's Farm as anything more than a domestic site.

When the sample area was divided into feature areas corresponding to the original historical structural and non-structural features, and the artifact content recovered in each year compared, there was very little in terms of artifact content to distinguish one feature area from another (Tables 9 and 10, Chapter 3). In each year, each feature area indicated varying proportions of the same artifact categories. Regardless of which year is examined, Kitchen group artifacts were the largest category of materials recovered for all feature areas, accounting for between 35.1% and 60.0% of all artifacts in each area. Architectural artifacts were usually the next highest group of materials recovered, accounting for between 10.0% and 29.0% of all artifacts in each area. (The only exception to this are the garden and west field areas where greater amounts of unidentified artifact shatter were recovered than architectural materials). Unidentified artifact shatter made up the third

largest category for most features, accounting for 10.0% and 22.0% of all artifacts recovered. This was not what was originally expected. It was hoped that examining artifact content in terms of historical feature areas would indicate differences which would reflect the original nature and use of those areas. In terms of artifact content, then, site surface collection only partially replicates the original context of use and the features originally present.

It was also hoped that comparing the artifact collections between years in terms of historical feature areas would indicate that each surface collection does not sample different populations of artifacts. As can be seen from Tables 11 and 12 in Chapter 3, and Tables 25 to 30 in Appendix A, the variation observed earlier is still present. The chi-square values obtained are generally lower but still indicate significant differences between years. With caution, the content in the west road, east path, and west field areas can be said to be not significantly different between years. As an experiment, the metal artifacts responsible for much of the variation between years overall, were deleted from the house area artifacts and the artifact content recovered between years for this area re-examined (Table 14). The result was a distribution for the house area which was not significantly different between years.

Comparing features to one another in terms of the overall percentages of each artifact group recovered does help to

isolate some differences. The house and house yard areas account for the largest percentages of all artifact categories recovered (63.8% in 1978 and 53.7% in 1979) and the barn, barn yard, and east path areas for the least percentages of materials (9.3% in 1978 and 17.6% in 1979). The house and house yard areas accounted for the highest percentages of Kitchen, Architectural, Activities and Unidentified artifacts recovered, and for most of the Furniture, Arms, Clothing, and Personal/ Tobacco pipe group artifacts recovered. The barn area contained the lowest percentage of Kitchen artifacts and some of the lowest percentages of Architectural, Activities, and Unidentified artifacts.

In contrast to the barn area and to the house/ house yard areas, the west road area contained the next highest percentages of Kitchen, Architectural, Activities, and Unidentified artifacts, and accounted for some of the Furniture, Arms, Clothing, and Personal group artifacts. The garden area contained the next highest percentages of Activities and Unidentified artifacts next to the west road area. The main difference in the garden area was the much lower percentage of architectural-related artifacts recovered.

Even when artifacts are compared by feature area, the kind of site consistently indicated by each year and each historical feature area is a domestic one, with evidence for architectural remains probably in the vicinity of the house area, and a high degree of artifact shatter (due to either heavy trampling or a disturbance of some kind). There is

very little anywhere in any of the features to indicate that farming was the main original activity at Jensen's Farm, and little to indicate any architectural remains in the vicinity of Jensen's barn.

The only category which could have indicated a farming component is the Activities artifact group. This group made up only 6.9% of all artifacts in 1978 and 9.1% in 1979. Of these Activities artifacts only 4.3% (or 96) of the 1978 artifacts and 4.6% (or 122) of the 1979 artifacts were farming-related. These "farming-related" artifacts proved to contain mostly fence wire, some harness-related items, and some farm machinery parts. The majority of these were recovered from the west road, garden, and house areas, not from the barn area.

The nature of these results are less surprising perhaps when one looks at the different types of building structures present and the types of factors affecting archaeological deposition in and around them. The Jensen house was a two storey, wooden frame structure that was abandoned twice during its existence - once during the Depression when the family's possessions were left intact in anticipation of returning to the house when economic situations improved, and once again during the period between Mr. Alex Kostiew's purchase of the farm and his removal of the house to the southeast edge of the property. Although the results of abandonment during the Depression period are difficult to document,

it is possible that vandalism and clean up activities on Ab Jensen's return to the farm resulted in a denser sheet litter of domestic and personal related artifacts in the vicinity of the house. Evidence for post-abandonment deposition during the second period of abandonment is much more clearly defined. During the time the house stood vacant after Mr. Kostiew's purchase, several different artifactual materials post-dating Ab Jensen's occupation appear to have become deposited within and around the house, and along the road and path between the house and the barn. This is most evident in the distribution of modern green and green-yellow bottle glass (Figures 59 and 58, Appendix B) and modern fired ammunition cartridges (Figures 33 to 35, Appendix B). Other post-abandonment deposition and vandalism, not evident in other artifact distributions, may have affected the density with which artifactual material maps around and within the house area.

The destruction, removal, or collapse of a frame building structure, such as Jensen's house, is more likely to leave behind greater numbers of architectural artifacts such as nails, window glass, and metal construction hardware items, than a structure made of logs and chinking (eg., the Jensen barn). When the plotted distribution for architectural materials are examined, this is readily apparent. The abundance of architectural artifacts along with a high degree of Kitchen or domestic-related artifacts is what makes the

original house feature so prominent in any artifact plot. The barn area, on the other hand, is characterized by a dearth of architectural materials and very low densities of any kind of artifactual material. When one stops to consider that barns are shovelled out regularly, the low density of artifacts in this area is understandable. If any artifacts were to be randomly lost or deposited in this area, they would end up in the manure heap not in the barn itself. Table 31 in Appendix A shows the materials which were recovered in this area in 1978. On closer examination, the manure pile proved to contain half bottle glass and half window glass. The only surviving evidence for the Jensen barn consists of a dark straw-mixed soil discolouration in the vicinity of the barn, and the recovery of chinking, some window glass (in particular, metal-reinforced window glass), and a few nails. Chinking and metal-reinforced window glass appear to be the only categories of artifacts unique to the barn area itself. If one was not looking for such slim evidence, it is unlikely the barn feature would be located.

Some of the the high density and clarity of artifact distributions in the vicinity of Jensen's house are probably also artificial. When Mr. Kostiew moved the original homestead house to the far south edge of the property, he filled in the exposed, shallow house basement with the soil immediately surrounding it. This could have resulted in a very concentrated, clearly outlined deposition of artifacts with-

in the basement area, as well as a broad smearing of artifacts around the house where the soil was bulldozed away. Judging from the clearly defined outline of melted and burnt artifactual materials in this area (Figures 74 and 75, Appendix B), Mr. Kostiew apparently also brush-piled and burnt any remaining debris. Although the different densities of artifacts in this area do correspond both to the house feature and the original yard area surrounding it, these are not necessarily reflections of original occupational deposition and use, but reflections of Mr. Kostiew's demolition and land-restoration activities.

The barn and house features at the site present contrasting ways in which features can potentially be isolated. The house feature with its very dense, highly visible concentration of artifacts has very clearly defined outlines (ie., possesses both high artifact visibility and focus) (Deetz 1977). The "image" it presents is a "positive" one. In contrast, the location and approximate size of the barn is mapped by characteristically low to zero artifact density (low visibility) surrounded on its periphery by a contrasting higher density area. It is perhaps best mapped by the 1979 all-artifact map and the all-artifact map for the combined collection results (Figures 7 and 9, Chapter 4). The "image" it presents is a "negative" one and its "focus" (clarity with which its outlines can be "read") varies from fair to poor.

While the high density concentration in the SE section of the sample area pin-pointed the location of and closely approximated the actual size of the original house feature, other feature areas were much harder to distinguish. The west road area did appear to be mapped by such artifacts as metal fastenings (bolts, nuts, screws, etc.; cf. Figure 79, Appendix B). If these fastenings are a result of vehicle loss, then this distribution makes some sense. Cookware ceramics and green/ green-yellow bottle glass also mapped this area (cf. Figures 61, 59, and 58, Appendix B). The east path area between the house and barn was poorly suggested by the distribution of some clothing items and green/green-yellow bottle glass (cf. Figures 36 to 38, 58, and 59, Appendix B). When the Jensen Farm schematic was superimposed on the all-artifact maps for each year (Figures 12 and 13, Chapter 4), the edge of the shadow concentration around the house corresponded exactly with the edge of the original windbreak immediately north of the house. Whether this is a real reflection of this feature or a fortuitous accident is unclear.

VI

CONCLUSION

The intent of this study was to assess whether the results obtained through replicated intensive site surface collection are:

1. replicable in terms of artifact content and spatial distributions, and
2. able to replicate reality in terms of isolating original site patterns and use.

When artifact content was compared between years, it was found that each year was subject to variation in the frequencies of artifact groups and classes recovered and that, in fact, each year sampled significantly different populations of artifacts. In all, approximately 18.1% (or 408) more artifacts were recovered in 1979 than in 1978. (A total of 4,904 artifacts were recovered - 2,248 in 1978 and 2,656 in 1979).

Upon further investigation it was found that the differential recovery of metal artifacts accounted for most of the variation between years. Possible explanations for this included collector bias, collection method, and artifact fragmentation (the issue of "comparable units"). When metal ar-

tifacts were deleted from the comparisons between years, the frequencies of artifact groups recovered in each year were much closer to one another but still showed significant statistical differences. Despite these significant differences between years in terms of artifact groups and classes recovered, each year was also characterized by similar generalized patterns of artifact recovery. This only became apparent when artifact groups were ranked in order of their frequencies of occurrence in each year.

Many potentially intervening factors affect both the collection and analysis of archaeological data. These include, among others, differential artifact fragmentation, collector bias, and variations in collection methods. Each of these factors has had an indeterminate but apparently significant impact on the results obtained in this thesis. Given the unpredictable nature of factors affecting collection and analysis, and the basically incomparable nature of "artifacts", it is reasonable to expect that replicated site surface collections should exhibit variation in the results obtained. Studies have shown that rather than expecting replicated surface collection results to possess no significant, statistical differences between collections, archaeologists should expect meaningful variations and broad similarities to occur between collection results.

The results obtained here, while statistically quite different, do show general correspondences between years both

in terms of artifact content and spatial distributions recovered. These correspondences mean that either year's collection results could have been used to determine the cultural nature of the site, the location of the main feature (the homestead house), and its approximate shape and size. In this study, the 1979 surface collection produced clearer versions of the artifact distributions recovered in terms of their "focus" (the clarity with which an outline or feature can read) and "visibility" (the amount of visible remains present) than those produced by the 1978 collection. The difference, however, is not pronounced. It is only the difference between a slightly sharper and a slightly blurred definition of the same complex picture. For whatever reason, if the results obtained here and those obtained by Hirth (1978) and Riordian (1982) are any kind of indication, it may be that the recovery of more artifacts in the second collection is more the rule than the exception. Only further studies will indicate whether this kind of result is a random event or an inherent characteristic of results obtained through replicated site surface collection.

When artifact content was compared between years, each year indicated a domestic site containing a large quantity of architectural remains and characterized by a high degree of unidentified artifact shatter. When the spatial distributions for different groups of artifacts were compared between years, each year indicated a very dense, square-shaped

concentration (approximately 12 by 16 metres in size) as occurring in the SE section of the sample area. This concentration, and the lower density shadow concentration surrounding it, were shown to contain the densest distribution of material at the site and as accounting for approximately 60.0% of all artifacts recovered. In each year the feature in question appeared to be the only feature present at the site and, in all likelihood, a domestic architectural feature surrounded by a heavily trampled or disturbed area.

Spatial overlap between years in terms of overall artifact dispersion and the definition, size, shape, and location of patterns of artifact clustering and concentration was best for the south half of the sample area studied, where artifact densities were high (between 2.0 and 15.0 artifacts per square metre). Where artifact densities were low (less than 2.0 artifacts per square metre), as they were in the north half of the sample area, correspondences between years were less pronounced and definitions of patterns were poor. Where patterns or clusters of artifacts did occur these patterns rarely overlapped between years, occasionally described very different patterns of artifact clustering, or mapped within two to four grid collection units (or four to six metres) of one another. On closer examination, it was also found that it was the north half of the sample area which was primarily responsible for the significant differences in metal artifacts recovered in each year.

In terms of replicating reality, the results from each year tell only part of the real story. The artifact content recovered in each year reflects the domestic and architectural nature of the Jensen homestead, but fails to isolate materials which indicate Jensen's Farm is primarily a farming component. In terms of spatial distributions, the house was clearly defined by the high density concentrations in the south half of the sample area. The barn feature, however, was poorly defined or suggested by the extremely low artifact densities characterizing the north half of the sample area. There several underlying reasons for this.

In the first case, each building was structurally quite different. The barn was built out of logs and chinking, neither of which leave much indication archaeologically, while the house was a two storey wooden frame structure characterized archaeologically by an abundance of nails, window glass, and metal construction hardware. Few nails, little window glass, and almost no metal construction hardware artifacts were recovered from the vicinity of the barn. In addition to their structural differences, the differences in use and survival of the two structures also dictated a different kind of artifactual deposition. The house was abandoned twice during its existence between 1927 and 1952, moved from its foundations in the 1960s to a new location several hundred metres south of its original location, and the original foundations scarified and back-filled by trac-

tor. All of these factors, along with the sheer abundance of domestic-related materials house structures tend to produce, appear to have contributed to creating a concentration of artifacts high in visibility and high in focus. The barn, on the other hand, was probably cleaned out regularly, and items lost or deposited within it more likely to end up elsewhere - especially in such areas as the manure pit or randomly distributed over the fields. Both the structural nature and depositional nature of the barn probably reduced its archaeological visibility and focus. Had the area immediately surrounding the barn been of a slightly higher artifact density, the barn feature would have shown up as a fairly well-defined, well-focused feature. If such had been the case, the barn would have presented an even better "negative image" - a feature low in visibility but high in focus. In contrast, the house presents a "positive image" high in visibility and high in focus.

The results obtained here have several different implications for the use of site surface collection, and particularly for the use of single site surface collection. Generally, it would appear that site surface collection is capable of reflecting the general nature, content, patterns, and dispersions of artifacts, and to some degree the original context of a site. These results are subject to reservations and should be interpreted in the light of factors affecting artifact deposition and preservation, and poten-

tially intervening factors which can affect both the collection and analysis of artifacts. It is unlikely that the effect of many of these factors can be successfully isolated and causal inferences posited (cf. Blalock 1964). However, they are important in tempering too liberal an explanation of archaeological results. Some of these factors include differential artifact fragmentation, collection bias, variations in collection methods, crop and weather conditions, land disturbances and the lateral displacement of artifacts, artifact size or visibility, and collection unit size.

The effect of collection or comparison grid size was not addressed in this thesis. It would appear that the collection of artifacts in smaller grid units is preferable only in so far as the results obtained can always be compared at different grid size levels once collection is complete. Where the lateral displacement of artifacts seems to be a critical factor, it can always be compensated for during comparisons - if and when lateral displacement can be established via a method such as artifact cross-mending. To assume that lateral displacement is acute without stopping to investigate that it is indeed the case, and then using this assumption as the rationale to collect artifacts in large grid units, as Ammerman and Feldman (1978) do, seems a premature and irreversible type of collection decision to make. It is difficult to say that there is a universally acceptable, better sized grid collection/ comparison unit for all

site surface collections. The decision is an individual research one.

There is reason to believe from the results obtained here that site areas with low artifact density should be investigated and interpreted with caution especially where historical features such as barns or chinked log structures characterized by low artifact deposition are involved. Such features can present "negative images" - low to zero artifact density areas surrounded by higher density distributions of artifacts. If surrounding artifacts are considerably denser than the feature area itself, then the feature itself may be low in visibility but high in focus. This contrasts features (such as the house feature examined here) which are high in both visibility and focus. Wherever ethno-historical information is available, it should be used to alert the archaeologist to the possibility that such low density and poorly detected features may be present.

Although single site surface collection is likely to reflect the basic nature and features of a site, both sampling theory and studies of replicated site surface collection suggest that replicated collection should accentuate any basic information and patterns recovered, and should be conducted wherever time constraints and funding permit this luxury (cf. Riordan 1982). If replicated site surface collection is conducted, variations between collections should be expected - perhaps as much as a 18.1% variation in the

total number of artifacts recovered in any given artifact category. Variations in the results obtained should be considered in the light of potentially intervening variables, such as those mentioned above. There are too many factors affecting the collection and analysis of archaeological data which cannot be controlled or compensated for, to expect that results obtained will be totally unbiased sources of statistically and archaeologically significant information.

In terms of replicating reality, the results of surface collection are inevitably tempered by the differential deposition of artifacts in the cultural context and by differential preservation in the archaeological context. The results in this study suggest that the correspondence between the archaeological results and the historical context is at least a partial one with the best correspondences occurring in areas of high artifact density (between 2.0 and 15.0 artifacts per square metre). Where artifact densities are low, historical features characterized in the cultural context by low artifact deposition and suffering from poor archaeological preservation (such as the barn area in this study), are likely to be poorly revealed in a single site surface collection but more likely to be detected through combining the results of replicated site surface collection.

Further research may help to clarify the observations made here. By examining several different types of sites, it may be possible to establish the nature and range of var-

iation which can be expected in results obtained through site surface collection. It would appear from the results obtained here, that it is possible to replicate the results from site surface collection in terms of broad similarities, both in terms of the artifact content and generalized spatial distributions of artifacts recovered. It would also appear that it is possible to partially replicate the original cultural context.

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Appendix A
TABLES RELATED TO ANALYSIS A

A.1 KITCHEN ARTIFACT CLASS AND ITEM TABLES

TABLE 15

GLASS KITCHEN ARTIFACTS: KITCHEN CLASSES BY YEAR

KITCHEN ARTIFACT CLASS	COUNT		YEAR		ROW TOTAL
	ROW	PCT	1978	1979	
	COL	PCT			
	TOT	PCT	1	2	
	11	I	9	18	27
ALCOHOL BOTTLES	I	33.3	I	66.7	2.1
	I	1.4	I	2.9	
	I	0.7	I	1.4	
	12	I	98	72	170
UNIDENTIFIED	I	57.6	I	42.4	13.1
GLASS JARS/ CONTAINERS	I	14.7	I	11.5	
	I	7.6	I	5.6	
	13	I	468	446	914
UNIDENTIFIED	I	51.2	I	48.8	70.7
BOTTLES	I	70.4	I	71.0	
	I	36.2	I	34.5	
	14	I	8	8	16
NONALCOHOL	I	50.0	I	50.0	1.2
BOTTLES	I	1.2	I	1.3	
	I	0.6	I	0.6	
	15	I	16	8	24
PHARMACEUTICAL	I	66.7	I	33.3	1.9
BOTTLES	I	2.4	I	1.3	
	I	1.2	I	0.6	
	16	I	32	36	68
GLASSWARE	I	47.1	I	52.9	5.3
	I	4.8	I	5.7	
	I	2.5	I	2.8	
	18	I	18	21	39
KITCHEN COOKWARE	I	46.2	I	53.8	3.0
	I	2.7	I	3.3	
	I	1.4	I	1.6	
	19	I	14	12	26
TINCAN/FOOD	I	53.8	I	46.2	2.0
PACKAGING	I	2.1	I	1.9	
	I	1.1	I	0.9	
	20	I	2	7	9
HOUSEKEEPING/ DOMESTIC ITEMS	I	22.2	I	77.8	0.7
	I	0.3	I	1.1	
	I	0.2	I	0.5	
	COLUMN		665	628	1293
	TOTAL		51.4	48.6	100.0

RAW CHI SQUARE = 12.52183 WITH 8 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.1294

TABLE 16
CERAMIC KITCHEN ARTIFACTS: KITCHEN CLASSES BY YEAR

KITCHEN ARTIFACT CLASS	COUNT ROW PCT COL PCT TOT PCT	YEAR		ROW TOTAL
		1978	1979	
		1	2	
		I	I	
TABLEWARE/ SERVINGWARE	10	I 251	I 205	I 456
		I 55.0	I 45.0	I 89.9
		I 92.6	I 86.9	I
		I 49.5	I 40.4	I
KITCHEN COOKWARE	18	I 20	I 31	I 51
		I 39.2	I 60.8	I 10.1
		I 7.4	I 13.1	I
		I 3.9	I 6.1	I
		I	I	I
		I	I	I
COLUMN TOTAL		271 53.5	236 46.5	507 100.0

CORRECTED CHI SQUARE = 4.00448 WITH 1 DEGREE
OF FREEDOM. SIGNIFICANCE = 0.0454

TABLE 17
METAL CONTAINER KITCHEN ARTIFACTS: KITCHEN CLASSES BY
YEAR

KITCHEN ARTIFACT CLASS	COUNT ROW PCT COL PCT TOT PCT	YEAR		ROW TOTAL
		1978	1979	
		1	2	
		I	I	
KITCHEN COOKWARE	18	2	9	11
	18.2	81.8	1.6	
	0.7	2.4		
	0.3	1.3		
TINCAN/FOOD PACKAGING	19	286	365	651
	43.9	56.1	97.2	
	98.6	96.1		
	42.7	54.5		
HOUSEKEEPING/ DOMESTIC ITEMS	20	2	6	8
	25.0	75.0	1.2	
	0.7	1.6		
	0.3	0.9		
COLUMN TOTAL	290 43.3	380 56.7	670 100.0	

RAW CHI SQUARE = 4.02440 WITH 2 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.1337

TABLE 18
KITCHEN CERAMIC TABLEWARE ITEMS BY YEAR

FUNCTIONAL USE	COUNT ROW COL TOT	YEAR		ROW TOTAL			
		PCT	PCT				
		1978	1979				
		I	I				
1	I	34	I	31	I	65	
UNIDENTIFIED	I	52.3	I	47.7	I	14.3	
TABLEWARE ITEM	I	13.5	I	15.1	I		
	I	7.5	I	6.8	I		
	I		I		I		
CUP	24	I	33	I	29	I	62
	I	53.2	I	46.8	I	13.6	
	I	13.1	I	14.1	I		
	I	7.2	I	6.4	I		
	I		I		I		
MUG	25	I	3	I	1	I	4
	I	75.0	I	25.0	I	0.9	
	I	1.2	I	0.5	I		
	I	0.7	I	0.2	I		
	I		I		I		
PLATE	26	I	59	I	56	I	115
	I	51.3	I	48.7	I	25.2	
	I	23.5	I	27.3	I		
	I	12.9	I	12.3	I		
	I		I		I		
SAUCER	27	I	39	I	26	I	65
	I	60.0	I	40.0	I	14.3	
	I	15.5	I	12.7	I		
	I	8.6	I	5.7	I		
	I		I		I		
PLATTER/ SERVINGWARE	28	I	2	I	2	I	4
	I	50.0	I	50.0	I	0.9	
	I	0.8	I	1.0	I		
	I	0.4	I	0.4	I		
	I		I		I		
BOWL	29	I	19	I	7	I	26
	I	73.1	I	26.9	I	5.7	
	I	7.6	I	3.4	I		
	I	4.2	I	1.5	I		
	I		I		I		
PITCHER	30	I	2	I	3	I	5
	I	40.0	I	60.0	I	1.1	
	I	0.8	I	1.5	I		
	I	0.4	I	0.7	I		
	I		I		I		
POT WITH SPOUT	31	I	0	I	1	I	1
	I	0.0	I	100.0	I	0.2	
	I	0.0	I	0.5	I		
	I	0.0	I	0.2	I		
	I		I		I		
EGG CUP	50	I	2	I	0	I	2
	I	100.0	I	0.0	I	0.4	
	I	0.8	I	0.0	I		
	I	0.4	I	0.0	I		
	I		I		I		
HOLLOWWARE	97	I	51	I	44	I	95
	I	53.7	I	46.3	I	20.8	
	I	20.3	I	21.5	I		
	I	11.2	I	9.6	I		
	I		I		I		
FLATWARE	98	I	7	I	5	I	12
	I	58.3	I	41.7	I	2.6	
	I	2.8	I	2.4	I		
	I	1.5	I	1.1	I		
	I		I		I		
COLUMN TOTAL		251	205	456			
RAW CHI SQUARE =		55.0	45.0	100.0			
OF FREEDOM.		9.11476	WITH	11 DEGREES			
SIGNIFICANCE =		0.6113					

TABLE 19
MOST FREQUENTLY RECOVERED KITCHEN ARTIFACT CLASSES BY
YEAR

KITCHEN ARTIFACT CLASS	COUNT ROW PCT COL PCT TOT PCT	YEAR			ROW TOTAL		
		I					
		1978	1979				
		1	2	I			
		-----I-----I-----I					
TABLEWARE/ SERVINGWARE	10	I	266	I	230	I	496
		I	53.6	I	46.4	I	23.0
		I	25.2	I	21.0	I	
		I	12.4	I	10.7	I	
		-I-----I-----I					
UNIDENTIFIED BOTTLE	13	I	468	I	446	I	914
		I	51.2	I	48.8	I	42.5
		I	44.3	I	40.7	I	
		I	21.7	I	20.7	I	
		-I-----I-----I					
TINCAN/FOOD PACKAGING	19	I	322	I	420	I	742
		I	43.4	I	56.6	I	34.5
		I	30.5	I	38.3	I	
		I	15.0	I	19.5	I	
		-I-----I-----I					
	COLUMN	1056		1096		2152	
	TOTAL	49.1		50.9		100.0	

RAW CHI SQUARE = 15.34768 WITH 2 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0005

A.2 MELTED/BURNT MATERIALS AND STABLE/BARN AND FARM TOOLS
ARTIFACT CLASS TABLES

TABLE 20
MELTED AND BURNT ARTIFACT CLASSES BY YEAR

MELTED/ BURNT ARTIFACT CATEGORY	COUNT		YEAR		ROW TOTAL
	ROW	PCT	1978	1979	
	COL	PCT			
	TOT	PCT			
			1	2	
MELTED GLASS	1	I	69	74	143
		I	48.3	51.7	71.1
		I	67.6	74.7	
		I	34.3	36.8	
BURNT CERAMICS	2	I	27	22	49
		I	55.1	44.9	24.4
		I	26.5	22.3	
		I	13.4	10.9	
BURNT/ MELTED OTHER MATERIALS	3	I	6	3	9
		I	66.7	33.3	4.5
		I	5.9	3.0	
		I	3.0	1.5	
COLUMN			102	99	201
TOTAL			50.7	49.3	100.0

TABLE 21
Stable/Barn and Farm Tool Classes By Year

STABLE/ BARN AND FARM TOOL CLASSES	COUNT		YEAR		1978		1979		ROW TOTAL	
	ROW	PCT	COL	PCT	I	1	I	2		I
	TOT	PCT	I	I						
					I		I		I	
	1		I	1	I	48.3	I	51.7	I	
UNIDENTIFIED			I	4.5	I	4.5	I	8.3	I	
TOOL/ITEM			I	1.7	I	1.7	I	5.2	I	
			I		I		I		I	
	2		I	7	I	7	I	16	I	
FENCE WIRE			I	55.1	I	55.1	I	44.9	I	
			I	31.8	I	31.8	I	44.4	I	
			I	12.1	I	12.1	I	27.6	I	
			I		I		I		I	
	3		I	2	I	2	I	1	I	
FARM TOOLS			I	66.7	I	66.7	I	33.3	I	
			I	9.1	I	9.1	I	2.8	I	
			I	3.4	I	3.4	I	1.7	I	
			I		I		I		I	
	4		I	6	I	6	I	7	I	
HARNESS			I	48.3	I	48.3	I	51.7	I	
RELATED			I	27.3	I	27.3	I	19.4	I	
ITEMS			I	10.3	I	10.3	I	12.1	I	
			I		I		I		I	
	5		I	6	I	6	I	9	I	
MECHANIZED			I	55.1	I	55.1	I	44.9	I	
FARM			I	27.3	I	27.3	I	25.0	I	
MACHINERY			I	10.3	I	10.3	I	15.5	I	
			I		I		I		I	
		COLUMN		22		22		36		
		TOTAL		37.9		37.9		62.1		
									58	
									100.0	

A.3 PARKS CANADA MATERIAL CATEGORY TABLES

TABLE 22
PARKS CANADA MATERIAL CATEGORIES BY YEAR

PARKS MATERIAL CATEGORY	COUNT		YEAR		ROW TOTAL
	ROW	PCT	1978	1979	
	COL	PCT			
	TOT	PCT	1	2	
PREHISTORIC	1	I	I	I	4
		I	25.0	I 75.0	0.1
		I	0.0	I 0.1	
		I	0.0	I 0.1	
GLASS	2	I	I 1224	I 1210	2434
		I	50.3	I 49.7	49.6
		I	54.4	I 45.6	
		I	25.0	I 24.7	
CERAMICS	3	I	I 345	I 266	611
		I	56.5	I 43.5	12.5
		I	15.3	I 10.0	
		I	7.0	I 5.4	
NAILS	4	I	I 38	I 146	184
		I	20.7	I 79.3	3.8
		I	1.7	I 5.5	
		I	0.8	I 3.0	
METAL FASTENINGS	5	I	I 7	I 36	43
		I	16.3	I 83.7	0.9
		I	0.3	I 1.4	
		I	0.1	I 0.7	
OTHER METAL	8	I	I 138	I 387	525
		I	26.3	I 73.7	10.7
		I	6.1	I 14.6	
		I	2.8	I 7.9	
ARMS AND AMMUNITION	12	I	I 11	I 13	24
		I	45.8	I 54.2	0.5
		I	0.5	I 0.5	
		I	0.2	I 0.3	
METAL CONTAINERS	14	I	I 312	I 419	731
		I	42.7	I 57.3	14.9
		I	13.9	I 15.8	
		I	6.4	I 8.5	
MISCELLANEOUS (MACHINE-MADE/ NATURAL/COMPOSITE MATERIALS)	99	I	I 172	I 176	348
		I	49.4	I 50.6	7.1
		I	7.7	I 6.6	
		I	3.5	I 3.6	
COLUMN			2248	2656	4904
TOTAL			45.8	54.2	100.0

RAW CHI SQUARE = 195.62598 WITH 8 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0

TABLE 23
1978 SOUTH ARTIFACT GROUPS BY PARKS CANADA MATERIAL CATEGORIES

PARKS CANADA MATERIAL CATEGORIES																ROW TOTAL
SOUTH ARTIFACT GROUP	COUNT	PREHISTO	GLASS	CERAMICS	NAILS	FASTENIN	OTHER	ME	ARMS	AMM	MET	CONT	MISC			
	ROW COL TOT	PCT PCT PCT	IRIC	1	2	3	4	5	8	12	14	99				
PREHISTORIC	1		1	0	0	0	0	0	0	0	0	0	0	0	1	
			100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
KITCHEN	2		0	665	271	0	0	12	0	290	2			1240		
			0.0	53.6	21.9	0.0	0.0	1.0	0.0	23.4	0.2			55.2		
			0.0	54.3	78.6	0.0	0.0	8.7	0.0	92.9	1.2					
			0.0	29.6	12.1	0.0	0.0	0.5	0.0	12.9	0.1					
ARCHITECTURAL	4		0	276	5	38	7	9	0	0	45			380		
			0.0	72.6	1.3	10.0	1.8	2.4	0.0	0.0	11.8			16.9		
			0.0	22.5	1.4	100.0	100.0	6.5	0.0	0.0	26.2					
			0.0	12.3	0.2	1.7	0.3	0.4	0.0	0.0	2.0					
FURNITURE	5		0	4	6	0	0	3	0	0	0	0	0	13		
			0.0	30.8	46.2	0.0	0.0	23.1	0.0	0.0	0.0	0.0	0.0	0.6		
			0.0	0.3	1.7	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0			
			0.0	0.2	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0			
ARMS	6		0	0	0	0	0	0	0	11	0	0	0	11		
			0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.5		
			0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0			
			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0			
CLOTHING	7		0	0	0	0	0	6	0	0	0	23		29		
			0.0	0.0	0.0	0.0	0.0	20.7	0.0	0.0	0.0	79.3		1.3		
			0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	13.4				
			0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.0				
PERSONAL	8		0	19	13	0	0	1	0	2	1			36		
			0.0	52.8	36.1	0.0	0.0	2.8	0.0	5.6	2.8			1.6		
			0.0	1.6	3.8	0.0	0.0	0.7	0.0	0.6	0.6					
			0.0	0.8	0.6	0.0	0.0	0.0	0.0	0.1	0.0	0.0				
TOBACCO PIPE	9		0	0	1	0	0	0	0	0	0	0	0	1		
			0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
ACTIVITIES	10		0	3	0	0	0	67	0	20	66			156		
			0.0	1.9	0.0	0.0	0.0	42.9	0.0	12.8	42.3			6.9		
			0.0	0.2	0.0	0.0	0.0	48.6	0.0	6.4	38.4					
			0.0	0.1	0.0	0.0	0.0	3.0	0.0	0.9	2.9					
UNIDENTIFIED	11		0	257	49	0	0	40	0	0	35			381		
			0.0	67.5	12.9	0.0	0.0	10.5	0.0	0.0	9.2			16.9		
			0.0	21.0	14.2	0.0	0.0	29.0	0.0	0.0	20.3					
			0.0	11.4	2.2	0.0	0.0	1.8	0.0	0.0	1.6					
COLUMN TOTAL			1	1224	345	38	7	138	11	312	172			2248		
			0.0	54.4	15.3	1.7	0.3	6.1	0.5	13.9	7.7			100.0		

RAW CHI SQUARE = 6156.87500 WITH 72 DEGREES OF FREEDOM. SIGNIFICANCE = 0.0000

TABLE 24
1979 SOUTH ARTIFACT GROUPS BY PARKS CANADA MATERIAL CATEGORIES

PARKS CANADA MATERIAL CATEGORIES																										
SOUTH ARTIFACT GROUP	COUNT		I	PREHISTO	GLASS	CERAMICS	NAILS	FASTENIN GS	OTHER TAL	ME	ARMS UNITION	AMM CONTS	MET	MISCEL LANEOUS	ROW TOTAL											
	ROW	PCT														COL	PCT	TOT	PCT							
	1	2														3	4	5	6	7	8	9	10	11	12	13
PREHISTORIC	1		I	3	I	0	I	0	I	0	I	0	I	0	I	0	I	0	I	0	I	0	I	0	I	3
		I	100.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	0.1
		I	100.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	
		I	0.1	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	
KITCHEN	2		I	0	I	628	I	236	I	0	I	0	I	9	I	0	I	380	I	2	I		I		1255	
		I	0.0	I	50.0	I	18.8	I	0.0	I	0.0	I	0.7	I	0.0	I	30.3	I	0.2	I		I		47.3		
		I	0.0	I	51.9	I	88.7	I	0.0	I	0.0	I	2.3	I	0.0	I	90.7	I	1.1	I		I				
		I	0.0	I	23.6	I	8.9	I	0.0	I	0.0	I	0.3	I	0.0	I	14.3	I	0.1	I		I				
ARCHITECTURAL	4		I	0	I	252	I	2	I	146	I	32	I	22	I	0	I	0	I	28	I		I		482	
		I	0.0	I	52.3	I	0.4	I	30.3	I	6.6	I	4.6	I	0.0	I	0.0	I	5.8	I		I		18.1		
		I	0.0	I	20.8	I	0.8	I	100.0	I	88.9	I	5.7	I	0.0	I	0.0	I	15.9	I		I				
		I	0.0	I	9.5	I	0.1	I	5.5	I	1.2	I	0.8	I	0.0	I	0.0	I	1.1	I		I				
FURNITURE	5		I	0	I	10	I	1	I	0	I	0	I	9	I	0	I	0	I	4	I		I		24	
		I	0.0	I	41.7	I	4.2	I	0.0	I	0.0	I	37.5	I	0.0	I	0.0	I	16.7	I		I		0.9		
		I	0.0	I	0.8	I	0.4	I	0.0	I	0.0	I	2.3	I	0.0	I	0.0	I	2.3	I		I				
		I	0.0	I	0.4	I	0.0	I	0.0	I	0.0	I	0.3	I	0.0	I	0.0	I	0.2	I		I				
ARMS	6		I	0	I	0	I	0	I	0	I	0	I	0	I	13	I	0	I	0	I		I		13	
		I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	100.0	I	0.0	I	0.0	I	0.0	I		0.5		
		I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	100.0	I	0.0	I	0.0	I	0.0	I				
		I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.5	I	0.0	I	0.0	I	0.0	I				
CLOTHING	7		I	0	I	0	I	0	I	0	I	0	I	18	I	0	I	0	I	47	I		I		65	
		I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	27.7	I	0.0	I	0.0	I	72.3	I		I		2.4		
		I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	4.7	I	0.0	I	0.0	I	26.7	I		I				
		I	0.0	I	0.0	I	0.0	I	0.0	I	0.0	I	0.7	I	0.0	I	0.0	I	1.8	I		I				
PERSONAL	8		I	0	I	13	I	12	I	0	I	0	I	4	I	0	I	0	I	5	I		I		34	
		I	0.0	I	38.2	I	35.3	I	0.0	I	0.0	I	11.8	I	0.0	I	0.0	I	14.7	I		I		1.3		
		I	0.0	I	1.1	I	4.5	I	0.0	I	0.0	I	1.0	I	0.0	I	0.0	I	2.8	I		I				
		I	0.0	I	0.5	I	0.5	I	0.0	I	0.0	I	0.2	I	0.0	I	0.0	I	0.2	I		I				
ACTIVITIES	10		I	0	I	1	I	0	I	0	I	4	I	139	I	0	I	38	I	59	I		I		241	
		I	0.0	I	0.4	I	0.0	I	0.0	I	1.7	I	57.7	I	0.0	I	0.0	I	24.5	I		I		9.1		
		I	0.0	I	0.1	I	0.0	I	0.0	I	11.1	I	35.9	I	0.0	I	0.0	I	33.5	I		I				
		I	0.0	I	0.0	I	0.0	I	0.0	I	0.2	I	5.2	I	0.0	I	0.0	I	2.2	I		I				
UNIDENTIFIED	11		I	0	I	306	I	15	I	0	I	0	I	186	I	0	I	1	I	31	I		I		539	
		I	0.0	I	56.8	I	2.8	I	0.0	I	0.0	I	34.5	I	0.0	I	0.2	I	5.8	I		I		20.3		
		I	0.0	I	25.3	I	5.6	I	0.0	I	0.0	I	48.1	I	0.0	I	0.2	I	17.6	I		I				
		I	0.0	I	11.5	I	0.6	I	0.0	I	0.0	I	7.0	I	0.0	I	0.0	I	1.2	I		I				
COLUMN TOTAL				3	1210	266	146		36		387		13		419		176		2656		100.0					
				0.1	45.6	10.0	5.5		1.4		14.6		0.5		15.8		6.6									

RAW CHI SQUARE = 8122.02734 WITH 64 DEGREES OF FREEDOM. SIGNIFICANCE = 0.0000

TABLE 26
BARN YARD: SOUTH ARTIFACT GROUPS BY YEAR

SOUTH ARTIFACT GROUP	COUNT		HISTORICAL FEATURE AREA				ROW TOTAL	
	ROW	PCT	I	1978	1979			
	COL	PCT	I	BARN	BARN			
	TOT	PCT	I	YARD	I	YARD		
			I	I	I	I		
KITCHEN	2		I	68	I	87	I	155
			I	43.9	I	56.1	I	48.7
			I	59.1	I	42.9	I	
			I	21.4	I	27.4	I	
			I	I	I	I		
ARCHITECTURAL	4		I	28	I	47	I	75
			I	37.3	I	62.7	I	23.6
			I	24.3	I	23.2	I	
			I	8.8	I	14.8	I	
			I	I	I	I		
FURNITURE	5		I	1	I	0	I	1
			I	100.0	I	0.0	I	0.3
			I	0.9	I	0.0	I	
			I	0.3	I	0.0	I	
			I	I	I	I		
ARMS	6		I	0	I	1	I	1
			I	0.0	I	100.0	I	0.3
			I	0.0	I	0.5	I	
			I	0.0	I	0.3	I	
			I	I	I	I		
CLOTHING	7		I	3	I	10	I	13
			I	23.1	I	76.9	I	4.1
			I	2.6	I	4.9	I	
			I	0.9	I	3.1	I	
			I	I	I	I		
PERSONAL	8		I	1	I	1	I	2
			I	50.0	I	50.0	I	0.6
			I	0.9	I	0.5	I	
			I	0.3	I	0.3	I	
			I	I	I	I		
ACTIVITIES	10		I	3	I	14	I	17
			I	17.6	I	82.4	I	5.3
			I	2.6	I	6.9	I	
			I	0.9	I	4.4	I	
			I	I	I	I		
UNIDENTIFIED	11		I	11	I	43	I	54
			I	20.4	I	79.6	I	17.0
			I	9.6	I	21.2	I	
			I	3.5	I	13.5	I	
			I	I	I	I		
			115		203		318	
			36.2		63.8		100.0	

RAW CHI SQUARE = 15.85409 WITH 7 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.0265

TABLE 27

WEST ROAD AREA: SOUTH ARTIFACT GROUPS BY YEAR

		HISTORICAL FEATURE AREA						
		COUNT		I			ROW	
SOUTH	ROW	PCT	I	1978	1979		TOTAL	
ARTIFACT	COL	PCT	I	WEST	WEST			
GROUP	TOT	PCT	I	ROAD	ROAD	I		
			I	I	I	I		
	1		I	0	I	I	3	
PREHISTORIC			I	0.0	I	100.0	0.5	
			I	0.0	I	0.8		
			I	0.0	I	0.5		
			I	I	I	I		
	2		I	130	I	182	312	
KITCHEN			I	41.7	I	58.3	48.7	
			I	51.8	I	46.7		
			I	20.3	I	28.4		
			I	I	I	I		
	4		I	44	I	74	118	
ARCHITECTURAL			I	37.3	I	62.7	18.4	
			I	17.5	I	19.0		
			I	6.9	I	11.5		
			I	I	I	I		
	5		I	1	I	3	4	
FURNITURE			I	25.0	I	75.0	0.6	
			I	0.4	I	0.8		
			I	0.2	I	0.5		
			I	I	I	I		
	6		I	1	I	1	2	
ARMS			I	50.0	I	50.0	0.3	
			I	0.4	I	0.3		
			I	0.2	I	0.2		
			I	I	I	I		
	7		I	5	I	3	8	
CLOTHING			I	62.5	I	37.5	1.2	
			I	2.0	I	0.8		
			I	0.8	I	0.5		
			I	I	I	I		
	8		I	5	I	6	11	
PERSONAL			I	45.5	I	54.5	1.7	
			I	2.0	I	1.5		
			I	0.8	I	0.9		
			I	I	I	I		
	10		I	29	I	38	67	
ACTIVITIES			I	43.3	I	56.7	10.5	
			I	11.6	I	9.7		
			I	4.5	I	5.9		
			I	I	I	I		
	11		I	36	I	80	116	
UNIDENTIFIED			I	31.0	I	69.0	18.1	
			I	14.3	I	20.5		
			I	5.6	I	12.5		
			I	I	I	I		
		COLUMN		251		390	641	
		TOTAL		39.2		60.8	100.0	

RAW CHI SQUARE = 9.06773 WITH 8 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.3366

TABLE 28
GARDEN AREA: SOUTH ARTIFACT GROUPS BY YEAR

		COUNT		HISTORICAL FEATURE AREA		
SOUTH ARTIFACT GROUP	ROW	PCT	I	1978	1979	ROW
	COL	PCT	I	GARDEN	GARDEN	TOTAL
	TOT	PCT	I	I	I	
	-----I			-----I		
KITCHEN	2	I	147	I	189	I 276
		I	53.3	I	46.7	I 57.1
		I	61.0	I	53.3	I
		I	30.4	I	26.7	I
-----I			-----I			
ARCHITECTURAL	4	I	25	I	22	I 47
		I	53.2	I	46.8	I 9.7
		I	10.4	I	9.1	I
		I	5.2	I	4.6	I
-----I			-----I			
FURNITURE	5	I	2	I	3	I 5
		I	40.0	I	60.0	I 1.0
		I	0.8	I	1.2	I
		I	0.4	I	0.6	I
-----I			-----I			
ARMS	6	I	0	I	2	I 2
		I	0.0	I	100.0	I 0.4
		I	0.0	I	0.8	I
		I	0.0	I	0.4	I
-----I			-----I			
CLOTHING	7	I	2	I	1	I 3
		I	66.7	I	33.3	I 0.6
		I	0.8	I	0.4	I
		I	0.4	I	0.2	I
-----I			-----I			
PERSONAL	8	I	5	I	5	I 10
		I	50.0	I	50.0	I 2.1
		I	2.1	I	2.1	I
		I	1.0	I	1.0	I
-----I			-----I			
ACTIVITIES	10	I	24	I	38	I 62
		I	38.7	I	61.3	I 12.8
		I	10.0	I	15.7	I
		I	5.0	I	7.9	I
-----I			-----I			
UNIDENTIFIED	11	I	36	I	42	I 78
		I	46.2	I	53.8	I 16.1
		I	14.9	I	17.4	I
		I	7.5	I	8.7	I
-----I			-----I			
COLUMN			241		242	483
TOTAL			49.9		50.1	100.0

TABLE 29

WEST FIELD AREA: SOUTH ARTIFACT GROUPS BY YEAR

		HISTORICAL FEATURE AREA					
		COUNT	I				
		ROW PCT	I 1978	1979			ROW
SOUTH		COL PCT	IWEST	IWEST			TOTAL
ARTIFACT		TOT PCT	IFIELD	IFIELD		I	
GROUP							
			-----I	-----I	-----I		
		1	I	I	I	I	
	PREHISTORIC		I 1	I 0	I 0	I 1	1
			I 100.0	I 0.0	I 0.0	I 0.4	0.4
			I 0.9	I 0.0	I 0.0	I 0.0	
			I 0.4	I 0.0	I 0.0	I 0.0	
			-----I	-----I	-----I		
		2	I	I	I	I	
	KITCHEN		I 61	I 69	I 69	I 130	130
			I 46.9	I 53.1	I 53.1	I 54.6	54.6
			I 54.5	I 54.8	I 54.8	I 54.8	
			I 25.6	I 29.0	I 29.0	I 29.0	
			-----I	-----I	-----I		
		4	I	I	I	I	
	ARCHITECTURAL		I 10	I 19	I 19	I 29	29
			I 34.5	I 65.5	I 65.5	I 12.2	12.2
			I 8.9	I 15.1	I 15.1	I 15.1	
			I 4.2	I 8.0	I 8.0	I 8.0	
			-----I	-----I	-----I		
		7	I	I	I	I	
	CLOTHING		I 2	I 3	I 3	I 5	5
			I 40.0	I 60.0	I 60.0	I 2.1	2.1
			I 1.8	I 2.4	I 2.4	I 2.4	
			I 0.8	I 1.3	I 1.3	I 1.3	
			-----I	-----I	-----I		
		8	I	I	I	I	
	PERSONAL		I 3	I 2	I 2	I 5	5
			I 60.0	I 40.0	I 40.0	I 2.1	2.1
			I 2.7	I 1.6	I 1.6	I 1.6	
			I 1.3	I 0.8	I 0.8	I 0.8	
			-----I	-----I	-----I		
		9	I	I	I	I	
	TOBACCO PIPE		I 1	I 0	I 0	I 1	1
			I 100.0	I 0.0	I 0.0	I 0.4	0.4
			I 0.9	I 0.0	I 0.0	I 0.0	
			I 0.4	I 0.0	I 0.0	I 0.0	
			-----I	-----I	-----I		
		10	I	I	I	I	
	ACTIVITIES		I 14	I 10	I 10	I 24	24
			I 58.3	I 41.7	I 41.7	I 10.1	10.1
			I 12.5	I 7.9	I 7.9	I 7.9	
			I 5.9	I 4.2	I 4.2	I 4.2	
			-----I	-----I	-----I		
		11	I	I	I	I	
	UNIDENTIFIED		I 20	I 23	I 23	I 43	43
			I 46.5	I 53.5	I 53.5	I 18.1	18.1
			I 17.9	I 18.3	I 18.3	I 18.3	
			I 8.4	I 9.7	I 9.7	I 9.7	
			-----I	-----I	-----I		
		COLUMN	112	126	126	238	238
		TOTAL	47.1	52.9	52.9	100.0	100.0

RAW CHI SQUARE = 5.75777 WITH 7 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.5683

TABLE 30
EAST PATH AREA: SOUTH ARTIFACT GROUPS BY YEAR

SOUTH ARTIFACT GROUP	HISTORICAL FEATURE AREA						ROW TOTAL
	COUNT		I		I		
	ROW PCT	I	1978		1979		
	COL PCT	IEAST			EAST		
	TOT PCT	IPATH	IPATH	IPATH	IPATH	I	
KITCHEN	2	I	22	I	66	I	88
		I	25.0	I	75.0	I	52.1
		I	53.7	I	51.6	I	
		I	13.0	I	39.1	I	
ARCHITECTURAL	4	I	10	I	17	I	27
		I	37.0	I	63.0	I	16.0
		I	24.4	I	13.3	I	
		I	5.9	I	10.1	I	
FURNITURE	5	I	0	I	2	I	2
		I	0.0	I	100.0	I	1.2
		I	0.0	I	1.6	I	
		I	0.0	I	1.2	I	
CLOTHING	7	I	2	I	5	I	7
		I	28.6	I	71.4	I	4.1
		I	4.9	I	3.9	I	
		I	1.2	I	3.0	I	
ACTIVITIES	10	I	1	I	14	I	15
		I	6.7	I	93.3	I	8.9
		I	2.4	I	10.9	I	
		I	0.6	I	8.3	I	
UNIDENTIFIED	11	I	6	I	24	I	30
		I	20.0	I	80.0	I	17.8
		I	14.6	I	18.8	I	
		I	3.6	I	14.2	I	
COLUMN TOTAL			41 24.3		128 75.7		169 100.0

RAW CHI SQUARE = 5.95956 WITH 5 DEGREES
OF FREEDOM. SIGNIFICANCE = 0.3102

TABLE 31
MANURE PIT AREA: SOUTH ARTIFACT GROUPS RECOVERED IN
1978

SOUTH ARTIFACT GROUP	COUNT ROW COL TOT	PCT PCT PCT	YEAR		ROW TOTAL
			I	1978	
			I	I	
			I	1	
			I	I	
KITCHEN	2		I	10	10
			I	100.0	40.0
			I	40.0	
			I	40.0	
ARCHITECTURAL	4		I	11	11
			I	100.0	44.0
			I	44.0	
			I	44.0	
CLOTHING	7		I	1	1
			I	100.0	4.0
			I	4.0	
			I	4.0	
ACTIVITIES	10		I	1	1
			I	100.0	4.0
			I	4.0	
			I	4.0	
UNIDENTIFIED	11		I	2	2
			I	100.0	8.0
			I	8.0	
			I	8.0	
COLUMN		25		25	
TOTAL		100.0		100.0	

Appendix B
FIGURES RELATED TO ANALYSIS B

B.1 FORMAT AND USE OF THE SAS ARTIFACT PLOTS AND SUPERIMPOSED DIAGRAMS

The following artifact plots were produced using the SAS-plot program. In these plots the following conventions apply:

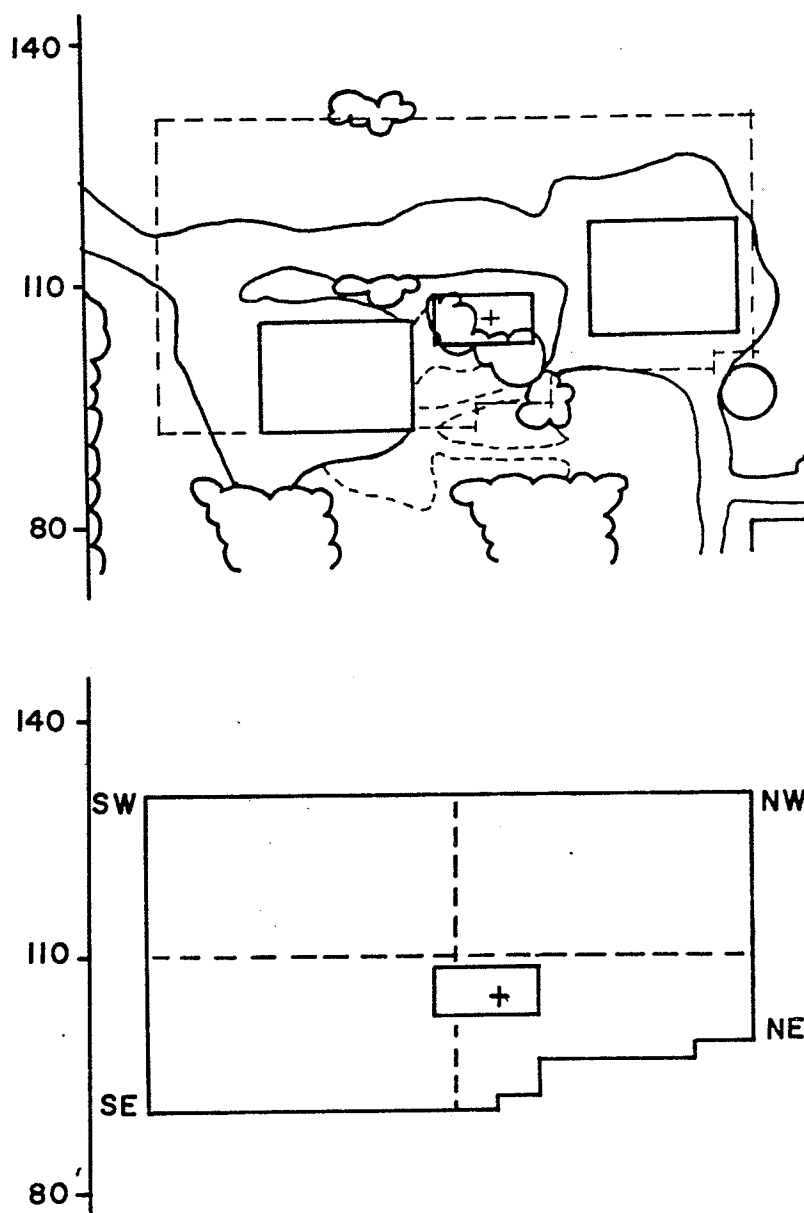
1. all artifacts have been plotted in terms of their original two metre by two metre collection units,
2. the axes give the co-ordinates in terms of two metre intervals starting at 80 metres west of zero datum on the west co-ordinate axis and 340 metres north of zero datum on the north co-ordinate axis,
3. the plots are oriented northwards horizontally across the page, and
4. artifact counts and symbols are unique to each individual plot as noted in the legend at the bottom of the page.

Superimposed drawings of artifact concentrations between years are hand-drawn tracings of the highest density areas observed in each year's artifact plots. These densities are relative to the north and south halves of the site sample

area and are shown in the legend at the bottom of each diagram. The scale used is the same as that used for the SAS artifact plots.

Transparency overlays for the Jensen's Farm feature areas and the site sample area quadrats can be found in the back pocket of this thesis or reproduced from Figures 15 to 17.

B.2 THE DEFINITION OF HISTORICAL FEATURE AREAS, JENSEN'S
FARM SCHEMATIC, AND THE SAMPLE AREA QUADRAT DIAGRAMS



(David Elrick; drafts person)

Figure 17: Small Scale Diagrams of a) Jensen's Farm and b) Sample Area Quadrats (Overlays)

B.3 SOUTH ARTIFACT GROUP PLOTS

FIGURE 24:
1979
SPATIAL DISTRIBUTION
OF ALL KITCHEN GROUP ARTIFACTS

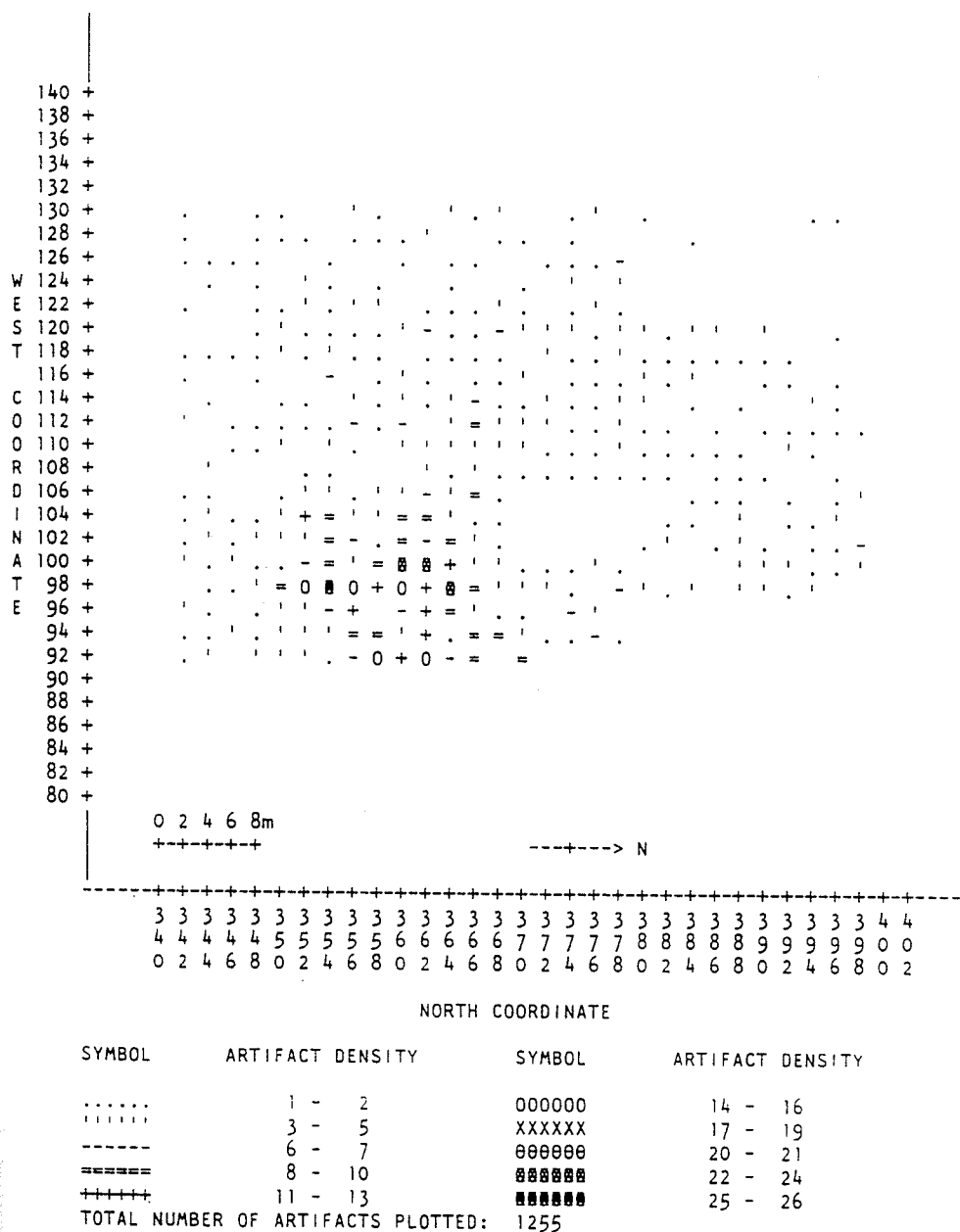
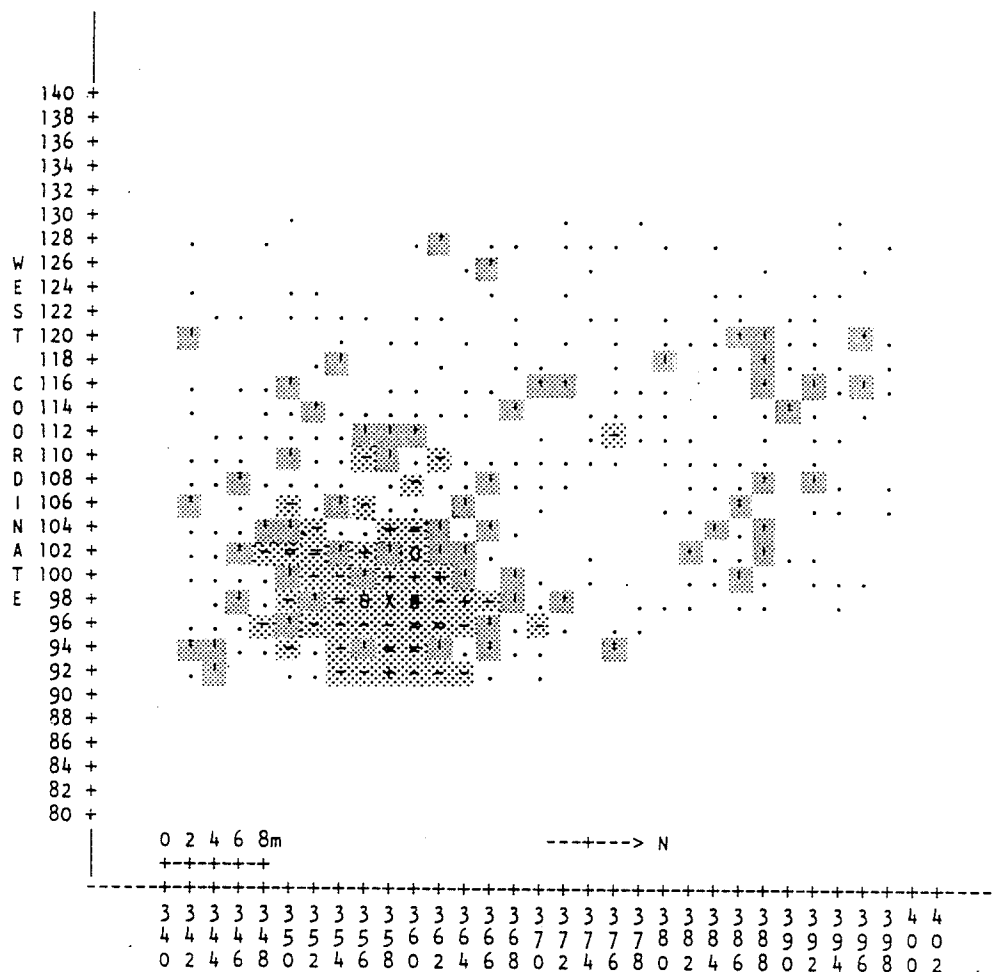


Figure 24: 1979: Spatial Distribution of All Kitchen Group Artifacts

FIGURE 26:
1978 AND 1979
COMBINED
SPATIAL DISTRIBUTION
OF ALL ARCHITECTURAL GROUP ARTIFACTS



NORTH COORDINATE			
SYMBOL	ARTIFACT DENSITY	SYMBOL	ARTIFACT DENSITY
.....	1 - 2	000000	13 - 15
	3 - 4	XXXXXX	16 - 17
-----	5 - 7	888888	18 - 20
=====	8 - 9	999999	21 - 22
+++++	10 - 12	222222	23 - 24
TOTAL NUMBER OF ARTIFACTS PLOTTED: 862			

(Shaded density overlay:
Judy Zoltai; draftsperson)

Figure 26: 1978 and 1979: Combined Spatial Distribution of All Architectural Group Artifacts Recovered

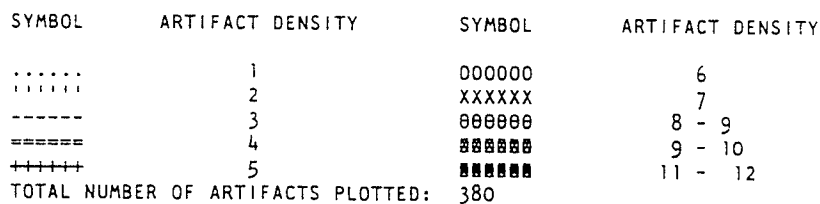


Figure 27: 1978: Spatial Distribution of All Architectural Group Artifacts Recovered

FIGURE 32:
1979
SPATIAL DISTRIBUTION
OF ALL FURNITURE GROUP ARTIFACTS

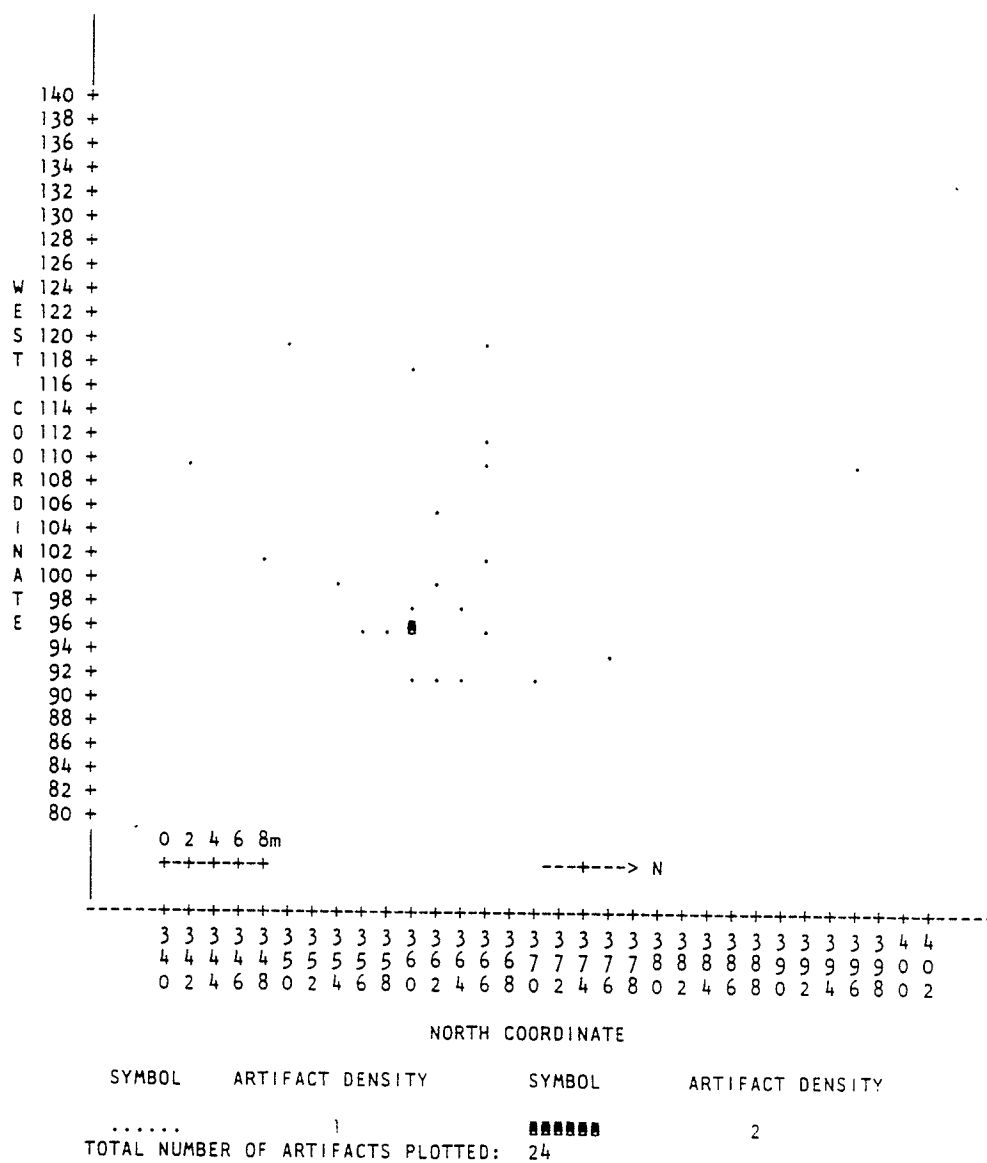


Figure 32: 1979: Spatial Distribution of All Furniture Group Artifacts Recovered

FIGURE 38:
1979
SPATIAL DISTRIBUTION
OF ALL CLOTHING GROUP ARTIFACTS

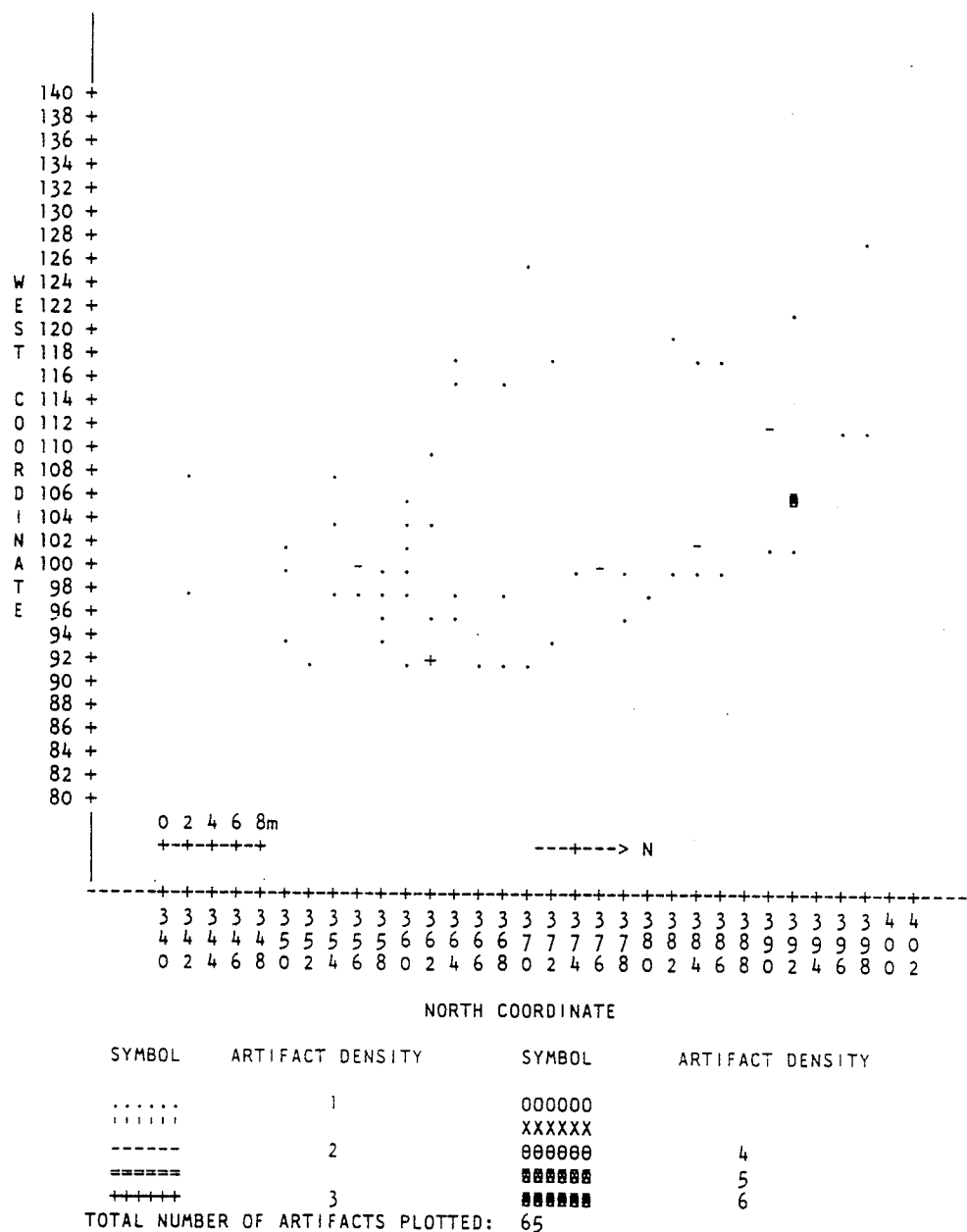


Figure 38: 1979: Spatial Distribution of All Clothing Group Artifacts Recovered

FIGURE 44:
1978 AND 1979
SPATIAL DISTRIBUTION
OF ALL ACTIVITES GROUP ARTIFACTS

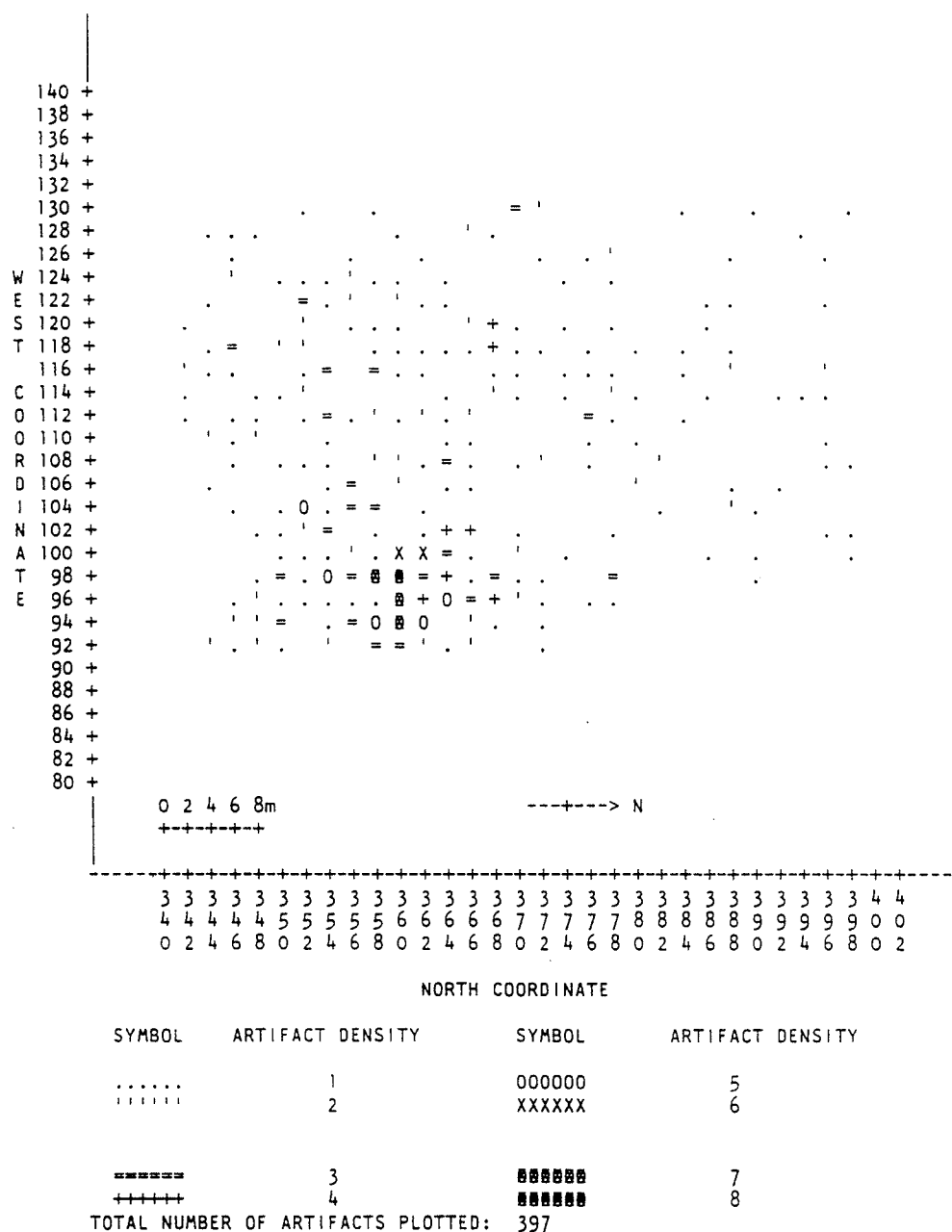
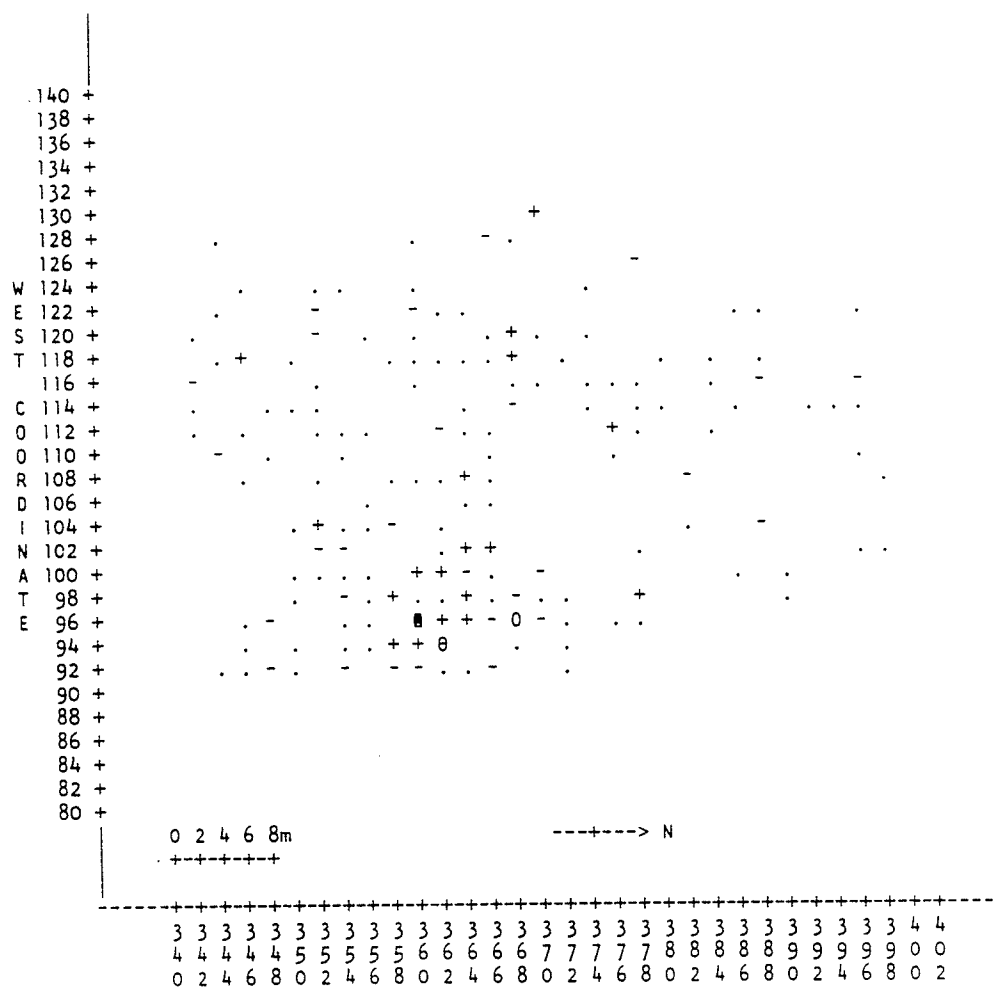


Figure 44: 1978 and 1979: Combined Spatial Distributions of All Activities Group Artifacts Recovered

FIGURE 46:
1979
SPATIAL DISTRIBUTION
OF ALL ACTIVITES GROUP ARTIFACTS



NORTH COORDINATE			
SYMBOL	ARTIFACT DENSITY	SYMBOL	ARTIFACT DENSITY
.....	1	000000	4
-----	2	XXXXXX	5
=====	3	000000	6
+++++		000000	

TOTAL NUMBER OF ARTIFACTS PLOTTED: 241

Figure 46: 1979: Spatial Distribution of All Activities Group Artifacts Recovered

FIGURE 48:
1978 AND 1979
COMBINED
SPATIAL DISTRIBUTION
OF ALL UNIDENTIFIED GROUP ARTIFACTS

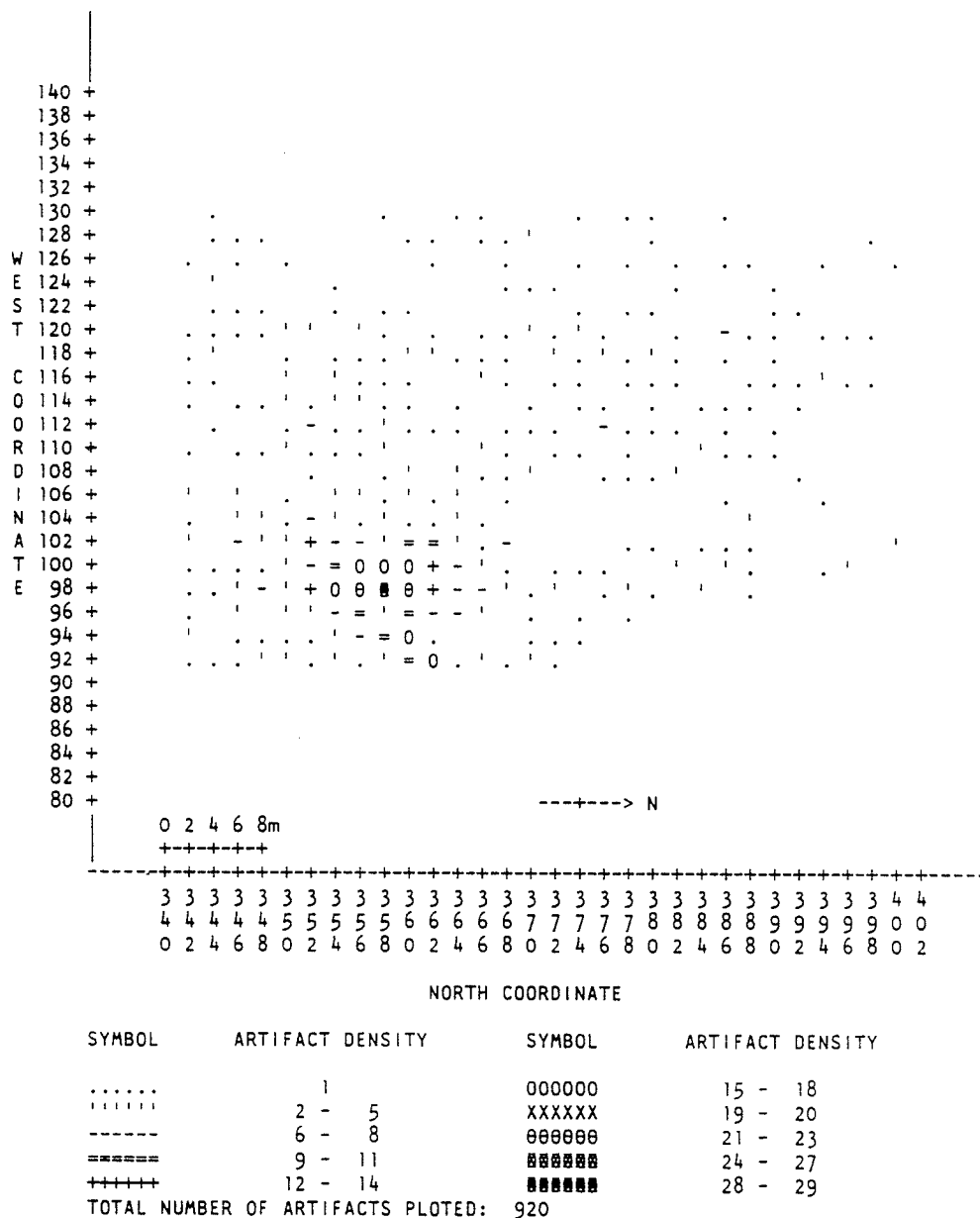


Figure 48: 1978 and 1979: Combined Spatial Distributions of All Unidentified Group Artifacts Recovered in Each Year

FIGURE 49:
1978
SPATIAL DISTRIBUTION
OF ALL UNIDENTIFIED GROUP ARTIFACTS

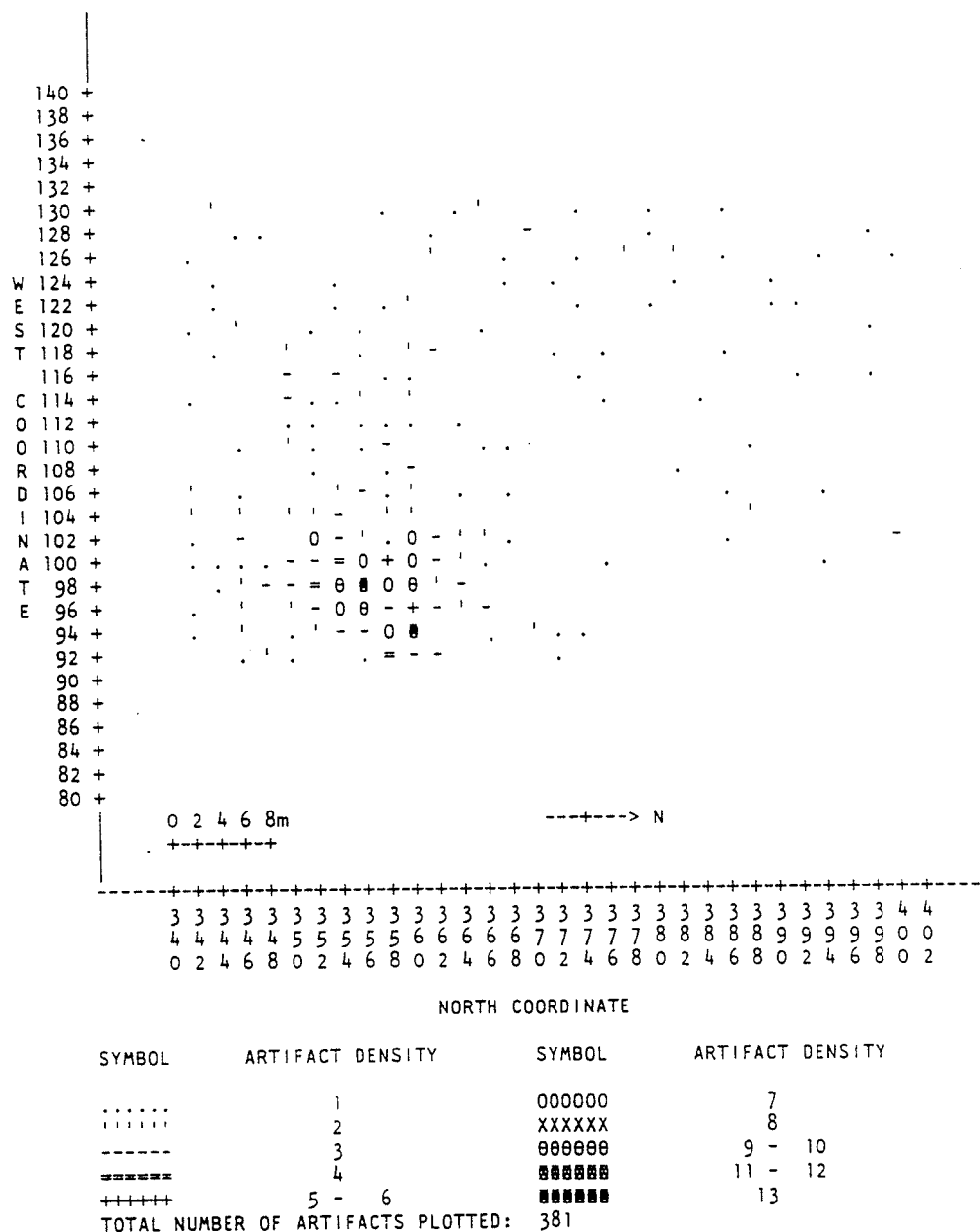


Figure 49: 1978: Spatial Distribution of All Unidentified Group Artifacts Recovered

B.4 KITCHEN ARTIFACT CLASSES AND ITEM/ATTRIBUTE PLOTS

140
138
136
134
132
130
128
126
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
94
92
90
88
86
84
82
80

W
E
S
T

C
O
O
R
D
I
N
A
T
E

○
⊗
⊙

TOTAL NUMBER OF ARTIFACTS PLOTTED: 1008

140
138
136
134
132
130
128
W 126
E 124
S 122
T 120
118
C 116
O 114
O 112
R 110
D 108
I 106
N 104
A 102
T 100
E 98
96
94
52
90
88
86
84
82
80

TOTAL NUMBER OF ARTIFACTS PLOTTED: 514

276

FIGURE 52 c)
 1979
 JENSEN HOMESTEAD
 SPATIAL DISTRIBUTION
 OF ALL GLASS BOTTLES BELONGING TO
 THE KITCHEN ARTIFACT GROUP

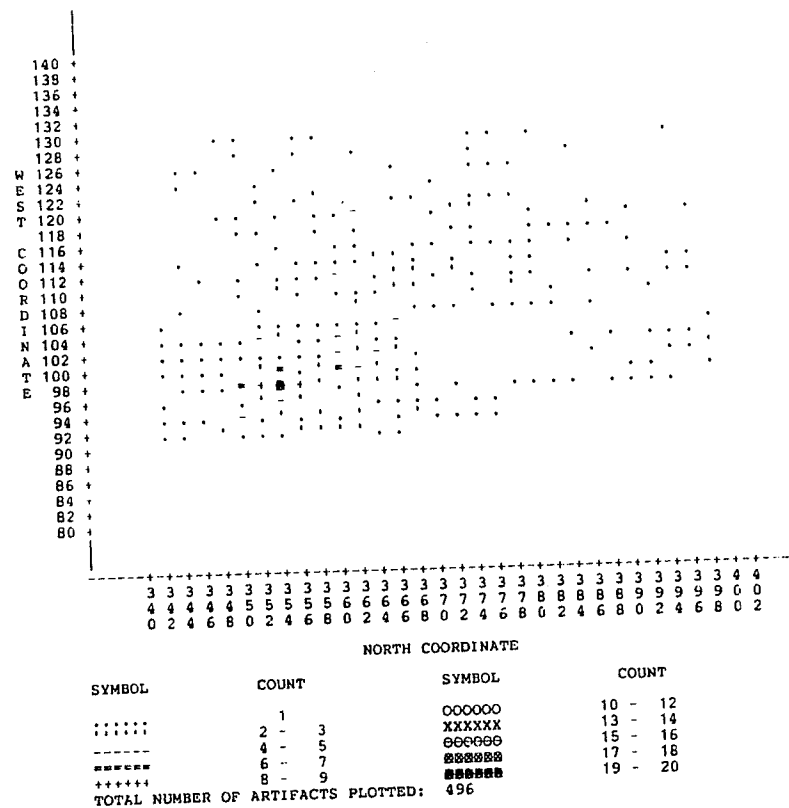


Figure 52 (continued)

FIGURE 53 a) 1978 AND 1979 COMBINED RESULTS
SPATIAL DISTRIBUTION
OF ALL GLASS BOTTLE BASES BELONGING
TO THE KITCHEN ARTIFACT GROUP

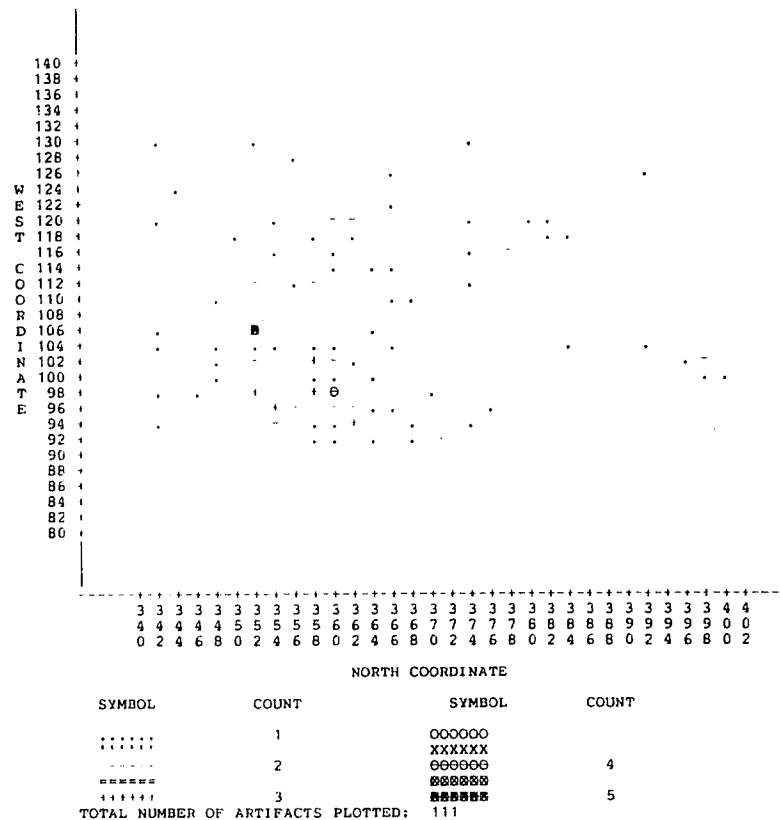


FIGURE 53 b) 1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL GLASS BOTTLE BASES BELONGING TO THE
KITCHEN ARTIFACT GROUP

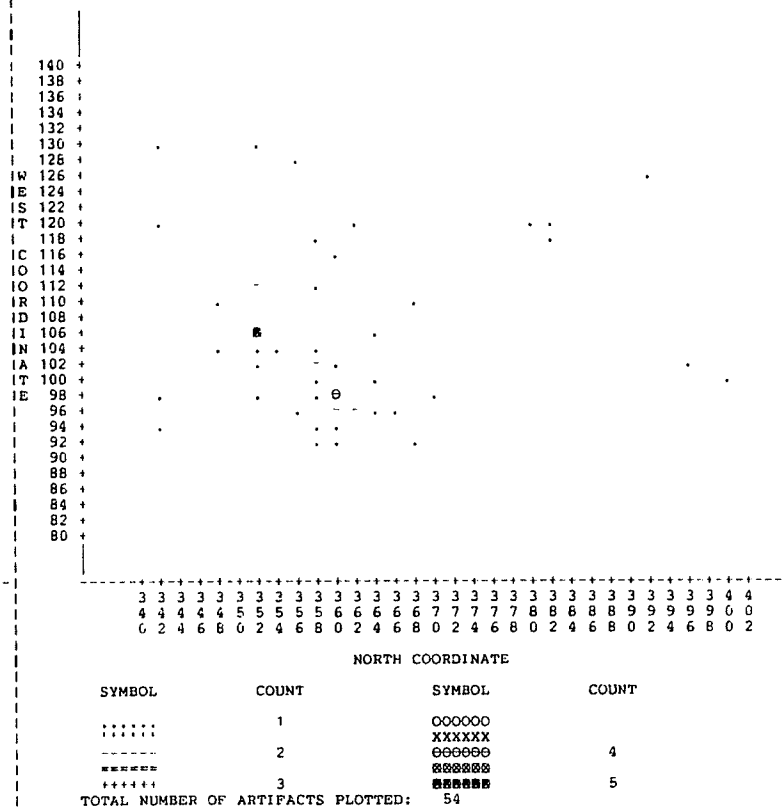


Figure 53: Spatial Distributions for All Kitchen Glass
Bottle Bases: a) 1978 and 1979, b) 1978, and c)
1979

[illegible]

279

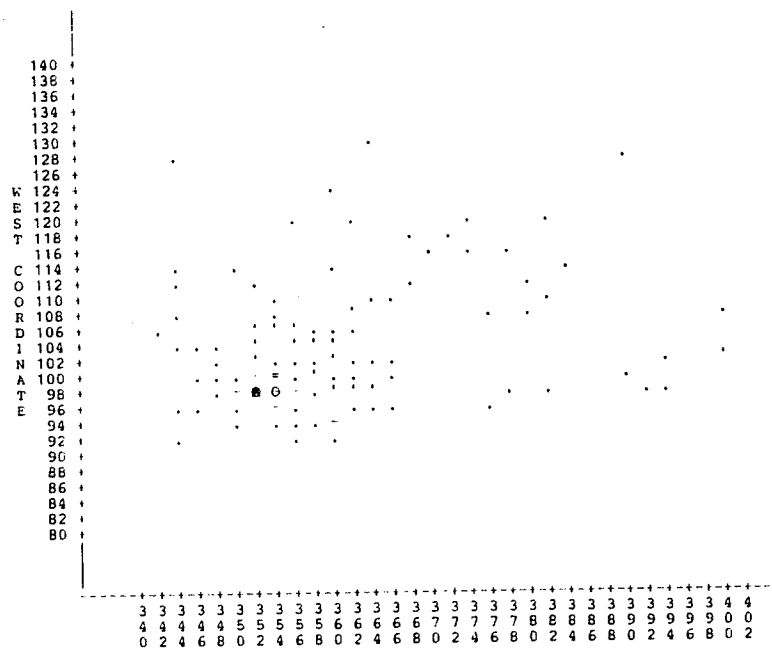

```

140 +
138 +
136 +
134 +
132 +
130 +
128 +
126 +
W 124 +
E 122 +
S 120 +
T 118 +
  116 +
  114 +
  112 +
  110 +
  108 +
  106 +
  104 +
  102 +
  100 +
  98 +
  96 +
  94 +
  92 +
  90 +
  88 +
  86 +
  84 +
  82 +
  80 +

```

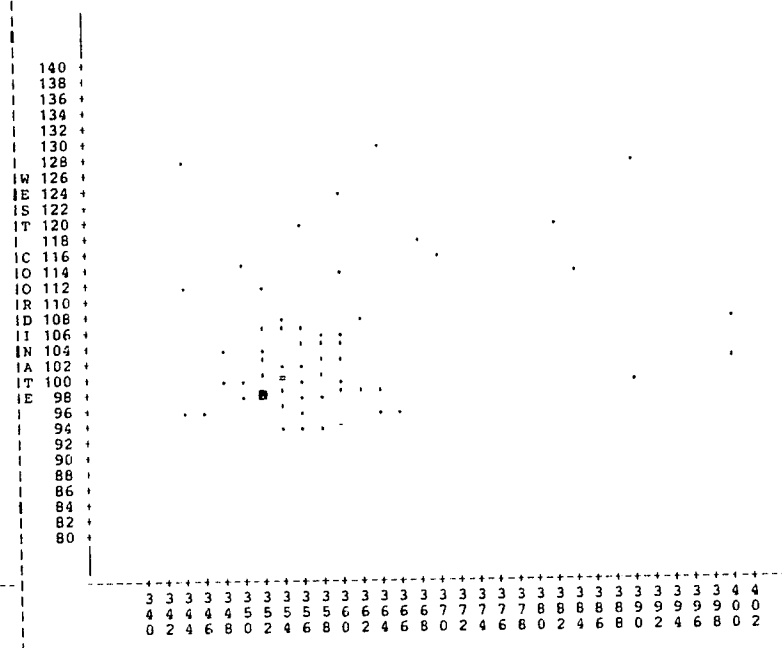
281

FIGURE 55 A) -1978 AND 1979 COMBINED RESULTS
SPATIAL DISTRIBUTION
OF ALL AMBER COLOURED BOTTLE GLASS
BELONGING TO THE KITCHEN ARTIFACT GROUP



NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT
.....	1	OOOOOO	10 - 12
-----	2 - 3	XXXXXX	13 - 14
=====	4 - 5	OOOOOO	15 - 16
++++++	6 - 7	OOOOOO	17 - 18
++++++	8 - 9	OOOOOO	19 - 20
TOTAL NUMBER OF ARTIFACTS PLOTTED: 196			

FIGURE 55 B) 1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL AMBER-COLOURED BOTTLES BELONGING TO
THE KITCHEN ARTIFACT GROUP



NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT
.....	1	OOOOOO	7 - 8
-----	2	XXXXXX	9
=====	3 - 4	OOOOOO	10 - 11
++++++	5	OOOOOO	12
++++++	6	OOOOOO	13 - 14
TOTAL NUMBER OF ARTIFACTS PLOTTED: 96			

Figure 55: Spatial Distribution of All Amber-Coloured
Bottle Glass: a) 1978 and 1979, b) 1978, and c)
1979

FIGURE 55 C) 1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL AMBERED COLOURED BOTTLES BELONGING TO
THE KITCHEN ARTIFACT GROUP

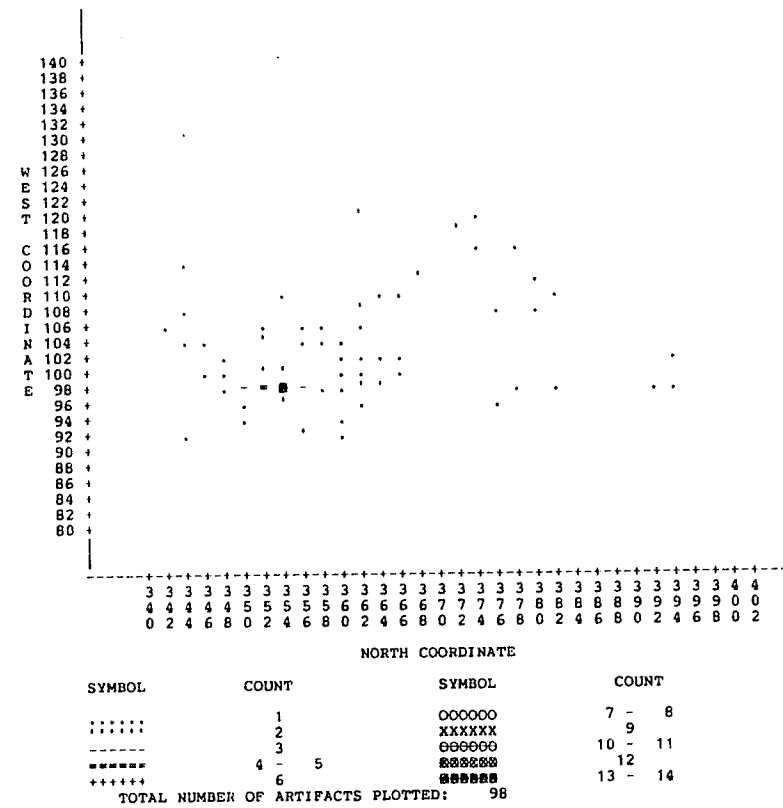


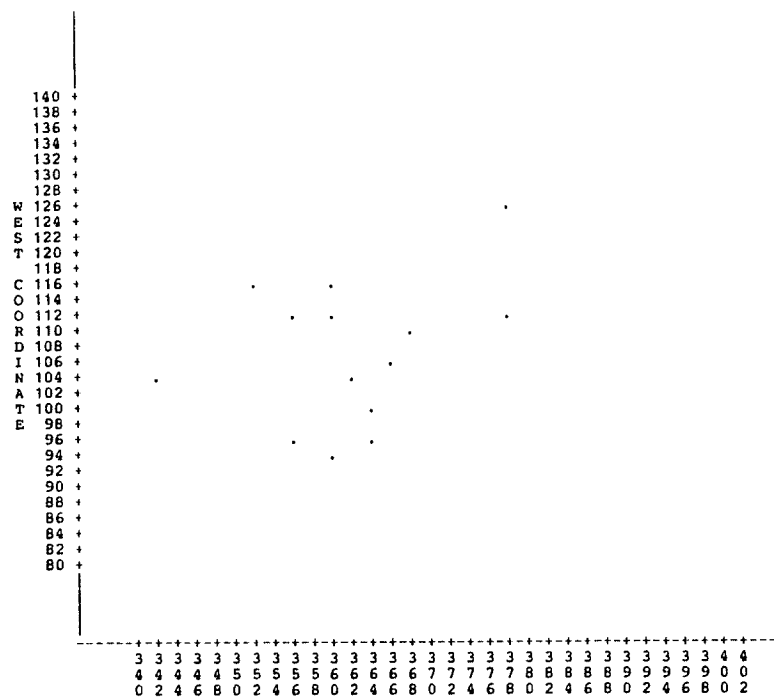
Figure 55 (continued)

[illegible]

Figure 56 (continued)

FIGURE 57 C)

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL MANGANESE-TINTED BOTTLES BELONGING TO
THE KITCHEN ARTIFACT GROUP



NORTH COORDINATE

SYMBOL COUNT

..... 1

TOTAL NUMBER OF ARTIFACTS PLOTTED: 13

Figure 57 (continued)

```

140 +
138 +
136 +
134 +
132 +
130 +
128 +
126 +
124 +
122 +
120 +
118 +
116 +
114 +
112 +
110 +
108 +
106 +
104 +
102 +
100 +
98 +
96 +
94 +
92 +
90 +
88 +
86 +
84 +
82 +
80 +

```

NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT
.....	1	000000	3
.....		XXXXXX	
.....		000000	
=====	2	000000	4
.....		000000	
.....		000000	
TOTAL NUMBER OF ARTIFACTS PLOTTED: 99			

140 +
138 +
136 +
134 +
132 +
130 +
128 +
W 126 +
E 124 +
S 122 +
T 120 +
118 +
C 116 +
O 114 +
O 112 +
R 110 +
D 108 +
I 106 +
N 104 +
A 102 +
T 100 +
E 98 +
96 +
94 +
92 +
90 +
88 +
86 +
84 +
82 +
80 +

NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT
.....	1	000000	
-----		XXXXXX	
++++++		000000	
		000000	
	2	000000	3
TOTAL NUMBER OF ARTIFACTS PLOTTED:		41	

288

FIGURE 58 C) 1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL GREEN-YELLOW COLOURED BOTTLES BELONGING
TO THE KITCHEN ARTIFACT GROUP

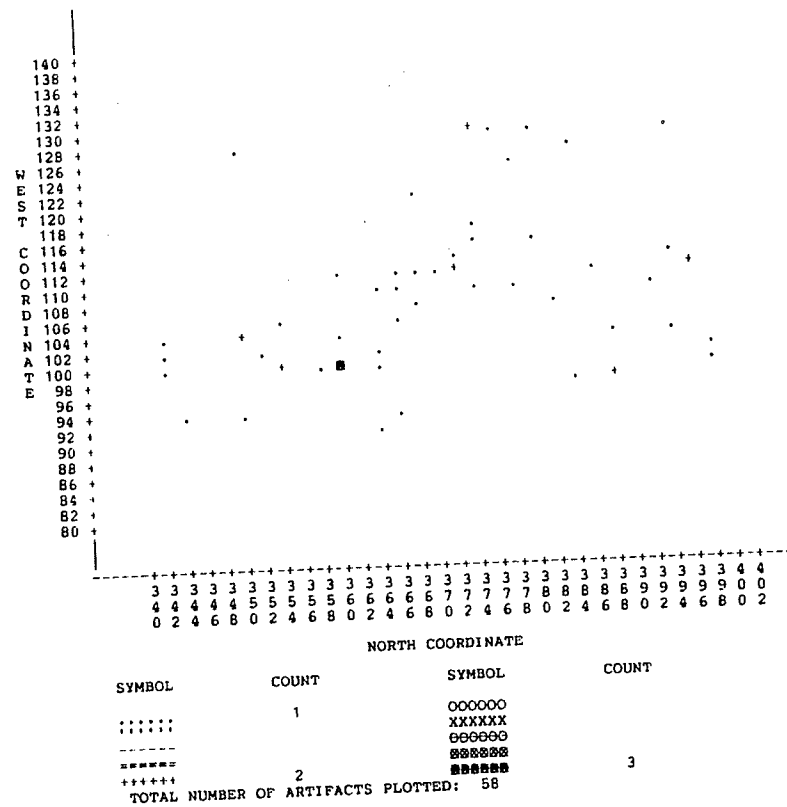


Figure 58 (continued)

WEST

CORNING

140
138
136
134
132
130
128
126
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
94
92
90
88
86
84
82
80

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40

Figure 59: Spatial Distribution of All Green Coloured Bottle Glass: a) 1978 and 1979, b) 1978, and c) 1979

[illegible]

290

FIGURE 59 C)

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL GREEN COLOURED BOTTLES BELONGING TO
THE KITCHEN ARTIFACT GROUP

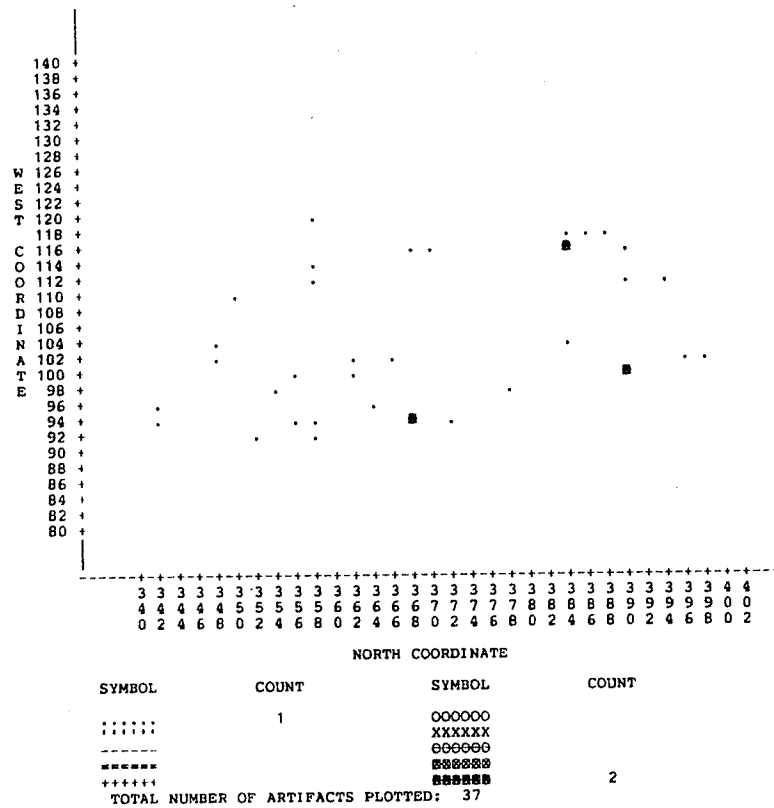
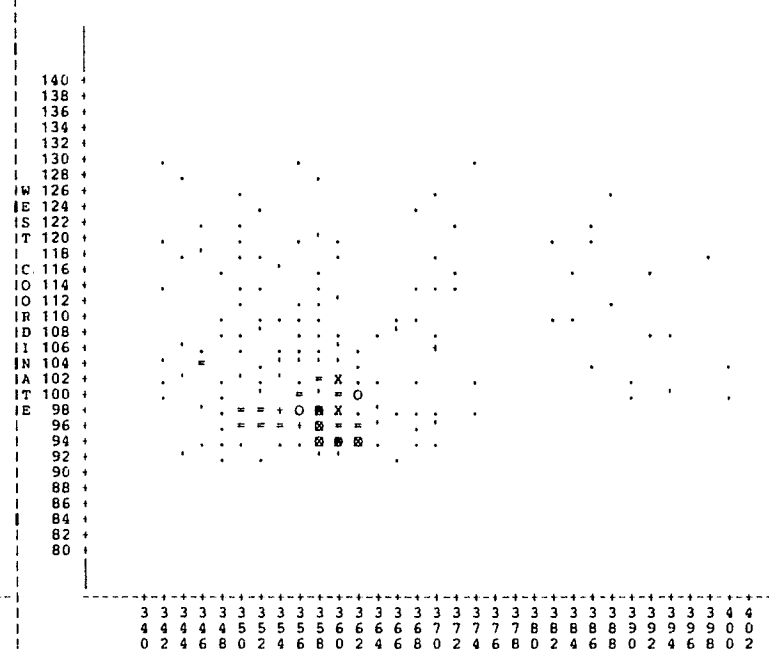


Figure 59 (continued)

FIGURE 60 B) 1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL CERAMIC ARTIFACTS BELONGING
TO THE KITCHEN TABLEWARE CLASS

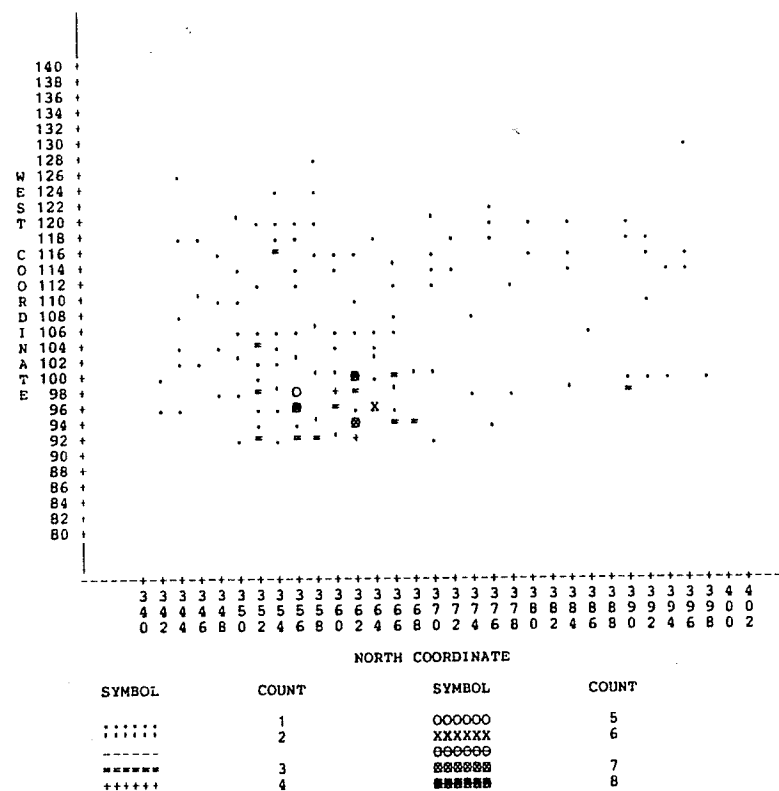


		NORTH COORDINATE	
SYMBOL	COUNT	SYMBOL	COUNT
*****	1	000000	5
-----	2	XXXXXX	6
=====	3	000000	7
++++++	4	000000	8

TOTAL NUMBER OF ARTIFACTS PLOTTED: 251

292

FIGURE 60 C) 1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL CERAMIC ARTIFACTS BELONGING
TO THE KITCHEN TABLEWARE CLASS



TOTAL NUMBER OF ARTIFACTS PLOTTED: 201

Figure 60 (continued)

SYMBOL		COUNT	SYMBOL		COUNT
.....		1	OOOOOO		
-----			XXXXXX		
=====			OOOOOO		
+++++		2	OOOOOO		
			OOOOOO		3

TOTAL NUMBER OF ARTIFACTS PLOTTED: 51

[illegible]

294

[illegible]

Figure 61 (continued)

FIGURE 62 A) 1978 AND 1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL KITCHEN CERAMIC TABLEWARE PLATE FRAGMENTS

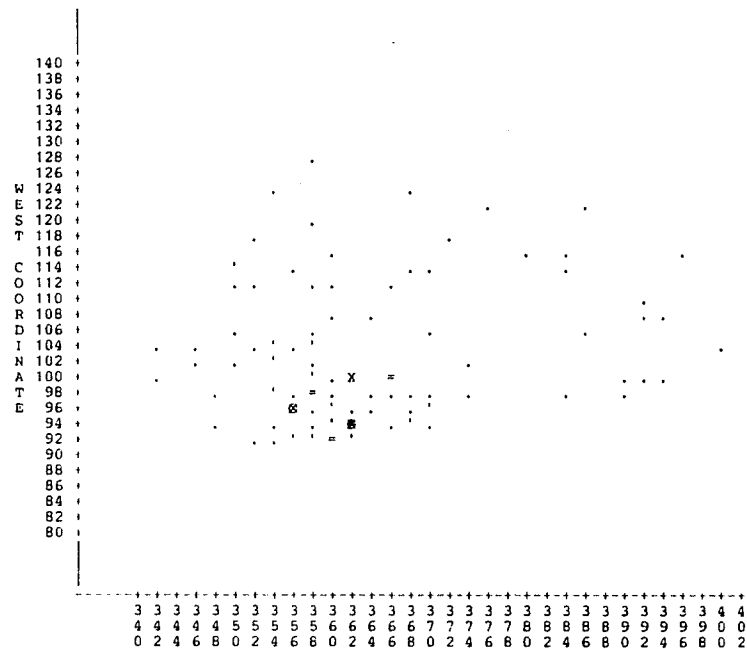


FIGURE 62 B) 1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL KITCHEN CERAMIC TABLEWARE PLATE FRAGMENTS

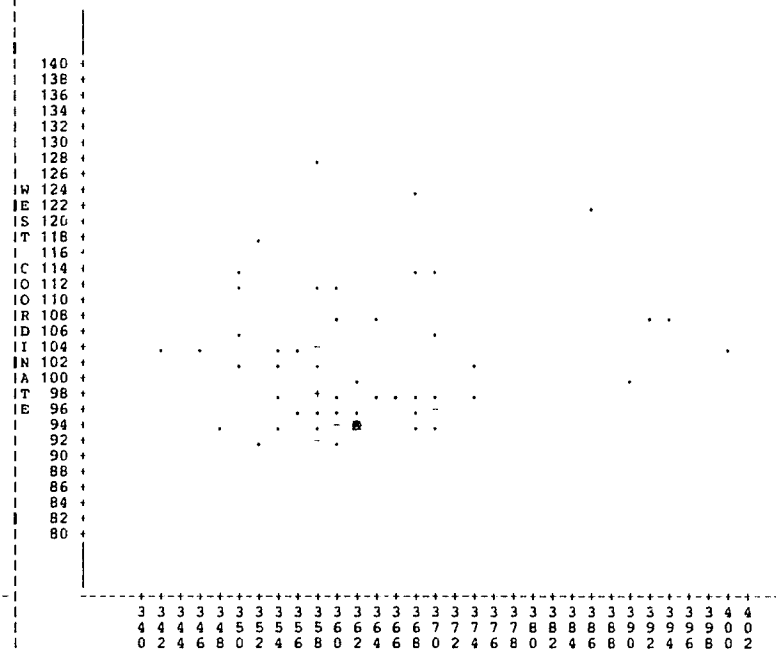


Figure 62: Spatial Distribution of All Ceramic Plate Fragments: a) 1978 and 1979, b) 1978, and c) 1979

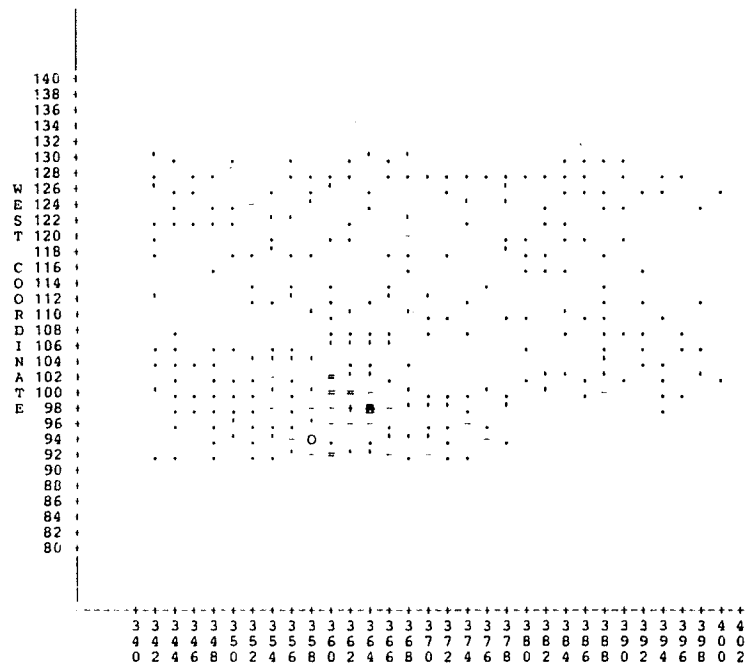
[illegible]

Figure 62 (continued)

[illegible]

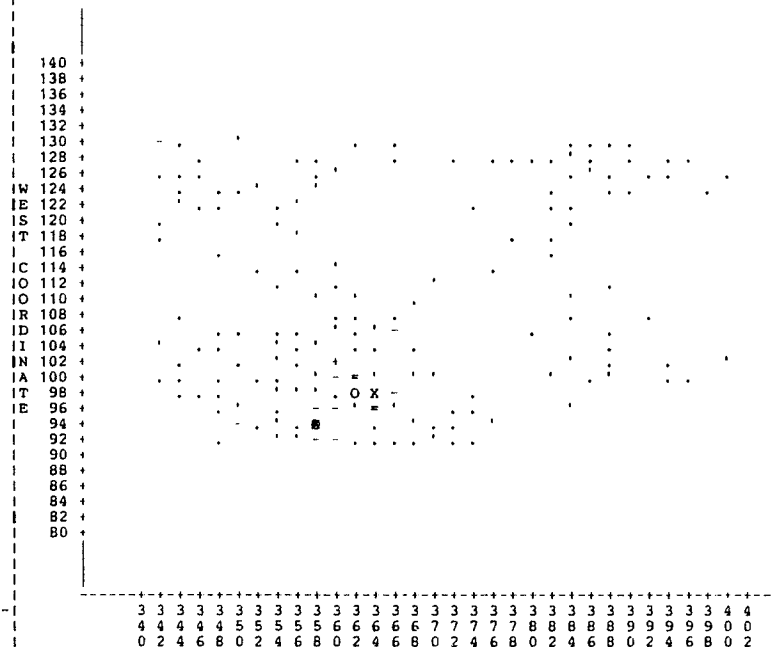
Figure 63 (continued)

FIGURE 64 A) 1978 AND 1979 COMBINED RESULTS
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL KITCHEN TIN CAN FOOD PACKAGING



NORTH COORDINATE					
SYMBOL	COUNT	SYMBOL	COUNT	SYMBOL	COUNT
.....	1	+++++	11 - 13	000000	23 - 25
-----	2	000000	14 - 16	000000	26 - 28
-----	5 - 7	XXXXXX	17 - 19		
=====	8 - 10	000000	20 - 22		
TOTAL NUMBER OF ARTIFACTS PLOTTED: 651					

FIGURE 64 B) 1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL KITCHEN TIN CAN FOOD PACKAGING



NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT
.....	1	000000	8
-----	2	XXXXXX	9 - 10
-----	3 - 4	000000	11 - 12
=====	5	000000	13
+++++	6 - 7	000000	14 - 15
TOTAL NUMBER OF ARTIFACTS PLOTTED: 286			

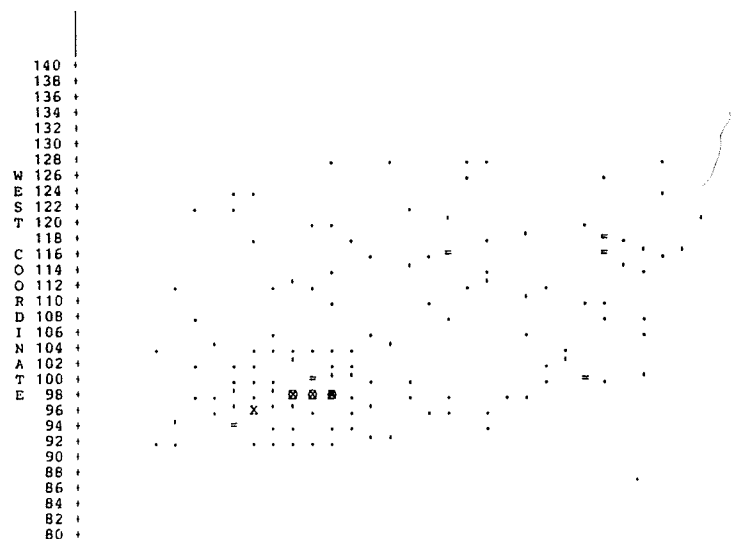
Figure 64: Spatial Distribution of All Kitchen Tin Can Packaging: a) 1978 and 1979, b) 1978, and c) 1979

[illegible]

+++++ 7 - 8
TOTAL NUMBER OF ARTIFACTS PLOTTED: 365

B.5 ARCHITECTURAL ARTIFACT CLASS PLOTS

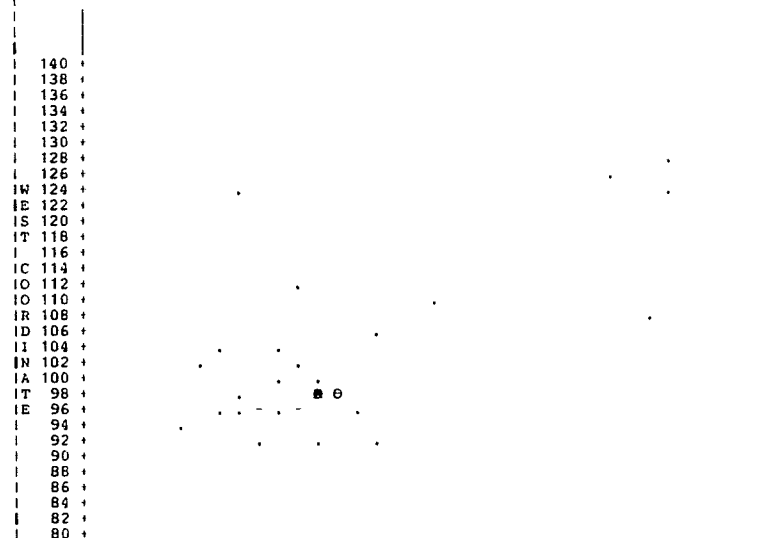
1978 AND 1979
COMBINED
SPATIAL DISTRIBUTION
OF ALL NAILS
JENSEN HOMESTEAD



	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4
	4	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	8	8	8	9	9	9	9	9	9	9	0
	0	2	4	6	8	0	2	4	6	8	0	2	4	6	8	0	2	4	6	8	0	2	4	6	8	0	2

NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT
*****	1	000000	4
*****	2	XXXXXX	
*****		000000	5
*****	3	000000	6
*****		000000	7

1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL NAILS



3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	5	5	5	5	6	6	6	7	7	7	8	8	8	9	9	9	9	9	9	9	9
0	2	4	6	8	0	2	4	6	8	0	2	4	6	8	0	2	4	6	8	0	2	4	6	8	0

		NORTH COORDINATE	
SYMBOL	COUNT	SYMBOL	COUNT
*****	1	000000	3
-----	2	XXXXXX	4
+++++		000000	5
		000000	6

TOTAL NUMBER OF ARTIFACTS PLOTTED: 38

303

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL NAILS

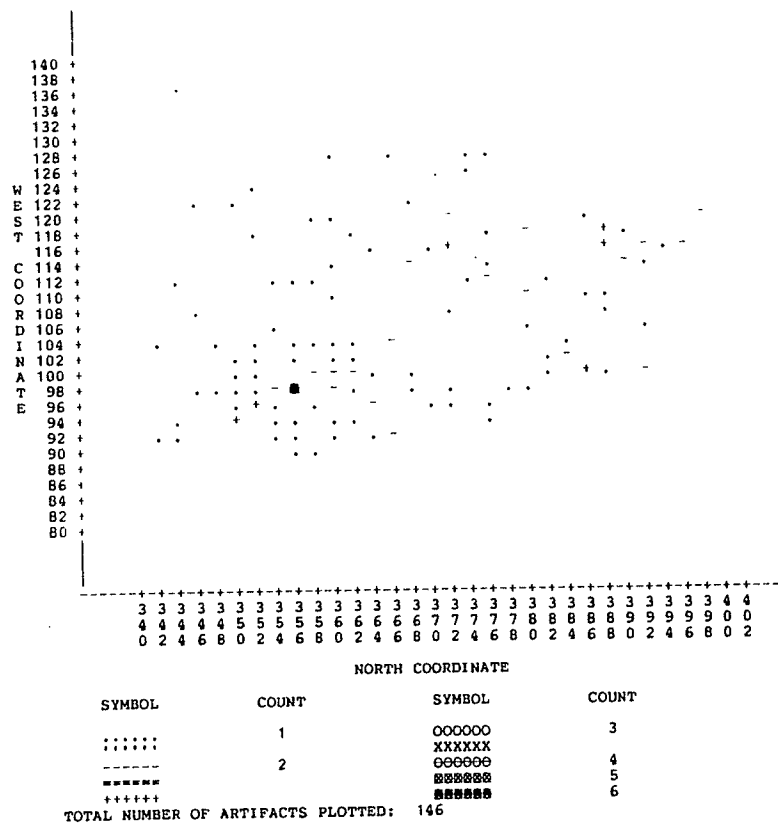
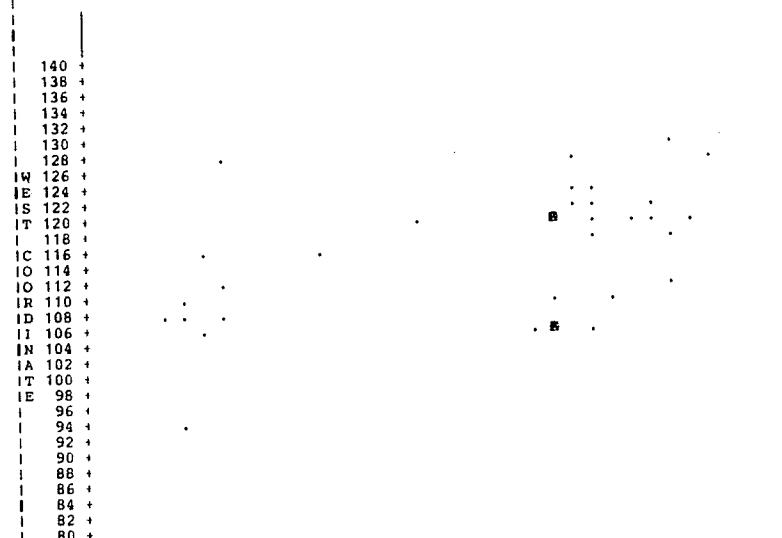


Figure 65 (continued)

FIGURE 66 B) 1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL ARCHITECTURAL CHINKING OR MORTAR
MATERIALS

[illegible]

NORTH COORDINATE

SYMBOL	COUNT	SYMBOL	COUNT
.....	1	000000	
..-.-.-		XXXXXX	
-.-.-.-		000000	
==--==		000000	
		000000	2

+++++

TOTAL NUMBER OF ARTIFACTS PLOTTED: 35

305

WATERFOWL SPECIES

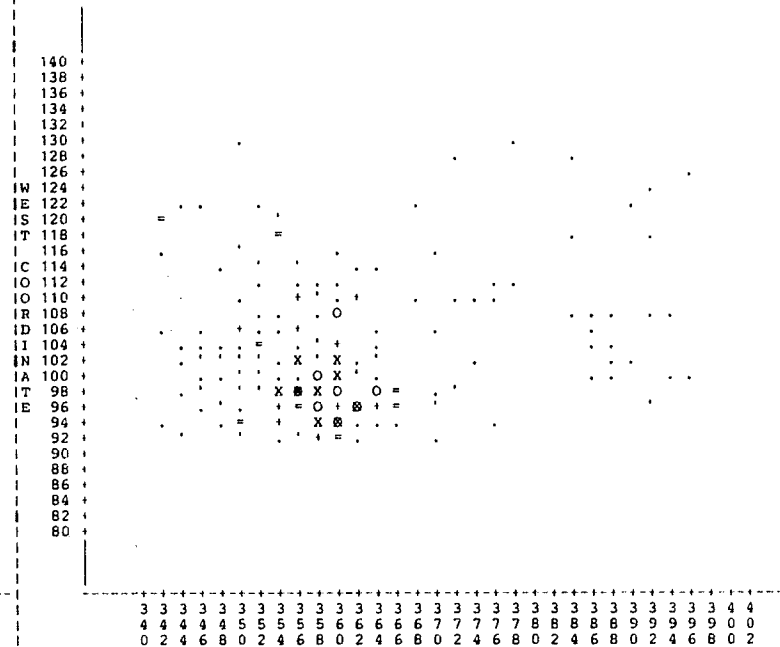
WATERFOWL INDIVIDUALS

Waterfowl Species	Waterfowl Individuals
140	24
138	24
136	24
134	24
132	24
130	24
128	24
126	24
124	24
122	24
120	24
118	24
116	24
114	24
112	24
110	24
108	24
106	24
104	24
102	24
100	24
98	24
96	24
94	24
92	24
90	24
88	24
86	24
84	24
82	24
80	24

+++++

TOTAL NUMBER OF ARTIFACTS PLOTTED: 28

FIGURE 67 B) 1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL ARCHITECTURAL WINDOW GLASS



NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT
	1	000000	8 - 9
	2	XXXXXX	10 - 11
	3 - 4	000000	12
=====	5 - 6	00000000	13 - 14
+++++	7	00000000	15 - 16
TOTAL NUMBER OF ARTIFACTS PLOTTED:		526	

NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT
*****	1	000000	5
-----	2	XXXXXX	6
++++++	3	000000	7
*****	4	000000	8
TOTAL NUMBER OF ARTIFACTS PLOTTED:		275	

307

FIGURE 67 C) 1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL ARCHITECTURAL WINDOW GLASS

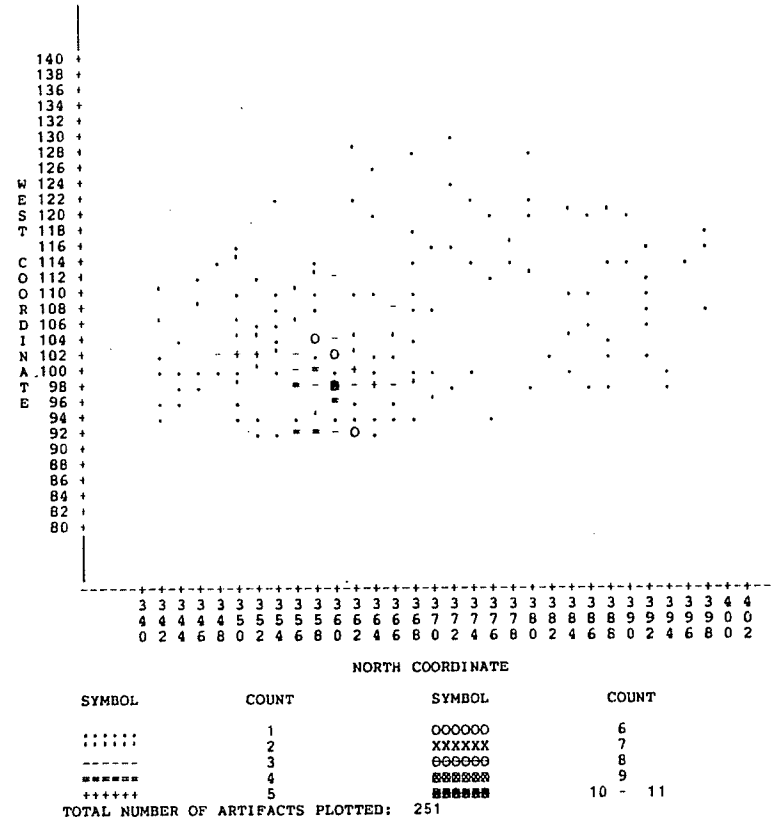
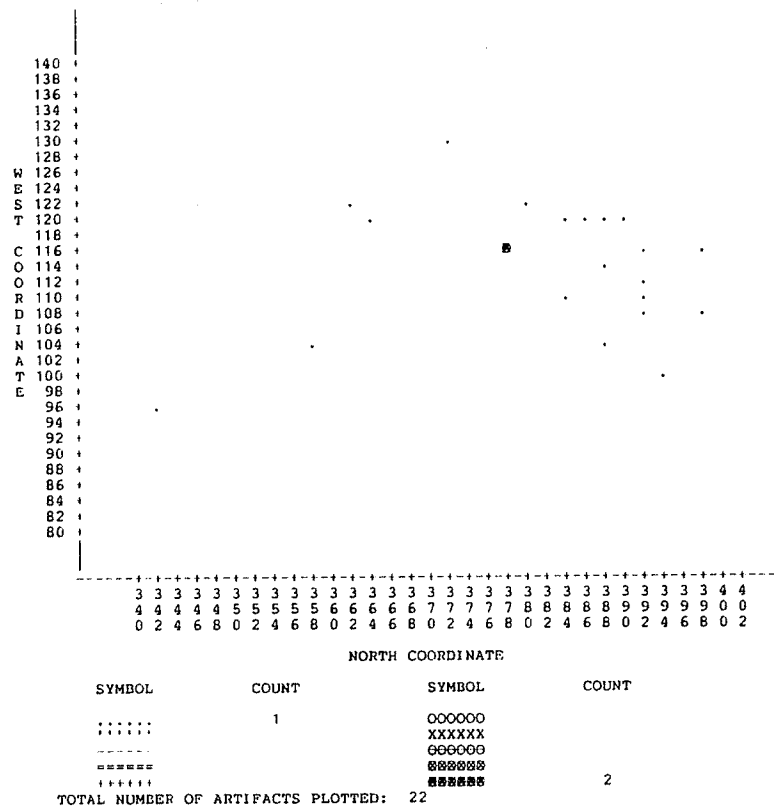


Figure 67 (continued)

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL ARCHITECTURAL METAL-REINFORCED
WINDOW GLASS



310

B.6 ACTIVITIES GROUP TRANSPORTATION AND STABLE/BARN AND
 FARM TOOLS ARTIFACT PLOTS

```

140 +
138 +
136 +
134 +
132 +
130 +
128 +
126 +
124 +
122 +
120 +
118 +
116 +
114 +
112 +
110 +
108 +
106 +
104 +
102 +
100 +
98 +
96 +
94 +
92 +
90 +
88 +
86 +
84 +
82 +
80 +

```

TOTAL NUMBER OF ARTIFACTS PLOTTED: 151

```

140
138
136
134
132
130
128
126
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
94
92
90
88
86
84
82
80

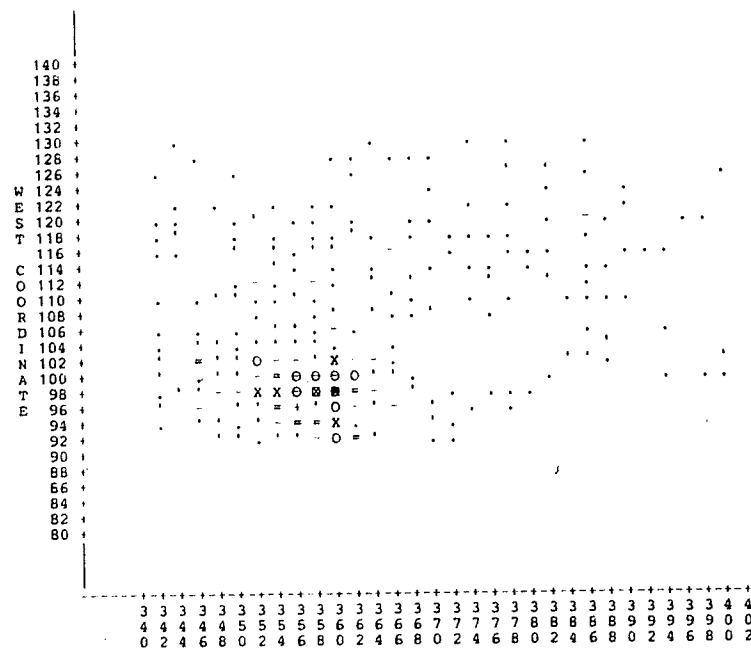
```

TOTAL NUMBER OF ARTIFACTS PLOTTED: 58

312

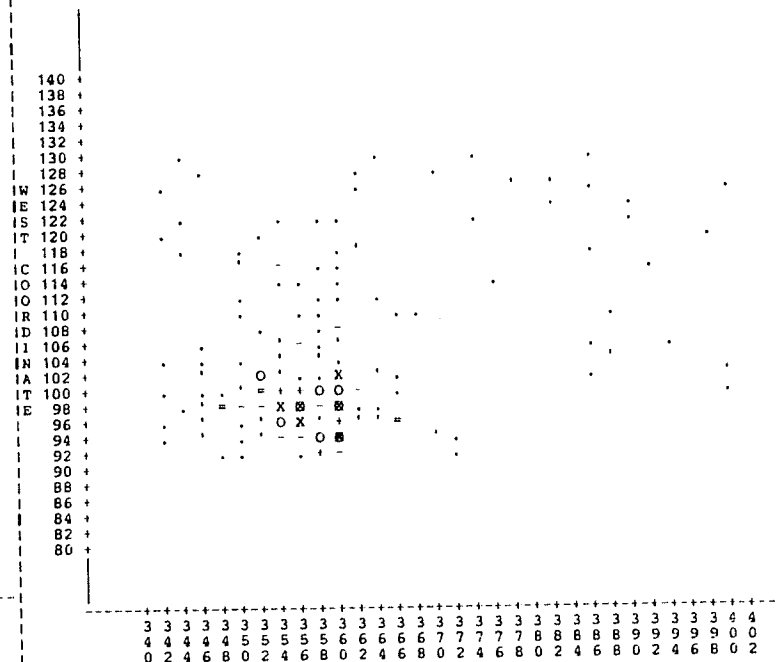
B.7 UNIDENTIFIED ARTIFACT CLASS PLOTS

1978 AND 1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL UNIDENTIFIED GLASS ARTIFACT REMNANTS



NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT
1		000000	9 - 10
2 - 3		XXXXXX	11
4		000000	12 - 13
5 - 6		000000	14 - 15
7 - 6		000000	16 - 17
TOTAL NUMBER OF ARTIFACTS PLOTTED:		564	

B) 1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL UNIDENTIFIED GLASS ARTIFACT REMNANTS



		NORTH COORDINATE			
SYMBOL	COUNT	SYMBOL	COUNT	SYMBOL	COUNT
+++++	1	+++++	5	#####	9
00000	2	00000	6	#####	10
XXXXX	3	XXXXX	7		
00000	4	00000	8		
TOTAL NUMBER OF ARTIFACTS		PLOTTED: 258			

314

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL UNIDENTIFIED GLASS ARTIFACT REMNANTS

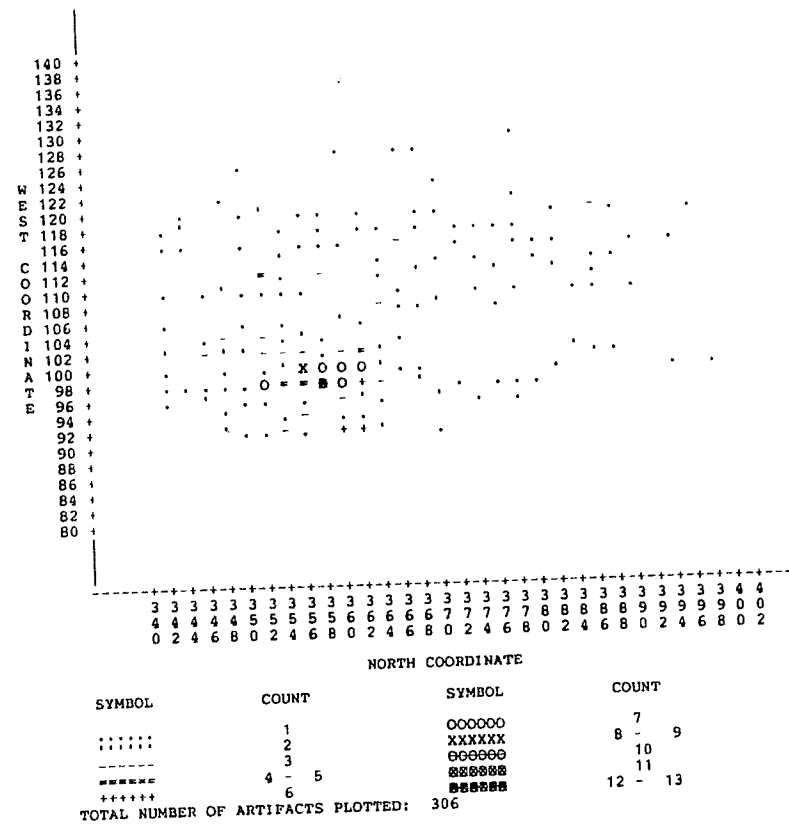


Figure 70 (continued)

B.8 MELTED AND BURNT ARTIFACT PLOTS

[illegible]

TOTAL NUMBER OF ARTIFACTS PLOTTED: 143

[illegible]

+++++

TOTAL NUMBER OF ARTIFACTS PLOTTED: 69

320

FIGURE 74 C)

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL MELTED GLASS MATERIALS

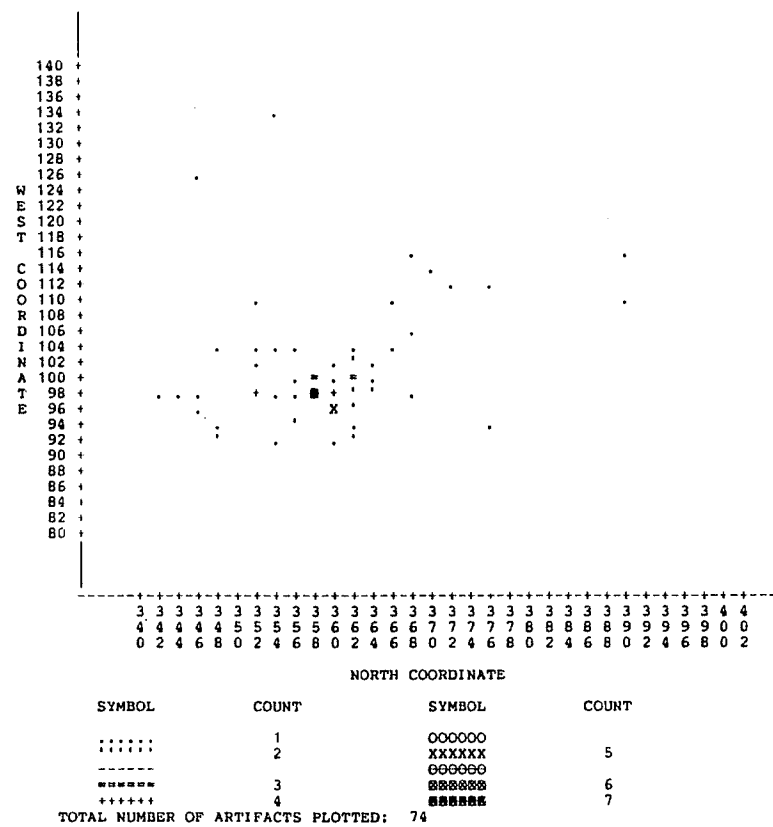


Figure 74 (continued)

FIGURE 75 A) 1978 AND 1979
JENSEN HOMESTEAD
COMBINED SPATIAL DISTRIBUTION
OF ALL BURNT OR HEAT-TREATED CERAMICS

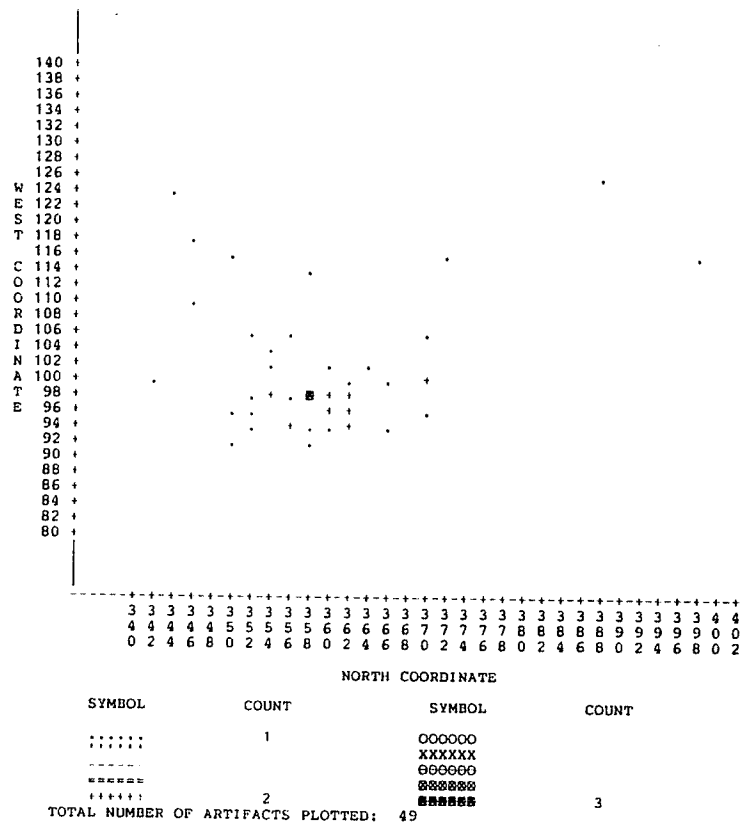


FIGURE 75 B) 1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL BURNT OR HEAT-TREATED CERAMICS

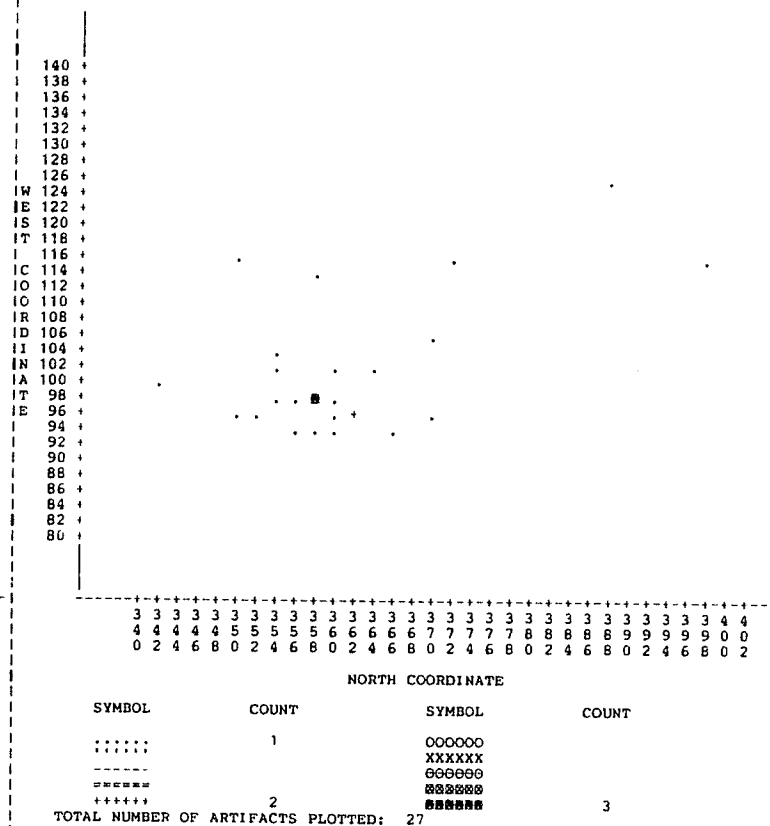


Figure 75: Spatial Distribution of All Burnt and Heat-Treated Ceramics: a) 1978 and 1979, b) 1978, and c) 1979

Figure 75 (continued)

B.9 PLOT OF NONCOLLECTIBLE MATERIALS (STRAW, MANURE, AND
SOIL DISCOLOURATIONS)

B.10 PARKS CANADA MATERIAL CATEGORY PLOTS

For the spatial distributions of all Parks Canada Nails and Ammunition Categories see Figures 65 and 33 to 35

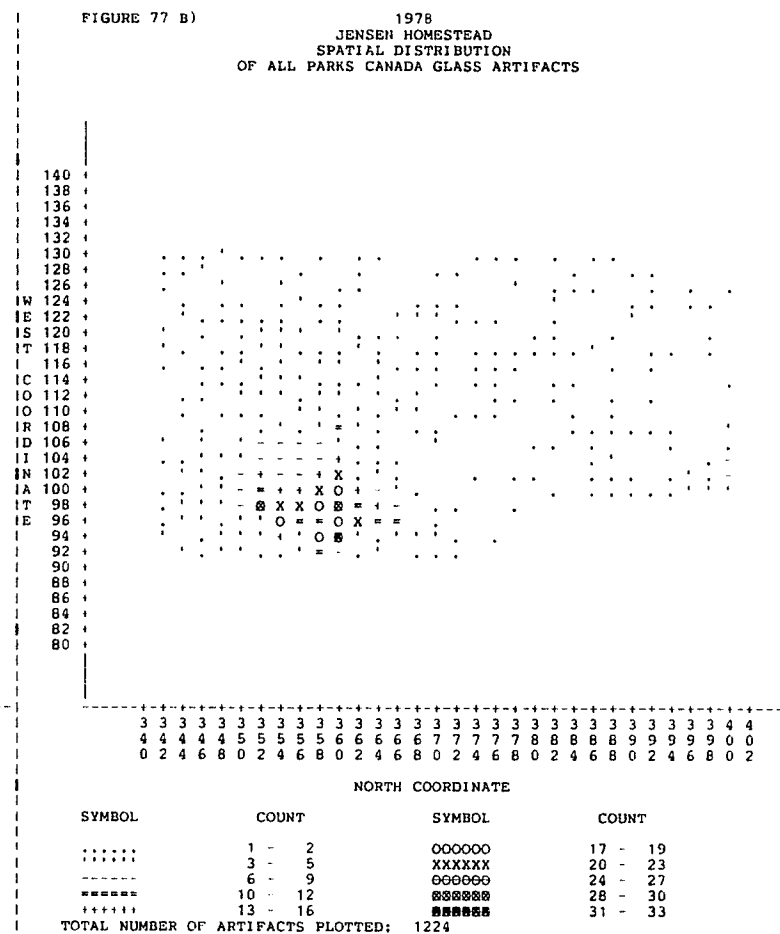
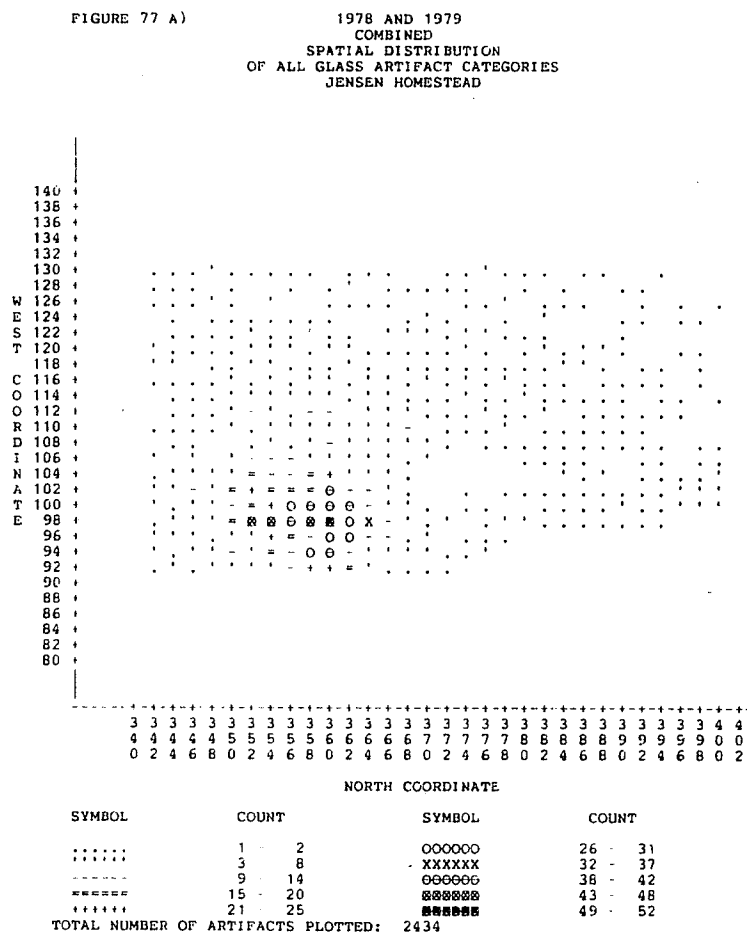


Figure 77: Spatial Distribution of All Glass Artifacts: a) 1978 and 1979, b) 1978, and c) 1979

FIGURE 77 C)

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL GLASS ARTIFACT CATEGORIES

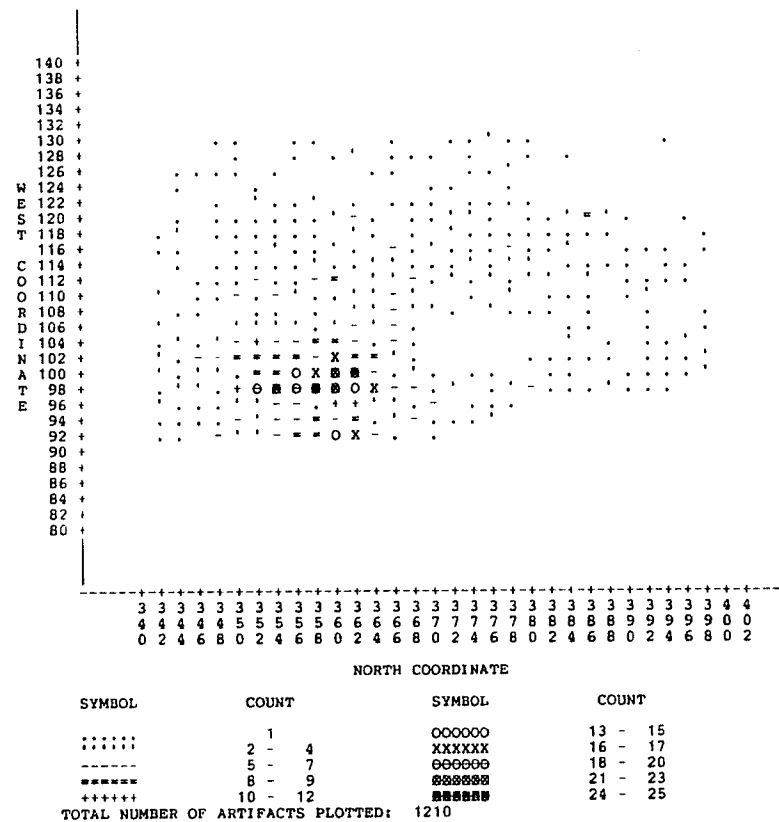


Figure 77 (continued)

FIGURE 78 A)
1978 AND 1979
COMBINED
SPATIAL DISTRIBUTION
OF ALL CERAMIC ARTIFACT CATEGORIES
JENSEN HOMESTEAD

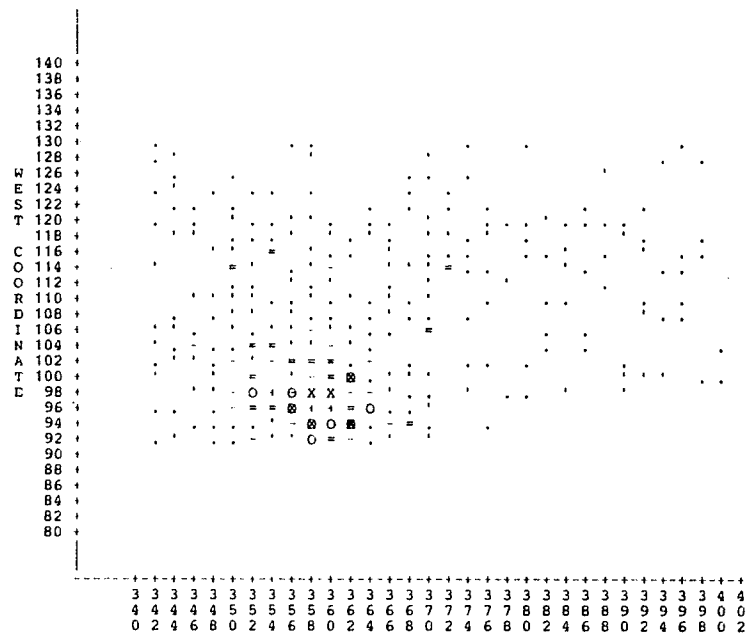


FIGURE 78 B)
1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL PARKS CANADA CERAMIC ARTIFACTS

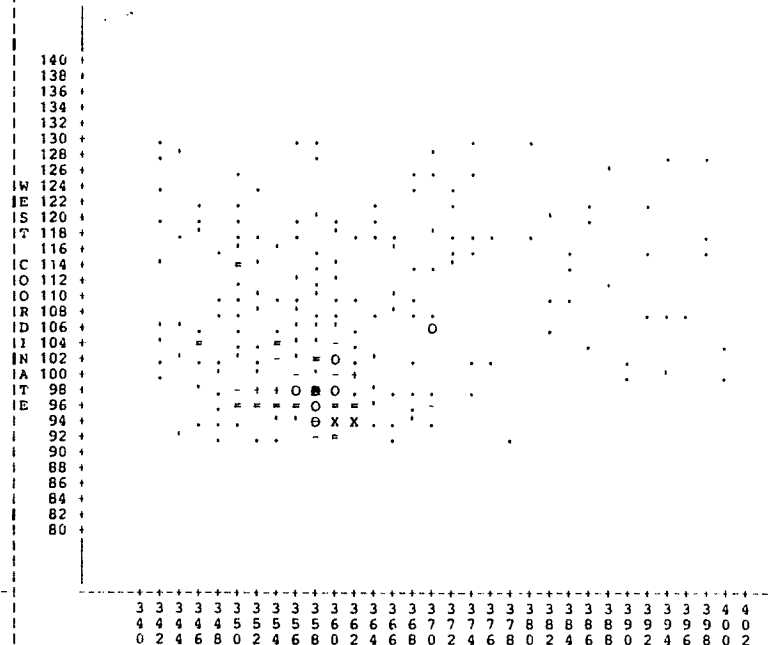
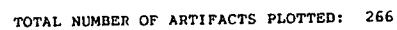


Figure 78: Spatial Distribution of All Ceramic Artifacts:
a) 1978 and 1979, b) 1978, and c) 1979

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL CERAMIC ARTIFACT CATEGORIES



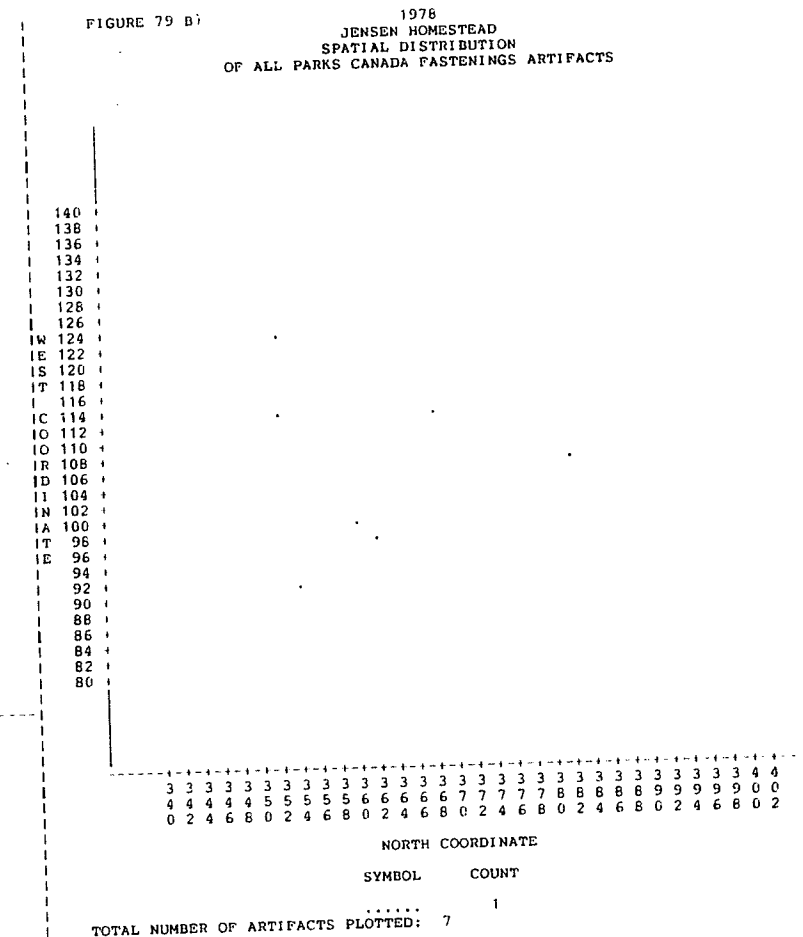
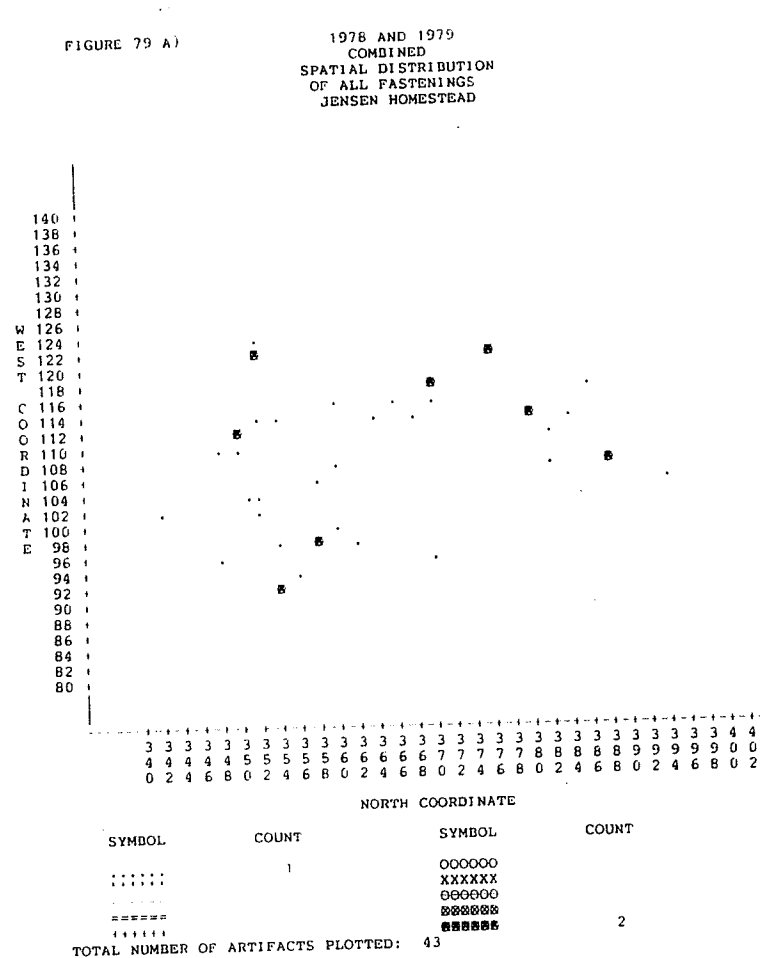


Figure 79: Spatial Distribution of All Metal Fastening Artifacts: a) 1978 and 1979, b) 1978, and c) 1979

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL FASTENINGS

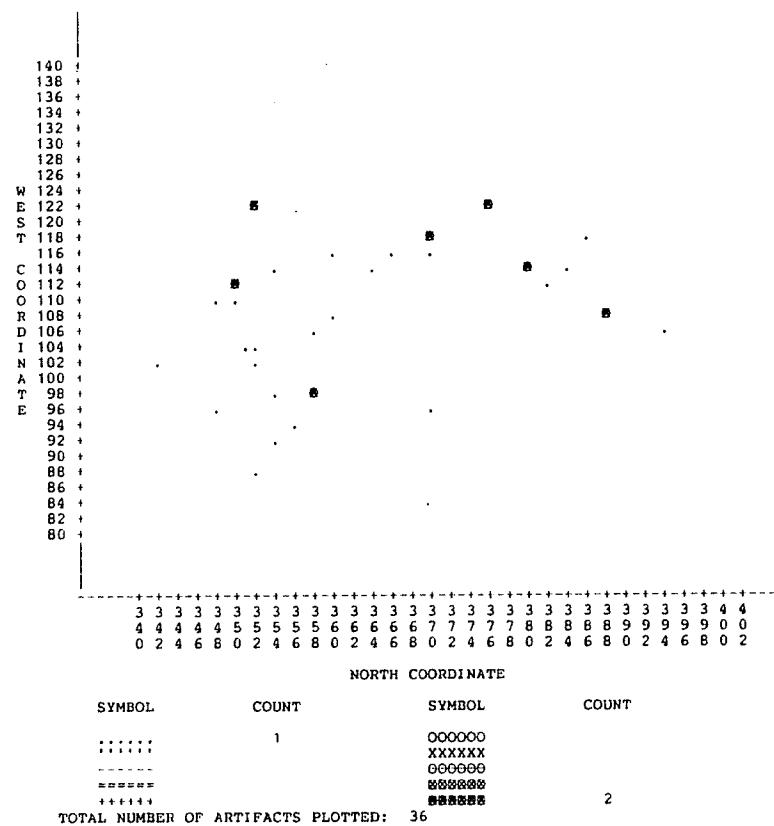
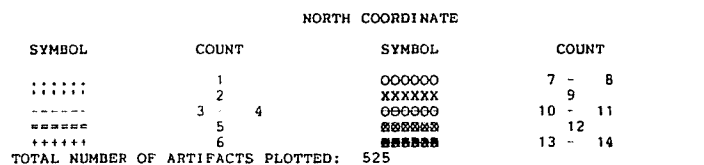
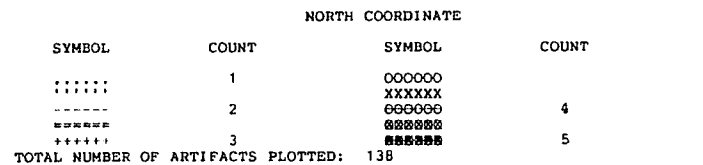


Figure 79 (continued)

1978 AND 1979
COMBINED
SPATIAL DISTRIBUTION
OF ALL OTHER METAL ARTIFACT CATEGORIES
JENSEN HOMESTEAD



1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL PARKS CANADA OTHER METAL ARTIFACTS



ω
ω
ω

FIGURE 80 C)
 1979
 JENSEN HOMESTEAD
 SPATIAL DISTRIBUTION
 OF ALL OTHER METAL ARTIFACT CATEGORIES

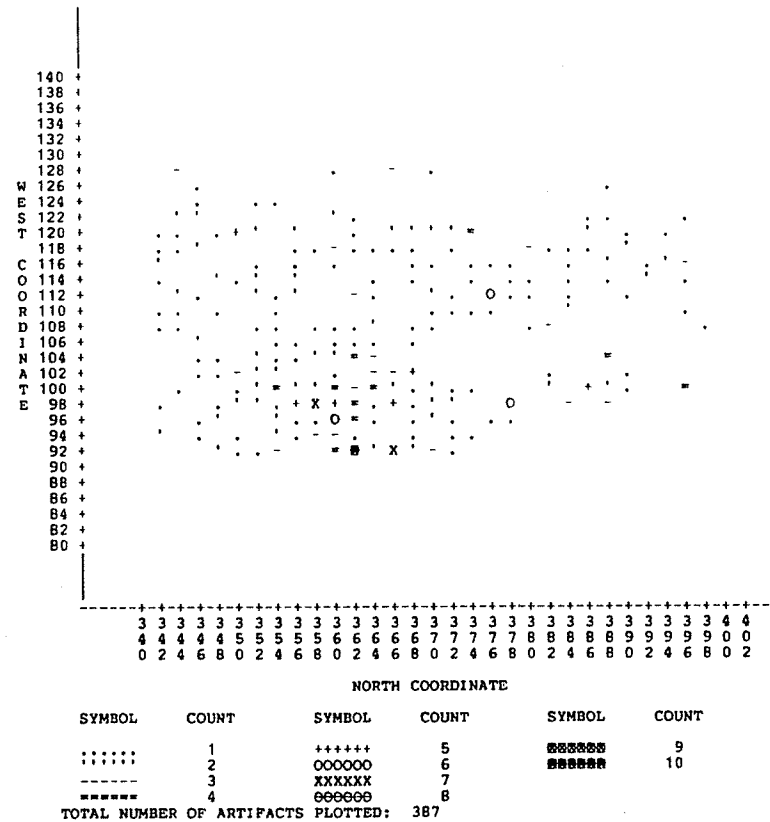


Figure 80 (continued)

FIGURE 81 A)
1978 AND 1979
COMBINED
SPATIAL DISTRIBUTION
OF ALL METAL CONTAINER ARTIFACT CATEGORIES
JENSEN HOMESTEAD

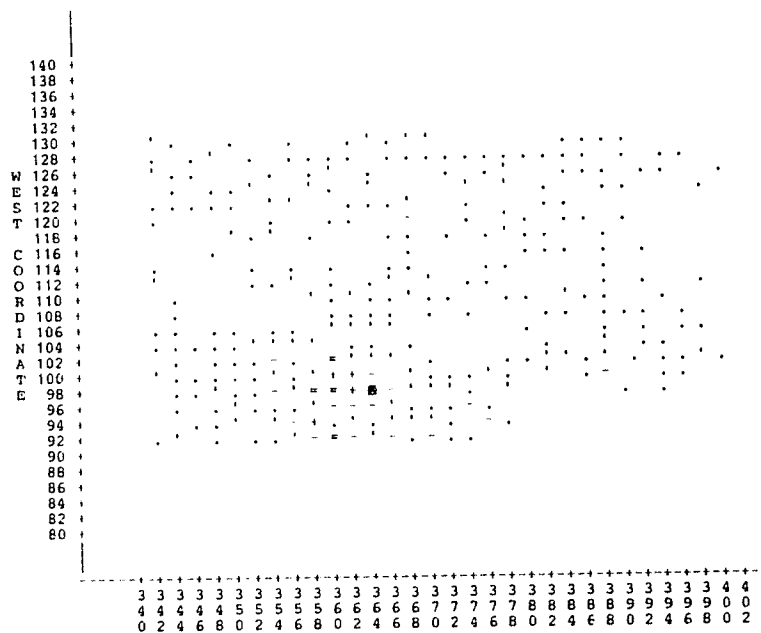


FIGURE 81 B)
1978
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL PARKS CANADA METAL CONTAINER ARTIFACTS

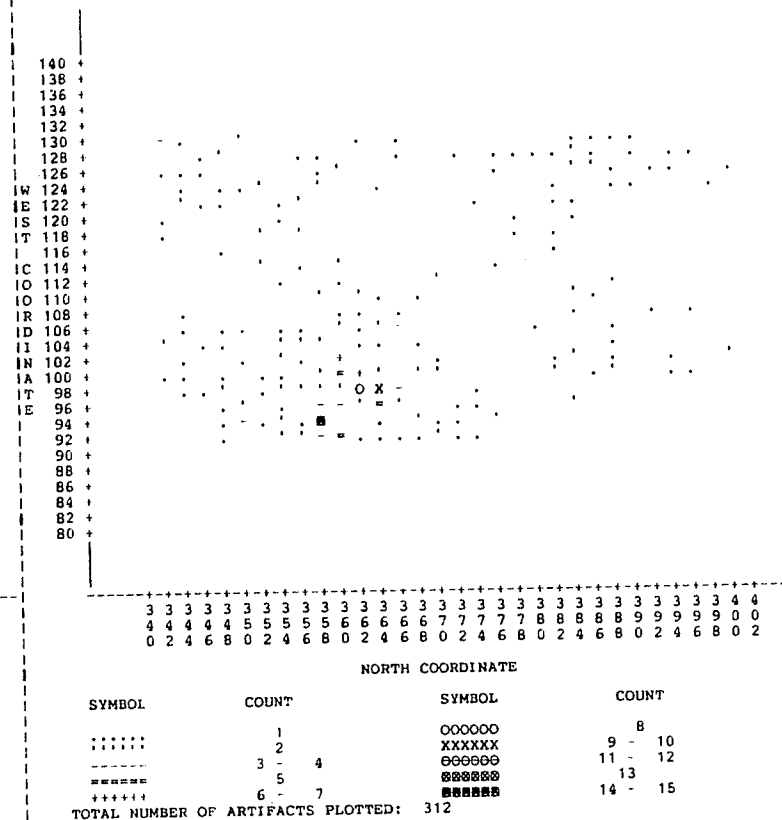
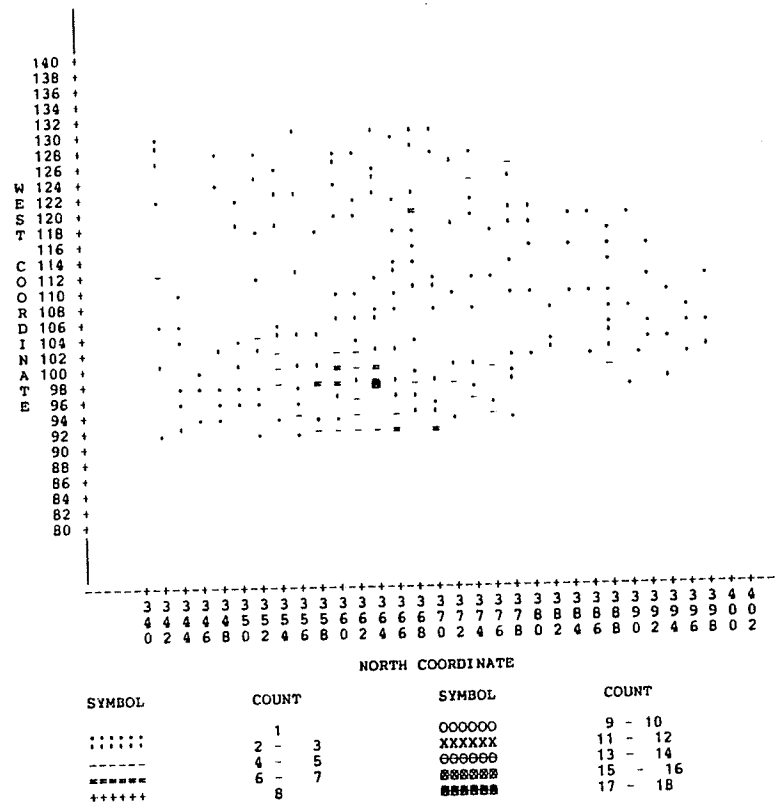


Figure 81: Spatial Distribution of All Metal Container Artifacts: a) 1978 and 1979, b) 1978, and c) 1979

FIGURE 81 C)

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL METAL CONTAINER ARTIFACT CATEGORIES



TOTAL NUMBER OF ARTIFACTS PLOTTED: 419

Figure 81 (continued)

[illegible]

TOTAL NUMBER OF ARTIFACTS PLOTTED: 348

[illegible]TOTAL NUMBER OF ARTIFACTS PLOTTED: 172

337

FIGURE 82 C)

1979
JENSEN HOMESTEAD
SPATIAL DISTRIBUTION
OF ALL MISCELLANEOUS ARTIFACT CATEGORIES

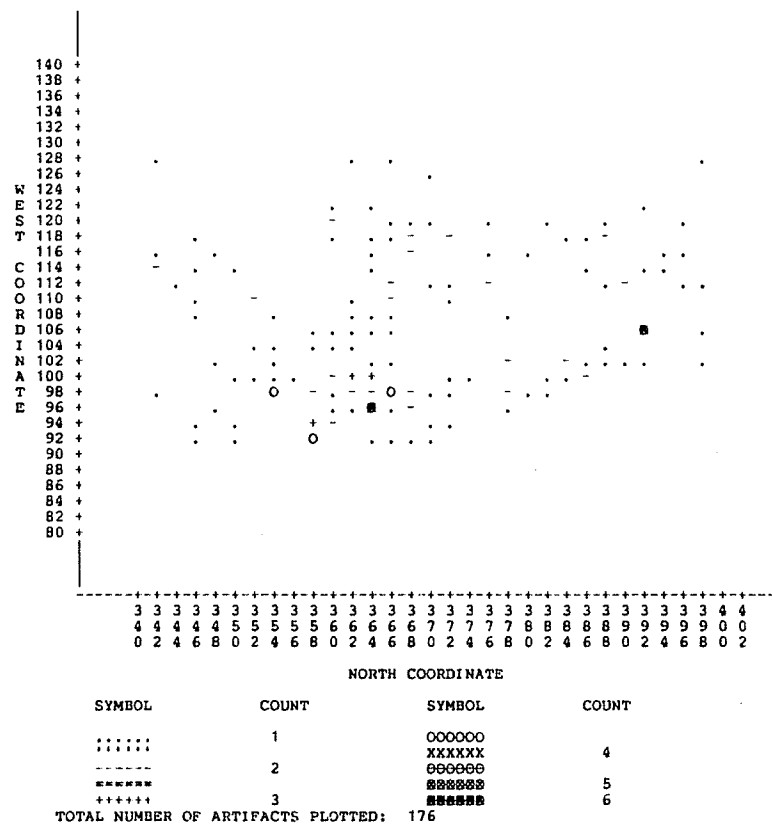


Figure 82 (continued)

FIGURE 16:
SCHEMATIC PRESENTATION
OF THE JENSEN FARM FEATURE AREAS
IN RELATION TO THE SAMPLE AREA
STUDIED

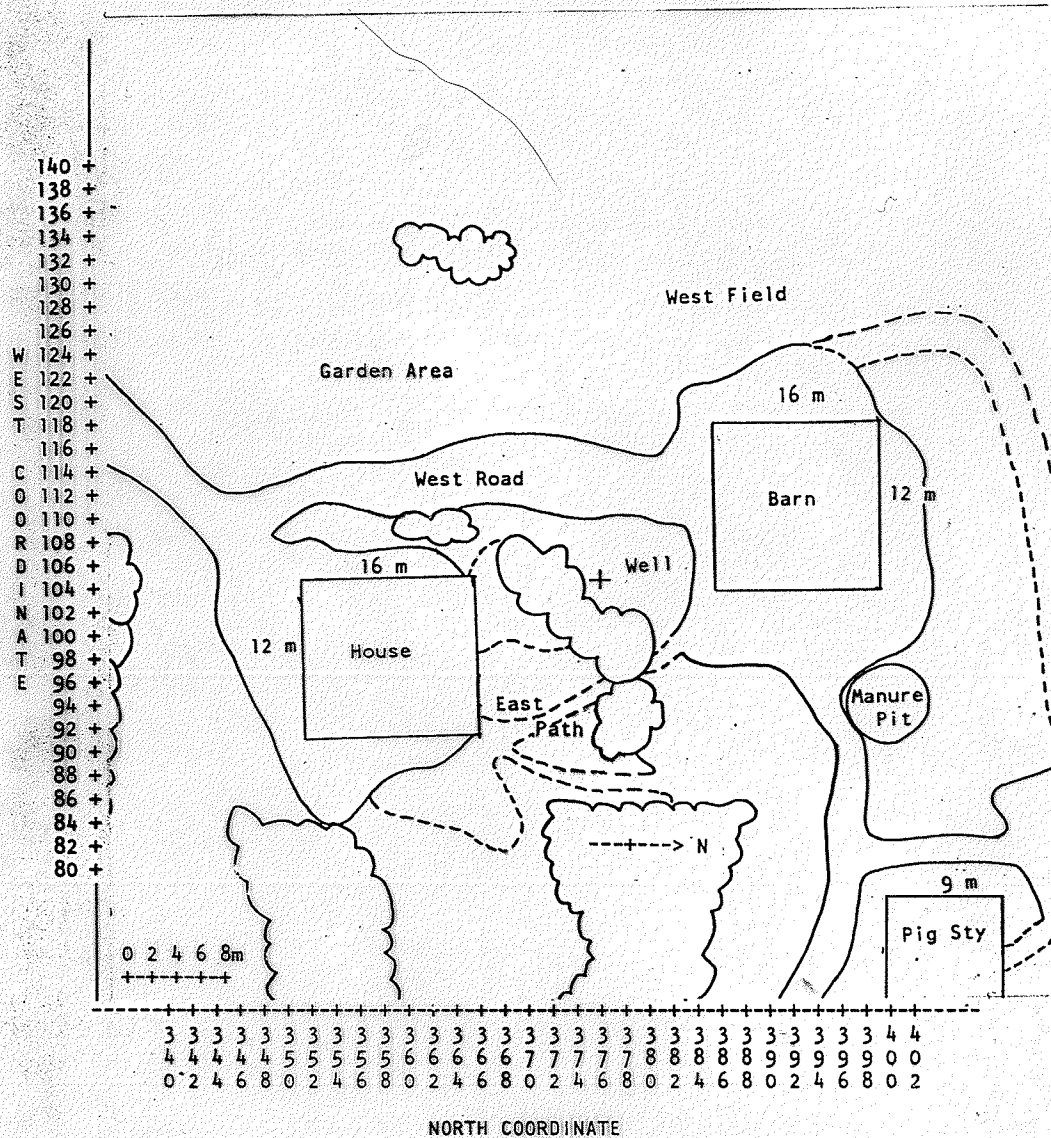


Figure 16. Transparency drawn from 1949 aerial photograph. Features in this photograph (shoreline of Lake Dauphin, beach ridges, fence line, certain trees, farm well) were still present in 1978 - 79 and therefore served to fix the historical features of the Jensen farm within the limits of sample area quadrats. (See text, pages 4, 9-10, 20-21, 25, 29-30, 35, 40-42, 101, 236).

100



