Revisiting the Nelson Site: Recent Archeological Investigations and Material Analysis

Jason Reichel

Minnesota State University - Mankato

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Revisiting the Nelson Site: Recent Archeological Investigations and Material Analysis.

By

Jason A. Reichel

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Mankato, Minnesota
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Revisiting the Nelson Site: Recent Archeological Investigations and Material Analysis.

Jason A. Reichel

This thesis paper has been examined and approved by the following members of the student’s committee.

________________________________
Dr. Ronald C. Schirmer (Advisor)

________________________________
Dr. Kathleen T. Blue (Committee Member)

________________________________
Dr. Woo S. Jang (Committee Member)
ABSTRACT
Reevaluating the Nelson Site: Recent Archeological Investigations and Material Analysis

Jason Anthony Reichel
Master Science in Applied Anthropology
Minnesota State University, Mankato
Mankato, Minnesota, 2015.

The Nelson Site (21BE24) is situated on a low terrace along the southern boundary of the Blue Earth River, approximately 2 miles west of the city of Mankato, Minnesota (Appendix A, Figures 1 and 2). Initial survey of the site in 1973 identified the site as a single component Terminal Woodland habitation site associated with cultural entities centered in the Mississippi River Valley of Iowa and Wisconsin. However, subsequent analysis and additional archeological investigations conducted in 2011 and 2013 identified additional components of the site and recognized variations in decorative elements from pottery recovered from previous surveys, which differed from those generally attributed to defined pottery wares in adjacent areas and states.

Additional investigations were conducted in the summer of 2014 to collect data from the originally defined Nelson site area and artifact concentrations identified during later surveys of areas to the immediate south, with the explicit purpose to define cultural contexts to each component of the Nelson site terrace. The results of this archeological investigation revealed that materials recovered from artifact concentrations identified to the south of the previously defined Nelson site are consistent with materials recovered from the 1973 investigation of the site.

An admixture of materials consistent with both eastern and western sources suggests a comingling of influences and a regionally unique combination of material culture. While concentrations of cultural materials were identified throughout spatially distinct areas of the Nelson site terrace, these all appear
to represent a relatively short temporal occupation of the area by a seemingly homogenous, yet regionally distinct cultural group. However, the presence of cultural materials within buried habitable soil horizons that have been interpreted as temporally synonymous with materials recovered from overlying horizons cannot be demonstrably associated with the apparent primary occupation of the Nelson site terrace. As such, these materials may be representative of an earlier occupation of the Nelson site terrace, which may or may not be related to its primary occupation.
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# TABLE OF CONTENTS

ABSTRACT ...................................................................................................................................................... 3

ACKNOWLEDGEMENTS ................................................................................................................................. 5

TABLE OF CONTENTS ..................................................................................................................................... 6

LIST OF APPENDICES ..................................................................................................................................... 7

INTRODUCTION ............................................................................................................................................. 6

  Research Problem ..................................................................................................................................... 6
  Project Intent ............................................................................................................................................ 7

METHODS ...................................................................................................................................................... 9

  File Search and Literature Review ............................................................................................................ 9
  Field Methods ........................................................................................................................................... 9
  Laboratory Methods ................................................................................................................................ 11

  Lithic Analysis ........................................................................................................................................ 11
  Pottery Analysis .................................................................................................................................... 19
  Faunal Analysis ....................................................................................................................................... 34
  Botanical Analysis .................................................................................................................................. 34
  Matrix Analysis ....................................................................................................................................... 34
  Mineral Analysis ....................................................................................................................................... 35

PHYSICAL SETTING ...................................................................................................................................... 36

  Soils ......................................................................................................................................................... 36
  Geology ................................................................................................................................................... 38

CULTURAL SETTING ..................................................................................................................................... 40

RESULTS ....................................................................................................................................................... 43

  Historic Document Review ...................................................................................................................... 43
  Review of Previous Archeological Investigation .................................................................................... 46

    1973 Archeological Investigation ........................................................................................................ 46
    2011 Archeological Investigation ......................................................................................................... 54
    2013 Archeological Investigation ......................................................................................................... 72
    2014 Archeological Investigation ......................................................................................................... 78

DISCUSSION ............................................................................................................................................... 102

BIBLIOGRAPHY .......................................................................................................................................... 112
LIST OF APPENDICES

APPENDIX A: FIGURES.........................................................................................................................121
APPENDIX B: HISTORIC MAP LOG.....................................................................................................149
APPENDIX C: PROJECT AREA IMAGES.............................................................................................154
APPENDIX D: GRAPHS..........................................................................................................................163
APPENDIX E: ARTIFACT PHOTOGRAPHS............................................................................................198
CHAPTER I

INTRODUCTION

Research Problem

The Prairie Lakes region of Minnesota has long represented an ecological peripheral zone where the eastern woodlands and western plains converge in a transitional prairie ecotone. Over time this ecological boundary has continuously shifted as the result of climate change. As the Prairie Lakes region represents an area where ecological boundaries converge, so too does the region represent a potential point of separation or convergence of the myriad of distinct prehistoric cultural entities that have inhabited the region over roughly the past 12,000 years (Anfinson 1997; Gibbon 1993; Holly and Michlovic 2013). While broadly recognized Plains Village tradition and Woodland period components have been defined within the region, there remain varied and complex cultural manifestations that while recognized within archeological assemblages, have yet to be sufficiently studied and defined (Holly and Michlovic 2013). Understanding the relationships between distinct cultural entities inhabiting separate ecological environments is perhaps most attainable through the study of how these groups interact where these environments converge.

While various cultural traits serve as markers of distinctive cultural entities, pottery perhaps represents one of the most significant diagnostic materials utilized to define and delineate cultural components within the Upper Midwest. Within the Prairie Lakes region, the Terminal Woodland period and Initial Middle Missouri variant of the Plains Village tradition are represented by a finite number of recognized pottery wares, specifically Great Oasis, Cambria, and Lake Benton wares (Anfinson 1997; Arzigian 2008; Gibbon 2008). Despite the prolific occurrence of undefined pottery types postulated as temporally-synonymous with these defined wares, there remains a paucity of data through which these may be ascribed respective cultural associations (Holly and Michlovic 2013). In particular, various cord-
impressed pottery types have been noted within archeological assemblages in the region and have either been defined as anomalous occurrences or generally ascribed to existing Plains Village or Terminal Woodland pottery wares (Anfinson 1997; Holly and Michlovic 2013). While some correlation with existing defined corded pottery wares is no doubt warranted, there remains a persistent tendency towards assigning pottery assemblages to predefined, ill-fitting ware classifications (Arzigian 2008; Scullin and Richardson 1981). Such practices may inadvertently perpetuate concepts of cultural continuity between geographically distant cultural groups, while overlooking local variation and inhibiting the recognition of unique cultural patterns.

Classification of cord-impressed pottery within the Prairie Lakes region has been inhibited in part by an overall lack of in-depth regional research, a finite amount of data on cord-impressed wares in the research area, and the level of complexity, temporally-extensive period of occupation, and/or disturbance associated with sites at which cord-impressed pottery has been recovered (Anfinson 1997; Holly and Michlovic 2013). Amongst known archeological sites within the Prairie Lakes region, the Nelson site (21BE24) has perhaps yielded one of the largest collections of cord-impressed pottery. As such, the Nelson site has the potential to yield the data necessary to begin defining cord-impressed pottery wares within the region, their associated temporal ranges, and cultural associations.

**Project Intent**

This project was initiated with the intent to procure data from separate areas of the Nelson site terrace and relate them to one another in an attempt to test the level of material culture continuity across the project area and determine whether these areas contain evidence of temporally and culturally distinct components or a single temporally-continuous and culturally-homogenous occupation of the site. The pottery assemblages acquired through previous archeological investigations of the site suggest that although spatially distinct concentrations of cultural materials and features have been identified within
the project area, these appear to be associated with an undefined cultural manifestation, similar to Late Woodland cultural phases defined in adjacent states to the east and south. Although similarities in material culture suggest a relationship between the prehistoric inhabitants of the Nelson site and defined Late Woodland phases in adjacent states, regional variation in associated life ways and localized divergence from stylistic trends suggests that assigning the Nelson site assemblage to a predefined affiliation would draw a potentially inaccurate picture of Terminal Woodland period within the Prairie Lakes region of south-central Minnesota.

Because the Nelson site likely represents one of the most intact examples of a large-scale Terminal Woodland village site in the Prairie Lakes region of Minnesota, an analysis of its artifact assemblage and in depth investigation of previously identified site areas has the potential to aid in identifying and defining distinct site components and overall trends in material culture attributes. The pottery assemblage, while varied, appears to exhibit stylistic qualities reminiscent of both Terminal Woodland period and Middle Missouri variant pottery wares and may represent the comingling of ideas and concepts from the east and west, the physical exchange of goods between these peoples, and/or the cohabitation of a single village by multiple culturally-diverse groups. The overall pottery assemblage reflects a transition between the cord-impressed wares of the Terminal and Late Woodland periods in Iowa and Wisconsin and the incised and trailed wares of contemporaneous and later Initial Middle Missouri variant pottery wares, suggesting some overlap in stylistic and morphological attributes of the overall pottery assemblage (Benn and Green 2000; Gibbon 2008; Howell 2015). It is the hope that the results of this archeological investigation will shed some light on the relationship between Woodland groups to the east and Plains Village tradition groups to the west and how these relationships are manifested in the material culture of transitional ecotones within the Prairie Lakes region of south-central Minnesota.
CHAPTER 2

METHODS

File Search and Literature Review

The project area was investigated through an archaeological file review conducted at the Minnesota State Historic Preservation Office (SHPO) on April 7, 2014. The purpose of reviewing this information was to determine if previously documented archaeological resources, or previous surveys were recorded within the project area and surrounding areas.

Background research also included a review of historic maps consisting of plat maps, atlases, topographic maps, and aerial imagery. These documents were examined to identify historic structures and features previously located within the project area and to identify previous disturbances of the project area, which may have negatively impacted the integrity of cultural materials and features. In addition, field notes, site forms, artifact catalogs, survey maps, and publications associated with previous archeological investigations of the project area were reviewed to aid in guiding fieldwork planning and the overall analysis and interpretation of data recovered within the project area.

Field Methods

Subsurface testing for this archeological investigation included the excavation of 0.5-m by 1-m excavation units arranged in east to west trending 10-m and 5-m long trenches, and individual 1-m by 1-m units. These were excavated at 10 cm intervals, and all excavated soils were screened through ¼ inch hardware mesh to identify and recover cultural materials within excavated soils. Excavation unit floors were mapped and photographed at every 10 cm level and all pertinent information recorded on excavation forms. Depths were recorded through the use of a self-leveling horizontal rotary laser level,
which was zeroed to the elevation of the southwest corner of each trench or single excavation unit, which served as the trench or unit datum. Number and placement of excavation trenches was determined in part through the results of shovel testing conducted in 2013. Trenches were placed extending between the highest yielding shovel tests from previously-identified artifact concentrations and expanded as necessary based upon the initial results of excavation. The shovel test grid from the previous year’s fieldwork was reestablished using datum spikes placed in adjacent wooded areas, which served as reference points for each shovel test area. From these points of reference, the shovel test grids were re-established and utilized to establish trench positions. Locations of additional units and trenches were determined by data collected in the field.

Trench extents and dimensions were marked with stakes and masons line, and each individual excavation unit was marked in all four corners with pin flags. When encountered, features were either dug as a single unit or split into equal quarters, dependent upon size. These were dug in 5 cm increments and all soils were placed in soil bags with their provenience information recorded in a soil collection log, in preparation for flotation. An additional 5 cm of the periphery of each feature was collected either in opposing quarters for larger features or as the entire 5 cm periphery of smaller features. These were collected to serve as a point of reference from which to compare feature contents to adjacent non-feature soil. Features were mapped and photographed at every 5 cm level and their characteristics defined on separate feature forms. All excavation units were dug to at least 5 cm below culturally-sterile soil and probed for evidence of underlying paleosols. Excavation unit profile maps were then completed for the north walls of each excavation unit and representative soil samples taken for each identified soil type.

Additional shovel testing was conducted in areas of the Nelson site terrace that had not been tested adequately in either the 2011 or 2013 surveys. A section of the northern portion of the Nelson site
terrace that had been included within the 1973 survey and an area of native prairie and deciduous woods to the west of concentration WIII were both shovel tested. Shovel testing of the northern portion of the terrace was conducted to ground proof the digitized locations of artifact concentrations and unit placement from the 1973 survey. Shovel testing in the western prairie and deciduous woods was conducted to determine the presence of cultural materials and level of disturbance in uncultivated portions of the terrace. Shovel tests were established in 5 meter increments along east to west axes. These were excavated in 10 cm increments to at least 5 cm below culturally sterile soil, with all soil screened through ¼ inch hardware mesh for cultural materials.

Laboratory Methods

Artifacts recovered from the 1973, 2011, 2013, and 2014 archeological investigations were classified into seven separate categories: lithic, pottery, flora, fauna, matrix, mineral, and historic. Historic materials were identified, catalogued, and omitted from further study, as their significance within the contexts of the prehistory of the site is negligible beyond a measure of site disturbance and stratigraphic displacement of cultural materials.

Lithic, pottery, faunal, floral, mineral, and matrix materials were all identified and classified by criteria unique to each artifact class, based on the Minnesota State University Anthropology Department’s (MNSU) 2015 Laboratory Manual (MNSU 2015). The below texts detail the particular methods and terminologies utilized to define attributes of each artifact within the Nelson site artifact assemblages.

Lithic Analysis

Lithic artifacts are defined in this study as any stone material that has been utilized, modified, or transported through human action. A multi-tiered classification system was utilized to identify and define lithic artifacts. At the most general level, lithics were separated into artifact types. Artifact types
included, core, debitage, fire-cracked-rock, manuport, and tool. These were further divided into separate groups based upon similarities in morphology and interpreted function. Artifacts were also divided and defined by their raw material, level of completeness, the presence of evidence of burning or heat treatment, presence of cortex and/or rind, and size grade when applicable. Below is a glossary of the terms utilized to identify lithic types within this archeological assemblage with several additional modifications adopted to address issues unique to the intent of this archeological investigation.

**Non-Tools**

Non-tools are defined as lithics that lack morphological characteristics associated with defined formal tool types. Below is a glossary of the morphologically-based terms utilized to identify non-tool lithics within this archeological assemblage.

**Core**

Cores are produced through the calculated removal of flakes or spalls from a single and often sizable piece of lithic material. Cores may be produced through pressure flaking, hard-hammer, and/or soft-hammer percussion, leaving large and/or elongated flake scars across most, if not all of the core’s surface. Exhausted cores may have been discarded once the core had become too small or difficult to work to be reduced further. In some instances, exhausted cores were utilized as hammerstones for the formation of pecked and/or ground lithic tools. Cores differ from bifaces in that cores are the result of removal of spalls, flakes, or blades for tool production, while bifaces are produced through the removal of flakes with the assumed intent of creating a bifacial tool. Nevertheless, bifaces and bifacially worked cores may be confused. Bifaces and cores may often be distinguished in that bifaces tend to exhibit a thinner cross-section, shorter flake scars, and more defined shape, while bifacially worked cores tend to exhibit longer and wider flake scars, less defined shape, and greater cross-sectional thickness. However, these are not exclusively defining characteristics.
**Bipolar Core:** Bipolar cores are produced through the concurrent percussion of opposing faces of a core, producing flakes from opposite faces. This is generally attributed to the use of hard-hammer percussion of a lithic cobble against an opposing force (i.e.: an anvil stone). This method of lithic reduction appears especially prominent amongst lithic raw materials that naturally occur in small semi-round to round cobbles and gravels.

**Centripedal Core:** Centripedal cores are produced through the removal of material in a radial pattern around a central locus. This produces a series of flake scars extending inward towards the center of the core. The result is generally a roughly circular core exhibiting a bi-convex profile.

**Random Core:** Random cores are produced through a seemingly unsystematic reduction method. Random cores were likely produced through a less systematic reduction strategy resultant in part from an abundance of available lithic raw materials, low quality of raw material, and/or the production of expedient or diminutive tools.

**Tested Cobble:** Tested cobbles are produced through removal of a small number of flakes or fragments from a lithic cobble with the assumed intent of determining viability for use in lithic tool manufacturing. Tested cobbles will exhibit minimal evidence of reduction and may display irregular fractures or flaws that may have resulted in discard prior to intensive reduction.

**Unipolar Core:** Unipolar cores are produced through the removal of flakes from a single face of a core. This reduction method generally results in a roughly cylindrical, conical, or pyramidal core, exhibiting flake scars originating from a single face.
Debitage

Debitage is the term utilized to identify the waste flakes and shatter produced during the process of lithic reduction. This subsumes all lithic waste that is lacking in additional modification through retouch or utilization.

Fire-Cracked Rock

A lithic or mineral material that exhibits coloration and/or fracturing indicative of exposure to fire, high heat, and/or rapid temperature change. The term fire-cracked rock (FCR) is generally utilized for lithic and mineral materials that exhibit thermal alteration, yet lack the characteristics associated with materials that were thermally altered to enhance workability (i.e. chert). As a general rule, if a material displays a conchoidal fracture or was readily utilized for knapped implements within a given area, it should be identified as a burned specimen of that material, rather than as FCR. It is also important to note whether the material was worked and served a primary function prior to thermal alteration (ex: a broken maul used to line a fire hearth). In such cases that a prior utilization can be discerned, the specimen should be classified as a burned example of that particular tool type.

Manuport

A lithic raw materials that have been physically transported through human intervention, yet do not exhibit evidence of modification aside from heat treatment. Manuports are generally identified within archeological contexts as unmodified lithic materials that do not occur naturally within a site area and/or have been utilized as elements of a feature (i.e. cairns, pit linings, etc.)

Tools

Tools are defined as lithics that exhibit morphological characteristics associated with defined formal tool types and/or use-wear suggestive of utilization. Below is a glossary of the morphologically-based terms
utilized to identify lithic tools within this archeological assemblage, based on the Minnesota State University Anthropology Department’s 2015 Laboratory Manual.

**Abrader**

A course-grained stone (e.g. sandstone) exhibiting directional or random striations and/or smoothing of one or multiple faces. Lacking the groove channels associated with shaft straighteners and channeled abraders (Adams 2002).

**Axe**

A grooved or notched implement, exhibiting a wedge-shaped utilized end when viewed from above. Grooved or notched axes generally exhibit a single cutting edge or "bit" and a non-cutting edge or "pole". However, double bitted axes rarely do occur, while implements exhibiting two polls are generally identified as mauls. Groundstone examples may resemble adzes but can be differentiated based upon distal end configuration (wedge-shaped distal observable from top rather than profile), general form (more elongate forms associated with adzes) and groove placement (restricted to the superior surface on adzes) (Adams 2002; Ahler 1994).

**Biface**

A knapped implement exhibiting bifacial percussion flake scars but often lacking pressure flake scars and additional alterations associated with formal tool types. Additionally, finished bifacial tools that are either too fragmentary or ambiguous to assign to a separate type may be classified as a biface. Complete bifaces may appear similar in form to knives, yet are differentiated based upon the presence of more extensive pressure flaking and use-wear in the latter. This additional alteration will generally yield more uniform edges on knives, while bifaces may exhibit more sinuous edges. The term biface is
utilized here to subsume the term “blank”, whereas pressure flaked blanks may at times prove indistinguishable from certain forms of projectile points and knives (Callahan 1979; Kelly 1988).

**Celt**

A groundstone or flaked and polished, elongate lithic implement, exhibiting a wedge or double bevel-shaped bit when viewed in profile. Celts may resemble adzes but can be differentiated based upon differences in bit morphology. Celts will generally exhibit a straight and centered bit when viewed on edge, as opposed to the curved and often slightly offset configuration associated with adzes (Adams 2002; Ahler 1994).

**Channeled Abrader**

A tool manufactured from course-grained stone (e.g. sandstone) exhibiting single to multiple straight, u or v-shaped, elongate channels. (Adams 2002; Ahler 1994)

**End Scraper**

A tool that exhibits unifacial reduction restricted to the short axis of the implement. End scrapers tend to exhibit a lenticular, trapezoidal, or concavo-convex profile, with an often steeply unifacial working edge.

**Hammerstone**

A tool that is generally defined as globular, semi-globular, to elongated or billet-like lithics that exhibit use-wear indicative of use as a striking implement. While a variety of lithics may fit into the above-stated definition, hammerstones lack any of the additional accessory features associated with similar lithic tools. Hammerstones tend to lack any purposeful shaping, other than those produced consequentially through prolonged utilization.
Indeterminate Groundstone

A groundstone tool that is too fragmentary or otherwise ambiguous to accurately identify as a given tool type.

Knife

A knapped tool that was utilized as either a hafted or unhafted cutting implement. Knives overlap in characteristics with bifaces and projectile points, necessitating some subjective distinction. Generally speaking, knives tend to be larger and wider than projectile points and display a more refined cutting edge than bifaces.

Perforator

A tool that exhibit a single retouched, pointed protrusion. Perforators may appear similar in form to drills, gravers, or burins, yet may be differentiated through careful observation of reduction patterns and use-wear. Perforators tend to exhibit minimal use-wear, with most dulling and micro-burination appearing at the tip of the protrusion. In contrast, drills and gravers will exhibit heavier, patterned use-wear, while burins are defined through their method of construction rather than their proposed use. Along this line of thought, burins may in fact represent a type of perforator, but are differentiated due to their uniquely defined method of construction. Perforator-like implements exhibiting multiple, short, and closely spaced protrusions are classified as denticulates. Within the contexts of this study, the term "perforator" is considered synonymous with "awl", when referring to lithic tools.

Pick

A flaked, ground, and/or polished implement, exhibiting an elongate and narrow morphology with one or two pointed bits. Picks are similar in form to chisels and celts, although chisels and celts will not exhibit the pointed bit observed on picks in plan and dorsal view.
**Projectile Point**

A tool that was hafted to the distal end of an arrow, spear, or dart. Typically referred to as "arrowheads", projectile points represent at least three distinct technological systems, associated with distinct temporal and spatial distributions within New World prehistoric contexts. Spear points are generally associated with Paleo-Indian contexts, although later examples may be associated with later contexts. Dart points are generally associated with Paleo to Middle Woodland contexts within the Upper Midwest, generally exhibiting wider and longer dimensions. Conversely, arrow points are typically more diminutive and otherwise more gracile than dart points. However, size alone cannot be accurately used to ascertain temporal context. Some dart and spear points are distinctively diminutive or may be resharpened to non-typical dimensions, while knives of any age may appear synonymous with earlier point clusters.

**Retouched Flake**

A tool exhibiting the patterned removal of flakes from a piece of lithic debitage, yet lacking attributes associated with defined formal lithic tool types.

**Scraper**

An ambiguous term for a lithic tool that exhibits one or several steeply reworked unifacial edges. The general term “scraper” is specifically utilized when a scraper cannot be adequately identified as either a side or end scraper due to fragmentation or an otherwise ambiguous morphology.

**Side Scraper**

A tool exhibiting a steeply retouched edge along one or more of its long axes, interpreted as a fleshing and/or butchering implement.
Spokeshave

A tool that exhibit a pronounced working edge concavity produced through utilization and/or retouching. Spokeshaves may be manufactured through intentional reduction to produce a concavity or through utilization alone.

Utilized Core

A core that exhibits use-wear indicative of use as a cutting or scraping implement, after the core has been initially exhausted.

Utilized Flake

A piece of lithic debitage that exhibit consequential flake removal as the result of utilization, yet lacks the morphological characteristics or retouch flaking to be classified as a formal tool or retouched flake.

Wedge

A tool that exhibits bipolar use-wear associated with the insertion of a lithic raw material into another material through a driving force. The resultant use-wear associated with this process will exhibit extensive bipolar step and hinge fractures in conjunction with edge dulling. Wedges and bipolar cores appear morphologically similar, although wedges will tend to exhibit a thinner profile and more extensive dulling of utilized surfaces.

Pottery Analysis

Pottery was analyzed based upon formative, morphological, and stylistic attributes. These included the presence and types of pottery temper, surface treatment, and thickness of morphologically identifiable pieces, formative modifications, and decorative elements. Below is a summary of the morphologically and stylistically-based terms utilized to identify pottery characteristics.
Tempering

Tempering includes any materials interpreted as inclusions intentionally added to a clay matrix with the intention of aiding in overall stability of the matrix during the firing process.

Grit Tempered

A tempering agent comprised of crushed stone fragments. Within the contexts of this study, grit tempering refers specifically to crushed granitic rock.

Sand Tempered

A tempering agent comprised of sand grains. Determining the presence of sand tempering is at time difficult to differentiate from naturally occurring sand present within clay, especially if mixed with additional types of tempering agents. Within the contexts of this study, sand tempering was only identified when it constituted twenty percent or more of observed pottery matrix.

Shell Tempered

A tempering agent comprised of crushed fragments of mollusk shell. In soils less conducive to shell preservation, shell tempering may be identified through the presence of lamellar voids in places where shell has been leached away.

Untempered

A lack of identifiable tempering agent with less than twenty percent sand grain inclusions. Untempered pottery may often be associated with small, crude, pottery vessels often referred to as “pinch pots” as well as pipes, beads, and other small fired clay objects.
Morphological Element

Morphological elements are described as potential portions of a container, from which a sherd or fragment was originally derived.

Rim

The area of a vessel that lies directly superior of the neck, extending to the apical lip margin.

Lip

The most superior aspect of the rim of a container.

Shoulder

The point at which a vessel is widest below the neck.

Neck

The area directly below the lip and directly above shoulder.

Body

The area below the shoulder on shouldered containers, the area below the lip on unshouldered containers, and/or sherds that lack morphological qualities that could be used to assign them to a specific area of a container.

Vessel

A container that exhibit intact portions of the rim, neck, and shoulder elements, or 30 percent of an unshouldered container, including the rim.
**Surface Treatment Placement**

Surface treatment placement describes the location of a particular surface treatment type in relation to the overall interpreted configuration of a container.

**Apex**

The junction between the interior and exterior aspects of a container occurring at the most superior aspect of the lip.

**Interior**

The inner-facing wall of a container or element of a container.

**Exterior**

The outer-facing wall of a container or element of a container.

**Surface Treatment Type**

Surface treatment types are defined by one or more modifications of the raw surface of a wall of a container, resulting in the observed overall appearance and qualities of the containers walls.

**Burnished**

A surface treatment exhibiting a smooth and polished surface differentiated from smooth surface treatments through the presence of a distinctive sheen and finely polished look. Burnishing produces a smoother, denser, and more regular surface than smoothing alone.
**Burnished Over Cordmarked**

A surface treatment exhibiting a smooth and polished surface while still exhibiting evidence of prior cordmarking. This surface treatment is differentiated from smoothed over cordmarked surface treatments through the presence of a distinctive sheen and finely polished look. Burnishing produces a smoother, denser, and more regular surface than smoothing alone.

**Smooth**

A surface treatment exhibiting signs of smoothing or an otherwise lack of surface treatment which in effect, has left a plain surface on the exterior of a vessel. Within the contexts of this study, the identification of this surface treatment was applied more judiciously throughout the identification process, due to the fact that the interior and exterior of sherds are not always present and that by and large the majority of pottery from the upper Midwest (regardless of temporal period) display smooth interior walls. This necessitated the ability to differentiate between interior and exterior smoothed surfaces. This may prove impossible in the case of split sherds that lack morphological characteristics, which could aid in the differentiation between interior and exterior surfaces. Therefore, pottery sherds that clearly exhibited a smooth surface yet lacked the features necessary to differentiate between interior and exterior surfaces were identified as “indeterminate”. This creates a bias in the data, which favors the identification of other surface treatments over smooth surface treatments. Despite this bias, the omission of all sherds failing to meet the same standards for classification as those with smooth surface treatments would likely not result in much more than a larger number of indeterminate pottery sherds and the same overall trend in pottery occurrence and distribution. Whereas the inclusion of split sherds with a smooth surface that fail to meet this standard would result in a markedly higher number of “smooth” pottery sherds than might in fact be representative of the overall assemblage.
Fiber Marked

A surface treatment created through the application of unidentified botanical or faunal fiber to the surface of the container, which lacks additional detail necessary for more accurate identification.

Cordmarked

A surface treatment exhibiting impressions or markings resulting from cordage being applied to the vessel. This is in essence a catch-all term for any surface treatment involving cordage but lacking the morphological placement on a sherd to denote direction of application. On sherds that display morphological characteristics which allow for its orientation in relation to the vessel from which it is derived to be ascertained, directional descriptors (e.g. oblique, vertical, etc.) were used in conjunction with the term “cordmarked”.

Smoothed Over Cordmarked

A surface treatment exhibiting cordmarking that has been partially obscured, smoothed, or smeared during manufacture. The identification of this surface treatment may prove difficult due to a number of factors. First, the fact that it exists as a gradation between cordmarked and smooth surface treatments leaves a large margin for error, especially when both surface treatments may be present within a given assemblage. Second, defining what constitutes a smoothing of a cordmarked surface is both variable and subjective, especially when dealing with often diminutive and fragmentary pottery sherds. Lastly, methods of surface treatment application, use-wear, and post-depositional wear may all result in the appearance of the smoothing of a cordmarked surface. In order to address the above-stated issues, a comparative sampling of smoothed over cordmarked sherds was utilized throughout the process of pottery identification. However, it is important to recognize that this particular surface treatment likely reflects both intentional and unintentional modification of cordmarked vessels and that the differentiation between these cannot be reliably and consistently executed.
Rim Form

Rim form is determined by the evidence for or against the significant modification of the rim of a container with the interpreted intent to create a particular stylistic form.

Unmodified

Unmodified rims exhibit a morphology where the paste of a vessel is brought from the shoulder or neck area up to the lip area without doubling on itself or systematically adding material to thicken, brace, or otherwise enhance or change the rim's basic form. Unmodified rims are identifiable in cross section through a lack of observed drastic changes in the orientation of the paste and/or a lack of observable systematic addition of material. It is important to note that potters will occasionally add material to small sections of a neck or a rim to provide added strength to a vessel. Such additions do not constitute modification, as modification is defined as a systematic change in direction of the paste or addition of material, which would be observable throughout the impacted morphological aspect of the vessel.

Modified

Modified rims exhibit a morphology where the paste of a vessel is brought up from the shoulder or neck to the lip and is doubled back on itself and/or extra material is systematically added. Modification is visible in the cross section of the rim in two ways: 1) as a distinct change in the orientation of the paste such that the interior surface below the lip becomes the exterior surface on the opposite side of the lip, or vice versa, or 2) as the addition of a separate section of paste.

Rim Modifications

Rim modifications are identified within this analysis as rims exhibiting the addition of clay matrix and/or the manipulation of the rim walls in a manner that modifies profile and overall appearance of the rim.
Thickened (Interior, Exterior, Interior and Exterior)

A rim modification in which a thickening of the interior, exterior, or interior and exterior of the rim is observable in cross-section. Thickened rims may occur as a gradual tapering or a more defined thickening of the vessel wall. Thickening is distinguished from other modifications in that no additional material is evident and the thickening is due to compressive widening of the paste rather than doubling it on itself or the addition of a fillet.

Folded (Interior, Exterior, Interior and Exterior)

A rim modification in which the superior margin of a vessel has been folded to the exterior or interior and conformed to the surface of the vessel. This produces a two-fold thickness to the rim, which can be differentiated from thickened rim modifications by the crease observable in both cross-section and along the inferior margin of the folded area. This modification may also resemble filleting, but can be differentiated based on the continuous nature of the folded area in relation to the vessel. In comparison, fillets will display two seams along its inferior and superior margins.

Rolled (Interior, Exterior)

A rim modification, which is characterized by an interior or exterior rolling or curling of the superior aspect of the rim. Although similar in formation to a folded rim, rolled rims do not lie flat against the wall of the vessel, but rather extend away from the vessel. This produces a bulbous protrusion of the lip, which exhibits a rounded semicircular appearance when observed in profile.

Rim Shape

Rim shape within this analysis refers to the overall shape of the rim itself, regardless of its position and angle to the vessel shoulder or body.
**Curvate**

A rim shape that exhibits a form that curves or flares outwards or inwards, resulting in a wider or more constricted vessel orifice.

**Straight**

A rim shape that exhibits a straight form, where both the interior and exterior walls of the rim remain perpendicular and parallel to each other or taper to a point.

**Recurvate**

A rim shape that exhibits a form that curves or angles both inward and outward. Recurvate rims generally flare or angle outwards immediately above the vessel shoulder. This outward angulation terminates prior to the rim apex, where an inward flaring or angulation results in a constricted rim orifice. The result is a reverse in rim form direction, yielding a roughly s-shaped profile.

**Rim Orientation**

Within this analysis, rim orientation strictly refers to the orientation of the rim in relation to the exterior wall of a vessel's body or shoulder.

**Everted**

A rim orientation that displays an outward deviation from vertical in relation to the shoulder of the vessel, resulting in an exterior flaring of the rim. This includes any outward flaring regardless of degree.

**Inverted**

A rim orientation that displays a deviation from vertical, resulting in an inward curvature of the rim in relation to the shoulder of the vessel.
Vertical

Rims that display a profile that does not deviate from a straight orientation and is over 2 cm in length. The 2 cm length is utilized to lend more consistency to the differentiation between indeterminate and vertical rim orientations and is based on general trends in defined Late/ Terminal Woodland and Initial Middle Missouri variant pottery ware morphologies.

Lip Forms

Within this analysis, lip forms refer to the modeling methods (or lack thereof) and resultant stylistic and morphological attributes of the most superior aspect of the rim.

Beveled (Interior, Exterior, Interior and Exterior)

Lip forms that display beveling to the interior, exterior, or interior and exterior of a vessel. Beveling of the lip is identified through the pronounced slanting of the apical surface of the lip in relation to the vessel wall. This results in an acute and obtuse angulation of the lip profile as opposed to the right angles produced by lip flattening.

Rounded

Lip forms that exhibit rounding of the apical surface resulting in a rounded or arc-shaped profile.

Flattened

Lip forms that exhibit flattening of the apical surface, producing a flat apical surface and roughly right angular cross-section produced between the apical surface and interior/exterior vessel walls. Flattening of the lip may occur in conjunction with lip decorations that may partially alter the appearance of a flattened lip when applied after the modification has been made. Therefore, the designation of a flattened lip does not necessarily reflect the final appearance of the vessel when lip decoration has been
added, but rather reflects the process utilized to finish the lip prior to decoration. In other words, any subsequent undulations or rounding caused by the application of lip decorations are categorized under a decorative rather than lip form classification.

**Thinned**

Lip forms that exhibit a thinning of both the interior and exterior surface of the superior aspect of the rim, as observed in cross-section. This lip form generally occurs as a gradual tapering of the superior aspect of the rim, resulting in a peaked or pointed lip morphology.

**Thickened (Interior, Exterior, Interior and Exterior)**

Lip forms that exhibit a thickening of the interior, exterior, or interior and exterior of the rim, as observed in cross-section. Thickened rims may occur as a gradual tapering or a more defined thickening of the vessel wall. Thickening is distinguished from other modifications in that no additional material is evident and the thickening is due to compressive widening of the paste rather than doubling it on itself.

**Protruding (Interior, Exterior, Interior and Exterior)**

Lip forms that exhibit a horizontal interior, exterior, or interior and exterior protrusion of the lip. This appears distinctive in cross-section, displaying a roughly 90-degree angle between the protruding lip and vessel wall. This may appear morphologically similar to a thickened rim, but is differentiated by its occurrence strictly within the most superior aspect of the rim. Whereas thickened rims display a tapering of thickness between the lip and neck. In addition, protruding lips display greater horizontal than vertical length, a feature absent on similar modifications.
Decoration Placement

Within this analysis, decoration placement refers to the face or faces of the vessel walls on which decorations have been applied.

Apex

The junction between the interior and exterior aspects of a container occurring at the most superior aspect of a container’s lip.

Interior

The inner-facing wall of a container or element of a container.

Exterior

The outer-facing wall of a container or element of a container.

Crenellate

The area extending across the interior, apical, and exterior aspects of a rim or tab lip.

Decoration Classification

Within this analysis, decoration classification subsumes a wide variety of decorative element types, which are classified into inclusive thematic representations and further defined through selected attributes.

Cord Impressed

The application of cordage to a vessel for decorative rather than formative purposes. Within this general category, the more specific terms of single cord, knot, and loop may be utilized. Single cord impressions
are considered to be any application of a singular band or zone of cordage. These may be arranged as multiple bands and/or as more intricate patterning, yet will lack the connective strands that would classify them as paired or woven cordage (fabric impressions). Further differentiation was defined through identification of directional twists as defined by Hurley (1975), with the terms S-Twist and Z-Twist utilized as applicable.

**Cord Impressed (Knot)**

A form of cord impression that involves the application of knotted cordage. These are applied in much the same manner as punctates or tool impressions, yielding similar results but exhibiting fiber and/or cordage twist impressions.

**Cord Impressed (Loop)**

A form of cord impression that involves the application of looped cordage. These are applied in much the same manner as knotted cord impressions, yet exhibit an open loop rather than the compressed and often partially obscured impression associated with cord impressed (knot) decorations.

**Cord-Wrapped Stick Impressed**

A decoration produced through the application of an object wrapped in cordage to the surface of a vessel. Similar impressions have been classified as cord-wrapped paddle, cord-wrapped rod, and cord-wrapped object (Mason 1981; Anfinson 1979; Gibbon 2008). For the sake of analytical consistency, the term cord-wrapped stick is to be considered synonymous with the above-stated decorative elements.

**Tool Impressed**

A decoration produced through the application of an indiscernible object to the wall or lip of a vessel, resulting in a non-continuous impression that is longer than it is deep. Tool Impressions are generally
longer and shallower than punctates, made by impressing a plain tool onto the surface of a container at an angle roughly parallel to the surface of a vessel (Gibbon 2008).

Fingernail Impressed
A decoration produced through the application of a fingernail to the wall or lip of a vessel, resulting in a crescent or arc-shaped impression.

Punctated
A decoration produced through the application of an object into the wall of a vessel at a roughly ninety degree angle (Gibbon 2008). Punctate shapes were also defined to aid in determining the number of vessels represented, potential correlations with defined pottery wares, and overall trends in decorative element preferences.

Dentate Stamped
A stamped design exhibiting rows of small, shallow, and closely spaced, square or rectangular impressions. Dentate stamps are produced through the application a comb-like or "toothed" implement to the wet or leather-hard surface of a vessel.

Toothed
A decoration occurring in conjunction with a protruding lip morphology. Toothed lips appear to result from the intentional outward protrusion of the lip, followed by vertical or oblique tool impressing or pinching of the lips exterior surface. This produces a distinctive outward projecting band of pointed “teeth” along the exterior surface of the lip.
**Pyramidal Toothed**

A distinctive variety of toothed lip, which displays additional modeling not observed on standard toothed lips. Pyramidal toothed lips display four squared sides and a flattened distal end, creating a four-sided tooth, that tapers slightly towards the flattened distal. In contrast, toothed lips appear roughly triangular in shape, displaying a pointed distal end and unmodified surfaces.

**Trailed Line**

A decoration produced through the dragging of a tool over the surface of a wet and pliable vessel wall, resulting in parallel-sided, plain lineate and/or curvilinearate line patterns. Trailed lines appear roughly U-shaped or flat-bottomed in profile, often with slight bulging along the borders of lines or interior intaglio, resultant from the displacement of clay. Trailed lines may appear similar to incised lines, although incised lines tend to exhibit a v-shaped or u-shaped profile and lack the accompanying clay displacement associated with trailed lines.

**Incised Line**

A scribed decoration exhibiting a v-shaped or u-shaped profile. Incised lines appear to have been applied to a leather-hard vessel surface, in a process which tends to remove, rather than displace clay. Incised lines may be easily confused with trailed lines, although they can be readily differentiated through the resulting decoration profile. Where trailed lines exhibit a basin-shaped trench profile, incised lines tend to yield a deeper, narrower, and more angular profile, exhibiting evidence of clay removal rather than displacement.

**Intaglio Bossed**

A design produced through the application of a punctate, resulting in a protuberance of the opposite vessel wall that may or may not represent an intentional decorative element.
Faunal Analysis

Faunal materials were identified and divided into seven classes (mammalian, avian, reptilian, amphibian, ichthyoid, gastropod, and bivalve), which were further classified by genus and/or species when discernable. Faunal remains were also classified based upon the presence or absence of identifiable anatomical characteristics, butchering marks, burning, modification, utilization, and non-cultural taphonomical processes. Due to the expansive spatial and stratigraphic nature of the site, all faunal materials were collected for their potential to be associated with the prehistoric occupation of site. Exceptions were made for faunal materials determined to be definitively derived from natural processes (i.e. small bivalve and gastropod shells in non-habitable soils), or were identified as non-native species associated with more recent Euro-American settlement of the area (i.e. Sus spc.).

Botanical Analysis

Botanical materials were generally identified as wood or non-wood, with additional identification of botanical element (i.e. rhizome, pith, kernel, etc.), genus, and species for non-wood specimens. Only carbonized botanical materials were collected and included within this analysis. Given that this study is focused primarily on identifying similarities and dissimilarities between the archaeological assemblages of spatially distinct areas of the Nelson site terrace, an in depth botanical analysis was not conducted due to a lack of comparable sample sizes from undisturbed contexts.

Matrix Analysis

The classification of matrix is utilized to identify both consolidated and unconsolidated materials that have been modified by human activity, but cannot be defined as lithic, pottery, faunal, botanical, or mineral in nature. Below is a glossary of the terms utilized to identify matrix within these archeological assemblages.
Burnt Earth

Burnt earth is identified as soil that has been blackened, reddened, and/or fused and hardened through close or direct contact with fire. Burnt earth may appear superficially similar to daub, pottery, fired clay, or non-artifactual dirt clots, but may be differentiated through the frequent inclusion of carbonized materials, lack of identifiable temper, overall cohesion, and distinct difference from accompanying soils (MNSU 2015).

Clinker

A porous material of unknown origin that may represent naturally-occurring heating of sediments and/or materials derived from more recent coal burning processes associated with historic contexts (MNSU 2015, WSU 2015).

Daub

Fired clays that display the angular characteristics and/or plant fiber or wood impressions indicative of wattle and daub constructed structures (MNSU 2015, WSU 2015).

Mineral Analysis

Mineral materials were only collected when they were identified as culturally-modified. The class “mineral” is utilized exclusively in reference to materials composed of a single consolidated mineral (i.e. hematite, galena, calcite, kaolinite, etc.) (MNSU 2015). Minerals were generally identified and defined by their mineral composition and type of alteration and/or presumed utilitarian purpose. Within the contexts of this study, two archeologically-significant modified mineral types were identified.
CHAPTER III

PHYSICAL SETTING

The Nelson site terrace is located approximately 2 mile southwest of the city of Mankato, in the southwest quarter of Section 21 and the northwest quarter of Section 28, Township 108 North, Range 27 West, Blue Earth County Minnesota. The terrace is located along the southern edge of the Blue Earth River, which encompasses the terrace along its western, northern, and eastern extents. To the south, a smaller and more elevated terrace and bluff line delineate the extent of the Nelson site terrace. Overall, land use associated with the area is primarily agricultural, with smaller portions in CRP and wooded peripheral areas (Appendix C, Photographs 1-12).

Soils

The soil map units encompassing the Nelson site terrace include the Lomax and Minneopa soil series (U.S. Department of Agriculture-Natural Resources Conservation Service [USDA-NRCS] 2015a). The Lomax series consists of very deep, well drained soils formed in loamy and sandy alluvium, or outwash on floodplains and stream terraces (U.S. Department of Agriculture-Natural Resources Conservation Service [USDA-NRCS] 2015b). The Minneopa series consists of very deep, moderately well drained soils on low stream terraces, flood plains, and outwash plains (USDA-NRCS 2015b). In the contexts of the Nelson site terrace, the delineation between Lomax and Minneopa series soils appears to mark the extent of past flooding, which deposited Minneopa series soils in the place of Lomax series to the north, while leaving the southern and more elevated areas intact. Based on a review of the parent materials and the project location (glacial outwash and sandy alluvial sediments on undeveloped floodplain), these soils appear to be associated with buried Holocene soils and paleosols that have the potential to contain buried archeological deposits.
The soil map units encompassing the mid-level terrace located directly to the south and southwest of the Nelson site terrace includes the Terril series. The Terril series consists of very deep, well and moderately well drained soils formed in colluvium on base slopes, foot slopes, drainageways, swales and toe slopes on alluvial fans, and treads and risers on stream terraces (USDA-NRCS 2015b). These soils appear to have the potential to contain deeply buried Holocene soils and paleosols that could contain buried archeological deposits.

Running along the southern periphery of the mid-level terrace, as well as much of the adjacent Blue Earth River embankments, are a series of soils of the Copaston complex thinly overlying Ordovician and Cambrian-ages bedrock outcrops. The Copaston complex consists of shallow, somewhat excessively drained soils that formed in a mantle of glacial drift or alluvial sediments over limestone and sandstone bedrock on terraces and uplands (USDA-NRCS 2015b). These are generally very steep and composed of approximately 60 percent bedrock, 30 percent Copaston soils, and 10 percent other soils (USDA-NRCS 2015b). These formations are notoriously unstable, prone to slumping and erosion. The area directly south of the mid-level terrace is covered by a thin layer of Copaston as well as colluvial soils. Further to the east, the angle of slope increases markedly, resulting in more severe soil erosion and extensive bedrock exposure.

Further to the south, the terrain levels off and again supports a deep layer of soil above bedrock. The cultivated field and residential areas to the immediate south of the lower terraces are composed of the Clarion and Estherville series of the Clarion-Estherville complex. The Clarion series consists of very deep, moderately well drained soils on uplands formed in glacial till (USDA-NRCS 2015b). The Estherville series consists of very deep, somewhat excessively drained soils that formed in 25 to 50 cm of loamy sediments over sandy and gravelly outwash on outwash plains, stream terraces, valley trains, and kames on moraines (USDA-NRCS 2015b).
Geology

The Blue Earth River cuts a deep and narrow valley through the Cambrian-aged Jordan Sandstone and overlying Ordovician-aged Oneota Formation within the northern half of Blue Earth County. These formations formed within shallow seas over the course of at least three marine transgressions from between 560 and 438 million years ago. Within these shallow seas, sediments and fragmentary marine skeletons accumulated and subsequently formed into the sandstone and limestone bedrock along what is today recognized as the Hollandale ebbayment (Wright 1972). Cambrian sedimentary deposition occurred during two major transgressive-regressive cycles, the Dresbachian and Franconian-Trempealeauan sequences of the St. Croixan Series (Wright 1972). Of these sequences, the Franconian-Trempealeauan formed the Jordan Sandstone, which occurs in outcroppings throughout the Blue Earth River Valley (Ojakangas 2009). The overlying Oneota and Shakopee Formations were formed from marine deposits dating to the Ordovician period. These were formed in a warm, supersaturated, shallow, and highly agitated marine water intertidal environment. By the end of the Ordovician period the North American inland sea that had inundated the region had subsided (Ojakangas 2009). Subsequent erosional processes and glaciation acted in unison to weather away all of the Shakopee Formation and much of the Oneota Formation in the Blue Earth River Valley in the vicinity of the Nelson site. However, remnant outcrops and displaced residual deposits remain present throughout the area (personal observation 2014).

Between 2.5 million and 14 thousand years ago, the North American continent underwent a series of glacial transgressions and regressions (Anfinson 1997). These glaciations significantly contributed to the modern landscape and deposited materials from geographically distant locals throughout the region. The final glaciation to affect the Blue Earth River Valley was a tongue of the Laurentide ice sheet of the Late Wisconsin glaciation, which advanced and covered much of the region approximately 17,000 years ago (Ojakangas 2009). This glacial advance, referred to as the Des Moines Lobe, reached its maximum
extent approximately 14,000 years ago near present day Des Moines, Iowa (Anfinson 1997). Over the course of the following 2,000 years, rapid wastage and subsequent glacial regression occurred, and by around 12,500 years ago the Blue Earth River Valley was unglaciated (Gibbon 2008).

The regression of the Laurentide ice sheet marked the beginning of the formation of Glacial Lake Agassiz at the southern end of the Red River Lowland, along the modern-day borders of Minnesota, North Dakota, and Manitoba (Ojakangas 2009). As the Laurentide ice sheet continued its retreat to the north, melt-water continued to collect within Glacial Lake Agassiz. This massive body of water eventually breached the Big Stone Moraine near present day Traverse County, Minnesota, which had formerly served to retain glacial melt-waters within Lake Agassiz. Between 11,700 and 9,400 years ago, the subsequent spillway known as the Glacial River Warren served to carve the deep and wide valley in which the Minnesota River flows today (Anfinson 1997). Subsequent overflow resulted in the short-lived Glacial Lake Minnesota formed directly to the south of Mankato within Blue Earth and adjacent counties (Ojakangas 2009). By 9,000 years ago Glacial Lake Agassiz had retreated further north and water levels of Glacial River Warren had subsided substantially (Anfinson 1997).
CHAPTER IV
CULTURAL SETTING

The Nelson site’s significance lies primarily in the temporal contexts of the Terminal Woodland period, from which archeological remains are most abundant. Regionally, this period reflects a transition from semi-sedentary horticultural and foraging lifeways to one increasingly invested in the large scale villages and agriculture (Gibbon 2008). While large, agricultural-based village sites associated with the Plains Village tradition exist within the Prairie Lakes region, Terminal Woodland sites of the same size and complexity are currently lacking in the archeological record (Holly and Michlovic 2013).

The Fox Lake phase of the Initial Woodland period appears to have transitioned into the Lake Benton phase of the Terminal Woodland period, around 1,300 years ago within the Prairie Lakes region (Anfinson 1997; Gibbon 2008). Lake Benton phase peoples appear to have shared many similarities with their Fox Lake predecessors, although changes in technology and material culture serve to define the two. By the beginning of the Lake Benton phase, the bow and arrow appears to have completely replaced the atlatl, as suggested by changes in projectile point morphology (Alex 1980; Anfinson 1997; Gibbon 2008). It is also during this time that the majority of burial mounds identified within the region appear to have been constructed (Arzigian 2008). However, earlier mounds are attributed to the Fox Lake phase and earlier Archaic traditions within the region, carrying over into later temporal periods (Arzigian and Stevenson 2003). In adjacent states, this period is synonymous with the Keyes phase in Iowa and the Eastman phase in Wisconsin (Benn and Green 2000; Stoltman and Christiansen 2000).

Archeological components associated with these phases are generally identified as small seasonal habitation sites in lacustrine, riverine, and rock shelter settings (Benn and Green 2000; Hurley 1975;
Stoltman and Christiensen 2000). Subsistence strategies associated with these phases appear similar to the foraging patterns associated with earlier Woodland components, perhaps with the exception of the apparent increased utilization of domesticated cultigens (i.e. Zea mays) (Benn and Green 2000; Stoltman and Christiansen 2000). However, evidence for earlier Fox Lake phase utilization of domesticated cultigens recovered from the Langseth site (21NO11) suggests their underrepresentation in earlier assemblages may be the result of sampling error, rather than an overall trend in subsistence strategy (Langseth 2014).

In the Mississippi River Valley river trench and nearby associated drainages, complex inhumation practices and earthen monuments including conical, linear, and effigy mounds are generally attributed to these phases (Benn and Green 2000; Hurley 1975; Stoltman and Christiansen 2000). Meanwhile, comparable earthen monuments and associated burials in adjacent portions of south-eastern and south-central Minnesota appear less intricate, generally confined to small earthen mounds of conical, and rarely, linear formations (Anfinson 1997; Arzigian and Stevenson 2003). Pottery assemblages associated with these phases demonstrates the replacement of a wide variety of Middle and Early Woodland pottery wares with a more homogenized decorative themes, likely derived from those observed on earlier Linn wares (Benn and Green 2000). Overall, these demonstrate the adoption of corded decorative elements in place of the incising and bossing generally associated with earlier Woodland assemblages (Benn and Green 2000; Howell 2015). In Wisconsin, these are generally associated with Madison ware, an expansive ware classification that includes multiple types and varieties (Howell 2015; Hurley 1975; Stoltman and Christiansen 2000). In Iowa, Madison ware appears to be more exclusively defined, with a variety of other regionally-recognized corded wares more carefully defined and associated with more refined regional and temporal contexts (Benn and Green 2000).
Around this same period, the influence of Plains Village tradition peoples from the west and southwest began its eastward expansion into the Prairie Lakes region (Anfinson 1997). Within the Prairie Lakes region, Plains Village tradition components are generally attributed to the Great Oasis, Cambria, and Big Stone phases of the Initial Middle Missourivariant of the Plains Village tradition (Anfinson 1997; Gibbon 2008). The influence of Great Oasis peoples appears within the region approximately 1,100 years ago, overlapping both temporally and geographically with the Lake Benton phase in Minnesota and the High Rim Horizon in Iowa (Alex 1980; Benn and Green 2000; Gibbon 2008). Where Lake Benton phase sites were generally centered around lacustrine habitation sites, Great Oasis sites appear most frequently on low terraces along river valleys (Alex 1980; Benn and Green 2000).

Over the following two hundred years, the emergence of Cambria and Big Stone phase sites in large part mirror those of Great Oasis sites, with definable differences often only observable through differences in pottery wares and geographic distribution (Anfinson 1997). While Great Oasis components are generally associated with the southwestern portion of Minnesota and adjoining states to the west and south (Alex 1980; Winham and Calabrese 1998), Cambria and non-Great Oasis Plains Village sites have been identified in greater numbers throughout the Minnesota River Valley in the Prairie Lakes region (Anfinson 1997; Holly and Michlovic 2013). Contemporaneous Big Stone phase sites appear to be geographically restricted to the far northwestern area of the Prairie Lakes region, exhibiting settlement patterns more reminiscent of Woodland than Plains Village sites (Anfinson 1997). Plains Village tradition influence appears to have tapered off between 700 and 800 years ago, replaced in part by Blue Earth phase components of the Oneota tradition (Gibbon 2008).
CHAPTER V

RESULTS

Historic Document Review

A historic document review of plats, atlases, topographic quadrangles, and aerial imagery was conducted to identify any historic features (i.e. structures, foundation, wells, etc.) that may be encountered during field investigations of the Nelson site terrace. In addition, the results of this review was utilized to identify past disturbances that may have compromised the integrity of different site areas and their cultural contents.

A review of the 1855 United States Department of the Interior (DOI), Bureau of Land Management (BLM), General Land Office Records (GLO) plat for Township 108 North, Range 7 West showed that the project area was located in undeveloped grassland on a river terrace to the immediate south of the Blue Earth River during the middle part of the 19th century (Appendix B, Map 1). No evidence for historic occupation or modification of the landscape were illustrated on the map in the vicinity of the project area or within surrounding areas.

The A.T. Andreas (1874) atlas showed that the project area was located in an open and undeveloped area in South Bend Township in Blue Earth County (Appendix B, Map 2). A structure was illustrated in the southwest quarter of Section 28, Township 108 North, Range 7 and an unlabeled road extending from east to west and then south in the approximate locations of Hemlock Road, 200th Street, and 549th Ave, was illustrated in the southeast quarter of Section 28, Township 108 North, Range 7. However, no evidence of historic occupation or modification of the landscape within the project area was observed.
The Central Publishing Company (1898) atlas illustrated an unlabeled road to the immediate south of the project area in the approximate location of 549th Lane (Appendix B, Map 3). A single structure was illustrated within the northeast end of the project area, assessed at $31.00 and belonging to a Peter Reiff, who is also listed as the owner of 7.10 acres of the terrace, assessed at a value of $69.00. An additional fourteen structures were illustrated within surrounding areas. The presence of a historic structure suggests that at least some modification of the project area was required for clearing and construction, while surrounding land use was likely modified for agriculture and/or pasture.

The Geo. A. Ogle and Company (1914) atlas illustrated a single structure in the northwest end of the project area, which likely represents the structure illustrated in the 1898 atlas (Appendix B, Map 4). This same structure and property is listed under the ownership of a J. A. Loomis. No other significant changes were noted within the project area and immediate surroundings within the Geo A. Ogle atlas or W. W. Hixson and Company (1925c) atlas.

The Webb Publishing (1929) atlas revealed that the structure illustrated in the 1898, 1914, and 1925 atlases was no longer present within the project area and the property owner was listed as A.J. Kroeger, who had also held ownership of adjacent property to the south in previous atlases (Appendix B, Map 5). No other significant changes were illustrated within the project area, although additional structures and labeled and unlabeled roads were illustrated throughout Section 28.

A review of the W. W. Hixson Map and Atlas Co. (1938) atlas, Thomas O. Nelson (1955) atlas, and Thomas O. Nelson (1962) atlas revealed no significant changes within the project area or surrounding areas.
A review of 1938, 1948, and 1964 aerial images procured from the Minnesota Historical Aerial Photographs Online (MHAPO 2015) website and 1991, 2003, and 2013 aerial images procured from the Northstar Mapper (Minnesota Geospatial Information Office 2015) website revealed that the project area was historically located in agricultural fields and undeveloped grasslands, river floodplain, and wooded areas.

Analysis of the 1938 aerial imagery revealed that the project area was primarily utilized as agricultural field with lesser areas in woodlands and grasslands (Appendix B, Map 6). Nearly all of the project area appeared to be located in agricultural field with peripheral areas located in uncultivated woodlands and grasslands. A single access road was observed extending north to the project area from a dirt road in the approximate current location of 549th Lane.

The 1949 aerial imagery showed little change from the 1938 aerial imagery (Appendix B, Map 7). However, an area within the center of the project area appeared to be located in an uncultivated grassland with sparsely concentrated stands of early growth trees, in an area previously located in a cultivated field. No significant changes in land use or land cover were observed within aerial imagery from the 1960s through the 1980s.

The 1991 aerial photograph revealed that the access road leading from 549th Lane to the project area was diverted approximately 50 meters to the east (Appendix B, Map 8). A section of land in the approximate center of the project area appears to be in grassland with concentrations of early growth trees, while the rest of the project area appears unchanged from the 1964 aerial photograph. No significant changes were observed in the project area in the 2003, and 2013 aerial images.
It would appear that historic land use would have negatively impacted the contextual integrity of cultural materials and features within the plow zone of the cultivated areas of the project area.

However, the lack of significant historic development within the project area suggests that subsurface cultural materials and features may be undisturbed below the plow zone and in peripheral areas that have not historically undergone cultivation or other ground disturbing activity.

**Review of Previous Archeological Investigation**

Three archaeological investigations have been previously conducted within the project area in 1973, 2011, and 2013. The geographical extents, methodologies, and results for each investigation is summarized in the following texts.

**1973 Archeological Investigation**

All information pertaining to the 1973 archeological investigation of the Nelson site was derived from personal communications with Michael Scullin in 2011, the field and laboratory notes he provided upon inquiry, and the manuscript *Minnesota’s First Farmers? Late Woodland Ceramics and Maize on the Blue Earth River (The Nelson Site 21BE24)* (Scullin and Richardson 1981).

Fieldwork was initiated at the Nelson Site in April of 1973 under the guidance of then Mankato State University professor Michael Scullin. Preparations for fieldwork included the establishment of a datum point at the northern half of the terrace at an elevation of 816.74 feet (249.4 meters). 11,800 square meters of surface area were then gridded into 10-m by 10-m survey units, which included the entirety of the observed surficial artifact concentration. Stakes were driven at ten meter intervals and affixed with paper discs in preparation for aerial photography, which was subsequently analyzed for anomalously surface features. Upon completion of aerial photography each 10-m by 10-m unit was subdivided into 5-
m by 5-m units, which were in turn staked and delineated in preparation for surface collection (Appendix A, Figure 3).

During mid-May, crew members conducted surface surveys on their hands and knees within each 5-m by 5-m survey unit, recovering all observed materials of possible cultural derivation. Materials recovered from these survey units were then divided into categories of historic and prehistoric ceramics, debitage, and identifiable tool types. The occurrence and number of these categories were then transferred to density distribution maps to identify distinct concentration, which would serve to determine placement of excavation units. The maps revealed roughly three separate surface concentrations of prehistoric material as well as a small concentration of historic materials associated with a structure once located on the site. Based upon these maps, excavation units were arranged for each of the three areas of highest prehistoric artifact density as well as a fourth unit planned to identify the location of the historic structure (Appendix A, Figures 4-6). These were planned as 1-m by 1-m units within the 5-m by 5-m units utilized during the surface survey. Units were labeled using the same basic north/south and east/west designators assigned to survey units, but with each 1-m by 1-m unit assigned an additional alphabetic and numeric designation. These were labeled in ascending order from the southwest corner of each unit, with A through E assigned to the north/south axis and 1 through 5 assigned to the east/west axis. Units were to be excavated in ten meter intervals with all soil screened through \( \frac{1}{4} \) inch hardware mesh.

Upon completion of preparations, excavations were initiated in June of 1973 by MSU students, under the supervision of Michael Scullin. All mapped excavation units and test pits were dug within the northeast quadrant of the survey area, and divided into three zonal areas named area I, II, and III. Information on the locations of any additional excavation units and/or test pits are not indicated within any of the site maps generated for this survey, although Scullin did mention that an additional test pit was placed somewhere at the far west end of the survey area, which yielded cultural material to 50-
cmbs (personal communication). The locations of the units excavated to determine the location of the historic structure is also absent within the site maps. Although not explicitly stated, excavation depth appears to have been determined by quantity of materials recovered. Units yielding more materials appear to have been dug to initial culturally sterile horizons, while units yielding less material appear to have been terminated prior to culturally sterile horizons. During these excavation a number of features were noted, including a line of post molds and what were identified as corn-roasting pits. Unfortunately, no existing field maps illustrate the locations or dimensions of these features. Although botanical remains were recovered from some of the features, these were recovered during standard dry-screening and likely represent only the largest and most intact samples within the features.

During the course of excavation, the plow zone was noted to range between 20 and 25-cm in depth, while appearing as deep as 32-cm along the northern periphery of the field. It was further noted that the integrity of the survey area appeared to have been negatively impacted by erosional processes resultant in part from agricultural practices. While plowing encouraged mixing of artifacts within upper stratigraphic layers, the light sandy soil of the survey area appeared to have been displaced by Aeolian erosional processes. It was posited that these processes had worked in concert to comingle artifacts within the upper layers of the plow zone, while areas beneath the plow zone remained for the most part intact.

Subsequent analysis of the 1973 assemblage focused primarily on diagnostic pottery and domesticated botanical specimens recovered from the Nelson site. The pottery assemblage was emphasized for what were perceived as characteristics diagnostic of Madison Ware, a pottery ware generally associated with the Effigy Mound Culture of southern Wisconsin, extreme southeastern Minnesota, northeast Iowa, and northwest Illinois (UMN 2015). In addition, characteristic comparisons were drawn between several rim sherds exhibiting folded lips and collared rim pottery recovered from the Azatlan site in Jefferson
County, Wisconsin. Of the 3,473 pottery sherds recovered, only the 846 that measured larger than 2-cm in diameter were analyzed. Overall, over half of the pottery assemblage was interpreted as representative of some variation of the “Madison theme” (Scullin and Richardson 1981).

Recataloging of this assemblage in 2014 and 2015 identified a total of 12,639 pottery sherds, not including pipe fragments, complete and fragmentary pottery discs, and/or fired clay, in addition to 5,046 lithics, 761 botanical remains, 614 faunal remains, 25 matrix fragments, and three mineral fragments (Appendix D, Figure 1). The disparity between these totals appeared largely due to the incomplete status of previous cataloging efforts and subsequent organization of the collection. Poor storage and handling over the years may have also led to further fragmentation and therefore the presence of more pottery. However, for the most part fresh breaks on pottery were readily identifiable and recently fragmented sherds were paired and cataloged as a single cohesive sherd.

Of the total pottery assemblage identified and recataloged in recent years, 12,583 exhibited grit tempering, 33 exhibited no tempering (untempered), 14 exhibited indeterminate tempering, three were sand tempered, and one was shell tempered (Appendix D, Figure 2). Of the pottery that was identified as a vessel element or pottery sherd, 12,557 exhibited grit tempering, 13 exhibited indeterminate tempering, eight were untempered, three were sand tempered, and one was shell tempered.

Grit tempered pottery sherds identified within the 1973 assemblage were comprised of a total of 11,039 body sherds, 440 neck sherds, 226 rim sherds, 65 shoulder sherds, 12 combined neck and shoulder element sherds, and two combined rim, neck, and shoulder element sherds (vessels). Of the 11,039 identified body sherds, 3,040 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 7,999 grit tempered body sherds exhibited one of six surface treatment types, including brushed, cordmarked, fiber marked, smooth,
smoothed over cordmarked, and vertical cordmarked. Cordmarked surface treatment were most prevalent, constituting 5,959 (74.49%) of identifiable surface treatments. Smoothed over cordmarked surface treatments were second most common, constituting 1,844 (23%) of identified surface treatments. The remaining grit tempered body sherds exhibited 193 smooth (2.41%), brushed (0.1%), fiber marked (0.1%), and vertical cordmarked (0.01%) surface treatments.

A total of 440 grit tempered neck sherds were identified within the 1973 pottery assemblage, of which 436 exhibited identifiable surface treatment types. Of these, cordmarked surface treatments were most common, constituting 171 (39.22%) of neck sherd surface treatments. Vertical cordmarked surface treatments were nearly as common, identified on 125 (28.66%) of grit tempered neck sherds. A total of 83 (18.86%) smoothed over cordmarked and 55 (12.61%) smooth surface treatments were also identified, representing less common yet still significant surface treatment types. The remaining two neck sherds exhibited a combination of surface treatments, with one exhibiting a smooth and cordmarked surface treatment and the other exhibiting a cordmarked and smoothed over cordmarked surface treatment (0.23% each).

A total of 12 grit tempered sherds exhibiting a morphological combination of neck and shoulder element were identified within the 1973 pottery assemblage. All 12 examples exhibited one of four surface treatment types, including cordmarked, smooth, smoothed over cordmarked, and vertical cordmarked surface treatments. Smoothed over cordmarked surface treatments were most common, exhibited on 6 (50%) of the identified neck/shoulder sherds. Cordmarked surface treatments were nearly as common, exhibited on four (33.33%) sherds. Of the remaining two sherds, one exhibited a smooth surface treatment (8.33%), while the other exhibited a vertical cordmarked surface treatment (8.33%).
A total of 65 grit tempered shoulder sherds were identified within the 1973 pottery assemblage. These all exhibited one of four surface treatment types, including, cordmarked, fiber marked, smooth, and smoothed over cordmarked surface treatments. Cordmarked surface treatments were most common on identified shoulder sherds, exhibited on 34 (52.31%) of the identified examples. Smooth and smoothed over cordmarked surface treatments were less common but nearly equally represented, with 17 (26.15%) exhibiting smoothed over cordmarked surface treatments and 13 (20%) exhibiting smooth surface treatments. The remaining single grit tempered shoulder sherd exhibited a fiber marked surface treatment.

A total of 226 grit tempered rims were identified within the 1973 pottery assemblage. Of these, 191 exhibited identifiable surface treatment types. These included burnished, burnished over cordmarked, cordmarked, oblique cordmarked, smooth, smoothed over cordmarked, and vertical cordmarked surface treatments. Vertical cordmarked surface treatments were most common, exhibited on 77 (40.31%) of all identified grit tempered rim sherds. Cordmarked and smoothed over cordmarked were well represent, with 44 (23.03%) cordmarked and 36 (18.84%) smoothed over cordmarked examples identified. While less common, smooth surface treatments were still well represented, identified on a total of 26 (13.6%) of all grit tempered rim sherds. The remaining rim sherds exhibited five (2.61%) oblique cordmarked, two (1.1%) burnished, and one (0.52%) burnished over cordmarked surface treatment.

A total of two combined rim, neck, and shoulder elements (vessels) were identified within the 1973 pottery assemblage. Of these, one exhibits a smooth surface treatment, while the other exhibits a vertical cordmarked rim and neck transitioning into a cordmarked shoulder.
In total, 517 of the grit tempered sherds identified within 1973 pottery assemblage exhibited some form of decoration. The two most common types of decoration included single cord impressed decorations (326) and punctated decorations (106). Additional decorations types included tool impressed (86), trailed line (4), intaglio bossed (32), toothed (9), cord-wrapped stick impressed (9), cord impressed knot (9), incised line (8), fingernail impressed (7), cord impressed loop (4), and dentate stamped (1).

Two types of diagnostic non-vessel pottery components were identified within the 1973 pottery assemblage and included 15 grit tempered pipe fragments and 15 grit tempered complete and fragmentary pottery discs. Of the 15 pipe fragments, six were identified as bowl fragments and nine were identified as stem fragments. Smooth surface treatments were exhibited on all pipe fragments with the exception of burnished surface treatments identified on two pipe stems, which may reflect use wear more so than intentional burnishing. Of the 15 identified pottery discs, 12 exhibited identifiable surface treatment types. These included five cordmarked (41.66%), four smoothed over cordmarked (33.33%), and three smooth (25%) examples.

The remaining shell tempered, sand tempered, untempered, and indeterminate temper pottery identified within the 1973 pottery assemblage were poorly represented and interpreted as likely a reflection of a combination of aberrant localized practices, material acquired from outside groups, and/or low impact and short term utilization of the Nelson site terrace.

Aside from pottery, an additional 5,021 lithics, 615 faunal remains (614 unmodified, 1 modified), 731 botanical remains (46 non-wood, 685 wood), 25 matrix fragments, and three modified mineral fragments.
Of the 5,021 lithics identified, 4,717 were debitage, 246 were single-purpose tools, nine were multi-purpose or repurposed tools, 22 were cores, and 27 were fire-cracked rock. In total, 45 lithic raw material types were identified within the 1973 lithic assemblage, of which 25 identifiable to a recognized raw material. The remaining 20 lithic raw material types were classified into more broadly defined and generalized categories. The 25 identified lithic raw materials included Burlington Chert (BC) (14), Cedar Valley Chert (CVC) (2) Cochrane Chert (CC) (3), Croton Chalcedonic Chert (CCC) (2), Galena Chert (GC) (4), Grand Meadow Chert (GMC) (888), Hudson Bay Lowland Chert varieties A, B, and D (HBLC) (3), Hixton Silicified Sandstone (HSS) (6), Hopkinton Chert (HC) (2), Jordan Silicified Sandstone (JSS) (60), Knife River Flint (KRF) (10), Lake Superior Agate (LSA) (1), Lake Vermillion Chert (LVC) (8), Maynes Creek Cherts (MCC) (4), Prairie du Chien Chert (PDC) (3,750), Selkirk Chert (SC) (5), Sioux Quartzite (2), Souris Agate (1), Spring Branch Chert (SBC) (1), Swan River Chert (SRC) (45), Tongue River Silica (TRS) (14), and Wyandotte Chert (WC) (1).

Overall, identified lithic raw materials from the 1973 lithic assemblage reflected a heavy reliance on locally available lithic raw materials with lesser numbers of exotic materials derived from west-central Wisconsin, east-central, south-eastern, and south-western Iowa, southern Indiana, north-western North Dakota, and north-central and northeastern Minnesota. While lithic raw materials such as Lake Superior Agate, Souris Agate, Swan River Chert, Tongue River Silica, Lake Vermillion Chert, Hudson Bay Lowland Cherts, Knife River Flint, and Selkirk Chert are sourced from distant areas to the north and northwest, the examples identified within the 1973 lithic assemblage may well represent both exchange of materials with geographically-removed groups and utilization of locally-available materials derived from glacial till. Non-local materials absent from local till, such as Burlington Chert, Croton Chalcedonic Chert, Hixton Silicified Sandstone, Cochrane Chert, Maynes Creek Cherts, Spring Branch Chert, and Wyandotte Chert, suggest an expansive network of direct and/or indirect interaction between the Terminal Woodland inhabitants of the Nelson site and far-removed groups to the east and south.
Formal lithic tools identified within the 1973 assemblage were generally typical of Terminal Woodland and Plains Village sites in the Upper Midwest. Projectile point typologies were restricted to small unnotched triangular points synonymous with Madison, Fresno, Cottonwood Triangular and other similar points associated with bow and arrow technology in the Upper Midwest, Eastern Woodlands, and Great Plains (Justice 1987; Overstreet 2009) The relatively small number of corner and side-notched points identified within the assemblage were similar to Scallorn, Prairie Side Notched, and a wide variety of other Late Prehistoric points associated with bow and arrow technology in the Upper Midwest, Eastern Woodlands, and Great Plains (Justice 1987; Morrow 1984). No projectile points or other formal lithic tool types appeared to be associated with habitation or utilization of the Nelson site terrace prior to the Terminal Woodland Period.

2011 Archeological Investigation

Previous fieldwork conducted at the Nelson site focused on an area of dense surface artifact distribution at the northern end of the terrace on which the site is located (Scullin and Richardson 1981). The diminutive identified area of the site in relation to the number of artifacts recovered, suggested that the area encompassing the recognized site area also held the potential to yield additional unidentified sites and/or a geographic continuation of identified components. Jason Reichel, an undergraduate student majoring in Anthropology at Minnesota State University, Mankato initiated a survey of these untested areas adjacent to the Nelson site in the summer of 2011. The focus of the 2011 survey was to determine the presence or absence of unidentified components and/or sites outside of the previously established boundaries of the Nelson site. To accomplish this, a series of both probabilistic and non-probabilistic surveys were conducted on the Nelson site terrace and the bluffs and terraces located to the immediate south. Non-probabilistic survey was conducted in the wooded areas and tallgrass prairie along the periphery and directly to the south of the Nelson site terrace, where dense vegetation inhibited probabilistic pedestrian survey. Overall, visibility in these uncultivated areas ranged between 0 and 25
percent, due to dense foliage and leaf litter. Probabilistic pedestrian survey was conducted throughout the cultivated areas of the Nelson site terrace, where a lack of ground cover proved favorable for artifact identification and recovery. Overall, visibility in the cultivated areas ranged between 75 and 100 percent, due to recent tilling and rain. In addition to surface testing, subsurface testing was initiated in a small area located to the south and southwest of the pedestrian survey area, on an elevated wooded area to the immediate south of the Nelson site terrace. Shovel testing was conducted in this area due to both abundant ground cover, which rendered pedestrian survey unreliable, and an apparent lack of significant modern terrain alteration. The methodology and results of this three-tiered survey is further described in the following texts.

**Non-Probabilistic Pedestrian Survey (2011)**

A non-probabilistic pedestrian survey of the uncultivated areas to the immediate south of the previously defined boundaries of the Nelson site was conducted over the course of four months, from June through October of 2011 (Appendix A, Figures 7 and 8). This provided the unintentional benefit of contrasting the area while in both thick summer and sparse autumn foliage. Although the following observations were made at different times over the course of several months, they will be presented here by general geographic area, with no differentiation in time unless otherwise stated.

The uncultivated areas of the Nelson Site terrace were surveyed for the presence of culturally or environmentally relevant information pertaining to the formative processes of the site area as well as its prehistoric and historic occupations. This included a survey of the wooded and grassy areas encompassing the periphery of the terrace, bluffs to the south, and an uncultivated section of land located near the center of the terrace. Along the southern periphery of the terrace a series of small earthen mounds, rock piles, and the remains of a displaced barbwire fence are likely the result of minor earth-moving processes. An examination of this area identified fragments of brick, white ware ceramics,
and bottle and window glass along the southern and southwestern periphery of the field. Historical artifacts from the southeastern periphery included a mammalian tooth identified as domestic pig (Sus domesticus), and a brass Remington UMC Arrow 12 gauge shotgun shell head casing, which was dated from between 1911 to the 1920s. In addition to historic artifacts recovered from the southern periphery of the terrace, a flake of Prairie du Chien Chert was recovered both approximately 10 meters to the southeast of the southeastern-most edge of the cultivated area of the terrace and approximately 5 meters to the south of the southwest corner of the cultivated area of the terrace. The southern periphery of the terrace was assessed as holding potential for yielding intact components, as accumulation of colluvium from adjacent uplands and soils collected from historic soil stockpiling may have contributed to the burial and preservation of subsurface cultural deposits. Areas to the far southeast and southwest, where level woodlot separates the cultivated field from the adjacent river and mid-level terrace were also identified as undisturbed areas with potential to yield intact subsurface cultural materials and features.

Along the western periphery of the field, a narrow section of woodlot separating the cultivated area of the field from the river was also examined. A survey of this area was conducted primarily to determine the erosional processes impacting the integrity of the site, identify any exposed cultural features and/or materials, and to observe the general stratigraphy of the terrace. This survey resulted in the identification of a single historic dumping area, characterized by a concentration of glass bottle fragments and oxidized metal fragments. Glass bottle fragments were collected from this area for the purpose of dating the dump site, while the oxidized metal was examined for distinguishing characteristics and left in situ. Of the collected pieces, at least 8 bottles appeared to be represented, dating from between approximately 1880 to 1933. No prehistoric artifacts were recovered from the western periphery, and erosional processes appeared to be only minimally impacting the integrity of the
Nelson site terrace, as larger cobbles and slabs of Jordan Sandstone encompassing the terrace appeared to act as natural riprap.

Along the northern periphery of the terrace is a continuation of the narrow woodlot and riverbank that skirts the Nelson site terraces. This area appeared to have been more significantly impacted by erosional processes, characterized by a steep terrace edge, dropping drastically to the river channel below. This area of the terrace was also covered in dense undergrowth, rendering standard pedestrian survey methods difficult. As a result, the pedestrian survey of this area was completed in a manner that while sufficient for identifying surficial cultural features, could not reliably identify artifacts on the surface. Despite poor surface visibility and the inability to maintain adequate pedestrian survey intervals, subsurface testing was not conducted in this area of the terrace due to its proximity to the adjacent river and potential to negatively impact the integrity of this area of the terrace. A single intact glass bitters bottle was recovered within this survey area, appearing to have eroded out of the terrace as a result high river levels in preceding years. This was identified as an embossed Atwood’s Jaundice Bitters bottle dating to the 1890’s.

Pedestrian survey along the eastern periphery of the Nelson site terrace identified erosional processes that had created a series of drainages extending west from the Blue Earth River, into the Nelson site terrace. Examination of these yielded a single grit-tempered pottery sherd. Dense foliage and leaf litter rendered surface visibility between 0 and 25%. Proximity to adjacent artifact concentrations identified through probabilistic surface survey of adjacent cultivated areas, suggested that further erosion of these drainages might expose additional cultural material and/or features.

Further to the southeast, the cut-bank of the Nelson site terrace is lined with redeposited and residual cobbles of Prairie du Chien Chert, Jordan Silicified Sandstone, and various till-derived silicates. Of the
cobble-sized non-local materials present within glacial deposits in this area of the terrace, Souris Agate, Knife River Flint, Swan River Chert, and Tongue River Silica are the most common and readily identifiable. Further north, these same materials also occur frequently in Minnesota River deposits, but tend to be smaller in overall size and are of poorer quality, likely the result of more aggressive fluvial weathering (Personal observation). Surface visibility ranged between 75 and 100 percent along the cut-bank, while visibility ranged between 0 and 25 percent in wooded areas to the immediate west. A single flake of Prairie du Chien chert was identified in this area, approximately 10-m to the southeast of the southeast corner of the cultivated area of the Nelson site terrace. No additional cultural materials or features were observed in the area.

Continuing further to the southeast, the river runs along a shear outcrop of Jordan Sandstone. Further examination of these exposures identified multiple lenses of Jordan Silicified Sandstone. While the bluff line along this area rises almost vertically from the river, areas of more-friable sandstone, more susceptible to aggressive erosion, have created navigable routes traversing these facies.

**Probabilistic Pedestrian Survey (2011)**

A probabilistic pedestrian survey was conducted across the entirety of the cultivated area of the Nelson site terrace from June 20th to June 27th, 2011 (Appendix A, Figure 9). To maintain provenience of recovered materials, the surveyed areas of the field were mapped into three survey areas that were divided into survey sections, which were in turn divided into section quarters. The following list breaks down the methods that were utilized for labeling locational areas throughout the course of the 2011 probabilistic pedestrian survey.

**Survey Areas:**
- W- western survey area (150-m by 100-m area)
- C- central survey area (150-m by 100-m area)
Survey areas W, C, and E were established over the entirety of the cultivated areas of the Nelson site terrace, while survey area N covered the uncultivated northern section of the field. The survey area layout was established in such a manner as to make quick reference based on landmarks more expedient in the field and was delineated with lensatic compass and measuring tape.

Survey sections were investigated utilizing pedestrian survey of east to west transects spaced at one meter intervals. All cultural materials were pin-flagged during the survey, for later collection and further intensive pedestrian survey.
The pedestrian survey of survey areas W, C, and E resulted in the identification of four artifact concentrations and a continuous artifact scatter across much of the Nelson site terrace. The areas of artifact concentrations were intensively surveyed to establish their approximate boundaries for mapping and provenience recordation. The boundaries of each concentration was well defined, with very little gradation between areas of high concentration and those yielding sparse cultural materials. Each of the four concentrations were mapped and assigned separate contextual labels prior to collecting identified artifacts. Concentrations were labeled according to their survey area and assigned a Roman numeral based upon the order in which each concentration was identified. The following is a description of each artifact concentration observed during the pedestrian surveys of areas W, C, and E.

**Concentration EI**

Concentration EI covers approximately 448 square meters of the far southeastern area of the survey area, located in survey area E, SE 1/4, numbers 2 and 4 and NE 1/4, number 4 (Appendix A, Figure 10). The density of this concentration appeared greatest in SE quarter, number 4, with material density gradually decreasing to the north, south, and west. Artifacts recovered from EI include a sizeable quantity of lithic debitage, as well as a lesser number of lithic tools, grit tempered pottery sherds, fire-cracked rock, and faunal remains. Fire-cracked rock appeared prolific throughout the concentration area and was noted but not otherwise collected during the course of this survey. Lithic debitage was abundant throughout EI, but tapered off drastically to the west of SE 1/4, number 2, north of NE 1/4, number 4, and appeared less frequently in survey area SE 1/4, number 4. The majority of pottery sherds and faunal remains from EI were recovered in SE 1/4, number 2.

Modern agricultural practices in conjunction with the natural contours of the Nelson site terrace may have in part contributed to the surface exposure of cultural materials at concentration EI. EI is located
along the periphery and corner of a cultivated field where motor traffic tends to travel to access the northern portion of the terrace and where agricultural equipment makes multiple passes in the process of tilling and planting. In the summer of 2011, the eastern and southern portions of EI were not fully planted and similar practices noted in aerial photographs from previous years may have lent to a greater degree of soil loss in this area of the field. These agricultural practices and subsequent soil loss may have in part facilitated the exposure of artifacts in EI. A similar pattern can be observed in the locations of artifact concentrations WIII and EIV.

In total, 294 artifacts were recovered during the pedestrian survey of artifact concentration EI. These included; 219 pieces of lithic debitage, 49 pottery sherds, 13 burned mammalian bone fragments, seven burned indeterminate bone fragments, one unburned mammalian bone fragment, one end scraper, one core, one fragment of fire-cracked rock, and one projectile point. Lithic materials identified within the artifacts recovered from artifact concentration EI include; Prairie du Chien Chert (193), Grand Meadow Chert (12), Swan River Chert (8), Jordan Silicified Sandstone (3), unidentified cherts (UC) (3), Hixton Group Silicified Sandstone (HGSS) (2), Galena Chert (1), chalcedony (1), and granite (1) (Appendix D, Figure 3). All identified lithic materials associated with lithic tools and the reduction of siliceous raw materials for the production of lithic tools are commonly associated with the Hollandale Lithic Resource region (Bakken 2011).

Pottery recovered from artifact concentration EI comprised a total of 49 grit-tempered pottery sherds, including 47 body sherds and two neck sherds (Appendix D, Figure 4). Of the 49 identified body sherds, 10 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 37 body sherds exhibited three types of surface treatments, including cordmarked, smooth, and smoothed over cordmarked. Of these, cordmarked surface treatments were most common, constituting 23 (62.5%) of identified surface treatment types.
The remaining body sherds exhibited 12 (32%) smoothed over cordmarked and two (5.5%) smooth surface treatments. Each of the two identified neck sherds exhibited cordmarked surface treatments.

Artifacts recovered from artifact concentration EI were identified as consistent with a Terminal Woodland component of the site, as suggested through the prevalence of thin-walled, grit tempered, and cordmarked or smoothed over cordmarked pottery. A small number of smooth were interpreted as likely associated with a Terminal Woodland and/or Cambria phase utilization of the Nelson site terrace. The single projectile point recovered from this concentration is typologically synonymous with Madison, Fresno, Cottonwood Triangular, and a variety of other unnotched triangular points associated with bow and arrow technology in the Upper Midwest, Eastern Woodlands, and Great Plains (Justice 1987, Overstreet 2009).

**Concentration EIV**

Artifact concentration EIV is located in survey area E, NW ¼, numbers 1 and 3 and covers approximately 246 square meters, situated primarily within the central and west-central areas of NW 1/4, number 1, extending into the north of NW 1/4, number 3. Artifacts recovered from EIV include a small number of pottery sherds, lithic debitage and tools, and bone fragments (Appendix A, Figure 11). Pottery was confined to NW 1/4, number 1, appearing most dense in the west-central area of the concentration and extending to the north. Lithics were dispersed in small clusters throughout EIV, with the highest density occurring in the southwest of NW 1/4, number 1. Faunal remains were confined to the central area of NW 1/4, number 1, where the agricultural field meets the adjacent wood line.

Like EI and WIII, EIV is located at a shoulder along the periphery of the cultivated field. This area was not fully planted in 2011 and experienced occasional vehicle traffic, leaving a narrow tract of open ground.
between the wood line and cultivated field. This extends to the east, curving south along El before extending west, to the gravel field access road.

In total, 39 artifacts were recovered on the surface within artifact concentration EIV. These included 22 pottery sherds, 12 pieces of lithic debitage, two indeterminate groundstone fragments, one projectile point, and one multi-purpose side scraper/spokeshave.

Lithic materials identified within the artifacts recovered from WIII include; Prairie du Chien Chert (9), unidentified chert (3), gabbro (2), Grand Meadow Chert (1), Swan River Chert (1), and Wyandotte Chert (1) (Appendix D, Figure 5). The majority of identified lithic materials associated with the reduction of siliceous raw materials for the production of lithic tools are commonly associated with the Hollandale Lithic Resource region (Bakken 2011). Wyandotte Chert is not typically identified on archaeological sites in south-central Minnesota, as it is sourced from bedrock outcrops in southern Indiana and western Kentucky. As such, the presence of this lithic raw material may represent exchange with peoples to the east and southeast, occasional movement of the inhabitants of the Nelson site to areas to the east and southeast.

Pottery recovered from artifact concentration EIV comprised a total of 22 grit-tempered pottery sherds, including 20 body sherd and two neck sherds (Appendix D, Figure 6). Of the 20 identified body sherds, seven were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 13 body sherds exhibited three types of surface treatments, including cordmarked, smooth, and smoothed over cordmarked. Of these, cordmarked surface treatments were most common, exhibited on eight (61%) of the identified body sherds. Three body (23.5%) sherds exhibited smooth surface treatments, while the remaining two (15.5%) exhibited
smoothed over cordmarked surface treatments. Each of the two identified neck sherds exhibited cordmarked surface treatments.

Artifacts recovered from EIV were interpreted as a continuation of the Terminal Woodland occupation of the northern portion of site identified in 1973, as suggested by the presence of thin walled, grit tempered, and cordmarked pottery, as well as a single, small, unnotched leaf-shaped projectile point similar to the Cottonwood Lead type associated with late prehistoric sites in the Northern and Central Great Plains (Overstreet 2009).

**Concentration CII**

Artifact concentration CII is located in survey area C, SW 1/6, numbers 1, 2, 3, and 4 (Appendix A, Figure 12). This was the most geographically confined and least dense of the four identified artifact concentrations. CII is 94 square meters in area and roughly centered at the four intersecting corners of numbers 1, 2, 3, and 4. Artifacts recovered from this concentration were primarily lithic debitage, with the exception of a single grit tempered pottery sherd.

Artifacts recovered from CII were generally lacking in features that would prove useful information in assigning temporal and/or cultural context... However, the presence of a single thin-walled, grit tempered pottery sherd suggests that CII likely in part represents an extension of the Terminal Woodland utilization of the Nelson site terrace.

In total, seven artifacts were recovered during the pedestrian survey of artifact concentration CII. These included; six pieces of lithic debitage and one pottery sherd. Lithic materials identified within the artifacts recovered from CII include; Prairie du Chien Chert (4), Grand Meadow Chert (1), and unidentified chert (1). All identified lithic materials associated with the reduction of siliceous raw
materials for the production of lithic tools are commonly associated with the Hollandale Lithic Resource region (Bakken 2011). The single pottery sherd recovered from CI is grit tempered body sherd exhibiting a cordmarked exterior surface treatment. The temper, surface treatment, and thickness of this single pottery sherd were consistent with those observed in artifact concentrations EI, EIV, and WIII.

**Concentration WIII**

Artifact concentration WIII is located in survey area W, SW 1/6, numbers 2 and 4 and SE 1/6, numbers 1 and 3 Appendix A, Figure 13). WIII covers approximately 664 square meters in the southwestern corner of the cultivated portion of the project area. Artifact density appears greatest in SW 1/6, number 4, gradually decreasing in density to the north and east. Artifacts recovered from concentration WIII were primarily pottery sherds, with lesser numbers of lithic debitage, fire-cracked rock, faunal remains, and historic materials.

Concentration WIII contained the highest concentration of pottery within the four identified concentrations, with the majority recovered from SW 1/6, numbers 2 and 4. Lithic debitage was encountered far less frequently and was randomly distributed throughout the concentration, with no discernable loci. Fire-cracked rock was relatively abundant in concentration WIII, primarily in SW 1/6, number 4 and SC 1/6, number 3. Noted examples of fire-cracked rock were primarily granitic, although ironstone, sandstone, and other igneous materials were present in lesser number. Although a significant amount of fire-cracked rock was noted within concentration WIII, no samples were collected for further analysis.

Concentration WIII occurs along the periphery of the western edge of the cultivated field, falling under similar agricultural and subsequent erosional factors as stated above for artifact concentration EI. This area of the field was observed to retain surface water after heavy or prolonged periods of precipitation.
In the days prior to the pedestrian survey of survey area W, heavy rains left much of WIII in standing water. Areas observed to be inundated by heavy precipitation included areas of SW 1/6, number 4, SW 1/6, number 2, SC 1/6, number 1, and SC 1/6, number 3. This also led to some difficulty in surveying the west-central section of SW 1/6, number 4, due to the collection of vegetative material transported by standing water, leaving a layer of decaying vegetation on the surface of this area of the field.

In total, 203 artifacts were recovered during the pedestrian survey of artifact concentration WIII. These include; 119 pottery sherds, 72 pieces of lithic debitage, five fragments of fire-cracked rock, two utilized flakes, two retouched flakes, one core, one bone fragment, and one scraper.

Lithic materials identified within the artifacts recovered from WIII include; Prairie du Chien Chert (45), Grand Meadow Chert (13), Jordan Silicified Sandstone (13), granite (4), unidentified chert (3), Swan River Chert (2), Hudson Bay Lowland Chert variety A (1), green rhyolite (1), and hematitic sandstone (1) (Appendix D, Figure 7). The majority of identified lithic materials associated with the reduction of siliceous raw materials for the production of lithic tools are commonly associated with the Hollandale Lithic Resource region (Cite Bakken). Hudson Bay Lowland Cherts and a variety of rhyolites similar to the green rhyolite recovered from this artifact concentration are generally associated with the West Superior Resource region in the northeastern and east-central portion of the state (Bakken 2011). These lithic raw materials have also been observed within glacial till throughout adjacent areas of south-central Minnesota (Personal Observation). As such, the presence of these lithic raw materials may represent exchange with peoples to the northeast, occasional movement of the inhabitants of the Nelson site to areas to the northeast, and/or procurement and utilization of locally-available glacially-derived lithic raw materials.
Pottery recovered from artifact concentration WIII comprised a total of 119 grit-tempered pottery sherds, including 113 body sherds, three neck sherds, and three rim sherds (Appendix D, Figure 8). Of the 113 identified body sherds, 36 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 77 body sherds exhibited three types of surface treatments, including cordmarked, smooth, and smoothed over cordmarked. Of these, cordmarked surface treatments were most common, constituting 38 (49%) of the identified surface treatment types. Smoothed over cordmarked surface treatments were nearly as common, constituting 33 (43%) of identified surface treatment types. The remaining six (8%) body sherds with identifiable surface treatments exhibited smooth surface treatments. Of the identified neck sherds, cordmarked, smooth, and smoothed over cordmarked surface treatments were equally represented. Identified rim sherds exhibited two surface treatment types, with smooth surface treatments exhibited on two (66.6%) sherds, while the remaining sherd (33.3%) exhibited a vertical cordmarked surface treatment.

Of the above-described pottery recovered from artifact concentration WIII, five exhibited identifiable decorative elements. These included two neck sherds exhibiting exterior horizontal cord impressions, one rim exhibiting exterior horizontal cord impressions and an interior tool impressed lip, one rim exhibiting a tool impressed lip, and one shoulder sherd exhibiting a wide trailed line.

Artifacts recovered from WIII were identified as consistent with a Terminal Woodland component of the site, as suggested through the prevalence of thin-walled, grit tempered, and cordmarked pottery. A small number of smooth, grit-tempered body sherds and a single smooth, grit-tempered shoulder sherd exhibiting wide trailed lines were identified as Cambria phase pottery. The finite number of identified Cambria phase pottery in this concentration in relation to the sizeable number of Terminal Woodland pottery, suggests that the identified Cambria phase pottery is likely representative of small-scale
interaction between Plains Village tradition peoples and the primarily Terminal Woodland occupants of the Nelson site and does not likely represent a separate Plains Village habitation of the site.

**Unconsolidated Scatter**

Artifacts recovered from outside of the four identified concentrations consisted primarily of lithic debitage, as well as two pottery sherds and bone fragments. Lithics were recovered in small scatters and as single artifacts across the surface of the agricultural field. The majority of artifacts recovered from outside of the four artifact concentrations were located along the periphery of the field and may have been exposed in part through erosional processes. The occurrence of unconsolidated surface scatter across the majority of the pedestrian survey area and their proximity to the previously defined site area of 21BE24, suggested that the identified artifact concentrations are likely associated with the components identified in the 1973 survey and represent an extension of the site. However, the dispersed nature of these materials also suggested that while different areas of the site likely represent cohabitation of a single landform by separate yet culturally-related groups, these may also represent a number of separate occupations of the site by groups sharing relatively homogenous material cultures over a relatively short temporal period. A more in depth analysis of materials recovered in unconcentrated scatter across the pedestrian survey extents is further detailed in the following texts.

**E Block Unconsolidated Scatter**

In total, 22 artifacts were recovered beyond the identified extents of the above described artifact concentrations EI and EIV within the eastern portion of the survey area (E Block). These included 18 pieces of lithic debitage, two pottery sherds, one fragment of fire-cracked rock, and one abrader.

Lithic recovered from E block included; Prairie du Chien Chert (14), Grand Meadow Chert (2), unidentified chert (1), Jordan Silicified Sandstone (1), quartz-mica schist (1), and hematitic sandstone (1).
All of the identified lithic materials associated with the reduction of siliceous raw materials for the production of lithic tools are commonly associated with the Hollandale Lithic Resource region (Bakken 2011).

Pottery recovered from areas outside of artifact concentrations EI and EIV with E Block consisted of two grit tempered body sherds. Of these, one exhibited a cordmarked surface treatment, while the other was too fragmentary to accurately denote surface treatment type.

These materials appeared to be concentrated primarily within the north and eastern portions of E Block, adjacent to identified artifact concentrations EI and EIV. However, the presence of additional prehistoric cultural materials in areas to south, east, and west of these concentrations was interpreted as evidence for continuation of cultural components beyond identified concentration areas.

**C Block Unconsolidated Scatter**

In total, five artifacts were recovered beyond the identified extents of the above described artifact concentration CII within the central portion of the survey area (C Block). These included 4 pieces of lithicdebitage and one pottery sherd.

Lithic materials recovered from C Block included; Jordan Silicified Sandstone (2), Prairie du Chien Chert (1), and agatized wood (1).

The single piece of pottery recovered from C Block was a grit tempered sherd exhibiting a smoothed over cordmarked surface treatment, similar to those observed in other portions of the survey area.
These materials were interpreted as an extension of the Terminal Woodland occupation of the site, based on the similarity with pottery recovered from other areas of the site.

**W Block Unconsolidated Scatter**

In total, seven artifacts were recovered beyond the identified extents of the above described artifact concentration WIII within the western portion of the survey area (W Block), all of which were identified as lithic debitage.

Lithic raw materials recovered from W Block included; Jordan Silicified Sandstone (1), Prairie du Chien Chert (5), and an unidentified chert (1).

Given the proximity of these materials to the Terminal Woodland component artifact concentration WIII, these materials were interpreted as an extension of the Terminal Woodland occupation of the site.

**Mid-Level Terrace Shovel Testing**

Non-probabilistic surface survey to the southwest of the primary survey area identified a narrow terrace between the Nelson site terrace and the bluffs skirting the southern edge of the Blue Earth River trench (Appendix A, Figure 14). This terrace appeared relatively level and was located only a short distance to the south and southwest of artifact concentration WIII, which was identified along the southwestern periphery of the Nelson site terrace. Given the proximity to artifact concentration WIII and suitable conditions for occupation, it was determined that an extension of the Nelson site, a specialization site associated with one or several of the Nelson site components, or a site predating the Woodland and Plains Village occupation of the area, may have been located within this mid-level terrace. The unmodified landscape of the terrace proved unsuitable for pedestrian survey, necessitating the systematic subsurface testing of the area to identify subsurface cultural materials and features.
In preparation for subsurface testing, a datum was established at latitude N 44.138250 and longitude W 94.093000 (UTM NAD 1983 15N), and marked by a section of iron rebar driven into a remnant sandstone outcrop. North to south and east to west axes were then established utilizing a lensatic compass corrected to 1° 25' E declination. Transects were marked with pin flags at 10 meter intervals across the entire western portion of the terrace. To the east, pin flags were placed along a north to south axis determined by the furthest western extent of the gravel access road leading to the Nelson site, which delineated the furthest eastern extent of shovel testing. The area was then mapped by hand, utilizing GPS to define the extent of subsurface testing.

Shovel tests were plotted along east/west and north/south transects at 20-m intervals throughout the mid-level terrace. Square 30-cm by 30-cm shovel tests were excavated in 10-cm levels to 5-cm below culturally sterile soil or to a point at which further excavation was no longer possible. Forty shovel tests were initially planned within the survey area, however this number was cut to 35 due to several inhibiting factors. To the farthest southern extent of the shovel test area, two shovel tests at 30S, 20W and 30S, 0E/W were omitted due to the steep slope of the area, in which digging may have compromised the stability of the soil and resulted in subsequent erosion. Similarly, shovel tests at 10N, 40E and 10S, 40E were omitted due to their proximity to the gravel access road, which runs atop an elevated layer of fill. Shovel tests were not conducted within this area to avoid compromising the stability of the gravel access road. A fifth shovel test at 30N, 0E/W was omitted due to its proximity to the edge of a shear sandstone outcropping, again to mitigate compromising the stability of surrounding soils. Additionally, shovel test 30N, 40E was terminated at 44-cmbs, prior to reaching culturally sterile soil. This was due to the identification of a homogenous, dark, and compacted loam, exhibiting bits of carbonized material. Directly above this was a thick layer of fill, which suggests that the underlying material may have been the result of compacted topsoil. However, the similarity in appearance to a cultural feature lead to the decision to proceed no further without testing adjacent areas for similar
stratigraphy. Further radials were not conducted around this shovel test, but would have likely proved beneficial in determining whether this soil layer represented compacted topsoil or a cultural feature.

Of the thirty-five shovel tests completed, five tested positive for prehistoric cultural materials. Positive shovel tests from this portion of the study area included Shovel Test Nos. 8, 18, 26, 28, and 32. Cultural materials recovered from these shovel tests included a total of four pieces of lithic debitage and one core. Of the recovered lithic debitage, two were unidentified chert, one was Prairie du Chien Chert, and one was Grand Meadow Chert, while the core was manufactured from Prairie du Chien Chert. In addition to the above-stated lithics, several shovel tests running along the southern periphery of the survey area yielded a concentration of carbonized botanicals within the B horizon. The presence of these carbonized botanicals along the southern periphery of the survey area, where materials from the adjacent slope have collected, suggests that these represent the colluvial deposition of burned botanical derived from the bluff top. Whether these occurred as the result of natural fires or more recent agricultural land-clearing practices was not determined.

This investigation determined that given the relative lack of cultural materials recovered during subsurface testing, the mid-level terrace likely represents an area of low-impact and/or short term utilization associated with the occupation of the Nelson site and/or an unrelated prehistoric component.

2013 Archeological Investigation

An archeological investigation of the Nelson site terrace was conducted throughout the summer of 2013. This investigation included the excavation of sixty 30-cm by 30-cm square shovel tests, placed at 10-meter intervals through, and 20-meters beyond, the extents of the three surface concentrations identified during the 2011 investigation (Appendix A, Figure 15). Shovel test were dug in 10-cm increments, terminating at the stratigraphic transition between the plow zone and underlying soils. All
soils were screened through ¼ inch mesh and any suspected cultural materials were bagged according to shovel test number and level. The bottom of each shovel test was hand-mapped to record possible cultural features and soil characteristic suggestive of proximity to cultural features and overall stratigraphic integrity. The overall results of this investigation revealed that artifact concentrations EI, EIV, and WIII extended in the subsurface beyond their identified surface area. However, the observed drastic decrease in cultural materials identified extending away from areas of densest distribution within each concentration, led to the interpretation that these concentrations constituted intensive utilization areas of a larger village complex. Additionally, the presence of undisturbed habitable soils below the plow zone of the cultivated portions of these concentrations, was determined to have the potential to yield intact cultural materials and features. Below is a synopsis of the results of shovel testing conducting within the boundaries of artifact concentrations EI, EIV, and WIII.

**Concentration EI Shovel Tests**

Shovel Test Nos. 40 through 60 were dug within and around the area encompassing surface concentration EI (Appendix A, Figure 16). Of these shovel tests, a total of nineteen tested positive for prehistoric cultural materials. Positive shovel tests included Shovel Test Nos. 44 through 60.

Cultural materials recovered from shovel test units excavated within and adjacent to artifact concentration EI included; 42 pottery sherds, 24 pieces of lithic debitage, 23 fragments of fire-cracked rock, nine fragments of carbonized wood, four burned mammalian bone fragments, one unburned mammalian bone fragment, one piece of fired clay, and one hammerstone.

Lithic materials recovered through shovel testing of artifact concentration EI and adjacent areas included; Prairie du Chien Chert (22), Knife River Flint (1), Bijou Hill Silicified Sandstone (BHSS) (1), and andesite (1) (Appendix D, Figure 9). The majority of lithic materials associated with the reduction of
siliceous raw materials for the production of lithic tools were identified as Prairie du Chien Chert, a material commonly associated with the Hollandale Lithic Resource region (Bakken 2011). The presence of Knife River Flint within this area of the survey may represent long-range trade with groups in western North Dakota and/or the procurement and utilization of locally-available till derived Knife River Flint. The presence of Bijou Hill Silicified Sandstone is more definitive evidence of direct or indirect contact with groups in south-central South Dakota and/or north-central Nebraska, as this material is unavailable in local glacial tills and would have needed to have been procured from the source or secondary sources even further south and southeast.

A total of 40 grit-tempered pottery sherds and one indeterminate temper sherd were recovered through shovel testing of artifact concentration WIII and surrounding areas (Appendix D, Figure 10). The one pottery sherd with an indeterminate temper was identified as a body sherd with an indeterminate surface treatment. Of the 40 identified grit-tempered pottery sherds, 36 were identified as body sherds, three as neck sherds, and one as a rim sherd. Of the 36 identified body sherds, 20 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 16 body sherds exhibited one of three types of surface treatments; including, cordmarked, smooth, and smoothed over cordmarked surface treatments. Smoothed over cordmarked surface treatments were most common, exhibited on nine (56%) of the body sherds with identifiable surface treatments. Smooth surface treatments were less common, exhibited on four (25%) body sherds. The remaining three (19%) of grit tempered body sherds with identifiable surface treatment types exhibited cordmarked surface treatments. Cordmarked, smoothed over cordmarked, and vertical cordmarked surface treatments were equally represented amongst identified grit-tempered neck sherds, while the single identified rim sherd exhibited a vertical cordmarked surface treatment.
Of the 41 pottery sherds identified within this portion of the study area, a single sherd exhibited identifiable decorative elements. This was a rim sherd, which exhibited exterior horizontal cord impressions and tool impressions on the exterior lip.

The pottery and lithic materials recovered through shovel testing within and in the immediate vicinity of artifact concentration EI were interpreted to represent an extension of the Terminal Woodland occupation of the northern portion of the site, or a separate yet temporally and culturally synonymous utilization of Nelson site terrace. Pottery temper, surface treatment, thickness, and decoration are consistent with the corded wares associated with pottery recovered from adjacent areas to the north and west within the Nelson site terrace. Lithic materials recovered from these shovel tests suggest an emphasis on the utilization of locally available lithic raw material sourced from primary sources to the east and residual and secondary deposits available throughout surrounding areas. The presence of two western-sourced lithic raw materials suggests some interaction with groups in the Missouri River trench of North Dakota, South Dakota, and Nebraska.

Overall, cultural materials were concentrated between 6 and 28 cm below the surface, with an average concentration occurring between approximately 7 and 18 cm below the surface. The temporal contexts of these materials are interpreted to represent an extension of the Terminal Woodland occupation of the northern portion of the site or a separate, yet temporally and culturally synonymous utilization of the Nelson site terrace.

**Concentration EIV Shovel Tests**

Shovel Test Nos. 23 through 39 were excavated within and around the area encompassing surface concentration EIV (Appendix A, Figure 17). Of these shovel tests, a total of six tested positive for prehistoric cultural materials. Positive shovel tests included Shovel Test Nos. 27, 28, 33, 34, 36, and 37.
Cultural materials recovered from shovel test units excavated within and adjacent to artifact concentration EIV included; 11 pottery sherds, two pieces of lithic debitage, one unburned mammalian bone fragment, one mammal tooth fragment, one carbonized wood fragment, and one fragment of fire-cracked rock.

Lithic materials recovered through shovel testing of artifact concentration EIV and adjacent areas included; Prairie du Chien Chert (2) and granite (1). Of these, Prairie du Chien Chert was the only identified lithic materials associated with the reduction of siliceous raw materials for the production of lithic tools and is generally associated with the Hollandale Lithic Resource region (Bakken 2011).

A total of 11 grit-tempered pottery sherds were recovered through shovel testing of artifact concentration EIV and adjacent areas, and each were identified as body sherds. Of these, four were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining seven body sherds each exhibited a smoothed over cordmarked surface treatment.

Overall, cultural materials were concentrated between 0 and 28 cm below the surface, with an average concentration occurring between approximately 6 and 16 cm below the surface. The temporal contexts of these materials are interpreted to represent an extension of the Terminal Woodland occupation of the northern portion of the site.

Concentration WIII Shovel Tests

Shovel Test Nos. 1 through 22 were excavated within and around the area encompassing surface concentration WIII (Appendix A, Figure 18). Of these shovel tests, a total of twelve tested positive for
prehistoric cultural materials. Positive shovel tests included Shovel Test Nos. 1 through 8, 11 through 13, and 17.

Cultural materials recovered from shovel test units excavated within and adjacent to artifact concentration WIII included; 23 pottery sherds, 17 fragments of fire-cracked rock, 11 pieces of lithicdebitage, eight fragments of carbonized wood, and one unburned mammalian bone fragment.

Lithic materials recovered through shovel testing of artifact concentration WIII and adjacent areas included; granite (16), Prairie du Chien Chert (4), Grand Meadow Chert (2), Jordan Silicified Sandstone (2), quartzite (1), Swan River Chert (1), unidentified chert (1), and granodiorite (1) (Appendix D, Figure 11). The identified lithic materials associated with the reduction of siliceous raw materials for the production of lithic tools are generally associated with the Hollandale Lithic Resource region (Bakken 2011).

A total of 23 grit-tempered pottery sherds were recovered through shovel testing of artifact concentration WIII and adjacent areas and included 22 body sherds and one neck sherd (Appendix D, Figure 12). Of the 22 identified body sherds, 12 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 10 body sherds exhibited three types of surface treatments; including, cordmarked, smooth, and smoothed over cordmarked surface treatments. Cordmarked surface treatments were most common, exhibited on 6 (60%) of the body sherds with identifiable surface treatments. Smooth and smoothed over cordmarked surface treatments were equally represented, each constituting 20% of identifiable body sherd surface treatment types. The single identified neck sherd exhibited a smoothed over cordmarked surface treatment.
Overall, cultural materials were concentrated between 0 and 30 cm below the surface, with an average concentration occurring between approximately 8 and 17 cm below the surface. The pottery and lithic materials recovered through shovel testing within and in the immediate vicinity of artifact concentration WIII were interpreted to represent an extension of the Terminal Woodland occupation of the northern portion of the site, or a separate yet temporally and culturally synonymous utilization of Nelson site terrace. Pottery temper, surface treatment, thickness, and decoration are consistent with the corded wares associated with pottery recovered from adjacent areas to the north and west within the Nelson site terrace. Lithic materials recovered from these shovel tests suggest an emphasis on the utilization of locally available lithic raw material sourced from primary sources to the east and residual and secondary deposits available throughout surrounding areas.

**2014 Archeological Investigation**

The project area for the 2014 archeological investigation of the Nelson site terrace was determined through the results of the previous year’s shovel testing and to reestablish boundaries of the 1973 archeological investigation, investigate untested areas of the terrace with potential to yield cultural components, and investigate the potential for deeply buried habitable soils. The extent of this archeological investigation covered portions of the western, eastern, and northern extents of the Nelson site terrace and included a combination of excavation units, trenches, and shovel tests. The following texts detail the results of this archeological investigation and describe the soil profiles, cultural features, cultural materials, and any additional pertinent information associated with geographically-defined portions of the project area.

**Trench 1**

Trench 1 was established on the far southeast corner of the Nelson site terrace, within the artifact concentration previously identified in 2011 as concentration EI (Appendix 1, Figure 19). The
southwestern-most edge of the trench was placed on the 2013 archeological investigations shovel test number 54 and extended east to shovel test number 60. The trench was comprised of ten 1-m by 0.5-m excavation units, running from east to west, with each unit assigned an excavation unit number from 1 through 10. Excavation unit floors were mapped at every 10 cm level and the overall soil profile was mapped upon termination of the unit.

Soil in the plow zone within Trench 1 was observed to be a dark brown sandy loam, which extended from the surface to approximately 10 centimeters below datum (cmbd). A mottled dark brown sandy loam A horizon and light brown sand was observed extending from the transition of the plow zone to approximately 50 cmbd. Extensive mottling throughout the A horizon suggests extensive bioturbation and possibly intermittent flooding during and after the formation of these soils. A mottled light brown sandy loam and dark brown sandy loam Bw1 horizon was observed extending from the transition of the A horizon to approximately 60 cmbd. A light brown sandy loam Bw2 horizon was observed extending from the transition with the Bw1 horizon to a termination depth of 70 cmbd. Additional soil probing conducted within Trench 1 revealed that the Bw2 horizon extended to at least 120 cmbd.

591 artifacts were recovered during the excavation of Trench 1. These include: 225 pottery sherds, 172 pieces of lithic debitage, 111 pieces of carbonized wood, 44 fragments of fire-cracked rock, 16 burned mammalian bone fragments, five cores, four utilized flakes, three fragments of pigment stone, two channeled abraders, two carbonized maize cupules, one piece of fired clay, one piece of burnt earth, one projectile point, one perforator, one hammerstone, one unburned mammalian bone fragment, and one manuport (Appendix D, Figure 13).

Lithic materials identified from Trench 1 include; Prairie du Chien Chert (143), granite (27), Grand Meadow Chert (15), ironstone (7), Bijou Hill Silicified Sandstone (6), unidentified chert (5), schist (4),
gneiss (3), Jordan Silicified Sandstone (2), basalt (2), Hudson Bay Lowland Chert variety A (2), Swan River Chert (2), Jordan Sandstone (2), Tongue River Silica (1), Cedar Valley Chert (1), Galena Chert (1), Hudson Bay Lowland Chert variety C (1), Knife River Flint (1), Morrison Silcrete (MS) (1), gabbro (1), oolitic limestone (1), hornfels (1), and quartzite (1) (Appendix D, Figure 14). The majority of identified lithic materials associated with the reduction of siliceous raw materials for the production of lithic tools are commonly associated with the Hollandale Lithic Resource region (Bakken 2011). Hudson Bay Lowland Cherts are generally associated with the West Superior Resource region in the northeastern and east-central portion of the state (Bakken 2011). These lithic raw materials have also been observed within glacial till throughout adjacent areas of south-central Minnesota (Personal Observation). Materials derived from the Dakotas (i.e., Bijou Hill Silicified Sandstone, Knife River Flint, and Tongue River Silica) and further west in Wyoming and Montana (i.e., Morrison Silcrete), likely represent both primary-sourced and till-derived lithic resources. The presence of these exotic lithic raw materials may represent exchange with peoples to the northeast and west, occasional movement of the inhabitants of the Nelson site to areas to the northeast and west, and/or procurement and utilization of locally-available glacially-derived lithic raw materials.

Pottery recovered from Trench 1 included 225 grit-tempered pottery sherds and one untempered fragment of fired clay (Appendix D, Figure 15). Of the pottery sherds recovered, 205 were identified as body sherds, 14 as neck sherds, two as rim sherds, and four as shoulder sherds. Of the identified body sherds, 51 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 153 body sherds exhibited three types of surface treatments; including, cordmarked, smooth, and smoothed over cordmarked surfaces. Cordmarked surface treatments were most common, with 81 (52 %) examples identified amongst body sherds with identifiable surface treatments. Smoothed over cordmarked body sherds were represented by 50 (33%) examples, while smooth surface treatments were exhibited on the remaining 23 (15 %) of body sherd
with identifiable surface treatment types. Of the identified neck sherds, 13 exhibited identifiable surface treatments. Examples of cordmarked and smoothed over cordmarked surface treatments number four each (31% each), smooth surface treatments were identified on three (23%) neck sherd. Vertical cordmarked surface treatments were least common, identified on the remaining two (15%) neck sherds. Of the two identified rim sherds, all exhibited identifiable surface treatment types. Cordmarked and smoothed over cordmarked surface treatment were equally represented, constituting 50% of surface treatments on all rim sherds from this portion of the project area. Of the four identified shoulder sherds, three exhibited identifiable surface treatment types. Smooth surface treatments were most common, exhibited by two (75%) shoulder sherds, while the remaining shoulder sherd (25%) exhibited a smoothed over cordmarked surface treatment.

In total, 10 of the pottery sherds recovered from trench 1 exhibited identifiable decorative elements. These included two neck sherds with exterior horizontal cord impressions, one body sherd with exterior cord impressions, two rim sherds with exterior horizontal cord impressions, one rim sherd with exterior horizontal cord impressions and a tool impressed lip, one rim sherd with exterior horizontal cord impressions above a row of punctates, two punctated neck sherds, and one body sherd with lineate trailed lines.

**Trench 2**

Trench 2 was established on the north end of the Nelson site terrace in the vicinity of 1973 survey units 5S, 1W and 5S, 2W (Appendix A, Figure 20). This area of the 1973 surface survey yielded almost no cultural materials, although some of the highest yielding areas of that survey was located only 12-m to the northeast. Trench 2 was placed in this area to test whether soil stability in this area had allowed cultural materials to remain more deeply buried and uncompromised by agricultural practices, or whether cultural materials were simply absent from this area of the terrace. The trench was comprised
of five 1-m by 0.5-m excavation units running from east to west, with each unit assigned an excavation unit number from 11 through 15. Excavation unit floors were mapped at every 10 cm level and the overall soil profile was mapped upon termination of the unit.

Soil in the plow zone within Trench 2 was observed to be a dark brown sandy loam, which extended from the surface to approximately 20 cmbd. A mottled dark brown sandy loam and light brown sandy loam A1 horizon was observed extending from the transition of the plow zone to approximately 30 cmbd. A mottled light brown sandy loam and light brown silty sand A2 horizon was observed extending from the transition of the A1 horizon to approximately 35 cmbd. Extensive mottling throughout the A1 and A2 horizons suggests extensive bioturbation and possibly intermittent flooding during and after the formation of these soils. A light brown sandy loam Bw2 horizon was observed extending from the transition of the A2 horizon to a termination depth of 40 cmbd. Additional soil probing conducted within Trench 2 revealed that the Bw horizon extended to at least 80 cmbd.

Cultural materials recovered from Trench 2 were limited to a single fragment of window glass recovered from the plow zone of Excavation Unit 11. No additional cultural materials or features were observed in Trench 1.

**Block N Shovel Test Units**

A total of sixty-seven shovel test units were excavated in Block N, within the boundaries of the 1973 archeological investigation area (Appendix A, Figures 25 and 26). Initially, 10 shovel test units were excavated in 10-m intervals along an east to west axis to determine the presence of cultural material and intact soils below the plow zone. An additional nine shovel test units were excavated in 10-m intervals along an east to west axis 10-m north of the initial transect. However, these shovel test units were unintentionally placed on an incorrect axis, which trended slightly to the southeast. An additional
twenty-seven shovel test units were excavated in 5-m intervals along three north to west axes, with the southwestern-most shovel test unit (Shovel Test No. 67), located 20-m to the immediate north of the southwest corner of Trench 2 (Excavation Unit 11). The overall soil profile of each shovel test was recorded upon termination of the shovel test.

Soil in the plow zone within this portion of the study area was observed to be a dark brown sandy loam, which extended from the surface to approximately 20 cmbd. A light brown sandy loam A1 horizon was observed extending from the transition of the plow zone to approximately 30 cmbd. A mottled light brown sandy loam A2 horizon was observed extending from the transition of the A1 horizon to approximately 40 cmbd. Extensive mottling throughout the A1 and A2 horizons suggests extensive bioturbation and possibly intermittent flooding during and after the formation of these soils. A light brown sandy loam B horizon was observed extending from the transition of the A2 horizon to approximately 50 cmbd. A dark brown sandy loam buried A horizon was observed extending from the transition of the B horizon to approximately 65 cmbd. A buried B horizon with a sparse distribution of small bivalve and gastropod shells was observed extending from the transition with the buried A horizon to a termination depth of between 70 and 100 cmbd.

Three hundred thirty-three artifacts were recovered during the excavation of shovel test units in Block N (Appendix D, Figure 16). These include 203 pottery sherds, 65 mammalian bone fragments, 33 pieces of lithic debitage, five fragments of fire-cracked rock, three bivalve shell fragments, three utilized flakes, three fragments of carbonized wood, three mammalian tooth fragments, two bifaces, two burned mammalian bone fragments, two unburned ichthyic bone fragments, one fragment of fired clay, one fragment of daub, one projectile point, one core, one burned bivalve shell fragment, one unburned reptilian bone, and one carbonized endocarp fragment.
Lithic materials recovered from shovel test units in Block N include: Prairie du Chien Chert (26), Grand Meadow Chert (4), unidentified chert (4), granite (3), granodiorite (2), Jordan Silicified Sandstone (2), Galena Chert (1), and basalt (1) (Appendix D, Figure 17). The majority of identified lithic materials associated with the reduction of siliceous raw materials for the production of lithic tools are generally associated with the Hollandale Lithic Resource region (Bakken 2011).

Pottery recovered from shovel test units in Block N included 198 grit-tempered pottery sherds, one grit tempered pipe bowl fragment, one untempered fragment of fired clay, and one sand tempered shoulder sherd (Appendix D, Figure 18). Of the 176 identified body sherds, 33 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 133 body sherds exhibited three types of surface treatments; including, cordmarked, smooth, and smoothed over cordmarked surfaces. Cordmarked surface treatments were most common, exhibited on 94 (70%) of the body sherds with identifiable surface treatments. Smoothed over cordmarked body sherds were exhibited on 32 (25%) of body sherds with identifiable surface treatment types, and smooth surface treatments were exhibited on the remaining seven (5%) grit tempered body sherds with identifiable surface treatment types. Neck sherds exhibited one of three surface treatment types, including cordmarked, smooth, and vertical cordmarked surface treatments. Cordmarked surface treatments were the most prevalent, identified on seven (70%) of grit tempered neck sherds. The remaining neck sherds included two (20%) exhibiting smooth surface treatments and one (10%) exhibiting a vertical cordmarked surface treatment. Of the two rim sherds recovered from shovel testing of this portion of the project area, cordmarked and smoothed over cordmarked surface treatment types were equally represented by a single example. Of the identified shoulder sherds, smooth surface treatments were observed on three examples (50%), while two (33.5%) exhibited smoothed over cordmarked surface treatments and one (16.5%) exhibited a vertical cordmarked surface treatment. The remaining grit tempered pottery identified from this portion of the project area included, one combined
neck and shoulder sherd with a cordmarked surface treatment and a pipe bowl fragment with a smooth surface treatment.

Pottery exhibiting identifiable decorative elements were exclusively grit tempered, and included a total of nine sherds. These included, one rim with exterior horizontal cord impressions, one rim with exterior horizontal cord impressions and an interior tool impressed lip, one horizontal cord impressed neck with a horizontal row of punctates, one cord impressed body, two punctated bodies, one punctated neck, one punctated pipe bowl, and one neck sherd exhibiting exterior lineate trailed lines.

In addition to the above-described grit tempered pottery, one sand tempered pottery sherd and one untempered fired clay fragment. The single tempered sherd identified from this portion of the project area was identified as a shoulder element from a likely pinch pot or child’s vessel, which exhibits a smooth surface treatment.

**Excavation Unit 16**

Excavation Unit 16 was established in center of Shovel Test No. 9 to further explore a dense concentration of faunal remains associated with a paleosol uncovered during shovel testing of this area of the site (Appendix A, Figure 23). Excavation Unit 16 was excavated as a single 1-m by 1-m unit to aid in determining whether further excavations of surrounding areas were warranted. Excavation Unit 16 was excavated in 10 cm levels and all soils were screened through ¼ inch hardware mesh to identify cultural materials in the subsurface. The excavation unit floors were mapped at every 10 cm level and the overall soil profile was mapped upon termination of the unit

Soil in the plow zone within Excavation Unit 16 was observed to be a dark brown sandy loam, which extended from the surface to between 22 and 34 cmbd. A remnant lens of a mottled dark and light
brown sandy loam A horizon was observed extending from 22 to 32 cmbd in the western portion of the excavation unit. A light brown sandy loam B horizon was observed extending from the transition of the A horizon and plow zone to a termination depth between 58 and 61 cmbd. A dark brown sandy loam buried A horizon was observed extending from the transition of the B horizon to between 74 and 79 cmbd. A buried yellowish-brown coarse sand B horizon with a sparse distribution of small bivalve and gastropod shells was observed extending from the transition with the buried A horizon to a termination depth of 80 cmbd. Additional soil probing of Excavation Unit 16 revealed that this sand B horizon extended to approximately 120 cmbd, where a second dark brown sandy loam buried A horizon was identified extending to approximately 130 cmbd. An additional buried light yellowish brown sand B horizon was observed to extend to a probe termination depth of 140 cmbd.

Sixty-one artifacts were recovered during the excavation of Excavation Unit 16. These include 37 pottery sherds, 16 unburned mammalian bone fragments, five pieces of lithic debitage, two burned mammalian bone fragments, and one mammalian tooth fragment (Appendix D, Figure 19).

Lithic materials identified within the artifacts recovered from Excavation Unit 16 were exclusively Prairie du Chien Chert (5). This lithic material is commonly associated with the Hollandale Lithic Resource region (Bakken 2011).

Pottery recovered from Excavation Unit 16 included 37 grit-tempered pottery sherds (Appendix D, Figure 20). These include; 33 body sherds, two rim sherds, one neck sherd, and one shoulder sherd. Of the 33 identified body sherds, 13 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 20 body sherds exhibited three types of surface treatments; including, cordmarked, smooth, and smoothed over cordmarked surface treatments. Cordmarked surface treatments were most common, exhibited on nine (45%) body
sherds with identifiable surface treatments. Smoothed over cordmarked surface were also well
represented, identified on seven (35%) body sherds with identifiable surface treatments. Smooth
surface treatments were the least common, identified on four (20%) of the body sherds with identifiable
surface treatments. Of the two identified rim sherds, one exhibited a smooth surface treatment, while
the other exhibited a smoothed over cordmarked surface treatment. Identified neck sherds included a
single sherd exhibiting a vertical cordmarked surface treatment, while identified shoulder sherds
included a single sherd exhibiting a cordmarked surface treatment.

A total of two pottery sherds recovered from Excavation Unit 16 exhibited identifiable decorative
elements. These included a rim sherd that exhibited an interior tool impressed lip and a shoulder sherd
exhibiting exterior punctating.

**Trench 3**

Trench 3 was established on the far southwest corner of the Nelson site terrace, in the concentration
previously labeled in 2011 as WIII (Appendix A, Figure 21). The southwestern-most end of the trench
was placed 1.5-m north of the 2013 archeological investigations shovel test number 1 and extended 10-
m to the east. The trench was originally comprised of ten 1-m by 0.5-m excavation units, running from
east to west, with each unit assigned an excavation unit numbers from 17 through 26. Additional 1-m by
0.5-m, 0.5m by 1-m, and 1-m by 1-m excavation units (numbers 27-32) were excavated as northern and
southern extensions of Trench 3. Excavation units within this trench were excavated in 10 cm levels and
all soils were screened through ¼ inch hardware mesh to identify cultural materials in the subsurface.
Excavation unit floors were mapped at every 10 cm level and the overall soil profile was mapped upon
termination of the unit.
A 1-m by 0.5-m excavation unit was excavated to the immediate south (Excavation Unit 27) and north (Excavation Unit 28) of Excavation Unit 17. A large roughly circular to oblong feature (Feature 3) was identified in the eastern portion of Excavation Unit 28 and an additional 1-m by 0.5-m excavation unit (number 31) was excavated to the immediate north. Further expansion of this feature necessitated the excavation of an additional 0.5-m by 1-m excavation unit (number 32) to the immediate east of Excavation Units 28 and 31. Further excavation of Feature 3 and its associated excavation units identified a post-mold (Feature 4) underlying the northern portion of Feature 3. A 1-m by 1-m excavation unit (number 29) was excavated to the immediate north of Excavation Unit 20, which exhibited a soil feature (later identified as non-cultural) extending north of Trench 3. Excavation of this area revealed that the soil feature identified in Excavation Unit 20 was a large rodent burrow; however, a cultural feature (Feature 1) was identified in the west-central edge of Excavation Unit 29. This feature consisted of a small semi-circle of broken and intact ground stone tools and unmodified stone encircling the eastern half of a post mold. An additional channeled abrader was identified to the immediate east of feature within the same stratigraphic level. An additional 0.5-m by 1-m excavation unit (number 30) was excavated to the immediate west of Excavation Unit 29, to allow for the recovery of the entirety of Feature 1.

Soil in the plow zone within Trench 3 was observed to be a dark brown sandy loam, which extended from the surface to approximately 25 cmbd. A mottled dark brown sandy loam and light brown sandy loam A horizon was observed extending from the transition of the plow zone to approximately 50 cmbd. Extensive mottling throughout the A horizon suggests extensive bioturbation and possibly intermittent flooding during and after the formation of these soils. A mottled light brown sandy loam and dark brown sandy loam Bw1 horizon was observed extending from the transition of the A horizon to approximately 73 cmbd. A light brown sandy loam Bw2 horizon was observed extending from the transition with the
Bw1 horizon to a termination depth of 80 cmbd. Additional soil probing conducted within Trench 1 revealed that the Bw2 horizon extended to at least 120 cmbd.

Twelve hundred ninety-three artifacts were recovered during the excavation of Trench 3. These included 720 pottery sherds, 222 pieces of lithic debitage, 148 fragments of carbonized wood, 127 fragments of fire-cracked rock, 60 bone fragments, 30 burned indeterminate bone fragments, 10 unburned mammalian bone fragments, nine burned avian bone fragments, seven burned mammalian bone fragments, three utilized flakes, two tooth fragments, two fragments of indeterminate groundstone tools, two carbonized endocarp fragments, one carbonized maize kernel, one unburned indeterminate bone fragment, one burned mammalian tooth fragment, one unburned mammalian tooth fragment, one burned ichthyic bone fragment, one unburned ichthyic bone fragment, one core, one manuport, one axe fragment, one abrader, one biface, and one channeled abrader (Appendix D, Figure 21). Additional cultural were recovered from soil samples associated with the four feature (Features 1 through 4) identified in Trench 3. These were separated by light and heavy fraction through flotation and later separated by size grades. Of the materials collected, only those of size grade G4 (⅛ inch) or larger were included in this analysis, as this was gauged as roughly comparable to the potential size of materials recovered through standard dry screening. Although potentially significant information may be revealed through the careful and systematic analysis of these omitted materials, the inclusion of these materials within this study would add little in terms of comparative significance given the lack of comparable features in other tested areas.

Lithic materials identified within the artifacts recovered from Trench 3 include: basalt (1), Burlington Chert (1), Cochrane Chert (1), diabase (2), Galena Chert (2), Grand Meadow Chert (37), Gulseth Silica (1), Hopkinton Chert (2), Hixton Group Silicified Sandstone (2), Hixton Silicified Sandstone (2), Jordan Sandstone (1), Jordan Silicified Sandstone (22), Knife River Flint (3), Lake Vermillion Chert (1), Lake of the
Woods Rhyolite (1), Prairie du Chien Chert (125), sandstone (1), Swan River Chert (5), Tongue River Silica (5), unidentified cherts (6), and unidentified fossiliferous chert (1) (Appendix D, Figure 22). The majority of identified lithic materials associated with the reduction of siliceous raw materials for the production of lithic tools are generally associated with the Hollandale Lithic Resource region (Bakken 2011). However, some of the exotic lithic materials originating from east-central Iowa (Hopkinton Chert), west-central Wisconsin (Cochrane Chert), and northern Minnesota (Lake of the Woods Rhyolite and Lake Vermillion Chert) are not commonly associated with the Hollandale Lithic Resource region. Materials from northern Minnesota are available in local glacial tills and may have been procured locally; however, the identified examples of Cochrane Chert and Hopkinton Chert suggest a connection between the Mississippi River Valley and the inhabitants of the Nelson site, whether that be through exchange, direct procurement, or other means. Additional exotic materials (Knife River Flint, Burlington Chert, Hixton and Hixton Group Silicified Sandstones) are commonly encountered at sites throughout southern Minnesota and adjacent areas.

Pottery recovered from Trench 3 included 718 grit-tempered pottery sherds, eleven untempered fired clay fragments, two untempered pottery sherds, one sand tempered pottery sherd, and one grit tempered pipe fragment (Appendix D, Figure 23). Of a total 672 identified grit tempered body sherds, 260 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 412 body sherds exhibited three types of surface treatments; including, cordmarked, smooth, and smoothed over cordmarked surface treatments. Cordmarked and smoothed over cordmarked surface treatments were most common and equally represented by 171 (41.5%) sherds each. The remaining 70 (17%) grit tempered body sherds exhibited smooth surface treatments.
A total of 24 grit tempered neck sherds were identified within the pottery assemblage collected from Trench 3, all of which exhibited one of four identifiable surface treatments. Of these, smooth surface treatments were the most common, identified on eight (33.5%) grit tempered rim sherds. Cordmarked surface treatments were nearly as common, identified on seven (29%) examples. Lesser numbers of smoothed over cordmarked surface treatments were identified on five (21%) examples, while vertical cordmarked surface treatments were identified on the remaining four (17%).

A total of seven grit tempered shoulder sherds were identified within the pottery assemblage collected from Trench 3, all of which exhibited one of three identifiable surface treatment types. Of these, smoothed over cordmarked was the most common surface treatment type, identified on four examples (57%) of grit tempered shoulder sherds. Lesser numbers of cordmarked surface treatments were identified on two examples (29%), while the one remaining shoulder sherd exhibited a smooth surface treatment (14%).

A total of five grit tempered combined shoulder and neck sherds were identified within the Trench 3 pottery assemblage, all of which exhibited one or more of two identifiable surface treatment types. Of these, smoothed over cordmarked and vertical cordmarked surface treatments were most common and equally represented by two sherds apiece (40%). The remaining sherd exhibited a combined vertical cordmarked neck transitioning into a smoothed over cordmarked shoulder (20%).

A total of ten grit tempered rim sherds were identified within the pottery assemblage collected from Trench 3, all of which exhibited one of four surface treatment types. Of these, smooth was the most common surface treatment type, identified on five (50%) of the ten identified grit tempered rim sherds. Cordmarked and vertical cordmarked surface treatments were second most common and equally
represented by two (20%) sherds apiece. The remaining grit tempered rim sherd exhibited a smoothed
over cordmarked surface treatment (10%).

Additional grit tempered pottery identified within the Trench 3 pottery assemblage included, one pipe
bowl fragment exhibiting a smooth surface treatment and two pieces of fired clay that exhibited no
surface treatment.

Sand tempered pottery identified within the pottery assemblage collected from Trench 3 is represented
by a single body sherd exhibiting an indeterminate surface treatment. Due to its stratigraphic placement
and overall crude method of manufacture, this sherd is interpreted as a fragment of a small pinch pot or
similarly crudely-manufactured pottery vessel or implement, rather than a pottery sherd associated with
an Early Woodland habitation of the site.

Untempered pottery identified within the pottery assemblage collected from Trench 3 includes two rim
sherds, and 11 pieces of fired clay. Of the identified untempered rim sherds, one exhibited a smooth
surface treatment, while the other proved too weathered to accurately identify a surface treatment
type. The remaining untempered pieces of fired clay all lacked any discernable evidence of surface
treatment application and likely represent waste from manufacture, rather than the remnants of a
formed and fired vessel or other clay implement. Given the diminutive nature of the identified
untempered rim sherds and overall crude method of manufacture, these likely represent the remnants
of small pinch pots or similarly crudely-manufactured pottery vessels or implements.

**Feature 1**

Feature 1 was a roughly circular soil stain partially encircled by groundstone tools and lithic manuports
identified in the west-central portion of Excavation Unit 29 (Appendix C, Photograph 13).
uppermost level of this feature was identified through the presence of a semi-circular concentration of lithics that included a sandstone abrader, basalt axe bit fragment, and sandstone manuport at a depth of 24 cmbd. An additional sandstone channeled abrader was recovered within the same level to the immediate east of Feature 1 in Excavation Unit 29. Feature 1 extended from 24 to 38 cmbd, exhibiting a circular shape in plan view and conical shape in profile.

Given the observed shape and dimension, Feature 1 is interpreted as a post mold, partially reinforced by stone. The shallow depth of Feature 1 and the rapidly expanding profile suggests that the post was likely removed and the subsequent void partially replaced by overlying soil, creating a shallow, conical profile.

Feature 2

Feature 2 was a roughly circular soil stain identified in the northeastern portion of Excavation Unit 21. The uppermost level of this feature was identified through the presence of a roughly circular soil stain containing concentrated carbonized botanical remain at a depth of 28 cmbd. Feature 2 extended from 28 to 38 cmbd, exhibiting a circular shape in plan view and a u-shaped basin in profile.

Feature 3

Feature 3 was a roughly circular to oblong soil stain and concentration of carbonized botanicals identified in portions of Excavation Units 28, 31, and 32 (Appendix C, Photograph 14). The uppermost level of this feature was identified through the presence of a dense concentration of a carbonized botanicals and pottery sherds in a rodent burrow extending north to south through Excavation Unit 17. Expansion of Trench 3 to the north of Excavation Unit 17 identified a large, diffuse, and oblong soil stain beginning at an approximate depth of 30 cmbd, where the plow zone transitioned into the underlying A horizon. A dark oblong soil stain was observed measuring approximately 60-cm by 50-cm at 35 cmbd, gradually tapering to a narrow u-shaped termination at a depth of approximately 63 cmbd. An
accompanying peripheral area of oxidized and weakly fused soil encircling the darker soil stain was interpreted as indicative of heating and extended an additional 33 to 45 cm beyond the darker soil stain. The combined dark soil stain and encircling burned soils that constitute Feature 3 measured approximately 93-cm by 95-cm at 35 cmbd and exhibited a circular to oblong shape in plan view and a deep u-shaped basin in profile. Unburned cultural materials (i.e., pottery and lithic) were concentrated in the upper levels of Feature 3, while lower levels appeared to contain lesser numbers of these materials and more carbonized botanicals. This suggests that the initial use of this feature was likely that of a fire hearth, while the inclusion of unburned cultural materials and carbonized cultigens in the upper levels suggest that refuse was deposited in the feature after its use as a fire hearth. As such, Feature 3 is interpreted as a fire hearth that was also utilized as a refuse pit near the end of its use life.

Feature 4

Feature 4 was roughly circular dark soil stain identified in the northern portion of Excavation Unit 31 (Appendix C, Photograph 15). The uppermost level of this feature was observed immediately below the northern portion of Feature 3 at approximately 34 cmbd. Feature three extended to a termination depth of approximately 39 cmbd and displayed the cylindrical to slightly conical dimensions indicative of a post mold. As such, Feature 4 is interpreted as a post mold underlying an intruding fire hearth (Feature 3).

Block W Shovel Test Units

A total of 45 shovel test units were excavated in Block W, with the datum point (shovel test unit 0N, 0W) placed 25-m to the southwest of the southwestern corner of Trench 3 (Excavation Unit 17) (Appendix A, Figure 27). Initially, thirty-three shovel test units were excavated in 5-m intervals along five north to south axes to the east and north of this datum to determine the presence of cultural materials and levels of disturbance within uncultivated areas adjacent to Trench 3. An additional twelve shovel test units were excavated in 5-m intervals along three north to south axes to the south and west of the
datum point. All shovel tests were excavated in 10 cm levels and all soils were screened through ¼ inch hardware mesh to identify cultural materials in the subsurface. The overall soil profile of each shovel test was recorded upon termination of the shovel test.

The uppermost soil layer within this portion of the study area was observed to be a deep, slightly mottled, dark brown sandy loam A1 horizon, which extended from the surface to approximately 15 cmbd. A slightly lighter dark brown sandy loam A2 horizon was observed extending from the transition of the A1 horizon to approximately 30 cmbd. A light brown sandy loam B1 horizon was observed extending from the transition of the A2 horizon to approximately 45 cmbd. A light yellowish-brown sandy loam B2 horizon was observed extending from the transition of the B1 horizon to a termination depth of 60 cmbd. Additional soil probing revealed no changes in soil composition or color to a depth of 110 cmbd; however, more frequent inclusions of gravel were encountered near the termination depth of soil probing.

Eighty-six artifacts were recovered during the excavation of Block W shovel test units. These included 66 pottery sherds, 19 pieces of lithic debitage, one multi-purpose spokeshave/graver, and one wedge (Appendix D, Figure 24).

Lithic materials identified within the artifacts recovered from shovel test units in Block N include: Prairie du Chien Chert (11), Grand Meadow Chert (7), Selkirk Chert (1), Knife River Flint (1), and unidentified chert (1) (Appendix D, Figure 25). The majority of identified lithic materials are generally associated with the Hollandale Lithic Resource region (Bakken 2011).

Pottery recovered from shovel test units in Block N included 66 grit-tempered pottery sherds, including 59 body sherds, four rim sherds, and 3 neck sherds (Appendix D, Figure 26). Of the 59 identified body
sherds, 11 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 48 body sherds exhibited three types of surface treatments; including, cordmarked, smooth, and smoothed over cordmarked surfaces. Cordmarked surface treatments were most common, exhibited on 31 (64.5%) of body sherds with identifiable surface treatments. Smoothed over cordmarked body sherds were exhibited on 13 (27%) of the body sherds with identifiable surface treatment types, while smooth surface treatments were identified on the remaining four (8.5%) body sherds. Neck sherds exhibited an even distribution of cordmarked, smoothed over cordmarked, and vertical cordmarked surface treatments, each represented by one sherd apiece. Of the identified rim sherds, smooth surface treatments were observed on two examples (50%), while smoothed over cordmarked and vertical cordmarked surface treatments were each identified on single sherds (25% apiece).

Twenty-three pottery sherds recovered from Trench 3 exhibited identifiable decorative elements. These included four cord impressed body sherds, six horizontal cord impressed neck sherds, one exterior horizontal cord impressed and knot impressed neck sherd, one exterior horizontal cord impressed and punctated neck sherd, one exterior horizontal cord impressed rim sherd, one exterior horizontal cord impressed and exterior tool impressed lip rim sherd, one exterior trailed line and exterior tool impressed lip rim sherd, one exterior trailed line shoulder sherd, one exterior punctated and crenelated tool impressed lip rim sherd, four tool impressed lip rim sherds (one interior, one exterior, and two indeterminate), and three exterior punctated neck sherds.

**Trench 4**

Trench 4 was established on the far northeast corner of the Nelson site terrace, within the extent of the 1973 archeological investigation area (Appendix A, Figure 22). The southwestern-most end of the trench was placed 1-m north of shovel test number 48 within Block N. The trench was comprised of five 1-m by
0.5-m excavation units, running from east to west, with each unit assigned an excavation unit number from 33 through 37. This trench was excavated to further investigate a dense concentration of faunal remains and a series of paleosols identified through the excavation of Excavation Unit 16 and shovel tests 1 through 67, within Block N. Excavation units within this trench were excavated in 10 cm levels and all soils were screened through ¼ inch hardware mesh to identify cultural materials in the subsurface. Excavation unit floors were mapped at every 10 cm level and the overall soil profile was mapped upon termination of the unit.

Soil in the plow zone within Trench 4 was observed to be a dark brown sandy loam, which extended from the surface to approximately 24 cmbd. A remnant lenses of a mottled dark and light brown sandy loam A horizon was observed between approximately 22 and 25 cmbd in western portions of Trench 4. A light brown sandy loam B horizon with a sparse distribution of bivalve and gastropod shells was observed extending from the transition of the A horizon and plow zone to an approximate depth of 38 cmbd. A dark brown sandy loam buried A horizon (paleosol 1) was observed extending from the transition of the B horizon to approximately 50 cmbd. A buried yellowish-brown coarse sand B horizon with a sparse distribution of small bivalve and gastropod shells was observed extending from the transition of paleosol 1 to a termination depth of approximately 65 cmbd. Additional excavation of Excavation Unit 36 revealed multiple light yellow-brown silty sand fluvial soil layers with a sparse distribution of bivalve and gastropod shells extending from the transition of paleosol 1 to between 97 and 100 cmbd. A second buried dark brown sandy loam A horizon (paleosol 2) was observed extending from the overlying fluvial soils to between 110 cmbd and 125 cmbd in the eastern and central portions of Excavation Unit 36 and a termination depth of 125 cmbd in the eastern portion of Excavation Unit 36. A second buried yellowish-brown sandy loam B horizon was observed extending from the transition with paleosol 2 to a termination depth of 125 cmbd within the western and central portions of Excavation Unit 36. No additional excavations were conducted within Trench 4 due to safety concerns associated
with deep testing in sandy soils. However, additional soil probing of Excavation Unit 36 revealed the presence of a third buried A horizon (paleosol 3) below the second buried B horizon, at a depth of 181 to at least 189 cmbd.

Three hundred thirty-three artifacts were recovered during the excavation of shovel test units in Block N (Appendix D, Figure 27). These include 313 unburned mammalian bone fragments, 122 pottery sherds, 12 pieces of lithic debitage, 11 fragments of carbonized wood, two unburned ichthyic bone fragments, two unburned indeterminate bone fragments, one scraper, one unburned avian bone fragment, one unburned mammalian bone and tooth fragment, one mammalian tooth fragment, one carbonized tuber and rhizome, and one piece of clinker.

Lithic and mineral materials identified within the artifacts recovered from Trench 4 include: Prairie du Chien Chert (7), Grand Meadow Chert (3), Jordan Silicified Sandstone (2), and hematite (1) (Appendix D, Figure 28). The majority of identified lithic and mineral materials are generally associated with the Hollandale Lithic Resource region (Bakken 2011). The identification of one piece of hematite debitage may indicate use of this material for less refined utilitarian implements (i.e. choppers, axes, etc.) or consequential spalling of a groundstone tool or expedient implement.

Pottery recovered from Trench 4 included 113 grit-tempered body sherds, four grit tempered neck sherds, two grit tempered rim sherds, two grit tempered shoulder sherds, and one indeterminate temper body sherd (Appendix D, Figure 29). Of the identified grit tempered body sherds, 34 were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. The remaining 79 grit tempered body sherds exhibited three types of surface treatments; including, cordmarked, smooth, and smoothed over cordmarked surfaces. Cordmarked surface treatments were most common, exhibited on 46 (58%) of the grit-tempered body sherds with
identifiable surface treatments. Smoothed over cordmarked body sherds were observed on 22 (28%) grit-tempered body sherds, while smooth surface treatments were observed on the remaining 11 (14%). Neck sherds exhibited an equal distribution of cordmarked, smooth, smoothed over cordmarked, and vertical cordmarked surface treatments. Rim sherds exhibited an equal distribution of smoothed over cordmarked and vertical cordmarked surface treatments. Shoulder sherds exhibited an equal distribution of smooth and smoothed over cordmarked surface treatments. The single body sherd that exhibited an indeterminate temper also lacked any defining features, which might be utilized to ascertain its surface treatment.

Of the 122 pottery sherds recovered from Trench 4, six exhibited identifiable decorative elements. These included one exterior horizontal cord impressed rim sherd, one exterior tool impressed and trailed line neck sherd, one exterior trailed line body sherd, two exterior punctated neck sherds, and one exterior punctated rim sherd. Decorated pottery was generally concentrated in the upper levels of Excavation Units 33 and 25; however, one exterior punctated rim sherd was recovered from Paleosol 1 and does appear to be representative of pottery types observed in overlying horizons.

**Excavation Unit 38**

Excavation Unit 38 was excavated 2-m west of shovel test unit 5S, 5W, within Block W (Appendix A, Figure 24). Excavation Unit 38 was excavated as a single 1-m by 1-m unit to further explore the level of disturbance within uncultivated areas of the site and identify the potential for intact cultural materials and features. This excavation unit was excavated in 10 cm levels and all soils were screened through ¼ inch hardware mesh to identify cultural materials in the subsurface. Excavation unit floors were mapped at every 10 cm level and the overall soil profile was mapped upon termination of the unit.
The uppermost soil layer within this portion of the study area was observed to be a deep, slightly mottled, dark brown sandy loam A1 horizon, which extended from the surface to approximately 15 cmbd. A slightly lighter dark brown sandy loam A2 horizon was observed extending from the transition of the A1 horizon to approximately 30 cmbd. A light brown sandy loam B1 horizon was observed extending from the transition of the A2 horizon to approximately 45 cmbd. A light yellowish-brown sandy loam B2 horizon was observed extending from the transition of the B1 horizon to a termination depth of 60 cmbd. Additional soil probing revealed no changes in soil composition or color to a depth of 110 cmbd; however, more frequent inclusions of gravel were encountered near the termination depth of soil probing.

Fourty-five artifacts were recovered during the excavation of Block W shovel test units (Appendix D, Figure 30). These included 26 pottery sherds, 13 pieces of lithic debitage, and six fragments of carbonized wood.

Lithic materials identified within the artifacts recovered from Excavation Unit 38 include: Prairie du Chien Chert (12) and Lake of the Woods Rhyolite. While Prairie du Chien Chert is associated in part with the Hollandale Lithic Resource region, Lake of the Woods Rhyolite is generally associated with the South Agassiz and West Superior Resource regions (Bakken 2011). While rare, Lake of the Woods Rhyolite and similar materials are occasionally encountered in glacial till within Blue Earth, Nicollet, and Le Sueur Counties, and are likely equally represented in small amounts throughout glacial till within glaciated portions of the Hollandale Resource region (personal observation). As such, the presence of this material at the Nelson site may represent the procurement of this material either directly or indirectly from northern sources or the utilization of locally available till-derived lithic resources.
Pottery recovered from Excavation Unit 38 included 26 grit-tempered pottery sherds, including 21 body sherds, three neck sherds, one rim sherd, and one shoulder sherd (Appendix D, Figure 31). Of the 21 identified body sherds, eight were either split, too fragmentary, or worn to positively identify surface treatment type and were cataloged as “indeterminate”. All of the remaining 13 body sherds exhibited cordmarked surface treatments. Of the identified neck sherds, vertical cordmarked surface treatments were most common, exhibited on two (66.5%) neck sherds. One remaining neck sherd (33.5%) of neck sherds exhibited a cordmarked surface treatment. The single rim sherd and shoulder sherd recovered from Excavation Unit 38 both exhibited a cordmarked surface treatment.

Of the 26 pottery sherds recovered from Excavation Unit 38, one exhibited identifiable decorative elements. This was a single rim sherd that exhibited exterior horizontal cord impressions and an interior tool impressed lip.
CHAPTER VI

DISCUSSION

Overall, the artifact assemblages recovered from the 1973, 2011, 2013, and 2014 archeological investigations of the Nelson site terrace exhibit a strong affiliation with Terminal/Late Woodland cultural entities identified and defined throughout west-central and southern Wisconsin and northeastern, east-central, and north-central Iowa. The pottery assemblages procured from distinct, yet likely temporally and culturally related components of the Nelson site terrace appear to represent some semblance of cultural continuity between Terminal/Late Woodland peoples to the south and east and the prehistoric inhabitants of the Nelson site. The extent and totality of the relationship between these groups cannot be accurately gauged based upon the data procured from a single archaeological site, but must be presented and reinforced by multiple examples, demonstrating measurable trends in material culture, settlement patterns, subsistence strategies, and various other nuanced aspects of the human experience.

Lithic artifacts recovered from each tested area of the Nelson site terrace appear relatively consistent in terms of material type, number and size of debitage, and number and type of lithic tools. Overall, locally-available lithic raw materials appear to have been favored across each tested area of the Nelson site terrace, with Prairie du Chien Chert and Grand Meadow Chert constituting the most common lithic material types recovered from each distinct area of the Nelson site terrace. In the western and northern portions of the Nelson site terrace, Jordan Silicified Sandstone also represented a significant proportion of overall identified lithic debitage. Far lesser numbers of glacially-derived Swan River Chert, Tongue River Silica, Selkirk Chert, and Hudson Bay Lowland Cherts appear to be equally dispersed across each tested area of the Nelson site terrace. Quantities and types of exotic lithic raw materials appear to
demonstrate a more patterned distribution than those of locally-available lithic raw materials. Lithic raw materials derived from central, east-central, southeastern, and southwestern Iowa, western Illinois, and northeastern Missouri are generally confined to the northern portion of the Nelson site terrace. Lithic raw materials derived from west-central Wisconsin and south-central South Dakota were identified only in the northern and eastern portions of the Nelson site terrace and generally represent a finite number of the overall lithic assemblage. An additional finite number of exotic lithics derived from neighboring states and provinces appear to be randomly dispersed across the Nelson site terrace, with no discernable pattern of distribution.

Overall, the lithic materials analyzed for this archeological investigation appear to demonstrate a tendency towards the utilization of locally-available lithic raw materials, with minimal utilization of exotic lithic raw materials derived from adjacent regions to the north, south, east, and west. While some areas exhibit concentrations of exotic lithic raw materials derived from distant geographic regions, these likely represent the reduction of a small number of acquired cores and/or cobbles within a confined portion of the Nelson site terrace, rather than a significant deviation of overall lithic raw material utilization between distinct areas of the Nelson site terrace. This assertion is based upon the overall confined geographic and stratigraphic location of clusters of exotic lithic material types, which demonstrate flake morphologies and characteristics consistent with the methodical reduction of a large cobbles or spall (Callahan 1979).

From a strictly stylistic and morphological standpoint, cultural materials recovered from the Nelson site terrace appear to represent a closely related temporal sequence of occupations. While artifact concentrations and intensive utilization areas may represent separate and distinct occupations of the Nelson site terrace, their typological and morphological similarities suggest some cultural continuity between components. Exceptions to this supposition may be represented by cultural materials
recovered from paleosols in the northern portion of the study area, which appeared to be associated with a Terminal/Late Woodland period utilization of the site predating a later intensive habitation.

Diagnostic lithics and pottery recovered from the 1973, 2011, 2013, and 2014 archaeological investigations provide a good basis for establishing a temporal context for different areas of the Nelson site terrace. While many of the diagnostic lithics identified within these assemblages are associated with broad temporal periods and geographic extents (i.e. end scrapers, axes, celts, etc.), others prove more useful in establishing relative temporal and cultural contexts. Of these, projectile points are perhaps one the most widely researched and best understood varieties of diagnostic lithic tools from which one may interpret the age and potential cultural affiliations of archeological components. Within the contexts of the above-mentioned archaeological investigations and their respective assemblages, projectile points were identified as typologies associated with Late Woodland and Late Prehistoric contexts within the Upper Midwest. These included small unnotched triangular points synonymous with Madison and Fresno types and small side notched points synonymous with Scallorn and a variety of other Late Woodland and Late Prehistoric projectile point types (Justice 1987; Morrow 1984).

Projectile points recovered from the northern portion of the project area during the 1973 archeological investigation included 15 small unnotched triangular points synonymous with Madison typologies, six indeterminate fragments, and two side notched and one corner or side notched projectile points synonymous with Scallorn and a variety of other Late Woodland and Late Prehistoric typologies (Justice 1987; Morrow 1984). An additional four projectile points and one potential projectile point preform were recovered during the 2011 and 2014 archeological investigations. Two small unnotched triangular projectile points stylistically-synonymous with the Madison type were recovered from concentration EI, while another was recovered during shovel testing of Block N. One small leaf-shaped projectile point was recovered from concentration EIV and is similar to the Madison type, but exhibits a more convex
base than is typically associated with that type. It is however similar to several Woodland types identified in adjacent regions of the Eastern Woodlands (i.e. Adena) and Great Plains (i.e. Cottonwood Leaf) (Overstreet 2009). The single biface that may represent a projectile point preform was recovered from concentration WIII and is small and triangular in shape, yet appears too thick and crude to represent a completed projectile point. However, given the size and relative shape, this likely represents a preform of a small unnotched or notched variety of projectile point synonymous with those identified in other areas of the Nelson site terrace. This consistency in projectile point typologies across distinct areas of the Nelson site terrace supports the hypothesis that these archeological components represent a single or multiple culturally and temporally-related occupations of the Nelson site terrace during the latter part of the Terminal Woodland period.

While lithic tool typologies are useful in determining general temporal ranges of archeological components, the tendency for culturally distinct groups to adopt similar tool forms makes it difficult to determine cultural affiliation based on lithic tools alone. Herein lies the value of pottery analysis, in facilitating the determination of cultural affiliation and broad regional relationships between temporally contemporaneous, yet geographically removed groups. The benefit of pottery analysis partially lies within the flexibility of the medium itself and its ability to reflect the purpose and thought processes involved in constructing and decorating a vessel. Within the contexts of the Nelson site assemblages, pottery has proven useful in defining the dominant morphological, formative, and decorative elements associated with pottery recovered from the site. These not only support the hypothesized temporal period of occupation for each component of the site, but also serve to reflect potential relationships with contemporaneous cultural entities throughout the Upper Midwest and Great Plains.

Undecorated pottery recovered from each area of the Nelson Site terrace is consistent with a wide variety of Late/Terminal Woodland and Plains Villages pottery wares defined throughout the Upper
Midwest and Great Plains. Thin-walled, grit tempered sherds, exhibiting cordmarked, smoothed over
cordmarked, and smooth surface treatments are by far the most common varieties of pottery sherds
identified across the each tested area of the terrace. While lesser numbers of aberrant pottery are also
present within the assemblages, their finite number suggests that these represent fragments of vessels
likely acquired from and/or influenced by outside sources rather than representative of common
practices associated with pottery construction by the Nelson site terrace prehistoric inhabitants.

While undecorated pottery identified within the Nelson site pottery assemblages fit quite nicely into
categories of defined pottery wares associated within the Terminal Woodland period (Lake Benton
phase) and the Middle Missourian variant of the Plains Village tradition (Cambria and Big Stone phases)
(Anfinson 1997; Arzigian 2008; Benn and Green 2000; Gibbon 2009; Howell 2015), decorative elements
identified within the assemblages are generally inconsistent with pottery wares defined within the
Prairie Lakes region of south-central Minnesota. Some exceptions to this statement can be made, as at
least one potential Lake Benton or Onamia dentate stamped sherd was recovered from the northern
portion of the Nelson site terrace and several Cambria ware or similar Plains Village tradition sherds
were identified from the northern eastern, and western portions of the Nelson site terrace (Anfinson
1997; Gibbon 2009). However, the majority of pottery sherds exhibiting identifiable decorative elements
could not be readily associated with pottery wares currently defined within the Prairie Lakes region of
south-central Minnesota. Rather, the majority of decorated pottery appear most stylistically and
morphologically similar to pottery wares associated with the Late Woodland Keyes phase in northeast
Iowa and Eastman phase of southern Wisconsin (Benn and Green 2000; Hurley 1975; Rowe 1970). These
included decorated and undecorated pottery elements that shared morphological, decorative, and
formative similarities with Late Woodland pottery wares defined in these adjacent states. These
exhibited horizontal and indeterminate orientation cord impressions located on exterior walls of rim,
neck, and shoulder sherds and vertical or oblique interior, exterior, apical, and crenelated cord
impressions on the lips of rim sherds. Additional cord impressions were identified on body sherds, however; these likely represent small fragments of neck, rim, or shoulder sherds that lack the size and morphological features to identify them as such. Cord Impressed pottery sherds identified within each assemblage were generally identified as multiple exterior horizontal decorations and/or interior or crenellate lip decorations. Additional decorative elements associated with cord impressed decorations identified within these assemblages are most commonly represented by a single underlying horizontal row of punctates and/or interior, crenellate, apical, or exterior tool impressed lips. A small number of examples exhibit modified cord impressions (knotted or looped cordage) in conjunction with horizontal cord impressions. Only one example of cord impressed decoration exhibited a multi-directional cordage application, similar to those associated with the Judson variety of Cambria ware and various other Late Woodland and Plains Village pottery wares identified within the Upper Midwest and Northern Great Plains (Gibbon 2008; Knudson 1967).

Within Block E, a total of eight cord impressed sherds represented 57.14% of total decorative element types and a thematic total of 72.73% when combined with accessory decorative element types. Decorative element types associated with cord impressed decorations in Block E included tool impressed lips (2) and punctates (1). Within Block N, a total of 253 cord impressed sherds represented 57.63% of total decorative element types and a thematic total of 64.14% when combined with decorative element types. Decorative element types associated with cord impressed decorations in Block N included tool impressed lips (35), punctates (34), cord impressed knots (2), cord impressed loops (2), fingernail impressions (2), and toothed lips (1). Within Block W, a total of 18 cord impressed sherds represented 51.43% of total decorative element types and a thematic total of 63.33% when combined with decorative element types. Decorative element types associated with cord impressed decorations in Block W included tool impressed lips (2), punctated (1), and cord impressed knot (1).
Overall, cord impressed pottery recovered from the Nelson site terrace appears to represent a stylistic extension of various corded wares associated with the Cordage and/or High Rim Horizons in Iowa and contemporaneous wares defined throughout the Upper Midwest and northern Great Plains (Arzigian 2008; Benn and Green 2000; Holly and Michlovic 2013; Howell 2015; Hurley 1975). Perhaps most similar in form and style, Madison, Grant, Minott, and Loseke wares all share similarities with the Nelson site terrace cord impressed pottery assemblages (Benn and Green 2000). However, the types and methods of decoration applications associated with these assemblages does not appear to demonstrate a direct relationship with any of these defined wares. Rather, cord impressed pottery from the Nelson site terrace appear to represent a localized interpretation of a much broader thematic trend in cord impressed pottery design. While similar to cord and fabric impressed Madison ware, the Nelson site terrace assemblages completely lack any evidence of fabric impression or the complex tripartite designs and motifs noted on many examples of Madison cord impressed and fabric impressed wares (Benn and Green 2000; Hurley 1975). Stylistically, the Nelson site terrace pottery assemblages appear most similar to Grant ware, yet lack any evidence of square orifices and castellations, a defining feature of Grant ware (Benn and Green 2000). Similar morphological and stylistic differences distinguish the Nelson site terrace pottery assemblages from Minott, Loseke, and a variety of other cord impressed wares identified within the Upper Midwest and Northern Great Plains (Anfinson 1997; Howell 2015; Stoltman and Christiansen 2000).

As a whole, cord impressed pottery identified within the Nelson site terrace assemblages appear to represent a single undefined type of ware related to contemporaneous wares associated with the Late Woodland Cordage and/or High Rim Horizons as defined by Benn and Green (2000) and possibly with earlier Fox Lake contexts (Langseth 2014). This type tends to exhibit horizontal single cord impressions of the rim and neck, with various types of interior, exterior, apical, and crenellated tool or cord impressions of the lip. An accessory single band of horizontal punctates appears on several examples,
delineating the transition between the neck and shoulder elements of a vessel. Thickness of cord impressed rims identified within each assemblage range between 2.57 and 6.49 mm, while lip thicknesses range between 2.3 and 7.68 mm. In the northern portion of the Nelson site terrace, cord impressed rims have an average maximum thickness of 4.3 mm, while lips have an average thickness of 4.1 mm. In the eastern portion of the Nelson site terrace, cord impressed rims have an average maximum thickness of 3.9 mm and an average lip thickness of 3.8 mm. In the western portion of the Nelson site terrace, cord impressed rims have an average thickness of 4.1 mm, while lips have an average thickness of 4.4 mm. Overall, rim and lip thickness for cord impressed pottery appears relatively homogenous across each tested area of the Nelson site terrace.

Decorated pottery lacking identifiable cord impressions are generally confined to a lesser number of punctated shoulder, neck, rim, and body sherds, trailed lines and incised lines on body, shoulder, neck, and rim sherds, and rim sherds with tool impressed lips. Generally speaking, Block N of the Nelson site terrace appears to exhibit the widest variety of decorative element combinations, while Blocks E and W shows far lesser variety and an overall emphasis on cord impressed decorative motifs. However, this may be partially the result of much more extensive data collection in this area of the terrace and a therefore more expansive sample size from Block N, rather than evidence for a more diverse record of habitation for the northern portion of the Nelson site terrace. Pottery exhibiting trailed or incised lines were interpreted as both Mankato Incised and Linden Everted Rim types of Cambria, while a far lesser number of incised and tool impressed sherds identified within the northern portion of the Nelson site terrace shared some similarities with Big Stone phase Cambria ware. However, the finite number and ambiguous nature of many of these examples makes it difficult to accurately assign potential ware classifications.
While punctates appeared commonly associated with cord impressed wares through each portion of the Nelson site terrace, a number of rim sherds recovered from the northern portion of the Nelson site terrace reveal a decorative theme comprised solely of punctates or punctates combined with tool impressed lips. The small number of examples recovered from the northern portion of the Nelson site terrace appear similar in style to those of punctated Madison ware, with multiple closely-spaced rows of punctates encircling the vessel orifice with multiple vertical rows of punctates extending downward along the neck of the vessel (Hurley 1975). However, other punctated pottery appears to deviate from this pattern, instead exhibiting a single horizontal row of punctates or multiple irregularly spaced punctates. Overall, punctated pottery recovered from the northern portion of the Nelson site terrace may in part represent a type stylistically-linked to Madison ware, while aberrant examples may represent a combination of local and personalized variation of a common and widely utilized decoration method.

Overall, the archeological assemblages recovered from throughout tested areas of the Nelson site terrace appear to be relatively homogenous and for the most part, likely represent a single cultural and temporal occupation of the area. Cultural materials identified in paleosols underlying the occupation levels associated with the primary occupation of the Nelson site appear to represent an earlier utilization of the site by Terminal Woodland peoples exhibiting a pottery assemblage similar to, but not synonymous with the later Terminal Woodland occupation of the Nelson site terrace.

In conclusion, most of the cultural materials recovered from the Nelson site terrace appear to represent the detritus of a fairly short yet intensive temporal period of utilization, dating to the latter part of the Terminal Woodland period. Diagnostic tools and pottery observed within assemblages from the site reinforce this interpretation and appear to exhibit a localized south-central Minnesota extension of the High Rim Horizon as defined by Benn and Green (2000). Such a relationship would suggest significant
contact with Late Woodland peoples in adjacent areas of present-day Wisconsin and Iowa. Furthermore, the inclusion of Plains Village pottery within these assemblages and the interpreted utilization of Plains Village decorative elements on locally constructed pottery indicates significant contact with Plains Village peoples to the south and west. Overall, the archaeological assemblages recovered from the Nelson site terrace appear to demonstrate an admixture of Eastern Woodland and Plains Village material culture attributes.

While perhaps most readily demonstrated in pottery assemblages procured from the Nelson site terrace, the variety of lithic raw materials, and interpreted subsistence and settlement strategies reinforce the hypothesis that the Terminal Woodland inhabitants of the Nelson site terrace shared a lifestyle and culture heavily influenced by both Eastern Woodland and Plains Village cultural entities. Such a connection would suggest that well-defined culturally distinct and geographically removed peoples occupying areas of the Upper Midwest and adjacent regions had established influence on groups inhabiting peripheral zones delineating larger cohesive cultural complexes. In this ecological peripheral zone between the Eastern Woodlands and Northern Great Plains in south-central Minnesota, the convergence of material cultures and lifeways from larger cultural complexes and their combination with localized and well-established lifeways and material cultures have yielded archeological assemblages unique in time and place to the Terminal Woodland period of south-central Minnesota.

In other words, material remains associated with the Terminal Woodland inhabitants of the Nelson site terrace likely represent the comingling and coalescence of western and eastern cultural entities, which yielded a localized cultural variation derived from local tradition and multiple outside influential groups. These exhibit a settlement and subsistence strategy similar to those associated with Middle Missourian variant sites combined with a material culture exhibiting Plains Village tradition and Terminal Woodland influences, resulting in the emergence of a unique and distinct localized cultural identity.
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Winham, Peter R. and Francis A. Calabrese

Wright, H. E., Jr.


Wichita State University

Appendix A, Figure 1: Nelson site terrace location.
Appendix A, Figure 2: Nelson site terrace 2014 aerial image
Appendix A, Figure 3: Extents of the 1973 archeological investigation of the Nelson site.
Appendix A, Figure 4: Detail of 1973 excavation unit locations.
Appendix A, Figure 5: Detail of 1973 excavation unit locations.
Appendix A, Figure 6: Detail of 1973 excavation unit locations.
Appendix A, Figure 7: Nelson site terrace current land use.
Appendix A, Figure 8: Extent and results of the 2011 non-probabilistic pedestrian survey.
Appendix A, Figure 9: Extent and results of the 2011 probabilistic pedestrian survey.
Appendix A, Figure 10: Detail of artifact concentration EI.
Appendix A, Figure 11: Detail of artifact concentration EIV.
Appendix A, Figure 12: Detail of artifact concentration CII.
Appendix A, Figure 13: Detail of artifact concentration WIII.
Appendix A, Figure 14: Extent and results of 2011 shovel testing of the mid-level terrace.
Appendix A, Figure 15: 2013 shovel test locations.
Appendix A, Figure 16: Detail of shovel testing locations of artifact concentration EI.
Appendix A, Figure 17: Detail of shovel testing locations of artifact concentration EIV.
Appendix A, Figure 18: Detail of shovel testing locations of artifact concentration WIII.
Appendix A, Figure 19: Location of Trench 1.
Appendix A, Figure 20: Location of Trench 2.
Appendix A, Figure 21: Location of Trench 3.
Appendix A, Figure 22: Location of Trench 4.
Appendix A, Figure 23: Location of Excavation Unit 16.
Appendix A, Figure 24: Location of Excavation Unit 38.
Appendix A, Figure 25: Extent and result of N Block shovel testing.
Appendix A, Figure 26: Extent and result of misaligned N Block shovel test units.
Appendix A, Figure 27: Extent and result of W Block shovel testing.
APPENDIX B, HISTORIC MAP LOG
Appendix B, Map 1: A view of the 1855 GLO plat. The red arrow indicates the approximate location of the project area.

Appendix B, Map 2: A view of the A.T. Andreas (1874) atlas. The red arrow indicates the approximate location of the project area.
Appendix B, Map 3: A view of the Central Publishing Company (1895) atlas. The red arrow indicates the approximate location of the project area.

Appendix B, Map 4: A view of the Geo. A. Ogle and Company (1914) atlas. The red arrow indicates the approximate location of the project area.
Appendix B, Map 5: A view of the Webb Publishing (1929) atlas. The red arrow indicates the approximate location of the project area.

Appendix B, Map 6: A view of the 1938 aerial photograph. The red arrow indicates the approximate location of the project area.
Appendix B, Map 7: A view of the 1949 aerial photograph. The red arrow indicates the approximate location of the project area.

Appendix B, Map 8: A view of the 1991 aerial imagery. The red arrow indicates the approximate location of the project area.
APPENDIX C, PROJECT AREA IMAGES
Appendix C, Photograph 1: (Northwest) View of the project area from the southeastern corner of the Nelson site terrace.

Appendix C, Photograph 2: (Southwest) View of the project area from the northeastern corner of the Nelson site terrace.
Appendix C, Photograph 3: (Southeast) View of the project area from the northwestern corner of the Nelson site terrace.

Appendix C, Photograph 4: (Northeast) View of the project area to the immediate northeast of the southwest corner of the Nelson site terrace.
Appendix C, Photograph 5: (Northeast) View of the project area from the southeastern corner of the Nelson site terrace.

Appendix C, Photograph 6: (West) View of the project area from the south-central edge of the Nelson site terrace.
Appendix C, Photograph 7: (East) View of the project area from the south-central edge of the Nelson site terrace.

Appendix C, Photograph 8: (North) View of the project area from the center of the Nelson site terrace.
Appendix C, Photograph 9: (East) View of the project area from the center of the Nelson site terrace.

Appendix C, Photograph 10: (South) View of the project area from the center of the Nelson site terrace.
Appendix C, Photograph 11: (West) View of the project area from the center of the Nelson site terrace.

Appendix C, Photograph 12: (Northeast) View of drainage at east-central edge of the Nelson site terrace from the gravel access road on the southeast end of the Nelson site terrace.
Appendix C, Photograph 13: (West) View of a post-mold (Feature 1) encircled by a distal axe fragment, abrader, and manuport located in Trench 3, with a channeled abrader shown to the immediate east.

Appendix C, Photograph 14: (North) View of a pit feature (Feature 3) located in Trench 3.
Appendix C, Photograph 15: (North) View of a post mold (Feature 4) observed immediately below the northwestern quarter of Feature 3 in Trench 3.
APPENDIX D, GRAPHS
1973 ARTIFACT ASSEMBLAGE

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Appendix D, Figure 1
Appendix D, Figure 4
Appendix D, Figure 5
Appendix D, Figure 6
Appendix D, Figure 7
Appendix D, Figure 8
Appendix D, Figure 9
Appendix D, Figure 10
Appendix D, Figure 11
Appendix D, Figure 12
### Appendix D, Figure 13

TRENCH 1 ARTIFACT RECOVERY DEPTHS

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![Graph showing artifact recovery depths in trench 1](image-url)
TRENCH 1 LITHIC DEBITAGE AND TOOLS

Appendix D, Figure 14
Appendix D, Figure 15
Appendix D, Figure 16
Appendix D, Figure 17
Appendix D, Figure 18
EXCAVATION UNIT 16 ARTIFACT RECOVERY DEPTHS

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Appendix D, Figure 19
EXCAVATION UNIT 16 POTTERY ASSEMBLAGE

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Appendix D, Figure 20
Appendix D, Figure 21
Appendix D, Figure 22
Appendix D, Figure 23
Appendix D, Figure 24
Appendix D, Figure 25
Appendix D, Figure 26
Appendix D, Figure 27
Appendix D, Figure 28
Appendix D, Figure 2
Appendix D, Figure 30
Appendix D, Figure 33
Appendix D, Figure 34
APPENDIX E, ARTIFACT IMAGES
Appendix E, Figure 1: A reconstructed vessel segment recovered from 21BE0024, displaying the most common decoration pattern observed on pottery from the site.

Appendix E, Figure 2: Cord Impressed pottery rim sherds recovered from 21BE0024, displaying the most common decoration pattern observed on pottery from the site.
Appendix E, Figure 3: Cord Impressed pottery rim sherds recovered from 21BE0024, displaying the most common decoration pattern observed on pottery from the site.

Appendix E, Figure 4: Cord Impressed pottery rim sherds recovered from 21BE0024, displaying crenelated lip impressions.
Appendix E, Figure 5: Pottery rim sherds recovered from 21BE0024, displaying variability of folded lips within the pottery assemblage.

Appendix E, Figure 6: Pottery rim sherds recovered from 21BE0024, displaying toothed lip modifications and variability of design elements.
Appendix E, Figure 7: Examples of Plains Village tradition rim sherds recovered from 21BE0024.

Appendix E, Figure 8: Examples of plain tool-impressed lip pottery rim sherds recovered from 21BE0024.
Appendix E, Figure 9: Examples of undecorated cordmarked and vertical cordmarked rim sherds recovered from 21BE0024.

Appendix E, Figure 10: Examples of punctated rim sherds recovered from 21BE0024.
Appendix E, Figure 11: Examples of punctated pottery sherds recovered from 21BE0024

Appendix E, Figure 12: Examples of pottery pipe fragments recovered from 21BE0024.
Appendix E, Figure 13: Examples of pottery discs recovered from 21BE0024.

Appendix E, Figure 14: Examples of unnotched projectile points recovered from 21BE0024.
Appendix E, Figure 15: Side notched and corner notched projectile points recovered from 21BE0024.