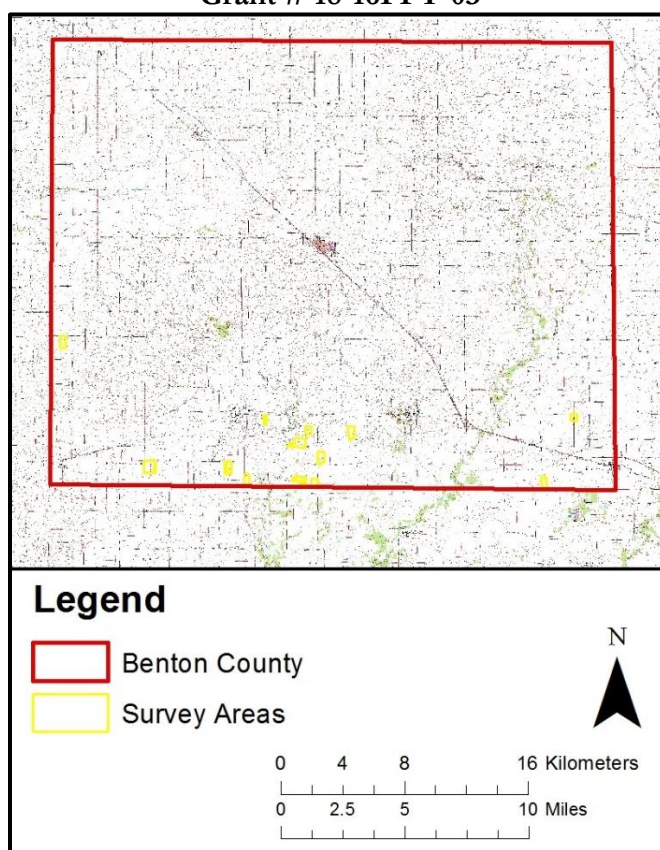


An Archaeological Survey of Benton County: Enhancement of a Data Deficient Region, Part II

Grant # 18-16FFY-03



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Reports of Investigation 99 Volume 1
May 2017

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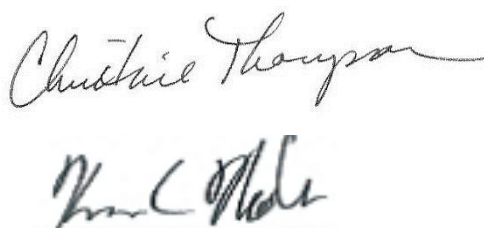
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Handwritten signatures of Christine Thompson and Kevin C. Nolan.

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ACKNOWLEDGEMENT OF STATE AND FEDERAL ASSISTANCE

This project has been funded in part by a grant from the U.S. Department of the Interior, National Park Service's Historic Preservation Fund administered by the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology. The project received federal financial assistance for the identification, protection, and/or rehabilitation of historic properties and cultural resources in the State of Indiana. However, the contents and opinions contained in this publication do not necessarily reflect the views or policies of the U.S. Department of the Interior, nor does the mention of trade names or commercial products constitute endorsement or recommendation by the U.S. Department of the Interior. Under Title VI of the Civil Rights Act of 1964 and Section 504 of the Rehabilitation Act of 1973, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, or disability in its federally assisted programs. If you believe that you have been discriminated against in any program, activity, or facility as described above, or if you desire further information, please write to: Office of Equal Opportunity, National Park Service, 1849 C Street, NW, MS-2740, Washington, D.C. 20240.

Acknowledgements

This project was a shared effort of numerous people. I am indebted to the following individuals for their assistance in completing this project. I would like to thank the Division of Historic Preservation and Archaeology (DHPA) and Ball State University for making this project possible. This project was funded in part by a Department of the Interior grant administered by the Division of Historic Preservation and Archaeology, Indiana Department of Natural Resources. Thanks to DHPA staff Malia Vanaman and Rachel Sharkey for their assistance in this project. Matching funds for this project were furnished by Ball State University. Thanks to Chad Paskiewicz, Matt Moore, and Ann Sheller in Sponsored Projects Administration at Ball State University for managing the accounting for this project. Thank you to Christine Thompson for beginning the research for this project and writing the proposal. Thanks to the Department of Anthropology for support and assistance throughout this project.

The project could not have been completed without access to agricultural fields in Benton County. I would especially like to thank the following landowners: [REDACTED]

[REDACTED] for granting us permission to survey their land. I appreciate your interest in this project. We also thank [REDACTED] for allowing us to review and analyze their artifact collection. Thanks to Ted Anchor and Alyssa Nyberg of The Nature Conservancy, Kankakee Sands for hosting us on our collector visit to Newton County. We appreciate their support and hospitality. Thanks to the Benton County Historical Society for hosting our May 2017 presentation. We had a large attendance and we appreciate the advertising done by the historical society.

The field work and laboratory processing was completed by AAL Director and Senior Archaeologist Kevin C. Nolan, AAL Archaeologist Christine Thompson, AAL Administrative Assistant and Archaeologist Amber Yuellig, myself, and the following Ball State students: Sneha Chavali, Abby Clark, Lindsey Cron, Henry Easley, Chyan Gilaspy, Justin Fleetwood-Goolsby, Sydney Green, Nora Hillard, Charity Munroe, Kiya Mullins, Savanah Myers, Kyree Nelson, Mia Nickelson, Sean Smith, and Lilly Tucker.

I would like to thank Amber Yuellig for organizing field crews and ordering supplies. I would especially like to thank Christine Thompson and Kevin C. Nolan for their help and guidance in all aspects of this project. Without their organization, leadership, archaeological and accounting skills, I would have been unable to perform the tasks required.

Amanda Balough

Abstract

The Applied Anthropology Laboratories (AAL) at Ball State University conducted a data enhancement project for archaeological resources in Benton County, Indiana for a FY2016 Historic Preservation Fund Grant (Grant #18-16FFY-03). This Historic Preservation Fund grant project investigated the archaeological resources of Benton County, Indiana with a focus on the southern half of the county. A total of 928.36 acres (375.69 hectares) of agricultural land was surveyed and 115 new archaeological sites were recorded. The survey recovered 102 prehistoric artifacts and 2161 historic artifacts from 13 parcels of land within Benton County. No human remains were discovered as a result of this grant project. Cultural periods that are represented in the artifact assemblage include precontact components dating to the Late Archaic, Middle Woodland, and possibly the Early Archaic, in addition to Historic components. The average site density recorded for the project area for precontact sites was one site per 14.07 acres and for historic sites was one site per 13.65 acres.

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Introduction

The Applied Anthropology Laboratories (AAL) at Ball State University was awarded a FY2016 Historic Preservation Fund Grant to survey portions of Benton County, Indiana. The project involved a pedestrian survey of 928.36 acres of agricultural land. The main goals of the project were to increase the site data base, refine the cultural chronology for the county (particularly the Late Archaic which is predominant in the collector reported sites), examine evidence for the early Euro-American settlement, resolve any inconsistencies found in the State Historic Architecture and Archaeological Research Database (SHAARD), and provide updated information for collector reported sites in SHAARD. Specifically, we hope to add to the understanding of the various prehistoric cultural periods of the county based on the low number of previously documented sites compared to the surrounding counties. We also hope to add to the understanding of the Euro-American presence and Native American interaction in Benton County. Benton County had 186 archaeological sites recorded in the State Historic Architecture and Archaeological Research Database (Division of Historic Preservation and Archaeology 2007) database prior to this survey. This investigation focused on the southern portion of Benton County.

The following research questions, while not exhaustive, guided this project.

1. What is the cultural chronology for Benton County?
 - a. Is the prevalence of Late Archaic among collector reported sites a result of bias, or representation of real pattern in precontact use of the Grand Prairie Natural Region?
2. What are the densities and distributions of archaeological sites in southern Benton County?
 - a. Are there patterns in the use of various ecologies through time?
 - b. Can this survey inform our knowledge of landscape change?
 - c. How does this compare to utilization of similar and different environments within the Central Till Plains?
3. What is the average site density within the county?
4. Is prehistoric occupation more extensive and/or more intensive at the ecotones between the environmental zones?
5. What is the settlement pattern for Euro-American people in southern Benton County?

Background

Environmental Setting

To provide a framework for interpreting the data collected during this project, a review of the natural and cultural setting was undertaken. The background information presented in this report includes environmental and archaeological information concerning Benton County, Indiana.

Location

The project area is located in Benton County (Figure 1), which has an area of 260,237 acres (105,314.18 hectares) (Barnes et al. 1989:1). For the proposed research, we targeted areas in seven townships within the Till Plain region in the southern half of the county (Figure 2 and Figure 3).

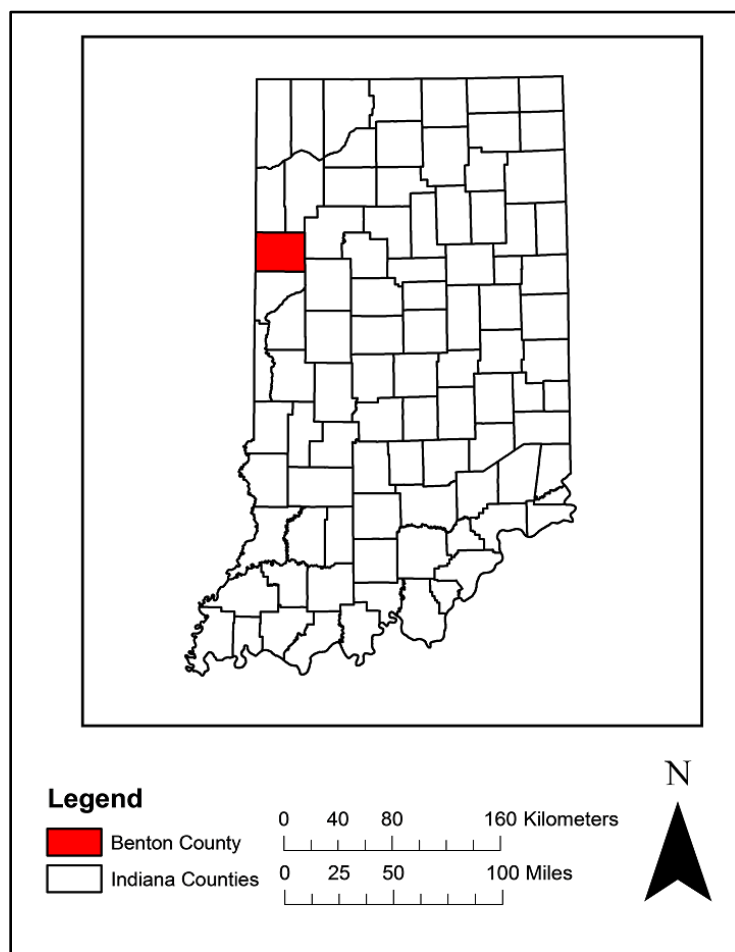


Figure 1: Benton County within the state of Indiana (based on Yellowmap World Atlas 2015).

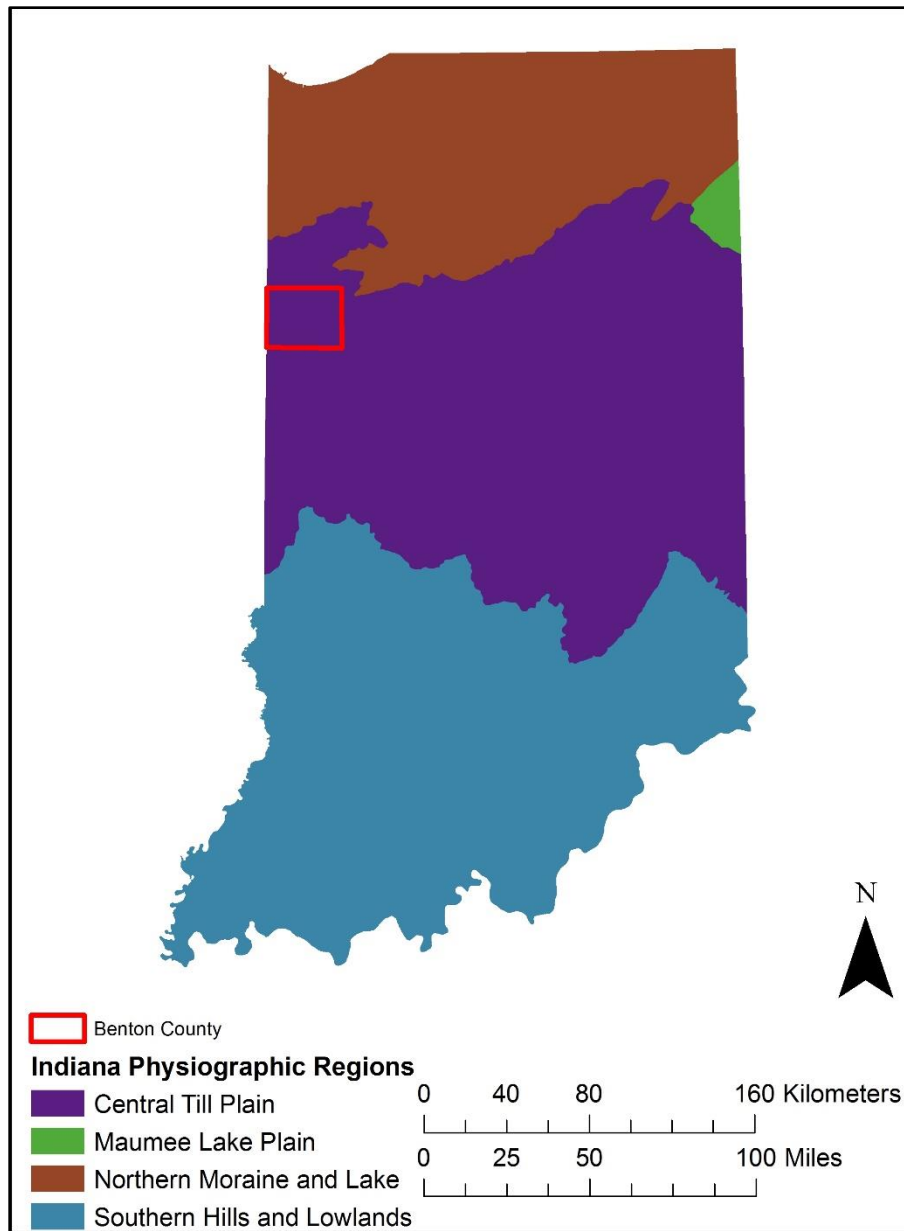


Figure 2: Benton County within the Central Till Plain (based on Gray and Sowder 2002).

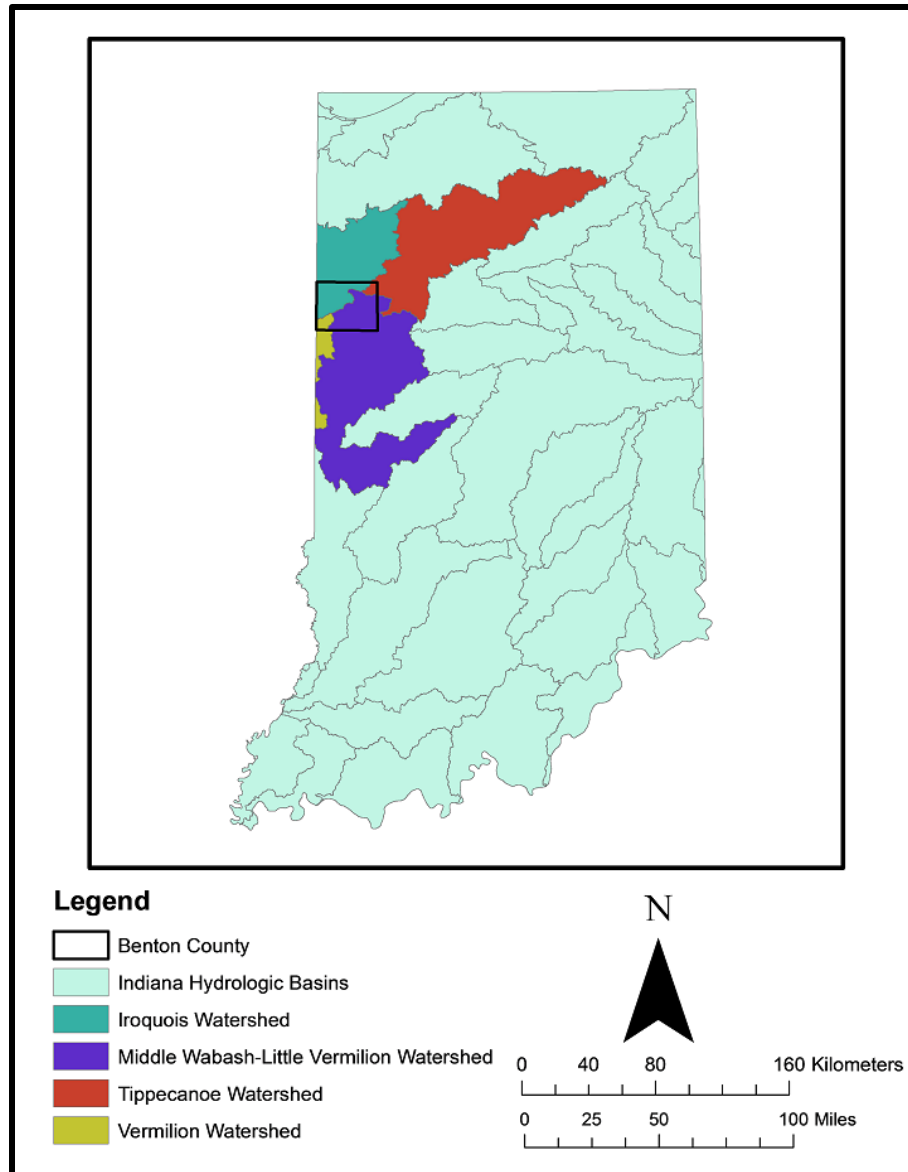


Figure 3: Benton County within the Iroquois River, Middle Wabash-Little Vermillion River, and Tippecanoe River Watersheds (Indiana Department of Natural Resources 1975).

Geology

The structural framework of Indiana is divided into three general areas: the Illinois and the Michigan Basins which are separated by the Cincinnati Arch and its branches of the Findlay and Kankakee Arches (Gutshick 1966:9). Benton County is located within the Tipton Till Plain of the Central Till Plains, a nearly flat to gently rolling glacial till plain (Schneider 1966:41).

The Tipton Till Plain can then be divided into smaller bedrock physiographic units. The project area is within one of those units known as the Rensselaer Plateau (Schneider 1966:54).

The Rensselaer Plateau occupies more than three quarters of Benton County. This bedrock unit is described as being physiographically distinct from other physiographic belts that are found in more southern regions of Indiana (Schneider 1966:55). Attica, Liston Creek, and Kenneth are the documented bedrock cherts in the region around Benton County (Figure 4).

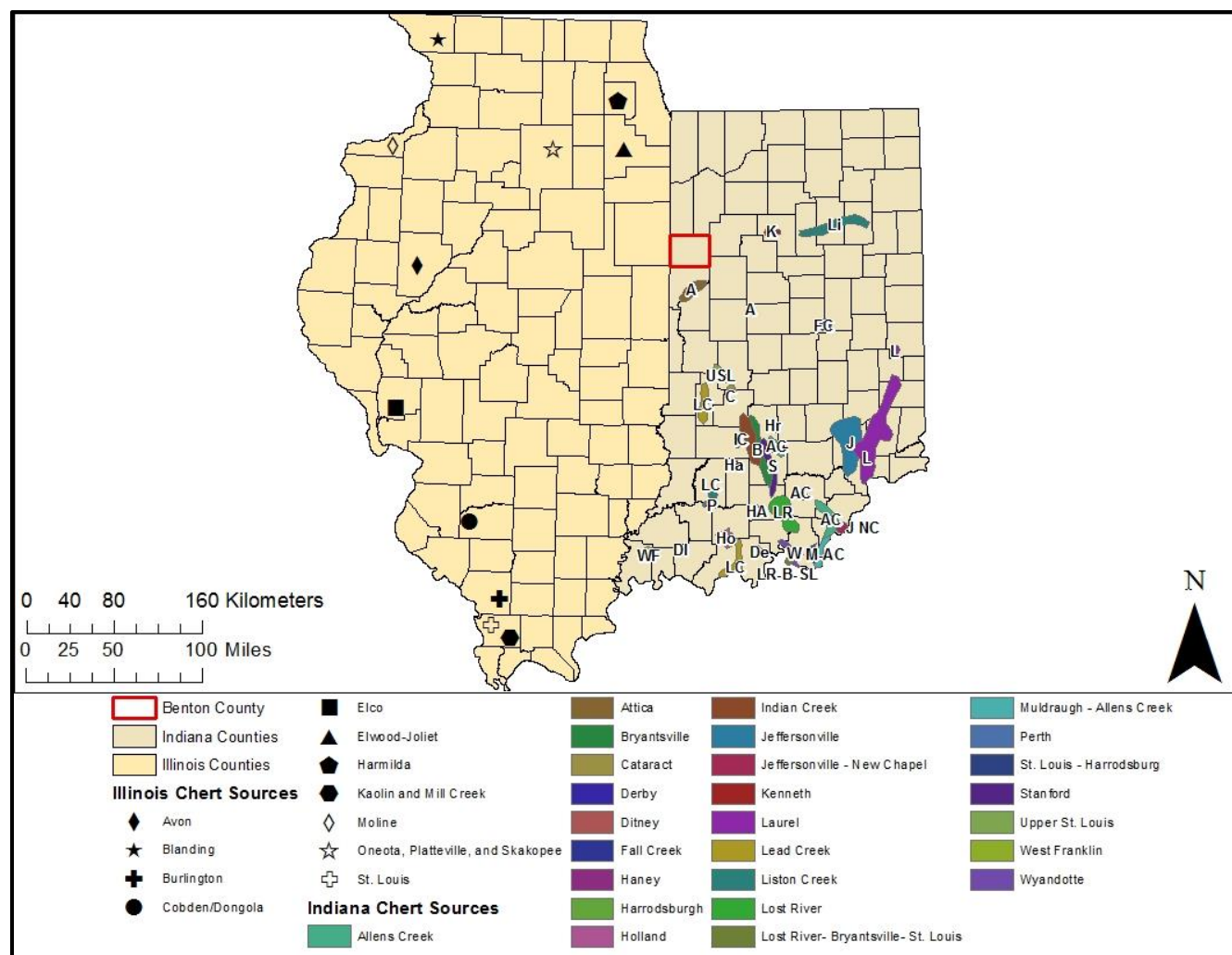


Figure 4: Chert Outcrop Locations in Indiana (digitized by Brad Painter from Cantin 2008) and Illinois (DeRegnaucourt and Georgiady 1998).

Stratigraphically, Attica chert (Figure 5) is a member of the Muldraugh Formation of the Borden Group of the Mississippian Period (Cantin 2008:15). Also known as “Wabash Green” and “Independence”, Attica chert is described as being blue-green in color with blue-grey streaks, bands and mottles (Cantin 2008:11-12). When heat treated, Attica chert takes on a purple color with pinkish bands and streaks (Cantin 2008:12). Texture is variable, ranging from fine-medium to medium coarse; luster is generally usually dull to slightly glossy (Cantin 2008:12). Fossil inclusions are rare with the exception of microscopic sponge spicules; however crystalline vugs have been encountered (Cantin 2008:12). Temporally, Attica chert is found in all cultural

periods in Indiana however little use is documented for Woodland and Mississippian periods in Indiana (Cantin 2008:13).



Figure 5: Example of Attica Chert from the Center for Social Research Chert Collection (Stelle and Duggan 2003).

Liston Creek chert (Figure 6) is both a nodular and bedded chert found in Liston Creek limestone which is a member of the Wabash Formation, Niagara Series, of the Silurian System (Cantin 2008:54). Liston Creek chert is always grey in color, but the shade of grey varies from very light to medium grey. As it weathers, Liston Creek chert can develop tan or brown patches. All these variations in color can occur within one sample. Textures of Liston Creek chert can be coarse to medium fine. Small calcitic or siliceous speckles are found within this chert type. These specks are most likely small fossils; however, the spots are too small to be determined as such. Liston Creek Chert was used heavily by prehistoric groups (Cantin 2008:55).

Kenneth chert (Figure 7) is a bedded chert found in Kenneth limestone which is a member of the Salina Formation of the Silurian System (Cantin 2008:46). Kenneth chert is known to be white to light grey in color, with light to dark grey and, or brownish-grey patches. These color variations can all be present within one sample. When weathered, Kenneth chert's appearance and texture become chalky white. Fossils are found within Kenneth chert, however the fossils are mostly "siliceous blobs" (Cantin 2008:47). Information on the usage of Kenneth chert is limited. Cantin (2008:48) notes that Kenneth chert should be archaeologically found throughout the Tipton Till Plain region.



Figure 6: Example of Liston Creek Chert from the Ball State University AAL Chert Collection (photo by Ball State University).



Figure 7: Example of Kenneth Chert from the Center for Social Research Chert Collection (Stelle and Duggan 2003).

The close proximity of Benton County to Illinois chert sources (Figure 4) has led to several types of Illinois chert being encountered during this survey. The closest Illinois chert outcrops are Harmilda and Elwood-Joliet located in DuPage and Will Counties respectively. Closely related to Elwood-Joliet chert are Blanding and Burlington cherts, which overlap in several classificatory properties along with Glacial Till chert (Stelle and Duggan 2003). The Blanding chert outcrop is located in Jo Davies County and Burlington chert outcrop is in Jackson County.

Blanding chert (Figure 8) is a medium to medium fine texture Mississippian Period chert that is dull in luster and naturally occurs in northwestern Illinois. Blanding chert can range from white to gray in color with pale yellowish, brown, or orangish streaks and faint banding (Stelle and Duggan 2003). Heat treatment of Blanding chert can cause the color to move to pink tones and the luster becomes more satin-like. Fossil fragments of sponge spicules, corals, and crinoid columnals are found frequently in the contrasting colors (Stelle and Duggan 2003).

Burlington chert (Figure 9) is a bedded Mississippian Period chert derived from the Burlington Limestone Formation occurring in the west-central region of southern Illinois (Koldehoff 1985:12). Burlington chert commonly has a base color of white to gray to tan with a waxy luster and can occasionally be mottled or banded (Stelle and Duggan 2003). Heat treatment of Burlington chert is frequently encountered and changes the base to a pure white or very light pink color. Fossil present in Burlington chert can include sponge spicules, brachiopods, bryozoans, corals, and crinoid columnals (Stelle and Duggan 2003). Due to the medium to fine texture and the enhanced flaking properties from heat treatment, Burlington chert was often selected for biface production (Koldehoff 1985:12; Stelle and Duggan 2003).

Elwood-Joliet chert (Figure 10) is a medium texture Mississippian Period chert that is dull in luster and is naturally occurring in northeastern Illinois. Elwood-Joliet chert white to gray in color and contains small iron pyrite structural inclusions (Stelle and Duggan 2003). Fossil inclusions present are sponge spicules, brachiopods, bryozoans, and crinoid columnals. Other inclusions present in Elwood-Joliet chert are druse and limestone, which can make the chert appear sugary under magnification (Stelle and Duggan 2003). Heat treatment effects on color and luster of Elwood-Joliet chert is unknown.



Figure 8: Example of Blanding Chert from the Center for Social Research Chert Collection (Stelle and Duggan 2003).

Harmilda chert (Figure 11) is a Silurian chert that is a member of the Silurian System occurring in DuPage County, Illinois. The luster of Harmilda chert ranges from dull to waxy corresponding to the variable texture with semi-translucent regions being fine to medium grained and waxy, while the opaque regions are medium to coarse grained and dull (Stelle and Duggan 2003). Few fossils are present in Harmilda chert, sponge spicule inclusions can be found in the semi-translucent regions and crinoid casts can be found in the opaque regions. Heat treatment causes Harmilda chert to turn a red or reddish brown color and the luster is enhanced weakly (Stelle and Duggan 2003). Harmilda chert tends to overlap visually with Kenneth and other Silurian aged cherts from Indiana.

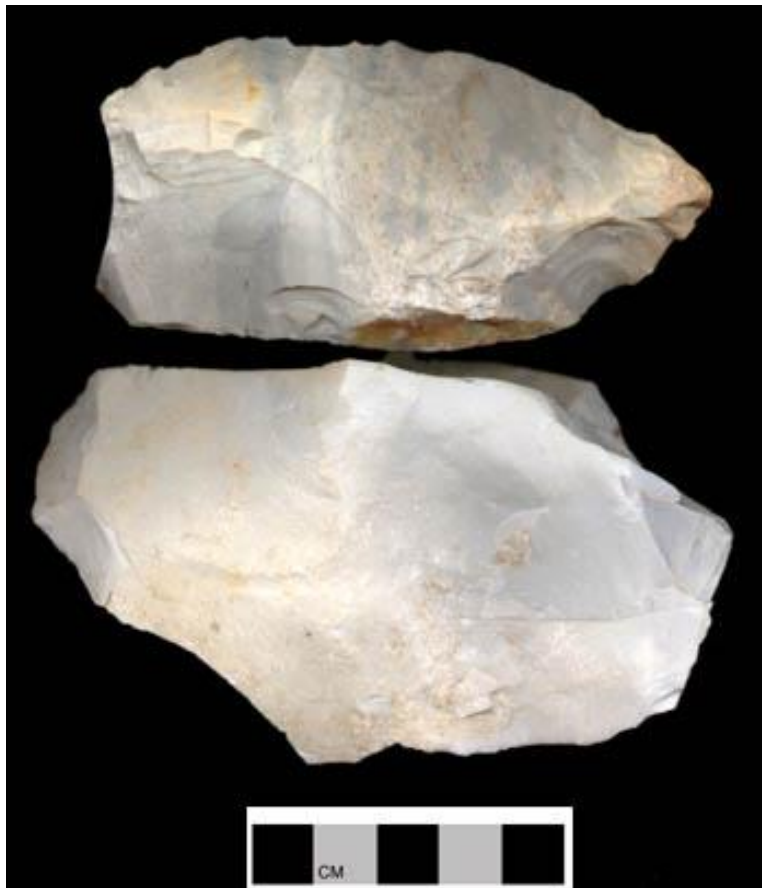


Figure 9: Example of Burlington Chert from the Center for Social Research Chert Collection (Stelle and Duggan 2003).

Glacial History

Modern Indiana has been shaped by the cumulative effects of repeated glacial, and inter-glacial, stages starting some 2.6 million years ago at the beginning of the Pleistocene (Fullerton 1986; Shurig 1970:6). The glaciers were formed in the upland east area near the Hudson Bay and spread out across the North American continent, reaching its farthest point in the Wabash and Ohio Valleys – south of the 38th parallel – farther than anywhere else in the Northern Hemisphere during the Pleistocene Epoch (Wayne 1966:21). Each new glacial advance transported tons of glacial drift that reshaped the surface of Indiana. The current homogenous appearance of Indiana's central region is misleading because underneath the surface lies a blending of bedrock and glacial drift that indicates its volatile glacial past.



Figure 10: Example of Elwood-Joliet Chert from the Center for Social Research Chert Collection (Stelle and Duggan 2003).

Evidence of glacial events that occurred prior to ~240,000 years ago are difficult to identify across the midcontinent, including Indiana. These earliest glacial events collectively are referred to as the Pre-Illinoian Stage (e.g., Fullerton 1986). During this time, regional hydrological systems underwent drastic alteration under the influence of the various ice sheets. The modern Ohio River drainage, which formed around 300,000 years ago, is the amalgamation of portions of various ancestral drainage reaches including the Teays, Steubenville, Manchester, and Marietta rivers (among others) (Hansen 1995; Ray 1974; Shurig 1970). Pre-Illinoian glaciation was also responsible for some of the deepest valley-cutting processes during the Pleistocene and deposits of glacial drift as deep as 75 to 100 feet can be found throughout parts of northern and central Indiana (Wayne 1966:32).



Figure 11: Example of Harmilda Chert from the Center for Social Research Chert Collection (Stelle and Duggan 2003).

Interglacial events, characterized by warming climates and retreating glaciers, represent a time of intensive erosional and depositional processes that shaped the landscape and led to deep soil development. Following Pre-Illinoian glacial advances, the Yarmouth interglacial occurred and lasted ~200,000 years (Melhorn 1997:18).

At ~240,000 years ago, glaciers began to advance once again during the Illinoian Stage (Fullerton 1986; Wayne 1966:32). These glaciers advanced farther south into the Northern Hemisphere than any previous stage. The terminal glacier margin fluctuated at least three times from its origin in the Lake Michigan Lowland to just south of the 38th parallel (Wayne

1966:33). Each fluctuation resulted in the deposition of till and outwash sediments that are distinguishable based on degree of oxidation and mineral and biogenic composition. Between 140,000 and 90,000 years ago, the Sangamon interglacial has been identified in Indiana which separates the Illinoian and Wisconsin glacial events (Wayne 1966:34). The most recent glaciation, the Wisconsin Stage, began its encroachment into Indiana from the northeast 90,000 years ago and produced various deposits including the Trafalgar Formation (Wayne 1966:34). The glacier was approximately 1,700 feet thick in certain areas (Wayne 1966:27).

Portions of southern and central Benton County contain deposits associated with the Cartersburg Till Member (Figure 12), which is part of the Trafalgar Formation (Wayne 1966:26). The Trafalgar Formation is primarily composed of massive calcareous conglomeritic mudstones (a compact but poorly cemented sandy, silty, matrix) with scattered beds of gravel, sand and silt (Wayne 1963:45).

Unconsolidated sediments overlie the Trafalgar Formation in some areas and were deposited extraglacially as the Atherton Formation (Wayne 1963:31, 1966:26). These sediments of gravel, sand, silt, and clay were derived primarily from glacial outwash and were sorted and deposited by meltwater currents, wind action or in the quiet waters of glacial lakes (Wayne 1963:31, 1966:26). Most of the Atherton Formation sediments in the project area in the northern portion of the county would belong to the outwash which drained to the Kankakee Basin and Aeolian dune facies (Wayne 1966:26; see Figure 12). The movement of glacial ice through the Lake Michigan and Kankakee basins deposited more till which eventually formed the Valparaiso Moraine and the melt created Lake Chicago (Wayne 1966:36). Stable dunes were created by the formation and recession of Lake Chicago into present day Lake Michigan. The remaining portion of central to southern Newton County is characterized by lacustrine facies and Paleozoic rocks. This facies consists of stratified fine- to coarse-grained sediments which were deposited in sheets by glacial meltwater current in valley fill (Wayne 1963:32).

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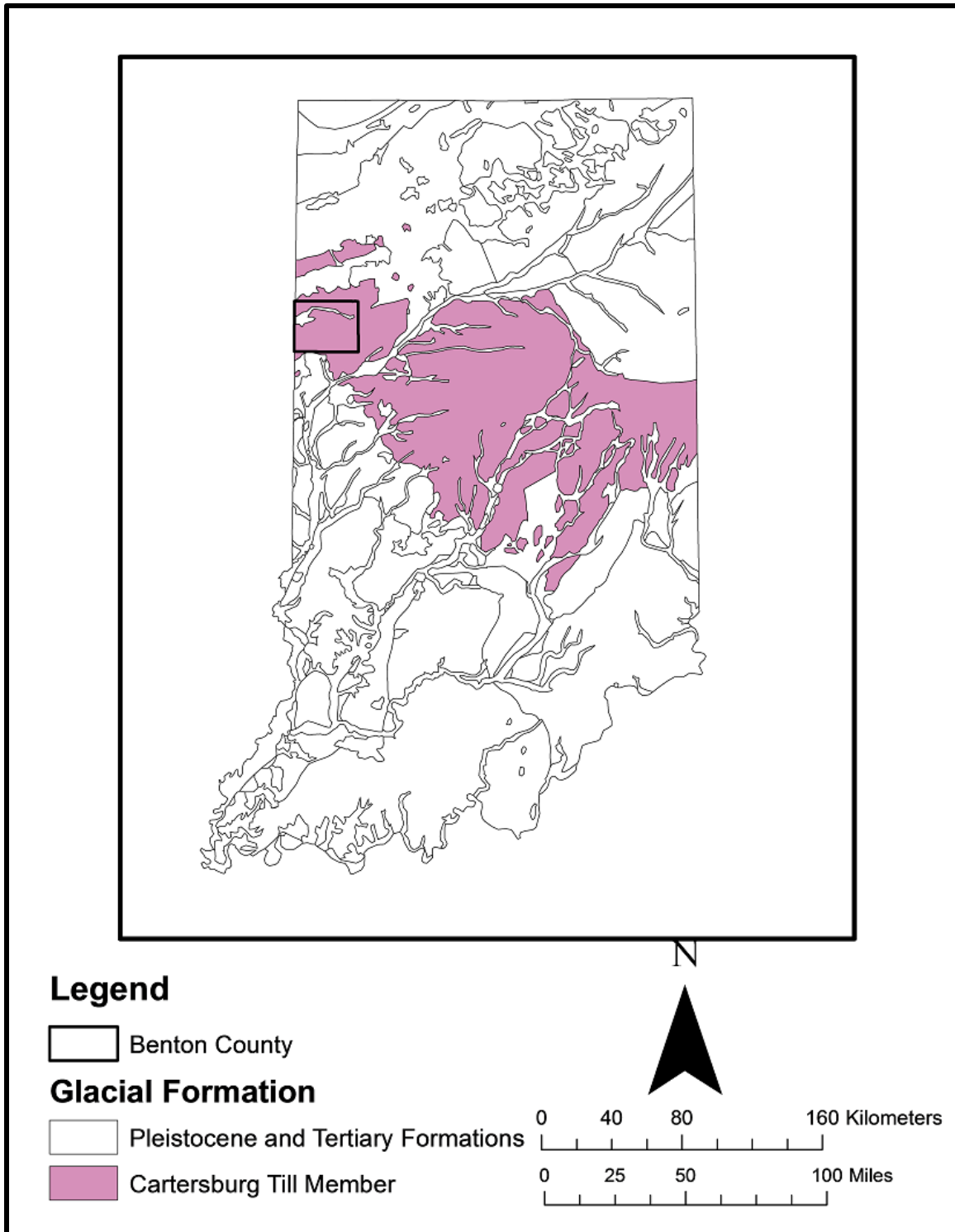


Figure 12: Location of Benton County and the Cartersburg Till Member (based on Wayne 1966:26).

During the Wisconsin Age, two main ice advances, which covered about two-thirds of Indiana 21,000 years ago, deposited groups of tills, consisting of outwash sand and gravel, which resulted in the Trafalgar Formation. After the active ice margin had melted, the entire lobe in central Indiana ceased to move; the outwash plains, kames, and moraines are evidence of an active glacier, but the esker(s) troughs are evidence of stagnant ice (Wayne 1963:36).

Physiography

Gray (2000) and Gray and Sowder (2002) map the county within the Iroquois Till Plains of the Central Till Plain Region (see also Schneider 1966) (Figure 13). The county is generally level and covered by gently sloping ground moraines variously named the Nebo-Gilboa Ridge, Chatsworth Moraine, Cropsey Moraine, and the Crawfordsville Moraine (Barnes et al. 1989:1). The Tipton Till Plain, which includes outwash plains, is an area of low relief with extensive areas of ice-disintegration features and much of the existing topography has been modified over the past 12,000 years by prevailing westerly winds (Schneider 1966:41-52). The county is drained by five main streams: Big Pine Creek, Mud Pine Creek, Sugar Creek, Mud Creek and Carpenter Creek (Schneider 1966:52).

Soils

The majority of soils found in Benton County are a product of their location upon nearly level and gently sloping ground moraines, or, in some cases, their location upon more strongly sloping end moraines. There are 10 soil associations mapped within Benton County (Table 1). Soil associations on floodplains and till plains (Montmorenci-Miami-Chalmers and Bryce-Swygert, consistent with Miami-Miamian-Xenia, Drummer-Toronto-Wingate, Gilford-Maumee-Sparta, and Sawmill-Lawson-Genesee in STATSGO) (USDA/NRCS 2002) represent a small percentage of the county. Soil associations on outwash plains (Chalmers-Lisbon-Drummer and Drummer-Comfrey-Tippecanoe, consistent with Drummer-Toronto-Wingate, Saybrook-Drummer-Parr, Warsaw-Lorenzo-Dakota, Barce-Montmorenci-Drummer, Gilford-Maumee-Sparta, Wolcott-Odell-Corwin, and Morley-Markham-Ashkumin in STATSGO) also account for a small percentage of Benton County. Soil associations that form glacial till (Corwin-Odell-Chalmers and Montmorenci-Miami-Chalmers consistent with Gilford-Maumee-Sparta and Miami-Miamian-Xenia in STATSGO) account for the second largest percentage in Benton County. The largest percentage of soil associations in Benton County form moraine landforms (Gilboa-Chalmers, Elliot-Ashkum-Selma, and Corwin-Odell-Chalmers consistent with Saybrook-Drummer-Parr, Wolcott-Odell-Corwin, and Barce-Montmorenci-Drummer in STATSGO) (Barnes et al. 1989:9-16). In 2002 the USDA revised their soil associations when producing STATSGO (USDA/NRCS 2002). Those soil associations are shown in Figure 14.

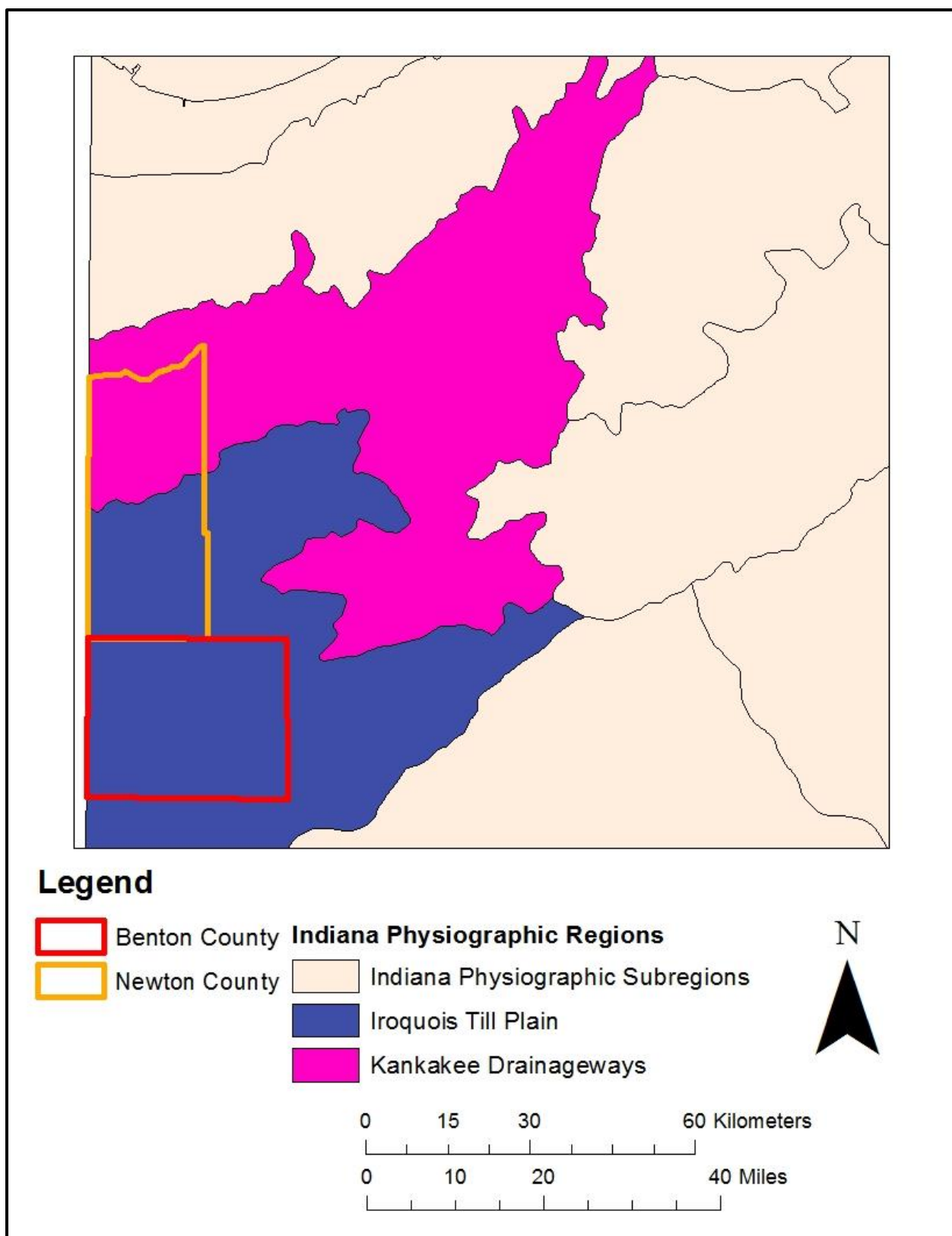


Figure 13: Physiographic divisions and survey areas in Benton County

The locations of survey areas show large scale variability in their soil associations as 38 soil series are reflected in tested area. The majority are poor or somewhat poorly drained soils. Silt loam textures are predominant, followed by silty clay loam then clay loam soils. Overall, the textures tend towards the finer grain sizes. Soils are classified into seven soil great groups according to Soil Taxonomy: Argiudolls, Endoaquolls, Haplosaprists, Endoaqualfs, Hapludalfs, Humaquepts, and Udipsamments (Figure 15). These can generally be associated with primary soil forming factors consistent with prairies (i.e., Mollisols), wet prairies (aquic Mollisols), high organic content (Histisols), wet forest soils (aquic Alfisols), forest soils (Alfisols), wet accumulating/young landforms (aquic Inceptisols), and young/accumulating dune formations (Entisols) (USDA/NRCS 2015a, 2015b).

Mollisols are most common across the county with wet prairie constituting a slightly larger proportion. The juxtaposition over short distances between soil forming factors associated with dry versus wet prairies creates very fine scale mixes of different ecological resources. This mix is supplemented by the forest soils (Alfisols) in clusters and linear concentrations across the northern and eastern portions of the county. Dry forests predominate with wet forests focused primarily in the eastern third of the county. While not a perfect proxy for precontact environments, these soil classifications should capture variability in the dominant soil forming factors (climate, biota, topography, and parent material) for the last several centuries to millennia (Figure 15) (USDA/NRCS 2015a, 2015b).

Water Resources

Precipitation is the primary source of surface water for Benton County (Hale 1966:92). Eight to 20 percent of precipitation becomes surface water as it collects in rivers, streams, lakes, and reservoirs (Bechert and Heckard 1966:100). The flow or “discharge” of rivers fluctuates greatly throughout seasons and over years. The maximum discharge is experienced during the late winter and early spring. Melt water from snow and increased precipitation at this time increases the discharge so much that at times flooding becomes a serious concern. Minimum discharge occurs during the summer and fall due to the effects of evapotranspiration with roughly two-thirds of precipitation lost due to this process. In contrast, maximum use of water also occurs during the summer and fall resulting in occasional drought (Hale 1966:94-95).

The remaining eight to 16 percent of precipitation percolates through the aeration zone of soil and rock until it reaches the water table where it becomes ground water (Bechert and Heckard 1966:100). Ground water moves laterally until it reaches a lower elevation. Eventually ground water will become surface water when it reaches an outlet (Bechert and Heckard 1966:110).

Table 1: Benton Soil Associations (Barnes et al. 1989).

Association	Description	Landforms	% of County
Barce-Montemorenci-Drummer	Very deep, moderately well drained soils consisting of loams and silty material, nearly level or gently sloping, formed in loamy outwash; on ground moraines and end moraines.	Ground and end moraines	8%
Drummer-Toronto-Wingate	Silty soils that are nearly level and gently sloping, are poorly drained, very poorly drained, and moderately well drained, and formed in silty deposits and outwash and in alluvium and outwash; on flood plains, outwash terraces, and outwash plains.	Floodplains, outwash terraces, and outwash plains	13%
Gilford-Maumee-Sparta	Deep, nearly level to strongly sloping, well-drained and excessively drained, moderately coarse textured soils on till plains, moraines, outwash plains, and terraces	Till plains, moraines, outwash plains, and terraces	2%
Miami-Miamian-Xenia	Deep, gently sloping to steep, well drained and moderately well drained soils; formed in thin loess and underlying glacial till.	Glacial till	2%
Morley-Markham-Ashkum	Gently sloping to steep, well drained to moderately well drained, deep soils that have moderately slow permeability; formed in outwash plains	Outwash plains	5%
Sawmill-Lawson-Genesee	Deep, well drained to very poorly drained, early level soils formed in alluvium; formed in loamy, alluvium on floodplains,	Loamy alluvium	0.50%
Saybrook-Drummer-Parr	Very deep, nearly level or gently sloping, poorly drained to moderately well drained, moderately fine or medium textured soils that formed in loamy outwash over glacial till	Glacial till plains	46%
Swygert-Bryce-Chatsworth	Somewhat poorly drained soils, nearly level to gently sloping, moderate sloping; formed in clayey till or clayey sediments on ground moraines and end moraines.	Ground and end moraines	1.50%
Warsaw-Lorenzo-Dakota	Well-drained soils, nearly level or gently sloping, moderately well-drained, medium textured soil; form in outwash plains and river terraces	Outwash plains and river terraces	11%
Wolcott-Odell-Corwin	Deep, nearly level, very poorly drained and somewhat poorly drained, medium textured soils, on outwash plains, lake plains and terraces	Outwash plains, lake plains, and terraces	11%

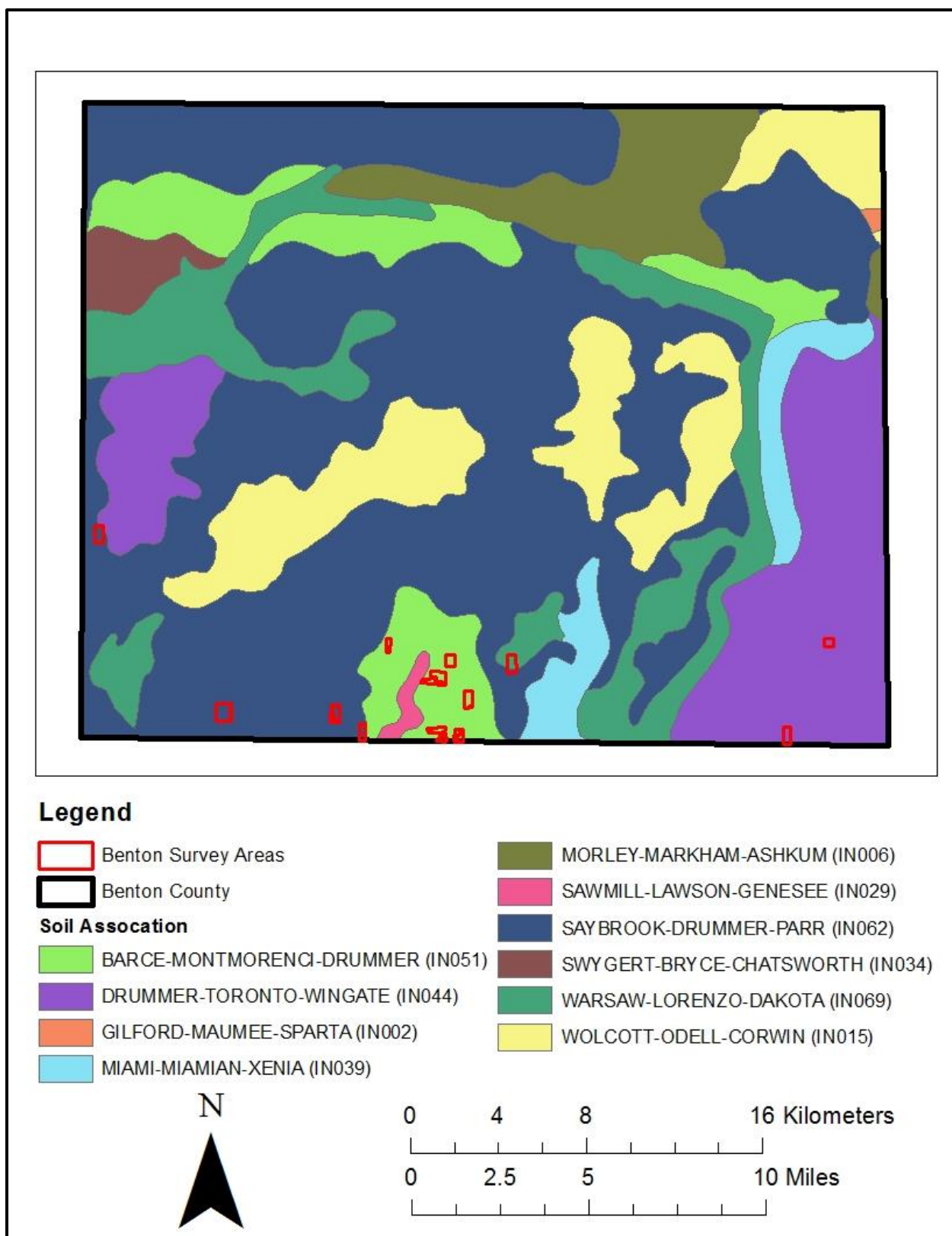


Figure 14: Soil Associations in Benton County (USDA/NRCS 2002).

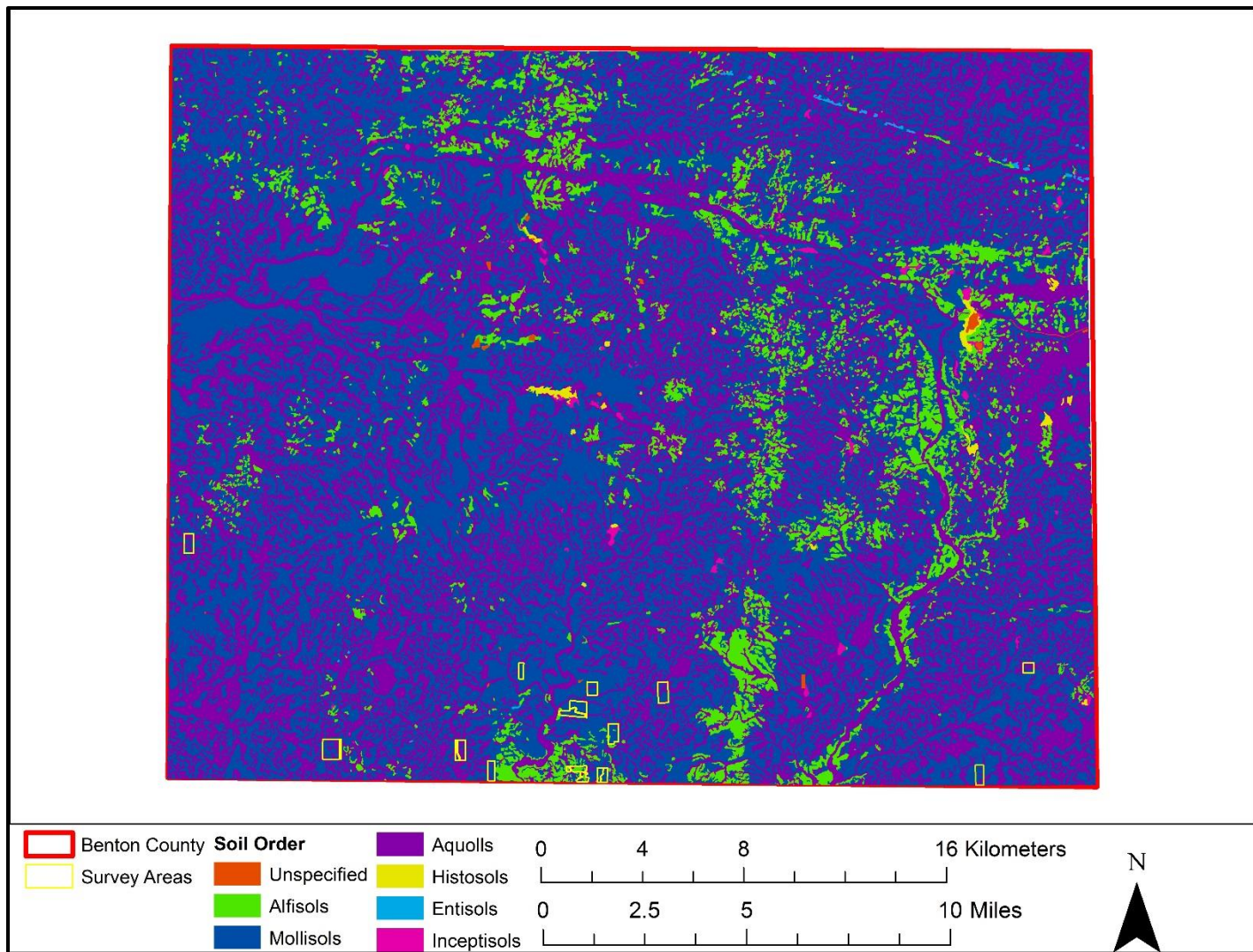


Figure 15: Soil Groups and Survey Areas within Benton County, Indiana (USDA/NRCS 2015a).

The Wabash River, which lies in western Indiana and southeastern Illinois is the major water source running closest to Benton County (Bechert and Heckard 1966:92-93). The Wabash River, the longest in Indiana, drains two-thirds of the state's runoff water, carrying it southwest until it reaches the Ohio River (Bechert and Heckard 1966:92). Within the Benton County proper, five main streams (Big Pine Creek, Mud Pine Creek, Sugar Creek, Mud Creek, and Carpenter Creek) provide drainage. While the Soil Survey of Benton County doesn't list any lakes or ponds in Benton County, the Indiana Department of Natural Resources Fish and Wildlife Indiana Lake Listing has one major manmade lake, Lake Boswell, and one major manmade pond, Fowler Pond (DNR Fish and Wildlife Lake Listing 2007:1).

The water supply for Benton County is primarily ground water. The principal sources of water are deposits of sand and gravel near streams and layers of sand and gravel intermixed with glacial till, which overlies the Lower Mississippian bedrock (Barnes et al. 1989:2). In the northeast and southeast corners of the county and in select areas along the southern boundary, the underlying bedrock is Upper Devonian black shale and a poor source of ground water (Barnes et al. 1989:2).

Water resources are extremely important to both prehistoric and historic human habitation patterns. Due to Benton County being mostly comprised of level and gently sloping ground moraines, the aquifers in this region are poor sources of ground water. The county has installed public water system near Ambia, Boswell, Earl Park, Fowler, Otterbein, and Oxford (Barnes et al. 1989:2). With only 95 percent of Benton County consisting of cropland and permanent pasture, the water system is principally supplies the developed areas of Oxford, Otterbein, Fowler, and Boswell (Barnes et al. 1989:3).

Climate

The modern climate of Indiana is described as a humid, mesothermal-microthermal, continental climate (Newman 1966:171; see also Eichenlaub 1979 and Woods et al. 2003). This refers to Indiana's generally humid climate with cold winters and warm summers (Newman 1966:171). In northern Indiana specifically, the climate is microthermal and includes cooler temperatures similar to those farther north and east (Newman 1966:171). Eichenlaub (1979) places this portion of the state within the Great Lakes climate region with the attendant influence of the lake on temperatures and precipitation. Further, Eichenlaub (1979:194, Figure 53) classifies the county as humid continental (*Dfb*) following the Köppen Climate Classification System. This climate is described as containing cold and dry winters and mild and moist summers (see also Schaal 1966:166). Benton County is characterized by a coefficient of continentality of approximately 45-46 (Eichenlaub 1979:56) which is a measure of the strong influence of Lake Michigan on local climate. Without Lake Michigan, northern Indiana would be much colder during the summer months due to the moisture in the air retaining heat, but the proximity to the lake also means that surface winds in the area are higher comparatively to other areas of Indiana (Schaal 1966:169).

Average rainfall for Benton County is 37 inches a year while average snowfall is 25 inches a year (Barnes et al. 1989:2; see also Woods et al. 2003). The mean minimum January temperature is 0 degrees Fahrenheit while the mean maximum January temperature is between 36 to 38 degrees Fahrenheit (Schaal 1966:162). Summer temperatures vary accordingly with intense heat, the mean minimum July temperature is 62 to 64 degrees Fahrenheit and the mean maximum July temperature is between 86 to 90 degrees Fahrenheit (Schaal 1966:162; see also Eichenlaub 1979).

Benton County is entirely within Level IV Ecoregion 54a (Figure 16) of the Illinois/Indiana Prairies (IIP) which is part of the Central Corn Belt Plains (CCBP) Level III Ecoregion 54 (Woods et al. 2003). Mollisols, primarily Aquolls, dominate the CCBP (Woods et al. 2003; see also Figure 15). Minor climatic properties may be influenced by natural features within the landscapes, creating variably hospitable small scale climatic zones. These features would have affected prehistoric and historic utilization of the local environment and created small scale preferential or detrimental climactic conditions. Newman (1966:174-176) refers to these areas as “meso-climates” and states that they are mainly caused by changes in wind patterns as a result of natural landforms such as major river valleys, the shore area around large lakes, high plateau areas and springs. These meso-climates, though very difficult to describe retroactively, may have played a part in the habitation patterns among prehistoric peoples.

The modern climate of Indiana is not an accurate reflection of the climate over the last 12,000 years. As other archaeologists have noted (e.g. King 1993:236), the reconstruction of paleo-climates has been hampered by ambiguous climatic data that have been used to support conflicting interpretations. Climatic change has been documented and can be discussed in generally accepted terms.

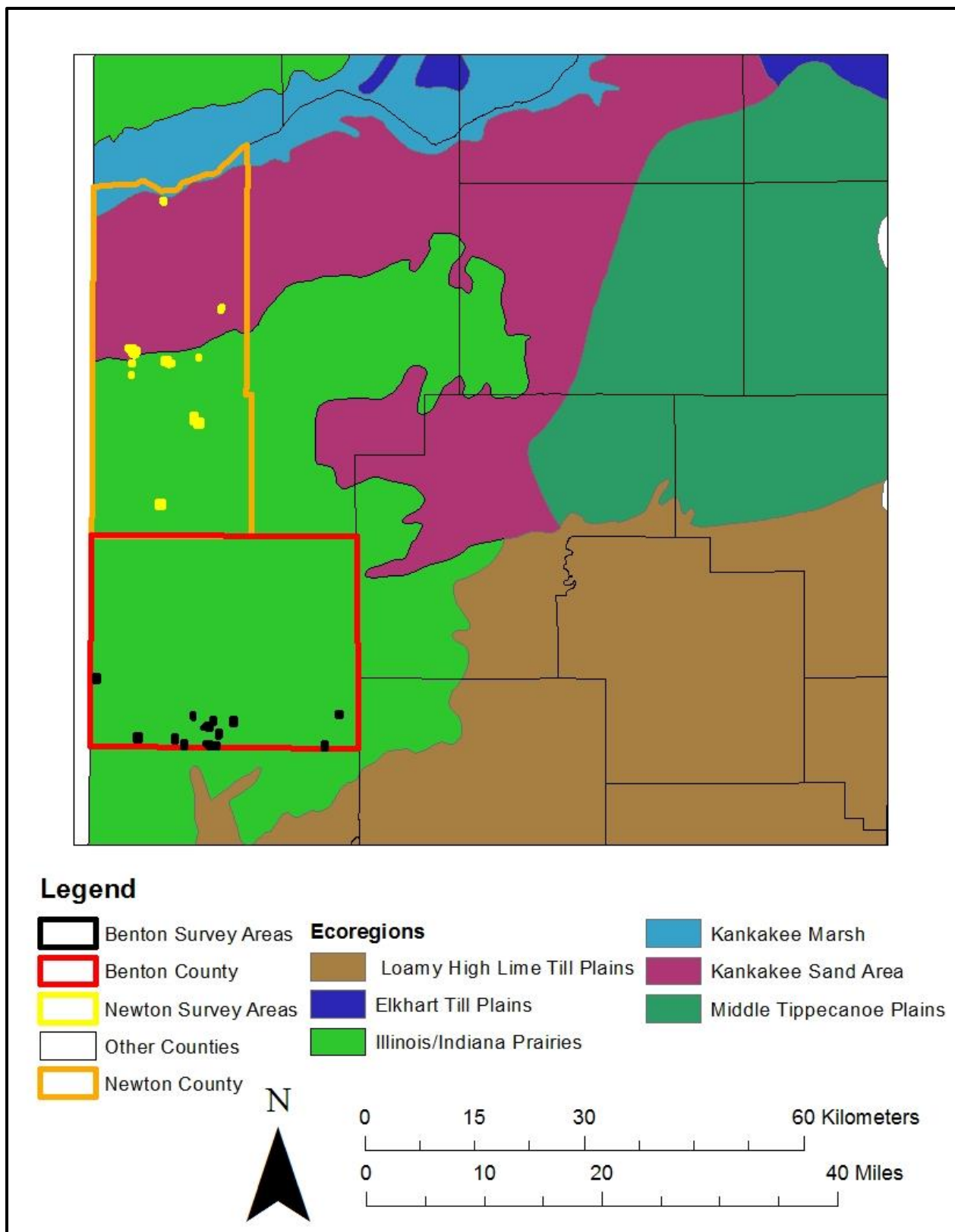


Figure 16: Level IV Ecoregions (Woods et al. 2003) for Northwest Indiana

Biotic Communities

Flora

As the climate shifted in Indiana after the end of the Pleistocene, so did the plant species. Figure 17 presents the transformation of the vegetative sequence constructed by Shane and adapted by Don Cochran (Cochran and Buehrig 1985:9, after Shane 1976; see also Bond et al. 2001; Shane et al. 2001) to reflect the general changes that took place within the region since the retreat of the glacial ice. Shane (1976, Shane et al. 2001) discusses regional changes within the Ohio Valley that have broad scale implications for the U.S. Midwest and Great Lakes regions. The trends identified were a relatively rapid and dramatic change in vegetation from open parkland to closed forest was the result of a rapid acceleration in the rate of warming (Whitehead 1997:105).

Figure 17 is a regional generalization and does not cover the project area specifically. It should be emphasized that vegetation varied greatly over time and space, and the introduction and extinction of species across Indiana produced a forest with mixed vegetation (Whitehead 1997:105). Vegetative responses to the expansion of prairie and the drying of the climate have not been universally recorded in sediments for the Great Lakes Region, but it has been found in Indiana and Illinois (Holloway and Bryant 1985:236-237).

A.D. 2000	Historic	Deciduous Forest
A.D. 1000		
0	Late Woodland	
	Middle Woodland	
1000 B.C.	Early Woodland	
2000 B.C.	Late Archaic	
3000 B.C.		
4000 B.C.	Middle Archaic	Prairies and Open Vegetation
5000 B.C.		
6000 B.C.		
7000 B.C.	Early Archaic / Late Paleoindian	Deciduous Forest
8000 B.C.		
9000 B.C.	Early Paleoindian	Pine Maximum
10000 B.C.		Conifer-Deciduous Woodland
11000 B.C.		Boreal Forest
12000 B.C.		
13000 B.C.		Park Tundra
14000 B.C.		Tundra or Open Areas
		Periglacial Zone
15000 B.C.		Wisconsin Ice

Figure 17: Vegetation Sequence of Central Indiana (Cochran and Buehrig 1985:9, after Shane 1976).

Utilizing historic documents, more detailed descriptions of the vegetation in northern Indiana can be given. Petty and Jackson's (1966) study of the natural vegetation of Indiana in 1816 shows Benton County as dry prairie interspersed with wetlands (Petty and Jackson 1966:284). This combination of wetlands and prairie created soils that were ideal for agriculture through accumulation of organic matter and nutrients in the topsoil (Petty and Jackson 1966:288-292). To get the dark and fertile soil characteristic of Benton County requires centuries of production. With cool-season and warm-season plant species, the prairie was biologically productive and supported large herds of buffalo (Petty and Jackson 1966:289). Early settlers assumed the prairie was infertile due to the lack of trees and few attempted to till the hardened

soil. Extensive cultivation of the prairie was impossible until the development of the steel plow circa 1840 (Petty and Jackson 1966:290).

Prairie is normally divided into three general types: wetland prairie, upland prairie, and areas were grassland and forest met (Petty and Jackson 1966:290). Benton County is comprised mainly of wetland prairie and upland prairie. Indian tribes periodically used fire to drive game and to maintain grassland which attracted Buffalo herds. Five prairie community types have been identified in Benton County. These types included big bluestem, little bluestem, prairie dropseed, poverty grass-bluegrass, and slough grass. The distribution of these types is controlled principally by soil drainage (Petty and Jackson 1966:291). Big and little bluestem species are of the greatest importance and have the most expansive extent. Big Bluestem communities dominate lower moist slopes and are the most noticeably abundant prairie type in Indiana.

The historic Prairie Peninsula of northwest Indiana once covered 13 percent of the Indiana landscape. In more recent times, prairie lands predominantly are found in designated low maintenance areas such as settlement-era cemeteries, and along highways and railroads. While prairie lands often appear to be simple grasslands, they are a complex system of plants and animals. The development of prairies played a large part in the fertility of both Indiana and the United States as a whole. The species of plants that constituted the historic prairies were a mix of both northern and southern species. Due to different growth rates and seasonal variation, prairies provided year-round resources and also possessed fertile soils (Petty and Jackson 1966:288-289). Six of the AAL survey areas (SA1, 2, 3, 10, 11, and 13) were within the dry prairie in Benton County, five (SA4, 7, 8, 11, and 12) were in the wetlands, and two survey areas (SA 5 and 9) were in both dry prairie and wetlands (see Figure 18). The intermingling of dry prairie and wetland may have fluctuated in the deeper past. The boundaries of the dry prairies and wetlands undoubtedly has fluctuated in the past.

In Indiana, wetland vegetative communities are advantageous for humans because of the wildlife and the plant life they house (Meyers 1997:69). Indiana wetlands display the highest diversity of life among local habitats, including providing refuge for many endangered species. Wetland areas include swamps, bogs, fens, marshes, seep springs, sloughs, bottomlands, potholes, wet meadows or prairies, and most areas are situated along the margins of lakes, reservoirs, rivers and streams. Wetlands offer ways for humans to control water-based resources and indeed the resource of water itself. Wetland communities are decreasing within Indiana due to the expansion of agricultural and wind farms (Taylor 2009:3), but they can still be found within places like Benton County (Meyers 1997:67). Prehistorically, wetlands would have been economically important, and potentially attracted people from atypical distances seasonally (Surface-Evans 2015). The fluctuations of surface moisture seasonally and through the centuries would have exerted a great influence on prehistoric activity distributions.

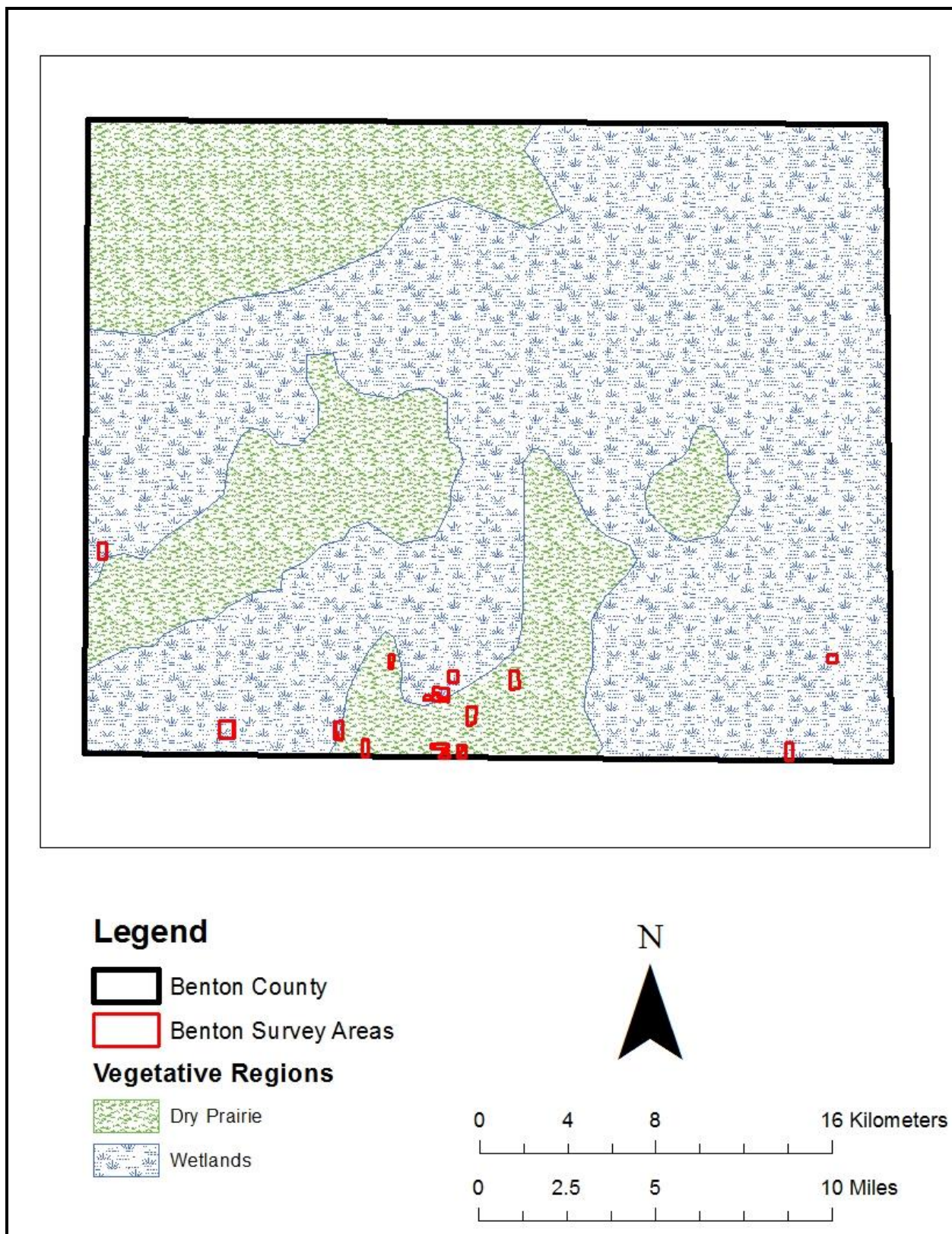


Figure 18: Pre-Euro-American Settlement Vegetation after (Petty and Jackson 1966).

Fauna

A range of animal species lived in Indiana during the late Pleistocene through Holocene. Various Pleistocene age fauna are known from Indiana including bison, giant beaver, caribou, Virginia deer, dire wolf, wapiti, horse, mammoth, mastodon, musk-ox, peccary, sloth and perhaps moose (Lyon 1936; Moodie 1929). More recent investigations have expanded this list to include moose, caribou, black bear, giant short-face bear, giant tortoise, white-tailed deer, Canada goose, armadillo, jaguar, sabertooth tiger and camel (Richards and Whitaker 1997:156). By at least 10,000 years ago, many of the larger mammalian species went extinct for reasons that are still debated.

In 1816, an estimated 66 mammalian species were present in Indiana (Mumford 1966:475). Some of the common mammals found in Indiana include opossum, eastern cottontail, eastern chipmunk, white-tailed deer, beaver, deer mouse, white-footed mouse, meadow vole, pine vole, muskrat, southern bog lemming, Norway rat, coyote, red fox, gray fox, raccoon, long-tailed weasel, various species of squirrels, mice and shrews. Twelve species are listed as exterminated from Indiana and include bison, wapiti, porcupine, gray wolf, red wolf, black bear, fisher, eastern spotted skunk, wolverine, river otter, mountain lion and lynx (Mumford 1966:475).

Historic sources also report a large variety of other fauna in Indiana. Webster (1966:455-473) identifies 366 species of birds. A total of 177 fish have been identified in the state (Gammon and Gerking 1966:401-425). Approximately 200 species of mollusks and 400 species of crustaceans occurred in Indiana waters. Approximately 82 species of amphibians and snakes have been identified (Milton 1966:426-451). The species can be subdivided into 19 species of salamanders, two species of toads, 11 species of frogs, six types of lizards, some 30 types of snakes, and 14 turtle varieties (Milton 1966:426-451).

Summary

As the ecological and natural setting of the project area evolved over the last several thousand years, human settlement would also have adapted. Settlement and use of resources within the project area would have been influenced by potential plant and animal resources and, conversely, may have influenced changes in flora and fauna (Delcourt and Delcourt 1991:87-89). The diversity of habitats that existed in the project area would have attracted prehistoric populations for the variety of natural resources available including food, water, and raw materials for the production of tools, clothing, adornment and shelter.

Archaeological Background

In this section, the archaeological background of Benton County is reviewed. The background information was analyzed for data relevant to an understanding of archeological resources expected to be found during this investigation both in terms of the types and densities of archaeological data, as well as the history of the landscape. A new records review was conducted at DHPA by Kevin Nolan on July 5, 2016. The results of this review are presented in Table 2, which provides the references for previous surveys as well as the number of surveys conducted and those successful in locating sites.

The earliest investigations in Benton County were due to the construction or improvement of these major roadways. From 1973 to 1999, 88 percent (n=37) of the 42 investigations were related to highway improvement or construction and were conducted either by the Archaeological Resource Management System (ARMS), the Indiana State Highway commission, or by other CRM firms (Armstrong 1980; Anuszczyk 1983a, 1983b, 1983c, 1983d, 1983e; Burkett 1983a, 1983b, 1983c, 1983d, 1983e; Carson 2003, 2007; Cochran 1979, 1984; Conover 1985a, 1985b; DeRegnaucourt 1977, 1982; Dietrich 1985; Evans 1988; Gaw 1993; Helmkamp 1991, 1992; Hicks and Carino 1978; Hicks and Cochran 1978; Kolbe 1992; Pace 1987; Poppe 1993; Ritchey 1991; Scuoteguazza 1995; Tomak 1979a, 1979b, 1979c; West 1988). The investigations were in advance of several projects related to bridge and on-ramp construction for US 41, US 53, and I-65 which all provided greater access between rural and urban areas (Taylor 2009:15).

The next trend for archaeological investigation was the construction of cellular towers. From 2001 to 2013, Greenhouse Consultant Inc., University of Illinois, and the Archaeological Consultants of Ossian conducted various investigations in Bolivar, Center, and Richland Townships for the construction of cellular towers and associated facilities (Greenhouse et al. 2001a, 2001b, 2001c; McGowan 2013a, 2013b; Stillwell 2004a, 2005, 2007, 2015).

Recently, installation of green technologies, primarily wind farms and ethanol plants, has fueled another increase in archaeological survey for the county. Benton County's level terrain is conducive for the generation of high winds, especially in Center Township around the town of Fowler (Jackson 2013, 2014). Alternative energy methods and wind farms were first introduced in Benton County in 2007 and it is projected that more and more farmers will opt for the installment of wind turbines. As of 2016, six Phase 1a surveys have been conducted in Benton County related to installment of wind turbines for two wind farms including the BP Alternative Energy Wind Farm and Fowler Ridge Wind Farm (Carson and Plunkett 2007; Hall and Smith 2009; Hall et al. 2007; Jackson 2013, 2014; Johnson and Poulton 2007). As of 2016, more than 65,000 acres of private land were surveyed in Benton for wind turbine installation (Division of Historic Preservation and Archaeology 2007). Since 2007, the presence of wind farms in Benton

County has brought over 95 new jobs to the county. Benton County has 560 wind turbines and the income from the wind farms has allowed the council and commissioners to pay off the counties debts and further develop their communities. With the presence of new workers, the housing market and local businesses have experienced an increase of income and county residence have lower property taxes (Benton County Indiana 2009).

Following Swihart and Nolan (2013, 2014), results of archaeological surveys presented in Table 2 are segregated by civil townships, which are shown in Figure 19. The Positive column indicates the number of surveys that encountered artifacts and reported sites. The S/P column is a ratio of the number of surveys conducted by the number of surveys that were positive. The P/S column is a ratio of the number of positive surveys to total surveys. These ratios give an approximate index of the average density of the archaeological record in the county and in each civil township. The results show that sites are encountered in about 1 in every 4.30 surveys in Benton County with an average positive density of 0.23. Prior to the current survey, 186 sites (Volume 2, Appendix A) had been recorded in Benton County. Summaries of site components and projectile points recovered from the area are presented in Table 3, Table 4, and Table 5).

The information in Table 2 and Figure 19 shows the highest frequency of surveys in Center, Parish Grove, and Richland Townships, mostly due to the development and installation of highways, bridges, and wind farms. The townships with the least amount of surveys (Bolivar, Hickory Grove, Oak Grove, Parish Grove, Pine, and Union) have limited development outside of farmland, which could account for the lower number of mandatory surveys. Gilboa, Richland, and York townships have the highest density of positives with 100 percent of surveys in Gilboa encountering sites and at least 40 percent of surveys in Richland and York encountering sites. Bolivar and Parish Grove Townships have the lowest density of positives with 10 percent or less.

With a ratio of 1 positive survey for every 4.30 CRM projects (Table 2), Benton County exhibits low relative abundance of archaeological resources compared to an S/P ratio of 2.8, 2.7, 1.94, and 2.94 for Jasper, Dearborn, Hamilton, and Newton Counties, respectively (Leeuwrik et al. 2016; Macleod et al. 2015; Swihart and Nolan 2013, 2014). This figure reflects the relatively infrequent number of archaeological investigations that have taken place in Benton County compared to counties like Hamilton in central Indiana, Dearborn in southern Indiana, and Montgomery in west central Indiana (James and Cochran 1985; Macleod et al. 2015; Murray et al. 2011; Swihart and Nolan 2013: Table 3, 2014: Table 2). The low frequency of development and construction in Benton County could account for the lower number of state and federal surveys conducted.

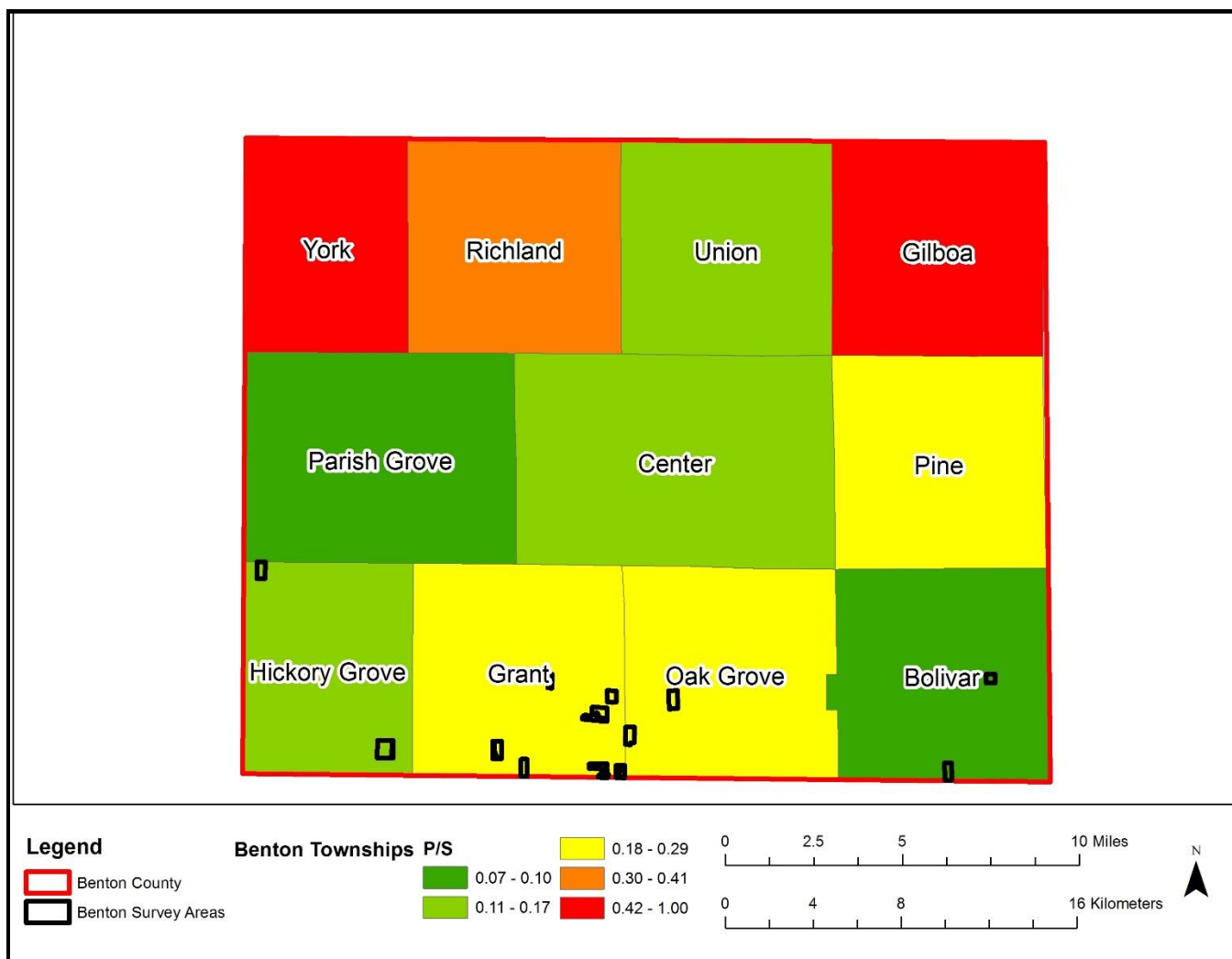


Figure 19: Ratio of Positive Surveys to Total Surveys by Civil Townships in Benton County.

Table 2: Summary of Previous Surveys in Benton County

Civil Township	# of Surveys	Positive	S/P	P/S	References
Bolivar	14	1	14.00	0.07	Conover 1985a; Carson and Plunkett 2007; Dickerson 2014; Dietrich 1985; Evans 1988; Greenhouse et al. 2001a; Helmkamp and Javorsek 2000a; Johnson and Poulton 2007; Kolbe 1992; Ritchey 1991; Scuoteguazza 1995; Stewart 1994; Stillwell 2007; West 1988
Center	23	3	7.67	0.13	Beard 1980; Carson and Plunkett 2007; Cochran 1984; Cochran 2000; Fishel 2000; Greenhouse et al. 2001b; Hall et al. 2007; Helmkamp and Javorsek 2000b; Holycross 1999; Jackson 2013, 2014; Lautzenheiser and Carson 2013; Johnson and Poulton 2007; Leffler 1981; Mayronne 2000; McGowan 2013a; Munson 1980; Pace 1987; Stillwell 2004a, 2004b, 2015, 2016; Whalen 2003
Gilboa	4	4	1.00	1.00	Balough et al. 2016 (Survey Areas 1, 5, and 7); Maust and Cochran 1989
Grant	11	3	3.67	0.27	Carmany-George 2006; Carson and Plunkett 2007; Cochran 1979; Culver and Bubbs 2014; Hicks and Carino 1978; Hall and Smith 2009; Hicks and Cochran 1978; Johnson and Poulton 2007; Lautzenheiser and Carson 2013; Martin 2000a, 2000b
Hickory Grove	7	1	7.00	0.14	Carson and Plunkett 2007; Hall and Smith 2009; Helmkamp 1992; Johnson and Poulton 2007; King 2011; Miller 2010; Reid 2001
Oak Grove	7	2	3.50	0.29	Carson 2007; Carson and Plunkett 2007; Helmkamp and Javorsek 2000c; Johnson and Poulton 2007; Laswell 2007; Stillwell 2013; Rotman 1998
Parish Grove	21	2	10.50	0.10	Anuszczyk 1983a, 1983b, 1983c; Beard 1990; Burkett 1983a, 1983b, 1983c; Carson and Plunkett 2007; Coon 2008; Crider and King 2005; Gaw 1993; Hall and Smith 2009; Holycross 2001; Jackson 2013, 2014; Johnson and Poulton 2007; Lautzenheiser and Carson 2013; Martin 2000c; Plunkett 2013; Tomak 1979a; Whalen 2003
Pine	9	2	4.50	0.22	Anuszczyk 1983d, 1983e; Balough et al. 2016 (Survey Area 9); Burkett 1983d, 1983e; Carson 2003; DeRegnaucourt 1982; Holycross 1998; King 2004
Richland	17	7	2.43	0.41	Balough et al. 2016 (Survey Areas 2, 3, 6, 10, and 12); Carson and Plunkett 2007; Greenhouse et al. 2001c; Jackson 2013, 2014; Johnson and Poulton 2007; Lautzenheiser and Carson 2013; Martin 2000d; McCord 2009; McGowan 2013b; Smith 2009; Stillwell 2005; Zoll 2013)

Union	7	1	7.00	0.14	Balough et al. 2016 (Survey Area 8); Carson and Plunkett 2007; Helmkamp 1991; McCord 2008, 2009; Poppe 1993; Smith and McCord 2008
York	9	4	2.25	0.44	Armstrong 1980; Balough et al. 2016 (Survey Areas 4 and 11); Conover 1985b; DeRegnaucourt 1977; Martin 2000e; Maust and Cochran 1989; Tomak 1979b, 1979c
Total	129.00	30.00	4.30	0.23	
Average	11.73	2.73	4.30	0.23	

Table 3: Site Components Recorded Within Benton County (Prior to Survey).

***bold period headings include all sub-periods**

Component	No.	Number of Multicomponent sites included in total
Unidentified Prehistoric	87	12 Multicomponent
Paleoindian	6	
Archaic	28	14 Multicomponent
Early Archaic	9	2 Multicomponent
Middle Archaic	4	4 Multicomponent
Late Archaic	13	7 Multicomponent
Unknown Archaic	2	1 Multicomponent
Woodland	8	5 Multicomponent
Early Woodland	1	1 Multicomponent
Middle Woodland	3	1 Multicomponent
Late Woodland/Mississippian	4	3 Multicomponent
Unknown Woodland	0	
Mississippian	3	3 Multicomponent
Protohistoric/Contact	0	
Historic	66	10 Multicomponent
Unknown	4	

Table 4: Previously Documented Points within Benton County (Prior to Survey).

Cultural Period	Projectile Point Types
Paleoindian	Clovis, Dalton
Early Archaic	Barbee Corner Notched, Dovetail, Hardin Barbed, Kirk Corner Notched, Palmer, St. Charles, Thebes
Early-Middle Archaic	Raddatz Side Notched
Middle- Late Archaic	Unidentified Concave Base, Unidentified Side Notched
Late Archaic	Brewerton, Durst, Lamoka, Matanza, Riverton, Vosberg Corner Notched, Unidentified Side Notched, Unidentified Expanding Stem
Terminal Late Archaic	N/A
Early Woodland	Perkiomen Broad, Susquehanna Broad
Middle Woodland	Snyder
Late Woodland/ Late Prehistoric	Jack's Reef, Steuben Expanded, Unidentified Side Notched

Table 5: Site Types Recorded within Benton County (Data from SHAARD, CRM, and research reports prior to survey).

Prehistoric Types	No.	Historic Types	No.
Lithic Scatter	31	Agricultural Field	2
Habitation	10	Bridge	1
Camp	19	Commercial	1
Mound	1	Farmstead	1
Isolated Find	51	House	3
Unknown	15	Historic Scatter	22
		Historic Isolate	31

There have been 103 archaeological investigations conducted in Benton County, most of which have been surface surveys. Per SHAARD (Division of Historic Preservation and Archaeology 2007), there have been no Phase II or Phase III surveys in Benton County. Please note that in Table 2, eight of the previous surveys were counted twice or more due to being located in different townships. Two investigations were located in Bolivar, Center, Grant, Hickory Grove, Oak Grove, and Parish Grove Townships (Carson and Plunkett 2007; Johnson and Poulton 2007). Two investigations were conducted in Center, Parish Grove, and Richland Townships (Jackson 2013, 2014) and one investigation was conducted in Center, Grant, Parish Grove, and Richland Townships (Lautzenheiser and Carson 2013). Of the remaining two investigations, one was conducted in Grant, Hickory Grove, and Parish Grove Townships (Hall and Smith 2009) and one was conducted in Center and Parish Grove Townships (Whalen 2003).

A Phase Ia investigation of 67.9 acres was conducted by the Archaeological Resource Management Service from Ball State University in 1989 within the townships of Gilboa, Earl Park, and York (Maust and Cochran 1989). This survey discovered three new sites, 12-Bn-53, 12-Bn-54, and 12-Bn-55 (Division of Historic Preservation and Archaeology 2007; Maust and Cochran 1989:12).

Benton County has had three Phase Ia surveys conducted in preparation for wind turbine installation at two wind farms owned by BP Alternative Energy North America (BP AENA). As of 2016, wind farm surveys have discovered 17 (9%) of the 186 listed sites in Benton County. In 2007, Environmental Resources Management (ERM) conducted a Phase Ia survey for the BP AENA Fowler Ridge Wind Power Project. The project area covered approximately 562 acres in portions of Fowler, Mount Gilboa, and Templeton Townships (Hall et al. 2007:iii). A total of 399 proposed turbine locations were within the project area. Survey including investigation of 150-foot radius for each wind turbine location, a 100-foot corridor for each associated access road, and a 100-foot corridor for each associated electrical transmission line. Survey identified six isolated prehistoric lithic finds (12-Bn-78, 12-Bn-79, 12-Bn-82, 12-Bn-83, 12-Bn-84, and 12-

Bn-85) and three historic scatters (12-Bn-77, 12-Bn-80, and 12-Bn-81) dating to the late-nineteenth and early-twentieth centuries (Hall et al. 2007:18).

In 2009, Environmental Resources Management (ERM) conducted a Phase Ia survey for the BP Wind Energy North America's (BP WENA) Fowler II Wind Farm Project. The project area consisted of land in parts of Fowler, Mount Gilboa, and Templeton Townships (Hall and Smith 2009:1). A total of 141 proposed turbine locations were surveyed. Survey including investigation of 150-foot radius for each wind turbine location, a 100-foot corridor for each associated access road, and a 100-foot corridor for each associated electrical transmission line. The survey area encompassed approximately 1,104 acres (Hall and Smith 2009:1). Seven sites were discovered including five low-density prehistoric lithic scatters (12-Bn-87, 12-Bn-88, 12-Bn-90, 12-Bn-91, and 12-Bn-92) and the two early to mid-twentieth century historic scatters (12-Bn-86 and 12-Bn-89) (Hall and Smith 2009:16).

In 2013, Archaeological Consultants of the Midwest conducted a Phase 1a survey for the proposed Fowler Phase IV Farm Project. The project area covered approximately 16,500 acres of land in portions of Center, Parrish Grove, and Richland Townships (Jackson 2013:1). A total of 93 wind turbines locations was surveyed. Survey including investigation of 150-foot radius for each wind turbine location, a 100-foot corridor for each associated access road, and a 100-foot corridor for each associated electrical transmission line (Jackson 2013:1). One site prehistoric isolated find (12-Bn-96) was discovered.

In 2015-2016, Ball State University Applied Anthropology Laboratories conducted a data enhancement project for archaeological resources in Benton County for a FY2015 Historic Preservation Fund Grant (18-15FFY-03). Pedestrian surveys targeted the four most northern townships (Gilboa, Richland, Union, and York) and the northern halves of the three central townships (Center, Parish Grove, and Pine). A total of 841.29 acres was surveyed and 85 new archaeological sites were recorded. The survey recovered 81 prehistoric artifacts and 442 historic artifacts from 12 parcels of land. The survey documented sites from the Early Archaic (12-Bn-164), Late Archaic (12-Bn-165), and Middle to Late Woodland (12-Bn-152), in addition to 54 Historic components. The average site density recorded for the project area for precontact sites was one site per 20.03 acres and for historic sites was one site per 15.58 acres (Balough et al. 2016).

All other surveys and investigations that have been conducted within Benton County were smaller than 35 acres and have documented little to no cultural materials.

Of the recorded 103 archaeological investigations listed in SHAARD, 45 (44%) were associated with bridge and highway construction and were located in all but Gilboa and Oak Grove Townships. Of those 45 investigations, 38 (84%) are related to bridge construction or

replacement, while seven surveys (16%) are related to highway construction and repair. Out of the 45 investigations, only one survey (2%) is greater than 10 acres. Ten investigations (22%) were between one and five acres, and the remaining investigations were less than one acre or acreage was unknown. The remaining 14 investigations (31%) were records checks. Eight (8%) of the 103 investigations in SHAARD were related to cellular tower installation and were located in Bolivar, Center, and Richland townships (Division of Historic Preservation and Archaeology 2007).

The southern half of Benton County was targeted for this FY2016 Historic Preservation Fund Grant survey project. These townships include the southern halves of Parish Grove, Center, and Pine townships and all of Hickory Gove, Grant, Oak Grove, and Bolivar townships. Prior to this FY2016 survey, these townships listed 78 documented archaeological sites. The central townships (Parish Grove, Center, Pine) were also targeted by AAL's FY2015 Historic Preservation Fund Grant. Prior to this FY2016 survey, the four most southern townships (Hickory Grove, Grant, Oak Grove, Bolivar) contained a total of 36 documented archaeological sites, with Bolivar Township having only one recorded archaeological site. These 36 sites include 16 isolated finds, 13 small lithic scatters, four large lithic scatters, and three historic scatters. Collector reported sites (n=26) within the southern townships contain many diagnostic artifacts including points, hammerstones, bannerstones, and celts, with all cultural periods represented, most predominantly Late Archaic (n=10) (Division of Historic Preservation and Archaeology 2007).

Of the 186 sites recorded in SHAARD for Benton County prior to this survey, 58 (31%) are collector reported sites. Of these 58 sites, 46.55 percent (n= 27) of sites contained one or more diagnostic prehistoric artifacts and were identified within a cultural time period. The Late Archaic period was most prevalent with 18.97 percent (n=11) of collector reports sites displaying a Late Archaic component. Early Archaic was the second most prominent time period (n=7), following by the Paleoindian time period (n=6). Collector reported sites add greatly to the construction of prehistory in Benton County, with 89.3 percent of sites with identified prehistoric cultural components attributed to collector information (Division of Historic Preservation and Archaeology 2007). This disparity emphasizes the dire need for broader systematic survey in Benton County.

Culture History

In Benton County, sites and site components indicate that Native Americans inhabited the region from the Paleoindian period through the Historic period. Given the above described environmental background we can expect highly variable density of artifacts over space due to the interrupted distribution of habitable areas interspersed with wetlands (see also Surface-Evans

2015), and a variable distribution through time as moisture levels fluctuated during the Late Pleistocene through Holocene.

Of the known periods of occupation, the most frequently identified has been Unidentified Prehistoric (n=87), followed by the Historic (n=66), and Late Archaic (n=13) (Division of Historic Preservation and Archaeology 2007). Of the 58 collector reported sites, 53.45 percent (n=31) were unidentified prehistoric or unknown cultural affiliation and there was no historic collector reported sites. In comparison, Newton County, immediately to the north of Benton County, has 267 documented sites listed in SHAARD, with 138 (51.7%) unidentified prehistoric sites and 92 (34.5%) historic sites (Leeuwrik et al. 2016). The prevalence of historic sites is to be expected as historic occupations typically display better preservation and a larger footprint than most prehistoric sites.

Paleoindian (~10,000 - 8,000 B.C.) culture in northern Indiana dates to the end of the Pleistocene, approximately 12,000 years ago (Jones and Johnson 2008:2; Smith et al. 2009:21; Swartz 1981:4; White 2007). Although considerable debate exists on the potential for pre-Clovis populations in the America (e.g., Bonnicksen et al. 2005), evidence currently is lacking for these early groups in Indiana. In northern Indiana, Paleoindian sites generally occur as small surface scatters that suggest small family bands. Debate continues as to subsistence strategies employed (e.g., Grayson and Meltzer 2003:588; Waguespack and Surovell 2003:348), but it seems likely that these early groups followed migrating herds and hunted large game such as Pleistocene megafauna in addition to limited hunting of smaller game and foraging of plant resources. Artifacts include fluted Clovis/Gailey points, un-fluted Agate Basin, Hi-Lo, Holcombe, Plainview and Dalton points (Justice 1987). There are six previously documented Paleoindian sites (12-Bn-02, 12-Bn-03, 12-Bn-33, 12-Bn-34, 12-Bn-35, and 12-Bn-36) in the SHAARD database for Benton County and all six were collector reported (Division of Historic Preservation and Archaeology 2007).

In the Early Archaic (ca. 8,000-6,000 B.C.) the warming climate caused changes in the ecology forcing local inhabitants to adapt their livelihood to the changes in the environment. The changing climate caused changes in the flora and fauna of the region (Shane 1976; Shane et al. 2001; Smith 1986:71). This offered more varieties of plant life and brought about the last extinctions of mega fauna which had begun to die off during the Paleoindian period (Grayson and Meltzer 2003:588). Sites in northern Indiana continue to be small but are distributed across the entire landscape (Munson 1986:280). Technological changes in tools and techniques occurred during this time including new hafting techniques and ground stone tools (Smith 1986:72). Ten Early Archaic sites (12-Bn-10, 12-Bn-11, 12-Bn-13, 12-Bn-17, 12-Bn-18, 12-Bn-20, 12-Bn-93, 12-Bn-95, 12-Bn-101, and 12-Bn-164) are known for Benton County. Seven sites were collector reported (Division of Historic Preservation and Archaeology 2007).

During the Middle Archaic (ca. 6,000-3,000 B.C.) the climate continued to become increasingly warmer and drier, bringing more variety and stability for food resources. The

climatic oscillation known as the Hypisthermal or Holocene Climatic Optimum (e.g., Robertson 2011:183) roughly coincides with the Middle Archaic time period. Although many have associated the Hypisthermal with a general warming trend, Lurie et al. (2009:756) have argued that its effects were minimal as permanent and seasonal wetlands were a major resource base for Archaic groups. Stone tools became more diversified in this era and side notched points appear along with ground stone tools (Stafford and Cantin 2009:299). In neighboring Ohio, Purtill (2009:578-584) has argued for a substantial decrease in Native American populations during the Middle Archaic based on a reduction in projectile point frequencies and radiocarbon dates. Four Middle Archaic sites (12-Bn-13, 12-Bn-19, 12-Bn-21, and 12-Bn-93) have been documented in Benton County. All four sites were collector reported (Division of Historic Preservation and Archaeology 2007).

During the Late Archaic (ca. 3,000-1,000 B.C.), the climate stabilized, approximating more modern conditions and the environment stayed deciduous forest. Late Archaic sites are very widely found and are generally multicomponent (Miller 1941:60; Smith et al. 2009:22). Some cultivation of native plants is indicated in regional datasets (e.g., Fritz 1999; Purtill 2009:586-587; Smith and Yarnell 2009:22). Pestles, axes, adzes, celts, bannerstones, gorgets and other ground stone artifacts are common in this period (Miller 1941:58; Stafford and Cantin 2009). Matanzas points make up the majority of Late Archaic points found in assemblages in Indiana (Stafford and Cantin 2009:305), but a wide variety of stemmed and notched forms have been documented (e.g., Justice 1987). Burials of the Late Archaic period in Indiana are the most represented of all Archaic subdivisions. Grave offerings typically are found to be segregated based on age and sex, although grave goods are typically not found with infant burials (Stafford and Cantin 2009:308). Twelve Late Archaic sites (12-Bn-07, 12-Bn-08, 12-Bn-12, 12-Bn-14, 12-Bn-19, 12-Bn- 21, 12-Bn-24, 12-Bn- 25, 12-Bn-26, 12-Bn-59, 12-Bn-93, and 12-Bn-165) have been recorded in Benton County, 11 of which were collector reported (Division of Historic Preservation and Archaeology 2007).

The Terminal Late Archaic (ca. 1500-700 B.C) is characterized by an increase in horticultural practices at the expense of hunting and gathering activities and the adoption of fired-clay pottery into toolkits (Stafford and Cantin 2009). Terminal Late Archaic Sites in Indiana often are associated with the Riverton Culture (Winters 1969), though no Riverton sites have been confirmed in Benton County. This period is known for barbed points (Justice 1987) and for being the transitional period into the Early Woodland era. During this transitional time people were often found to be living on rivers and other major water sources. This period saw the initial growth of long-distance trade networks as exotic materials such as marine shell from the Gulf, exotic cherts from south-central Indiana, and native copper from the Upper Great Lakes, have been found from some Terminal Late Archaic sites (e.g., Winters 1968). The Terminal Late Archaic saw turmoil in the region and evidence from this period shows a marked increase in both ceremonial activity and cremation of the dead (Mensforth 2001:123; Pedde and Prufer 2001;

White et al. 2007). One Terminal Late Archaic (12-Bn-93) has been recorded in Benton County (Division of Historic Preservation and Archaeology 2007).

The Early Woodland period (ca. 700-200 B.C.) is when pottery was widely produced in North America (Black 1936:287-189; Montet-White 1968:5). Among the earliest pottery types in Indiana is Marion Thick pottery which is thought to date to as early as 700 B.C. (Munson and Munson 2004). Hunting, gathering and some horticulture continued during this period (Caldwell 1971:370). The Adena culture is the most prominent cultural phenomena during this period and encompassed a region including Indiana, Kentucky, and Ohio. Many Adena sites also include burial mounds characterized by oval mounds, often with log tombs such as at the Nowlin Mound in southeastern Indiana (Black 1936:297; Ruby 1994). Two Early Woodland sites (12-Bn-14 and 12-Bn-93) have been documented within Benton County and both were collector reported (Division of Historic Preservation and Archaeology 2007).

Middle Woodland period subsistence and settlement patterns (ca. 200 B.C.-600 A.D.) are roughly coeval with that of the Early Woodland within Indiana. Sites tend to be located in close proximity to a ponds, swamps, and drainage ways, and are relatively equally distributed across the landscape (Montet-White 1968:18-19). Hunting, gathering, and some horticulture were the main forms of subsistence during this period (Abrams 2009; Caldwell 1971:370; Montet-White 1968:18-19). This period saw the rise of the Hopewell culture and extensive trade networks (Mangold 2009; Seeman 1979). Classic Hopewell mound sites and earthwork centers are better known for Ohio, Illinois, and east-central Indiana (McCord and Cochran 2008). Although evidence of maize introduction is known for the Midwest, no evidence of its use in Indiana have been identified (Hart 1999; Riley et al. 1994:496). Some have suggested that large Middle Woodland sites with extensive occupational debris may represent year-round occupations (e.g., Mann Site in Posey County, Indiana, as discussed by White et al. 2007:19), although the issue of site permanence is still debated. Extensive trade networks are also identifiable through exotic artifacts and botanical remains (Mangold 2009:198). Diagnostic artifacts found in the Middle Woodland include Snyder's, Lowe, Chesser, and Steuben points and lamellar bladelets (Justice 1987; Montet-White 1968:179). Within Benton County, two Middle Woodland sites (12-Bn-93 and 12-Bn-100) has been documented, one of which was collector reported (Division of Historic Preservation and Archaeology 2007).

Two mound sites may represent two additional Middle Woodland sites. One is PA-Bn-1/12-Bn-1 and the second is a possible mound identified as PA-Bn-2. Both mounds are located in the Grand Prairie section near minor streams in the Middle Wabash-Little Vermillion Watershed. Temporal information about the mounds is limited and Coon (2008:8) "assumes" PA-Bn-1 (12-Bn-1) to be Middle Woodland but cannot temporally place PA-Bn-2. Mound PA-Bn-2 is thought to be historic, but grave disturbance after Chief Pierre Morin's burial makes dating difficult (McCord and Cochran 2015, Appendix A:15-17).

In the Late Woodland period (ca. 600-1200 A.D.), settlement systems fluctuated between large, nucleated villages early in the period, followed by a more dispersed settlement system in the middle, then back to nucleated villages by the end of the period. Technological innovations include adoption of the bow and arrow (Seeman 1992:44). The first true arrow points were modifications of Middle Woodland side or corner notched points such as Jacks Reef and Raccoon Corner Notched (see Justice 1987). Maize was introduced as a more stable dietary constituent into the Late Woodland diet along with the continued consumption of other plant materials found in the earlier Woodland periods such as maygrass, goosefoot, and knotweed (Greenlee 2002:12). Domestic crops such as maize became increasingly important to subsistence during this period especially after 800 A.D. (Hart 1999:8; Shott 1993; Swartz 1981:59). In much of Indiana the Late Woodland period is synonymous with the Albee Phase (ca 800-1300 A.D.; see Redmond and Jones 2003; Redmond and McCullough 2000:652-662). While no Albee sites have been reported in Benton County the known distribution extends into Warren County and encompasses much of the nearby Wabash River watershed (Redmond and McCullough 2000:Figure 24.13). Albee occupations have yielded distinctive ceramics and Jacks Reef, Raccoon Notched, and Triangular Cluster projectile points.

Only four Late Woodland sites (12-Bn-07, 12-Bn-22, 12-Bn-93, and 12-Bn-152) have been found in Benton County, three of which were collector reported (Division of Historic Preservation and Archaeology 2007). The low frequency of Woodland, and later, sites in Benton County is nearly a reversal of the temporal patterns of other counties. This trend may be inaccurate and a result of small sample size, or it could be accurate and represent a different pattern of use (or avoidance of the region) at various times due to either cultural or environmental limits.

After around ~1,100 A.D. Native American subsistence strategies focused more on full agriculture, especially the staples of corn, squash, and beans. Village sites show segregated activity in villages and triangular points are the most common projectile point style in local assemblages (Redmond and McCullough 2000:656). The Vincennes Culture of southwestern Indiana, and Fisher and Huber Cultures of northwestern Indiana can be considered indicative of post-Middle Woodland occupations, but also of Mississippian cultural affiliation (Redmond and McCullough 2000:643). Based on artifact styles alone, it is often difficult to designate an assemblage as Late Woodland or Mississippian and this has led several researchers to classify sites as Late Woodland/Mississippian in the SHAARD dataset. Two Late Woodland/Mississippian sites (12-Bn-07 and 12-Bn-93) have been documented in Benton County and both were collector reported (Division of Historic Preservation and Archaeology 2007).

The Mississippian period (ca. 1000-1650 AD) persisted into the era of European contact and marks a time of rapid cultural change and transition among Native American groups (Munson et al. 2006:7; Faulkner 1972:13). A few of the cultures that were prominent during this

period are quite well known for their societal structures and shell tempered pottery. Mississippian era archaeological sites in western and southern Indiana are commonly found with several aspects that are considered “classic” Mississippian features like platform mounds, public and ceremonial architecture and plazas, nucleated villages that were near their agricultural fields, enclosed settlements, cemeteries and societies with hierarchical social organizations (Benson et al. 2009:468-469; Redmond and McCullough 2000:648). Only three sites (12-Bn-07, 12-Bn-93, and 12-Bn-151) of the Mississippian cultural affiliation has been discovered in Benton County and two were collector reported sites (Division of Historic Preservation and Archaeology 2007).

The Protohistoric period (ca. 1500-1850 A.D.) is the transitional period as the first European settlers began to arrive in the Americas and have first contacts with the Native Americans. This period is characterized by indirect contact with Euro-Americans and the first written accounts of the area by external observers. As such, these types of sites often include both Native and European-derived materials. Though often not in direct contact, material goods, in addition to knowledge of Euro-American settlers had an influence on native life. Protohistoric sites are best identified when the site is undisturbed and contains both historic and prehistoric materials. This is evidence that these two cultures were in the location at the same period in time. The result of contact with Euro-Americans was catastrophic for Native American groups as various epidemic diseases and conflicts associated with the fur trade led to large-scale abandonment of the region (Heistand 1951:8). In the early 1800’s Native Americans inhabiting Indiana began to cede their land rights and were moved, often forcefully, to reservations within the state or out west. The largest western removal took place in 1838 and moved much of the local tribes to Kansas, including the Potawatomi in a federal government action known as the Potawatomi Trail of Death (Carmony 1998). This pattern continued until 1840 when all commonly held reserve lands had been ceded and Indiana was open for Euro-American Settlement (Heistand 1951:8-9; Taylor 2009:12).

Three Native American groups of the Protohistoric period are documented in the areas around Benton County. The Potawatomi, Kickapoo, and Miami groups were recorded to live in the north and northwest of the state, near Benton County along with a Delaware tribe, which had relocated to the area ca. 1795 (Taylor 2009:12).

Prior to European settlement, multiple Native American groups such as the Miami, Kickapoo and Potawatomi, populated the area. The Miami occupied the area as early as 1670 and other tribes, such as the Kickapoo and Potawatomi, formed alliances with the Miami in 1770 (Taylor 2009:12). More Indian tribes were forced into the area due to European expansion in the east and these additional tribes disrupted established Indian alliances. Relations between the different Indian tribes continued to disintegrate with various tribes taking sides during the French-Indian and Revolutionary War (Taylor 2009:12-13). Following defeat at Battle of Tippecanoe, Native Americans were forced out of the state and, by 1838, Native Americans no longer occupied present-day Indiana. Many old county maps from this period still show the “Old Indian Boundary” line, which cuts through Benton diagonally, along with the Potawatomi Trail

to Chicago (Guernsey 1932). The General Land Office survey notes (1795-1840) and maps illustrate many of the cultural resources that were once within Benton County. Two Indian villages, one Native American agricultural field, and one trail are recorded on the General Land Office maps of Benton County (Maust and Cochran 1989).

The Historic period in Indiana can be assigned a starting year of 1840 although European settlers had been in Benton County since ~1795 which corresponded with the migration of the Delaware Indians into the county. Benton County was established in 1840 and currently has 779 historic structures throughout the county (Taylor 2009:17). Many of the old, historic schools and churches have either been torn down or are considered endangered and could be lost to future development (Taylor 2009:15).

Prior to 1840, European settlement was slow due to the isolation of Benton County. Following establishment of the county, populations increased substantially. Benton County is part of the Grand Prairie region with contains rich fertile soils making it ideal for farming. Initially, cattle farming dominated the landscape, with farmers making use of the abundant prairie grass. But mid-1800s, farmers began to drain low-lying areas to expose the rich black soil (Taylor 2009:12-13). Population increased even more in 1871 with the establishment of the railroad along the old Indian trails and, in 1882, the establishment of Indiana and Chicago Railroad through Oxford created easy shipping (Taylor 2009:12-13). Over the years, Benton population has continued to grow modestly and the county still remains rural and sparsely populated. Major roadways, such as US 41, US 52, and I-65, link Benton County to major cities and ports (Taylor 2009:15).

Archaeological Survey

Introduction

A total of 928.36 acres (375.69 hectares) of agricultural land was surveyed by pedestrian transects during this project. The entire survey area was located on end and ground moraines, flood plains, and outwash terraces/plains. The survey documented 115 new archaeological sites and recovered 102 prehistoric artifacts and 2161 historic artifacts. No human remains were discovered as a result of this grant project. The results are discussed by survey area below.

Methods

Field Survey

For this project, approximately 900 acres of pedestrian survey were initially proposed. It was anticipated that by surveying 900 acres, approximately 100 to 150 new sites would be discovered to increase the existing site database. Our planning projected that different landforms and environmental zones consisting of ground moraines, end moraines, flood plains and outwash terraces/plains would be systematically surveyed. Areas were selected for survey using topographic maps, aerial maps, soil information, historic sources and reconnaissance information. The survey was constructed to sample different regions within the project area, with an emphasis on the seven townships in the southern portion of the county and collector reported sites. Cultivated fields with optimal visibility were sought for survey. Ultimately, landowner permission and field visibility dictated the areas sampled by this survey which included 928.36 acres of end and ground moraines, flood plains and outwash terraces/plains.

This project was conducted by AAL Archaeologists and AAL student employees. Principal Investigators were AAL Archaeologists Christine Thompson and Kevin C. Nolan. The field survey was conducted between August 8 and October 22, 2016. The field survey was conducted using pedestrian transects spaced at 10 meter intervals. The survey interval was reduced to 5 meters when artifacts were encountered. The areas surveyed by pedestrian transects had between 30 and 90 percent ground surface visibility. All artifacts within two meters of the first artifact encountered, except fire-cracked rock and brick, were collected, bagged and given a temporary transect and find numbers. Objects found farther than that within the same transect were given the same transect number and the next sequence number. If a site only consisted of one collection point, a 10 x 10 meter radial survey was conducted around the point. Each new radial find was assigned a new find number. If multiple artifacts were encountered along multiple transects, short transects were traversed at five meter intervals to refine the boundaries of the cluster. Fire-cracked rocks and bricks were counted in the field, but were not collected.

GIS Mapping

Find points were mapped with a Trimble GeoXT Series GPS with a minimum of 20 readings logged for each find spot. GPS data was imported from the Trimble to the GPS Pathfinder Office series 5.3 software for post-processing. The raw GPS data from each logging unit was consolidated and position corrected with the Differential Correction. This process consolidated all Trimble points into one data file (*.cor). The consolidated, corrected data file was then exported. In the Export Setup dialog box, all data export options, except Worst Vertical Precision and Worst Horizon Precision, were selected for inclusion in the exported file attribute table. The Coordinate System was set for UTM NAD83 Zone 16N. The file was then exported and renamed to the appropriate survey area in ArcCatalog and was then included in the project GIS. Field notes were maintained by AAL field supervisors.

The ESRI shapefiles were added into the ArcGIS map for analysis. Once ESRI shapefiles were added, 15 meters buffers were created around the points within each survey area using the Spatial Analyst buffer tool in ArcMap 10.4. The 15 meter buffers were used to define clusters of artifacts that constitute a 'site'. After sites were defined, we generated 5 meter buffers to define site extent and boundaries. These site boundaries were then used to compile site attributes such as site area, soils, and site density. Site area was calculated by using the calculate geometry function in ArcGIS. The site extent was applied to identify soil map units within the defined site boundaries. Site density was calculated by dividing the number of acres within a survey area to the number of sites located within that survey area.

Laboratory

All collected artifacts were taken to the AAL laboratory for processing, identification, analysis and temporary curation. Artifacts were cleaned, classified and catalogued. Definitions used for classifying prehistoric lithic materials are included in Volume 2, Appendix B. Diagnostic point types were classified and dated using standardized reference materials (Justice 2006). Metric attributes and raw material identifications were recorded in accordance with AAL standards (Volume 2, Appendix C). Lithic raw materials were identified by comparison with reference samples and published descriptions on file in the AAL laboratory (Cantin 2008; DeRegnaucourt and Geogiady 1998; Stelle and Duggan 2003). Their association was reported to geologic period, with the chert typology being reported as the type most consistent with the specimen. All prehistoric artifact and chert identifications were made microscopically at 10x or greater. Historic artifacts were identified and dated using published references (Horn 2005; IMACS 1984, 1992, 2009; Lofstrom et al. 1982; Majewski and O'Brien 1987; Miller 2000; Nelson 1964; Newman 1970:74; ODOT 1991; Oswald et al. 1982:19; Standler 2006; Stelle 2001). Notes, maps and photographs were reviewed and prepared for illustration and curation.

State site numbers were obtained and a DHPA Sites and Structures Inventory form was entered in SHAARD for each site identified during the project.

BSU AAL Standard Lithic Identification Method

By Kevin C. Nolan, Mark A. Hill, and Colin L. Macleod

Chippable stone raw materials were identified in comparison with the AAL chert collections. All artifacts are compared macroscopically and microscopically with samples of known provenience from the AAL comparative chert collection. The comparative collection contains hundreds of samples of all of the known varieties of Indiana chert and several cherts from neighboring states. This provides an invaluable perspective on the variability within each defined category. Our method of raw material identification involves several steps.

The initial step involves the visual sorting of materials into groups based on broad categories of raw materials such as sedimentary rocks, igneous rocks, cherts, quartzites, orthoquartzites, chalcedonies, obsidian, and other metamorphic, sedimentary, and igneous categories (Kooyman 2000:37). As most of the raw materials in the Midwest consist of marine cherts, the next steps are often the key to material identification. Each artifact is macroscopically identified with probable match categories using hand samples and reference manuals (e.g., Cantin 2008) at this stage. Attention is paid to luster, color, patterning, inclusions, translucency, and texture. Next, several samples from the probable match categories are collected and examined under magnification with a 57900-04 Boreal Zoom Stereo Microscope at 10x to 40x magnification. We microscopically compare matrix, color, texture, inclusions, luster, and other physical and visual characteristics of the unknown artifact to the known comparative collection samples from the probable match categories and Cantin's (2008, 2011) resources. This step is crucial in obtaining the most accurate identification possible as Cantin (2011:Slide 10) notes that "Macroscopic identification is sketchy at best... microscopic identification ... is far more reliable." Further, Cantin (2008:2) notes that what he terms "microfabric" is perhaps the best way to differentiate chert types and varieties. Microfabric is a result of the genesis of the raw material including the process by which the rock was formed (metamorphic, igneous, sedimentary) and in particular, with the marine cherts of the Midwest, the source of silica, the environment in which the silica is precipitated, and the matrix within which this silica is deposited (Andrefsky 2005). Microfabric may include evidence of bedding, fossils present in the environment at the time of formation, or structures such as oolites, silicified worm burrows, and crystalline growths. As fossils and other structures will vary with the conditions and time in which these cryptocrystalline silicates were formed, they are often good visual indicators of raw material source.

The propensity for micro/cryptocrystalline silicates to be strongly influenced by formational and diagenetic processes indicates that identifications of chert material are most appropriately an assessment of the geological age of the material (Luedtke 1992). For this reason

specimens are identified to geologic age (period) which is, in turn, consistent with specific geologic formations. Next, the more specific material “type”, as described in the reference collection and Cantin (2008), is noted based on the consistency of the material with listed sources. The inconsistent nature, and often heterogeneous representation of many of the identifying features of micro- and cryptocrystalline silicates means that any one of these features is not enough to make a confident material association. A combination must therefore be employed in order to mount evidence for the association of the material with a particular type, and by extension, source. This combination, particularly in small or anomalous samples can lead to association with multiple sources. This is particularly true of materials that share the same age and geographic location as they will have likely undergone comparable formational and diagenetic processes. Where the sample resembles multiple sources in our collection, such is noted. Our identifications to “type” are illustrative of method and not an indication of source.

Finally, we revisit Cantin’s (2008:9) map of the known provenience of Indiana chert types to identify the most proximate sources (aside from the nearly ubiquitous gravel chert). Samples from the proximate source(s) are selected and compared microscopically to the unknown artifact. This final step is employed to ensure that we are able to rule out a proximate source from our identification. If the local variety cannot be ruled out, identification will favor the proximate source as most probable. However, location cannot be a primary criterion when attempting to identify the raw material of an artifact. Identifications are based on the best overall match of observed macroscopic and microscopic characteristics between known and unknown samples. If a clear match cannot be made, the material is categorized as unidentified.

Rocks of the same age and of the same or comparable formation may, and often do, have distributions outside of Indiana and can find their way into Indiana from these extra-locational sources. This occurs through glaciations, human mobility, or trade as a result of contact. For this reason Cantin’s (2008) work, while effective at identifying the known locations of primary chert sources in Indiana, cannot alone account for the diversity of materials found archaeologically in Indiana. Cantin’s information on chert is therefore supplemented with sources from surrounding states such as Illinois, Michigan, Ohio, and Kentucky (DeRegnaucourt and Geogiady 1998; Stelle and Duggan 2003) which stand to have the greatest extra-local influence on lithic material types found in Indiana.

There is always the possibility of misclassification with visual identification; however, our procedures are the same for all projects, and replicable across projects that employ the same procedures. Inter-observer variability is unavoidable in the absence of discrete criteria for identification of unknowns with ideal categories. Our procedures attempt to limit the magnitude of these errors. Finally, it must be said that identifications made by these and similar procedures are provisional, and cannot definitively match an unknown to a known geological provenience. For more definitive results, geochemical methods such as Instrumental Neutron Activation Analysis, X-ray Florescence, or other methods are required (Andrefsky 2005; Kooyman 2000). However, using the criteria and procedures detailed above, our identifications (and all visual

identifications) should be taken as an assessment of the geological age and context of the raw material. Rocks of the same age and context have known distributions outside of Indiana and may well find their way into Indiana from another deposit of the same geological formation through natural or cultural processes. Our identifications do not presume mechanism of transport.

All materials generated by this project were accessioned under AAL Accession number 16.116. All project materials were curated at Ball State University, Department of Anthropology. Landowners were given their choice of having the artifacts returned to them or having the artifacts curated at Ball State University (see Volume 2, Appendix D for listing). All artifacts returned to the landowners were identified, analyzed, measured, and photographed per DHPA guidelines. A DVD of these artifact photos is attached to this report. The DVD with the artifact photos also contains the catalog sheets for all sites and Volume 2 of the report. All artifacts not requested to be returned to the landowner were catalogued, labeled and curated at Ball State University's Applied Anthropology Laboratories and will be used for student education and research.

Archaeological Survey Results

A total of 13 survey areas was investigated as part of this grant project (Figure 20).

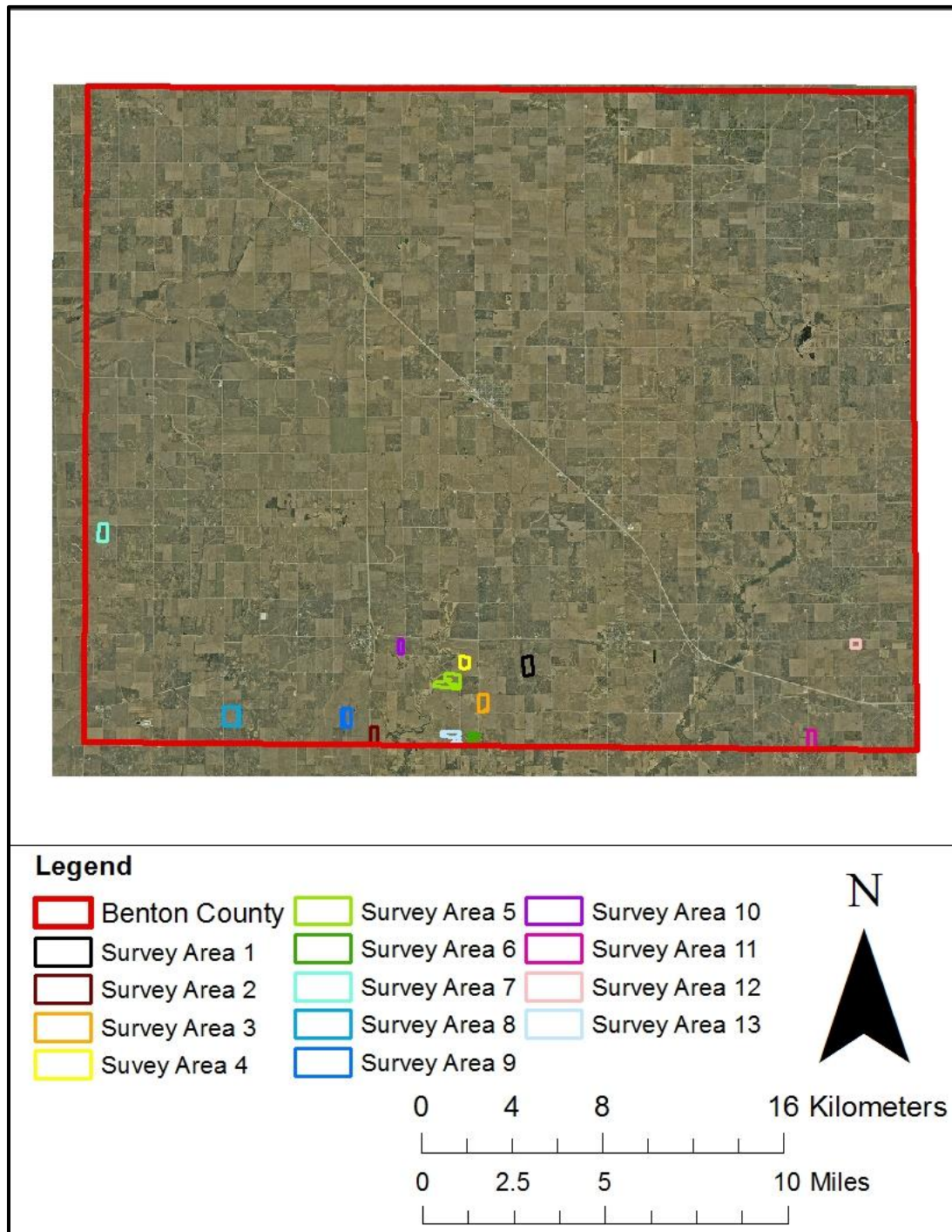


Figure 20: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of the 13 survey areas within Benton County.

Survey Area 1

Survey Area 1 was located in Oak Grove Township in [REDACTED] Township 24 North, Range 8 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Fowler, Indiana Quadrangle (Figure 21 and Figure 22). The property was surveyed on August 8, 2016. The field was planted in corn, standing between four and eight feet tall. Ground surface visibility was approximately 70-90 percent with some weeds and corn stalks themselves hindering visibility. A total of 80.07 acres was surveyed consisting of ground moraines and end moraines. The area contained Barce (BaB2), Chalmers (Ch), Darrock (Dp), Gilboa (G1A), and Odell (O1B2) soils. Four sites (12-Bn-187 to 12-Bn-190) were encountered during the survey. The sites ranged in size from historic isolates and a historic scatter to a multicomponent site of prehistoric and historic isolates of 161.87 square meters (0.05 acres).

Landowner [REDACTED] stopped by the van while the crew was in the field and invited the crew to examine her personal artifact collection. Amanda Balough visited with [REDACTED], who stated that part of their collection had been found in Survey Area 1, but were unsure which specific artifacts were found there. The rest of the collection had been found in fields further north. Following the visit, [REDACTED] donated their collection to the Applied Anthropology Laboratories. Detailed information about the [REDACTED] Collection can be found in the Collectors Visit section of this report.

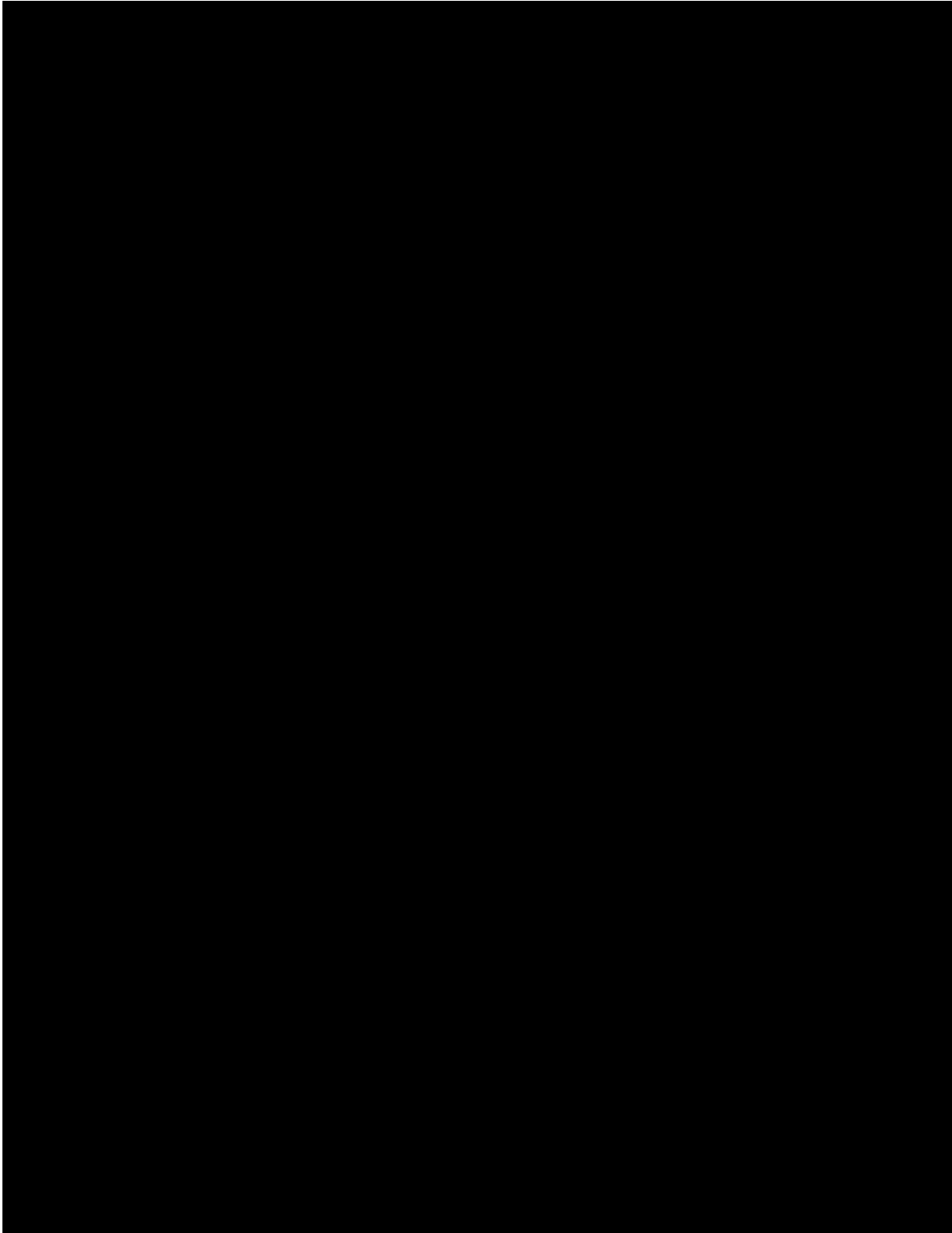


Figure 21: A portion of the map of Oak Grove Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 1. Note: Due to distortion in historical maps, the georeferenced location of SA1 is slightly off.

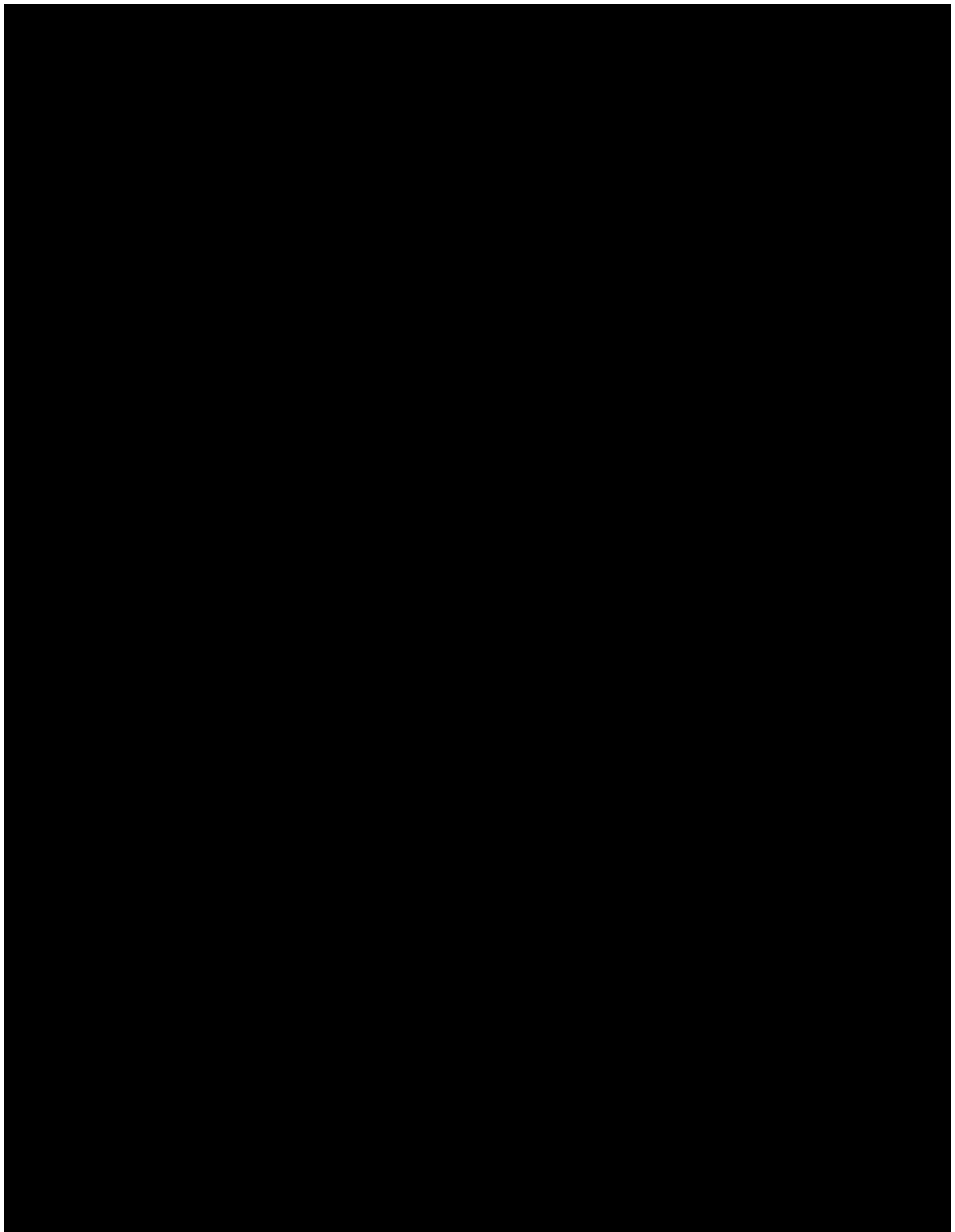


Figure 22: A portion of the USGS 7.5' Fowler, Indiana Quadrangle showing the location of Survey Area 1.

Artifacts

A total of six artifacts was encountered in Survey Area 1. Table 6 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 23 and Figure 24. Artifacts are listed by individual site in Volume 2, Appendix E.

One prehistoric artifact was recovered from site 12-Bn-189 (Figure 23). None were diagnostic.

Five historic artifacts were recovered from Survey Area 1 and of those, four artifacts are diagnostic (Table 6). Chronologically expressed these items include plain ironstone recovered from sites 12-Bn-187 and 12-Bn-189 (ODOT 1991:177; Trussel 2010:14). Green glass recovered from site 12-Bn-188 was manufactured from 1860 to present (IMACS 1992:472(18)).

Table 6: Artifacts from Survey Area 1.

Prehistoric	No.	Historic	No.
Biface	1	Ceramic, Ironstone	3
		Glass, Green	1
		Coal, Clinker	1
Total	1	Total	5

Table 7: Historic Diagnostics from Survey Area 1.

Artifact Type	Site	Date Range	Citation
Plain Ironstone	12-Bn-187, 12-Bn-189	1840-1904	ODOT 1991:177; Trussel 2010:14
Green Glass	12-Bn-188	1860-Present	IMACS 1992:472(18)



Figure 23: Broken biface tip from Survey Area 1 (Photo by Kiya Mullins, Ball State University).



Figure 24: Representative historic artifacts from Survey Area 1 (Photo by Kiya Mullins, Ball State University).

Sites

Four archaeological sites (12-Bn-187 to 12-Bn-190) were recorded in Survey Area 1 (Figure 25 and Figure 26). Summaries for the individual sites are contained in Volume 2, Appendix F. Three sites (12-Bn-187, 12-Bn-188, and 12-Bn-189) had diagnostic artifacts. One site was a historic scatter (12-Bn-187) and two sites were historic isolated finds (12-Bn-188 and 12-Bn-190). One site was a multicomponent site (12-Bn-189) with a historic isolate and prehistoric isolate.

All four sites were discovered in end moraines and ground moraines. All four sites were found on Barce loam (BaB2) soil.

The site types found in Survey Area 1 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National register of Historic Places.

Density

Survey Area 1 consisted of 80.07 acres of ground moraines and end moraines. Within Survey Area 1, a density of one site per 20.01 acres occurred and sites covered 0.14 percent of the surface area.

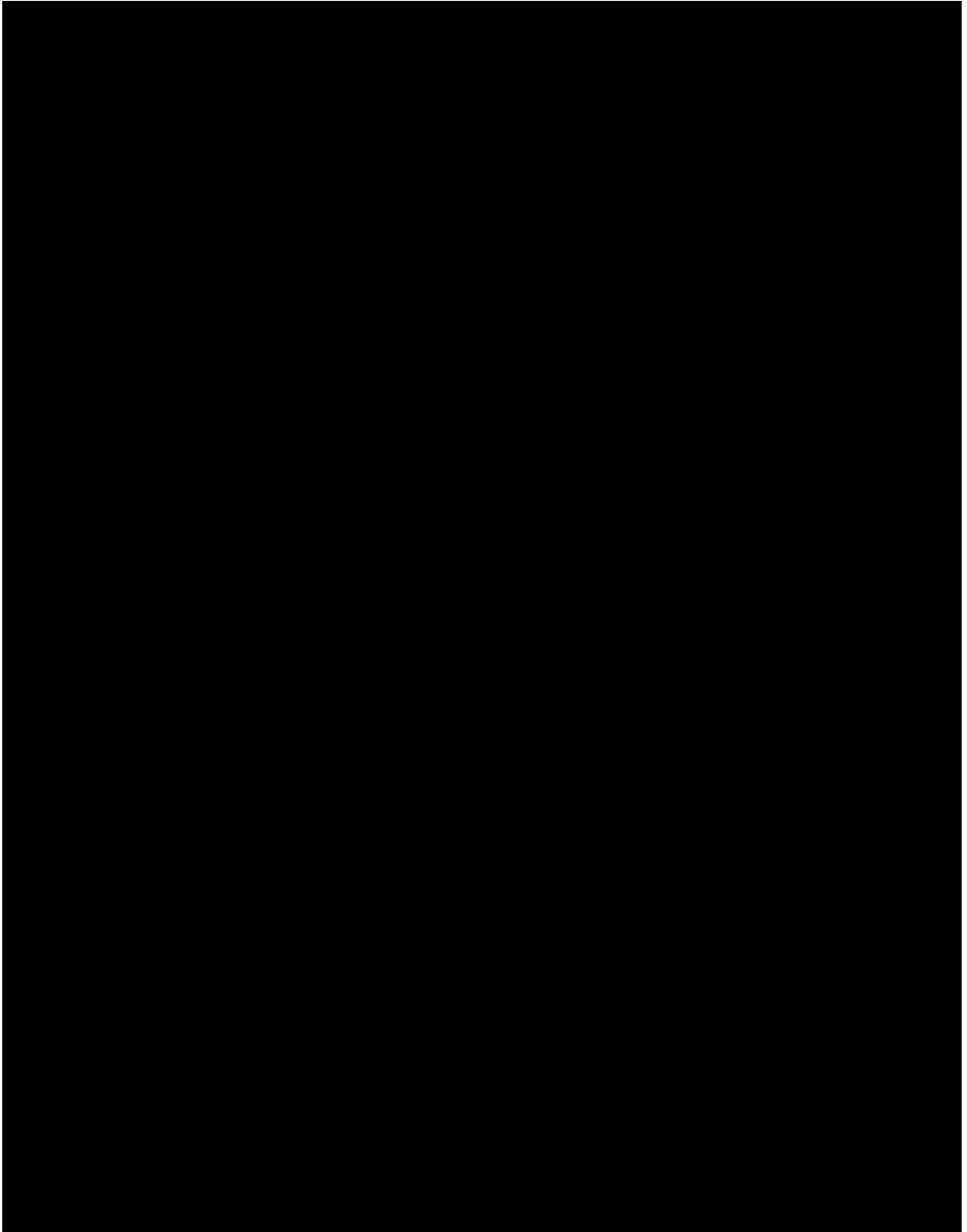


Figure 25: A portion of the USGS 7.5' Fowler, Indiana Quadrangles showing the location of sites 12-Bn-187 to 12-Bn-190.

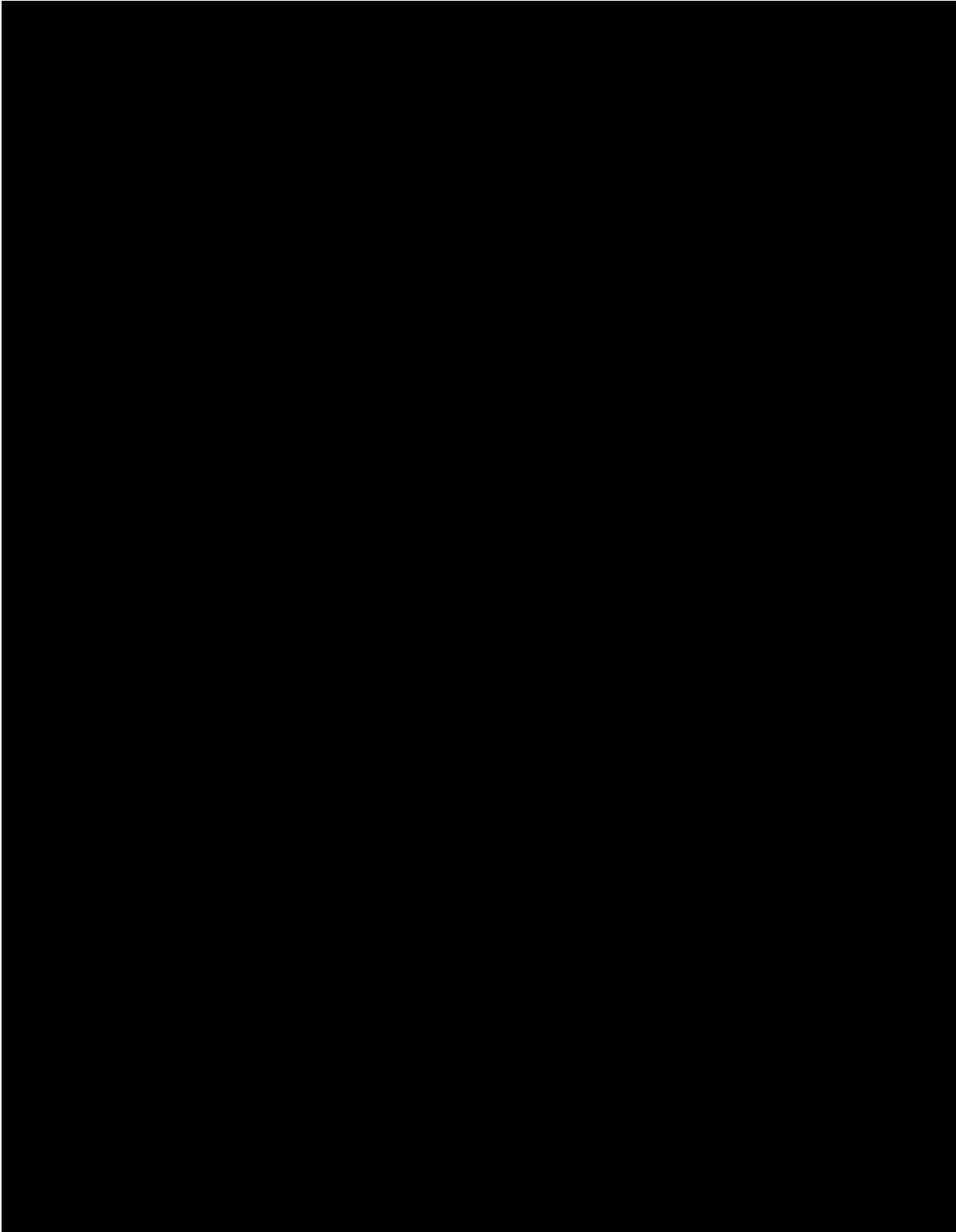


Figure 26: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-187 to 12-Bn-190.

Survey Area 2

Survey Area 2 was located in Grant Township in [REDACTED] Township 23 North, Range 8 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Pine Village, Indiana Quadrangle (Figure 27 and Figure 28). The property was surveyed on August 8, 2016. The field was planted in corn, standing between four and eight feet tall. Ground surface visibility was approximately 70-90 percent with some weeds and corn stalks themselves hindering visibility. A total of 55.41 acres was surveyed consisting of ground moraines, end moraines, and outwash plains and terraces. The area contained Chalmers (Ch), Corwin (CsB2), Crane (Cu), Odell (O1B2), Darrock (Dp), Drummer (Du), Foresman (FpB2), Gilboa (B1A), and Montmorenci (MxB2) soils. Four sites (12-Bn-191 to 12-Bn-194) were encountered during the survey. The sites ranged in size from prehistoric isolated finds to a multicomponent historic scatter of 364.22 square meters (0.09 acres) with a prehistoric isolate.

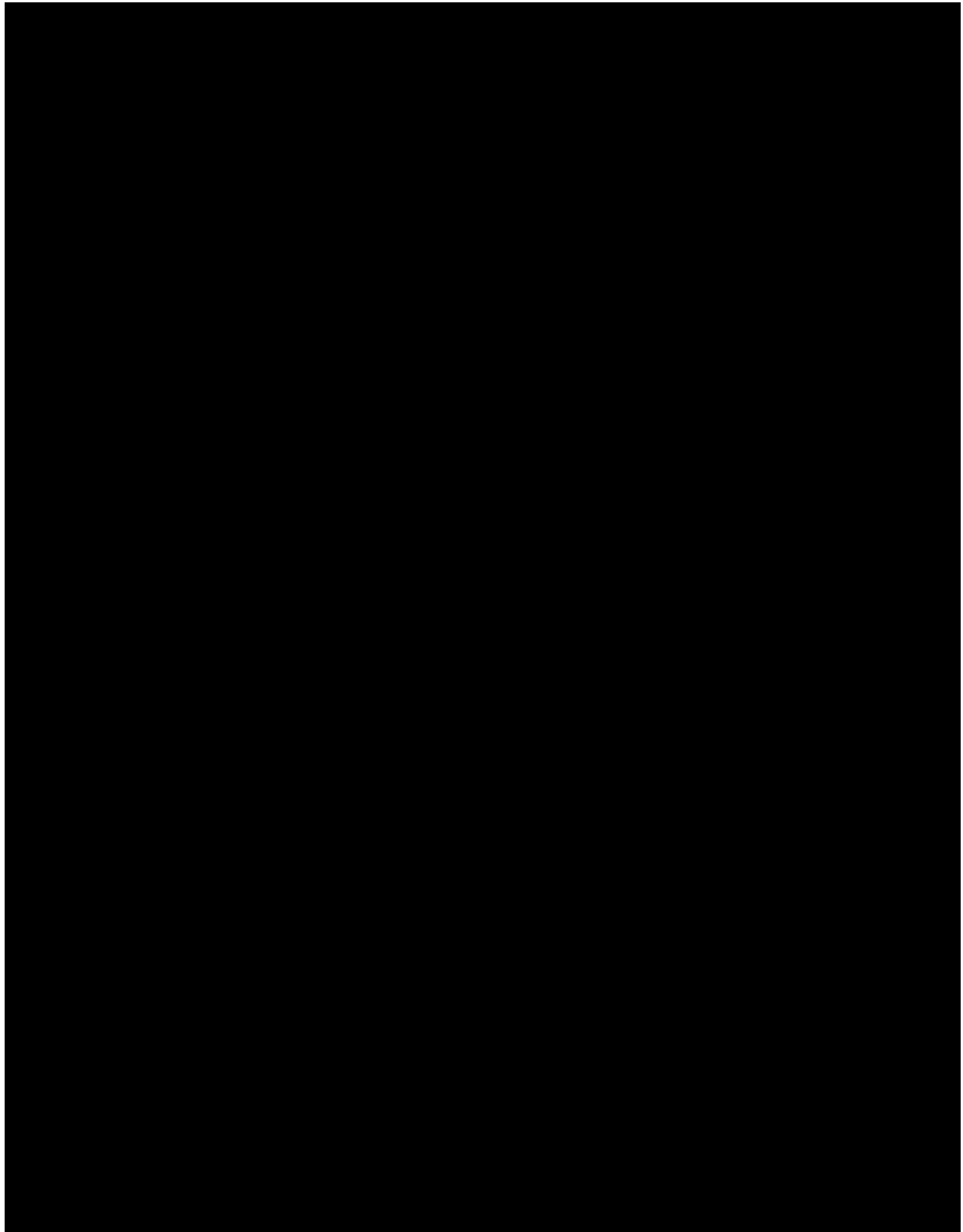


Figure 27: A portion of the map of Grant Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 2. Note: Due to distortion in historical maps, the georeferenced location of SA2 is slightly off.

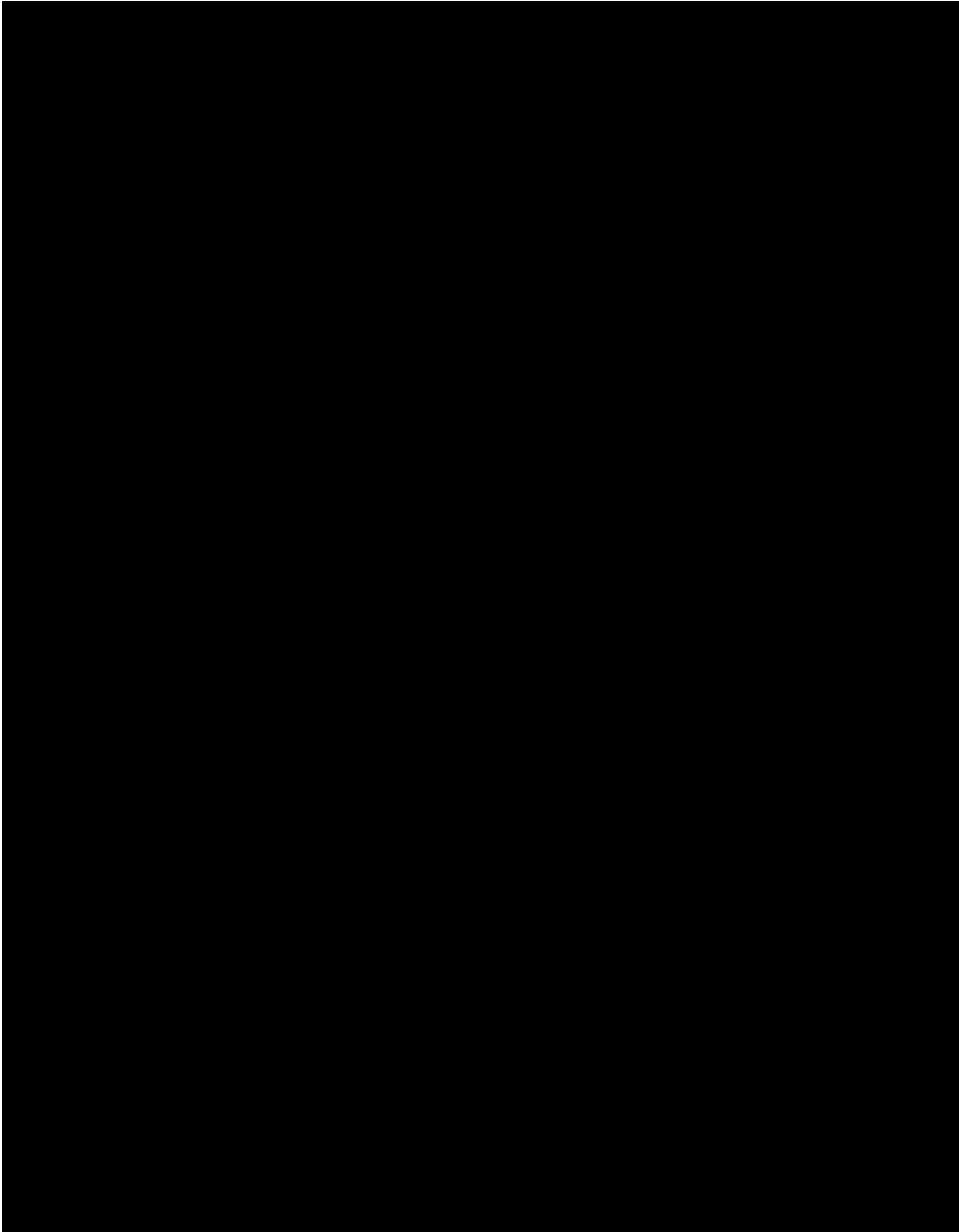


Figure 28: A portion of the USGS 7.5' Pine Village, Indiana Quadrangle showing the location of Survey Area 2.

Artifacts

A total of 26 artifacts was encountered in Survey Area 2. Table 8 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 29 and Figure 30. Artifacts are listed by individual site in Volume 2, Appendix E.

Four prehistoric artifacts were recovered, with three being diagnostic. These artifacts included a possible Early Archaic Kirk Stemmed biface from site 12-Bn-191 (Figure 29), a possible Early Archaic retouched Kirk Corner-notched biface from site 12-Bn-193 (Figure 30), and a Late Archaic Lamoka biface from site 12-Bn-194 (Figure 31).

Twenty-two historic artifacts were recovered from Survey Area 2 and all are diagnostic (Table 9). Chronologically expressed these items includes plain porcelain which was manufactured between 1745 and 1795 (Noël Hume 1969:137; ODOT 1991:72). Stoneware with lead glaze was manufactured between 1780 and 1940 (Stelle 2001:Chapter 1). Aqua glass was manufactured from ca. 1800 to ca. 1910 (IMACS 1992:472). Stoneware with Albany glaze interior and exterior was manufactured between 1805 and 1920 (Ramsey 1939:21-22, 59). Plain whiteware was manufactured from 1820 to the present (ODOT 1991:177, Stelle 2001:Chapter 1; Trussel 2010:13). Stoneware with Bristol glaze interior and exterior was manufactured from 1835 to the present (Oswald et al. 1982:19). Amber glass was manufactured from 1860 to the present (IMACS 1992:472). Clear glass was manufactured from 1875 to the present (IMACS 1992:472(19)). Amethyst glass was manufactured between 1880 and 1925 (Newman 1970:74; IMACS 1992:472).

Table 8: Artifacts from Survey Area 2.

Prehistoric	No.	Historic	No.
Biface	3	Ceramic, Porcelain	1
Flake, Complete	1	Ceramic, Whiteware	2
		Ceramic, Stoneware	9
		Glass, Amethyst	1
		Glass, Aqua	7
		Glass, Amber	1
		Glass, Clear	1
Total	4	Total	22

Table 9: Historic Diagnostics from Survey Area 2.

Artifact Type	Site	Date Range	Citation
Plain Porcelain	12-Bn-194	1745-1795	Noël Hume 1969:137; ODOT 1991:72
Stoneware with lead glaze	12-Bn-194	Historic 1780-1940	Stelle 2001: Chapter 1
Aqua Glass	12-Bn-194	Ca. 1800- ca. 1910	IMACS 1992:472(18)
Stoneware with Albany glaze interior and exterior	12-Bn-194	1805-1920	Ramsey 1939:21-22,59
Plain Whiteware	12-Bn-194	1820 to present	ODOT 1991:177; Stelle 2001: Chapter 1; Trussel 2010:13
Stoneware with Bristol glaze interior and exterior	12-Bn-194	1835-present	Oswald et al. 1982:19
Amber Glass	12-Bn-194	1860- Present	IMACS 1992:472(19)
Clear Glass	12-Bn-192	1875-Present	IMACS 1992:472(19)
Amethyst Glass	12-Bn-194	1880-1925	Newman 1970:74; IMACS 1992:472(7)



Figure 29: Possible Early Archaic Kirk Stemmed biface from Site 12-Bn-191 in Survey Area 2 (Photo by Kiya Mullins, Ball State University).



Figure 30: Possible retouched Early Archaic Kirk Corner Notched biface from 12-Bn-193 in Survey Area 2 (Photo by Kiya Mullins, Ball State University).



Figure 31: Late Archaic hafted Lamoka biface from Site 12-Bn-194 in Survey Area 2 (Photo by Kiya Mullins, Ball State University).

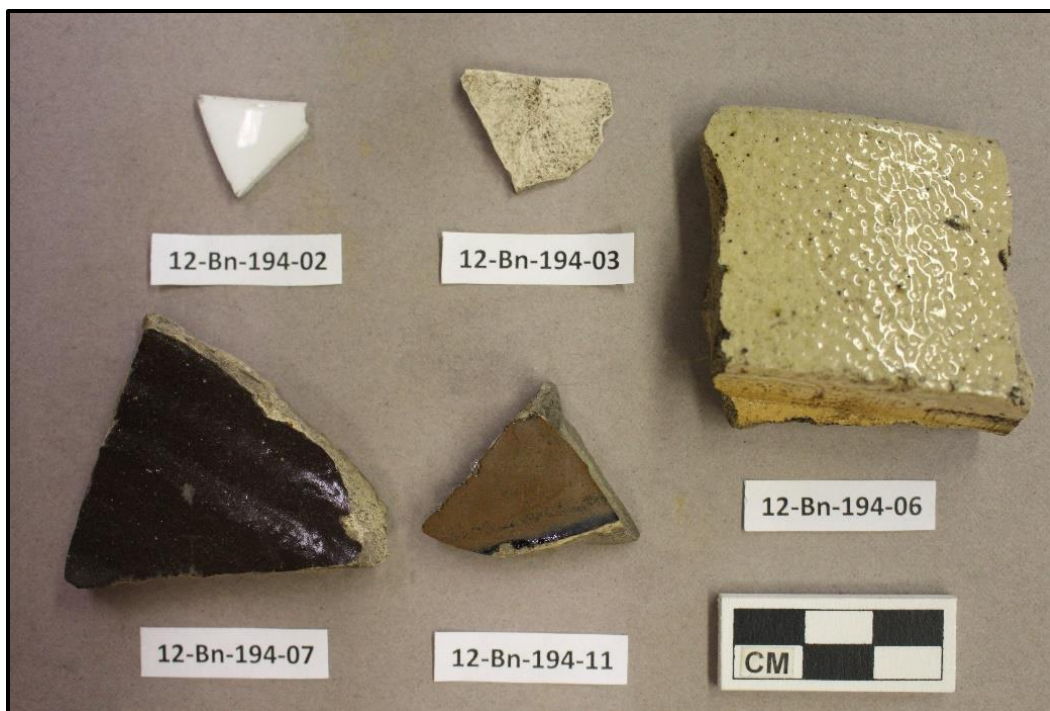


Figure 32: Representative historic ceramic artifacts from Survey Area 2 (Photo by Kiya Mullins, Ball State University).



Figure 33: Representative glass artifacts from Survey Area 2 (Photo by Kiya Mullins, Ball State University).

Sites

Four archaeological sites, 12-Bn-191 to 12-Bn-194, were recorded in Survey Area 2 (Figure 34 and Figure 35). Summaries for the individual sites are contained in Volume 2, Appendix F. All four sites had diagnostic artifacts. Two of the sites were prehistoric isolated finds (12-Bn-191 and 12-Bn-193). Two sites were multicomponent sites (12-Bn-192 and 12-Bn-194). 12-Bn-192 was a multicomponent site with a prehistoric isolate and historic isolate and 12-Bn-194 was a multicomponent with site a prehistoric isolate and a historic scatter

All four sites were discovered on end moraines and ground moraines. Two sites (12-Bn-191 and 12-Bn-192) were located on Odell silt loam (O1B2) soils. One site (12-Bn-193) was located on Foresman loam (FrB2) soil and one site (12-Bn-194) was located on Darroch silt loam (Dr) soil.

Site 12-Bn-194 was a mid-sized multicomponent historic scatter with a prehistoric isolate and was 283.28 square meters (0.07 acres) in size. No subsurface features were encountered. Three historic maps (Andreas 1968; Geo. A. Ogle & Co 1909; Taylor 2009) were consulted. The Geo. A. Ogle & Co 1909 map showed a structure located on the northern edge of the parcel, approximately 425 meters north of 12-Bn-194. No other structures were shown in Survey Area 2 on any of the historic maps consulted. With no evidence of structures or subsurface features encountered, it is possible that 12-Bn-194 was a secondary dump site, rather than a primary deposit. The tight clustering of the artifacts could suggest that topography played a part in the formation of the site, but the slope of the topography in Survey Area 2 is very little to nonexistent (0-2%), making topography an unlikely contributor to the artifact distribution. Based on the archaeological evidence and our historic research, site 12-Bn-194 is considered to not have the potential to yield additional information beyond the Phase I level and is therefore not considered eligible for the National Register of Historic Places.

The site types found in Survey Area 2 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National register of Historic Places.

Density

Survey Area 2 consisted of 55.41 acres of end moraines and ground moraines. Within Survey Area 2, a density of one site per 13.85 acres occurred and sites covered 0.32 percent of the surface area.

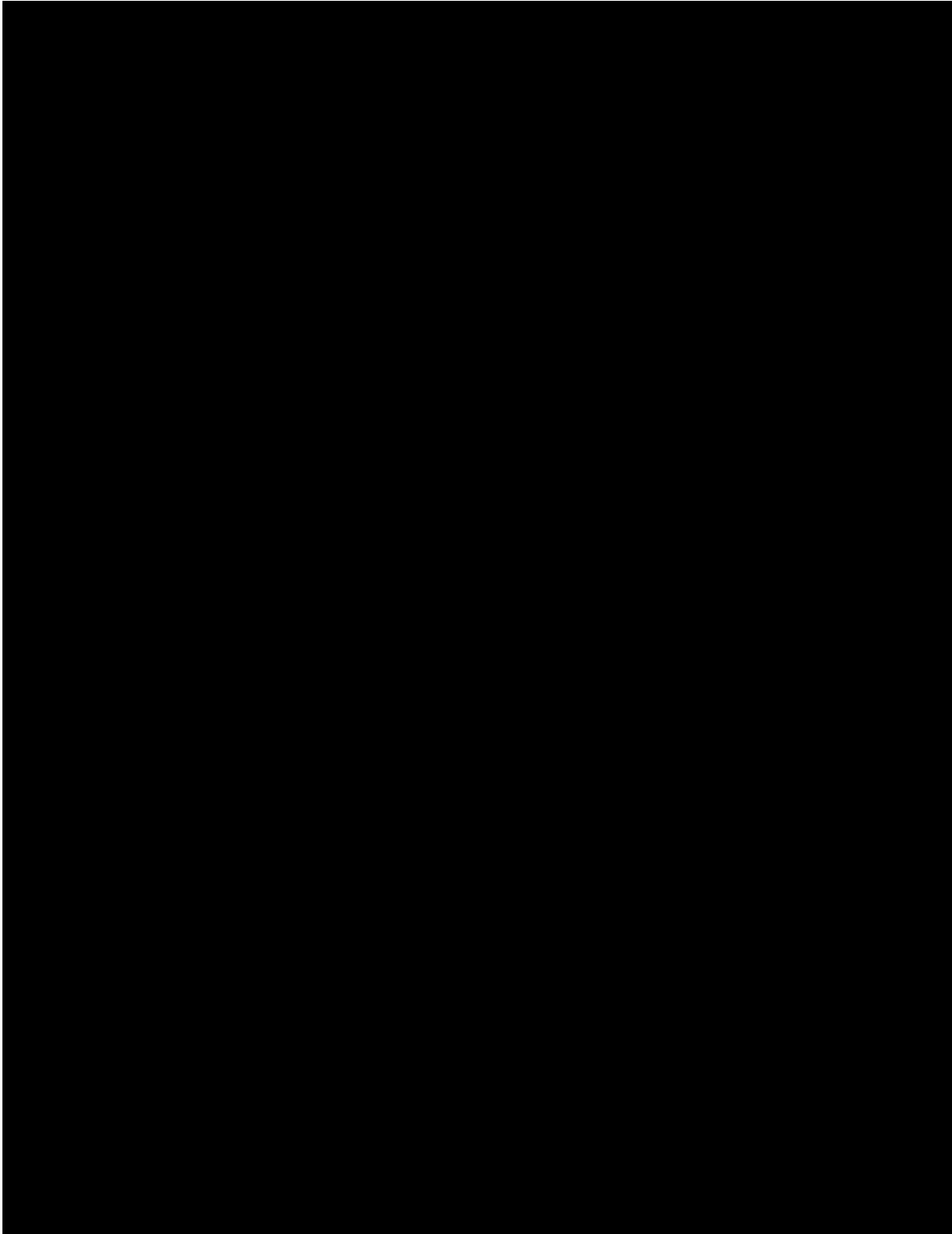


Figure 34: A portion of the USGS 7.5' Pine Village, Indiana Quadrangle showing the location of sites 12-Bn-191 to 12-Bn-194

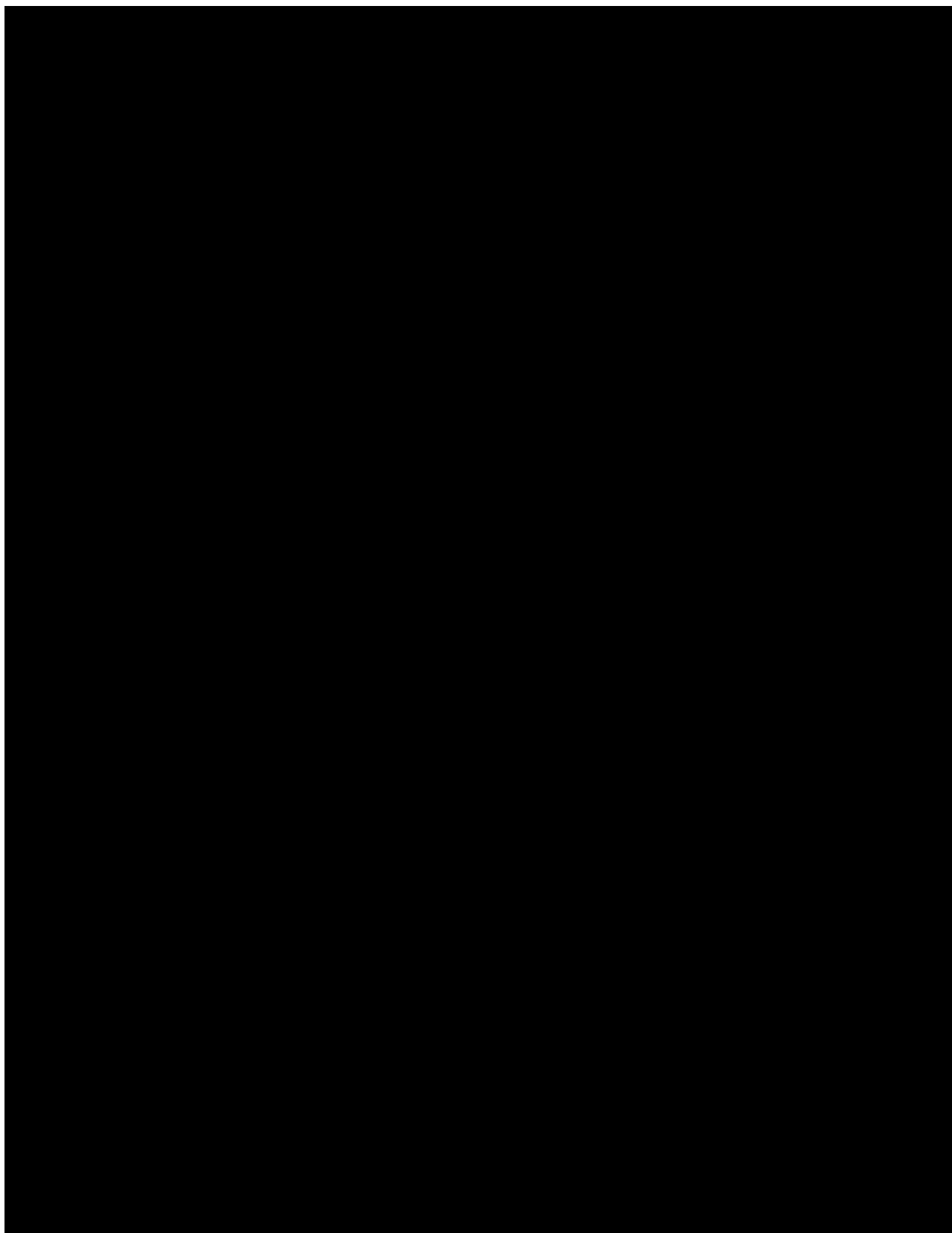


Figure 35: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-191 to 12-Bn-194.

Survey Area 3

Survey Area 3 was located in Oak Grove Township in [REDACTED] Township 24 North, Range 8 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Pine Village, Indiana Quadrangle (Figure 36 and Figure 37). The property was surveyed on August 9, 2016. The field was planted in corn, standing between three to seven feet tall. Ground surface visibility was approximately 60-80 percent with some weeds and corn stalks themselves hindering visibility. A total of 75.15 acres was surveyed consisting of ground moraines and end moraines. The area contained Chalmers (Ch), Corwin (CsA, CsB2, and CsC2), Gilboa (G1A), Miami (MmC3) and Odell (O1B2 and O1A) soils. Seven sites (12-Bn-195 to 12-Bn-201) were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a multicomponent historic and prehistoric scatter of 566.56 square meters (0.14 acres).

Site 12-Bn-20 is a collector reported site in SHAARD that is located in the NE ¼ of the SE ¼ of the SW ¼ of the SW ¼ of [REDACTED] Township 24N Range 7W and within Survey Area 3 (Figure 38). The site was reported by [REDACTED], the father of the current landowner [REDACTED], and was recorded by Indiana University’s Noel Justice in 1977. Site 12-Bn-20 is listed as a habitation site of unknown size consisting of an Early Archaic Thebes biface (Division of Historic Preservation and Archaeology 2007).

Survey Areas 3, 4, and 5 are all owned by [REDACTED]. [REDACTED] met with the crew before survey had begun and recommended which parcels to begin on. He also mentioned that he owned an extensive collection of prehistoric artifacts and invited the crew to visit after survey. Christine Thompson, Amanda Balough, and Sean Smith viewed the collection. Christine Thompson took pictures of the extensive collection. [REDACTED] stated that his father had been collecting from the surrounding fields, much of which was now owned by [REDACTED]. [REDACTED] mentioned that in the 1970’s his father had visited Noel Justice at the Glenn Black Laboratories at the Indiana University in Bloomington. Permission was asked for a return visit to catalog, scan, and photograph [REDACTED] collection. It seemed evident based upon landowner’s comments that the artifacts reported in collector reported sites 12-Bn-2, 12-Bn-7 to 12-Bn-12, and 12-Bn-16 to 12-Bn-21 corresponded to artifacts in the [REDACTED] Collection.

On December 4 and 5, 2016, Kevin Nolan and Amanda Balough returned to [REDACTED] home to catalog, scan, and photograph his collection. Detailed information about the [REDACTED] Collection can be found in the Collectors Visit section of this report.

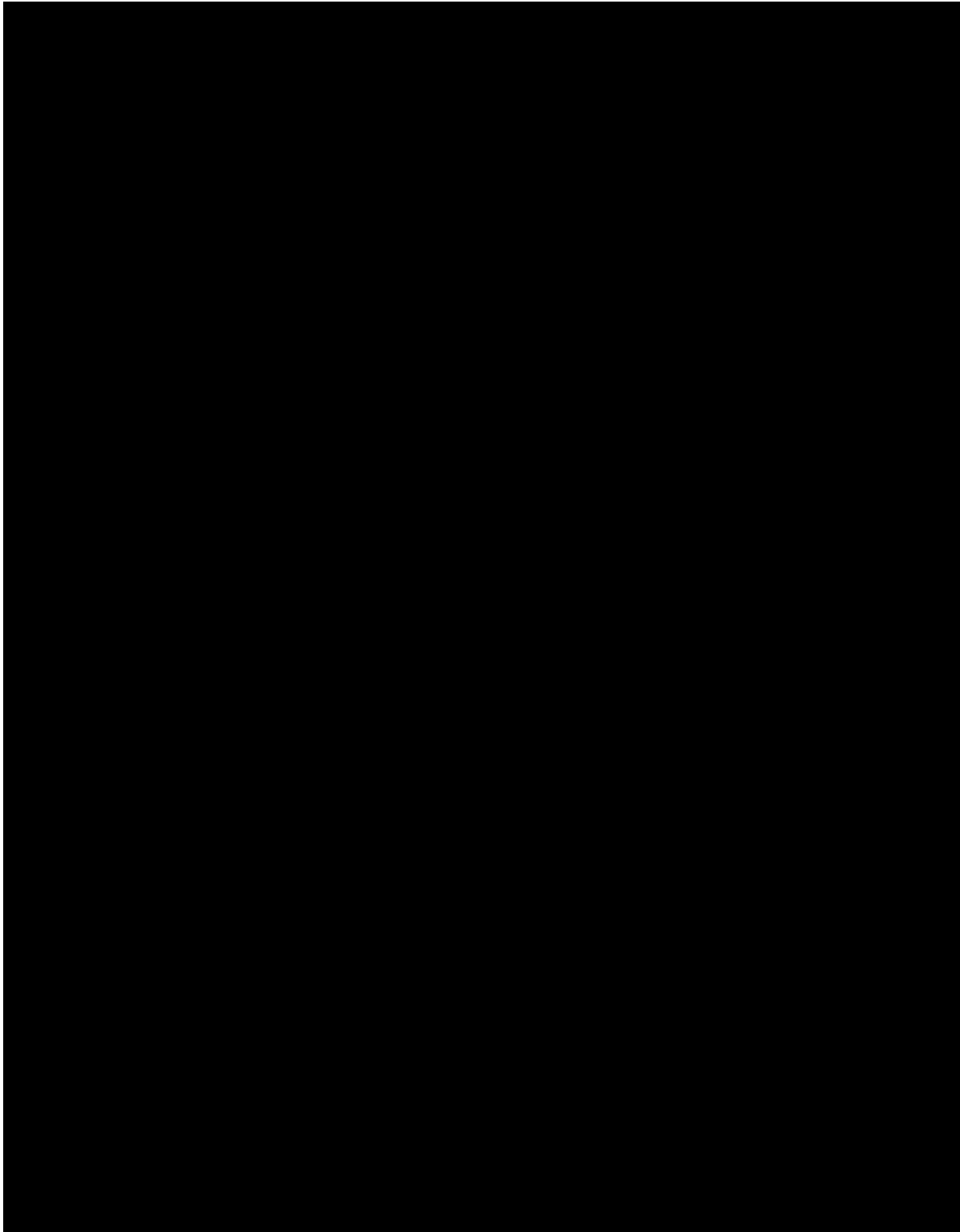


Figure 36: A portion of the map of Oak Grove Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 3. Note: Due to distortion in historical maps, the georeferenced location of SA3 is slightly off.

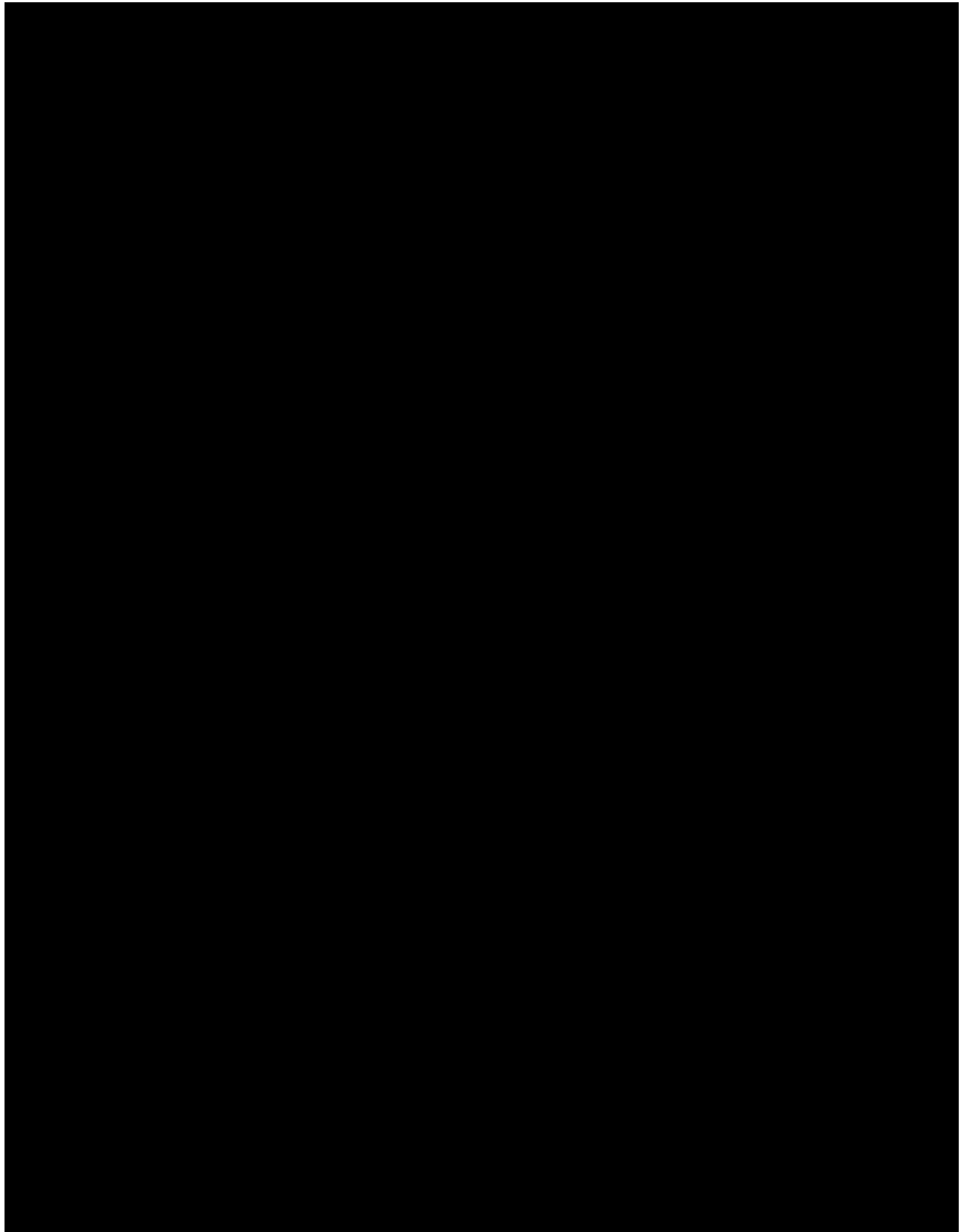


Figure 37: A portion of the USGS 7.5' Pine Village, Indiana Quadrangle showing the location of Survey Area 3.

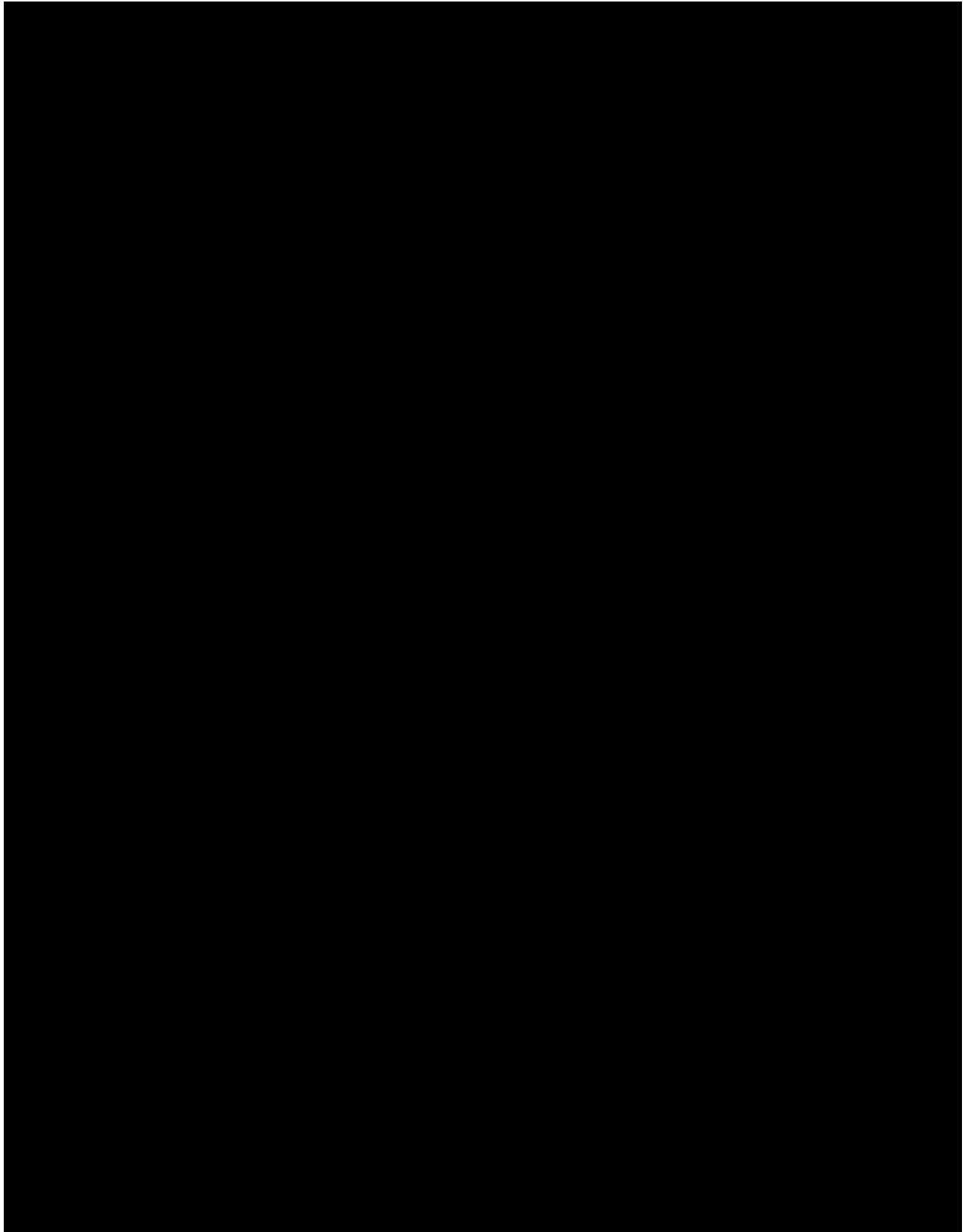


Figure 38: Approximate location of collector reported site 12-Bn-20 within Survey Area 3.

Artifacts

A total of 15 artifacts was encountered in Survey Area 3. Table 10 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 39, Figure 40, and Figure 41. Artifacts are listed by individual site in Volume 2, Appendix E.

Five prehistoric artifacts were recovered from Survey Area 3 (Figure 39). None were diagnostic.

Ten historic artifacts were recovered from Survey Area 3 and of the 10 collected, five are diagnostic (Table 11). Chronologically expressed these items include aqua glass recovered from site 12-Bn-196, which was manufactured between 1800 and the 1920s (Horn 2005:1). Stoneware with an Albany glaze interior and exterior recovered from site 12-Bn-197 was manufactured from 1835 to 1940 (Ramsey 1939:21-22,59). Stoneware with Bristol glaze interior and exterior was recovered from site 12-Bn-196 and was manufactured from 1835 to the present (Oswald et al. 1982:19). Clear glass was recovered from site 12-Bn-196 and was manufactured from 1875 to the present (IMACS 1992:472(19)). A semi-porcelain fence insulator with a metal nail was recovered from site 12-Bn-198 and was manufactured from 1900 to the present (IMACS 1992:9).

Table 10: Artifacts from Survey Area 3.

Prehistoric	No.	Historic	No.
Scraper	1	Ceramic, Semi-Porcelain	1
Flake, Complete	1	Ceramic, Stoneware	2
Flake, Medial	2	Glass, Aqua	1
Flake, Distal	1	Glass, Clear	1
		Iron, Stake	1
		Iron, Band	1
		Coal, Clinker	2
		Brick	1
Total	5	Total	10

Table 11: Historic Diagnostics from Survey Area 3.

Artifact Type	Site	Date Range	Citation
Aqua Glass	12-Bn-196	1800-1910	IMACS 1992:472(18)
Stoneware with Albany interior and exterior	12-Bn-197	1835-1940	Ramsey 1939:21-22,59
Stoneware with Bristol interior and exterior	12-Bn-196	1835 to present	Oswald et al. 1982:19
Clear Glass	12-Bn-196	1875 to present	IMACS 1992:472(19)
Semi-Porcelain fence insulator with metal nail	12-Bn-198	1900 to present	IMACS 1992:9



Figure 39: Representative prehistoric artifacts recovered from Survey Area 3 (Photo by Kiya Mullins, Ball State University).



Figure 40: Representative historic ceramic artifacts recovered from Survey Area 2 (Photo by Kiya Mullins, Ball State University).



Figure 41: Representative glass artifacts recovered from Survey Area 3 (Photo by Kiya Mullins, Ball State University).

Sites

Seven archaeological sites, 12-Bn-195 to 12-Bn-201, were recorded in Survey Area 3 (Figure 42 and Figure 43). Summaries for the individual sites are contained in Volume 2, Appendix F. Three sites had diagnostic artifacts (12-Bn-196, 12-Bn-197, and 12-Bn-198). Three sites were historic isolated finds (12-Bn-197, 12-Bn-198, and 12-Bn-201), one site was a prehistoric isolate (12-Bn-199), one site was a historic scatter (12-Bn-195), and one site was a multicomponent historic and prehistoric scatter (12-Bn-196).

All seven sites were discovered on end moraines and ground moraines. Three sites (12-Bn-196, 12-Bn-197, and 12-Bn-198) were located on Miami clay loam (MmC3) soil and four sites (12-Bn-195, 12-Bn-199, 12-Bn-200, and 12-Bn-201) were located on Corwin silt loam (CsB2) soil.

Three sites (12-Bn-197, 12-Bn-199, and 12-Bn-201) were discovered within 200 meters of collector reported site 12-Bn-20, which would cover the maximum site size as identified by the geographic location in SHAARD. Sites 12-Bn-197 and 12-Bn-201 were historic isolates and 12-Bn-199 was a prehistoric isolate with one flake. None of these sites can confirm a more exact location or add to the context of collector reported site 12-Bn-20.

The site types found in Survey Area 3 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 3 consisted of 75.15 acres of end moraines and ground moraines. Within Survey Area 3, a density of one site per 10.74 acres occurred and sites covered 0.37 percent of the surface area.

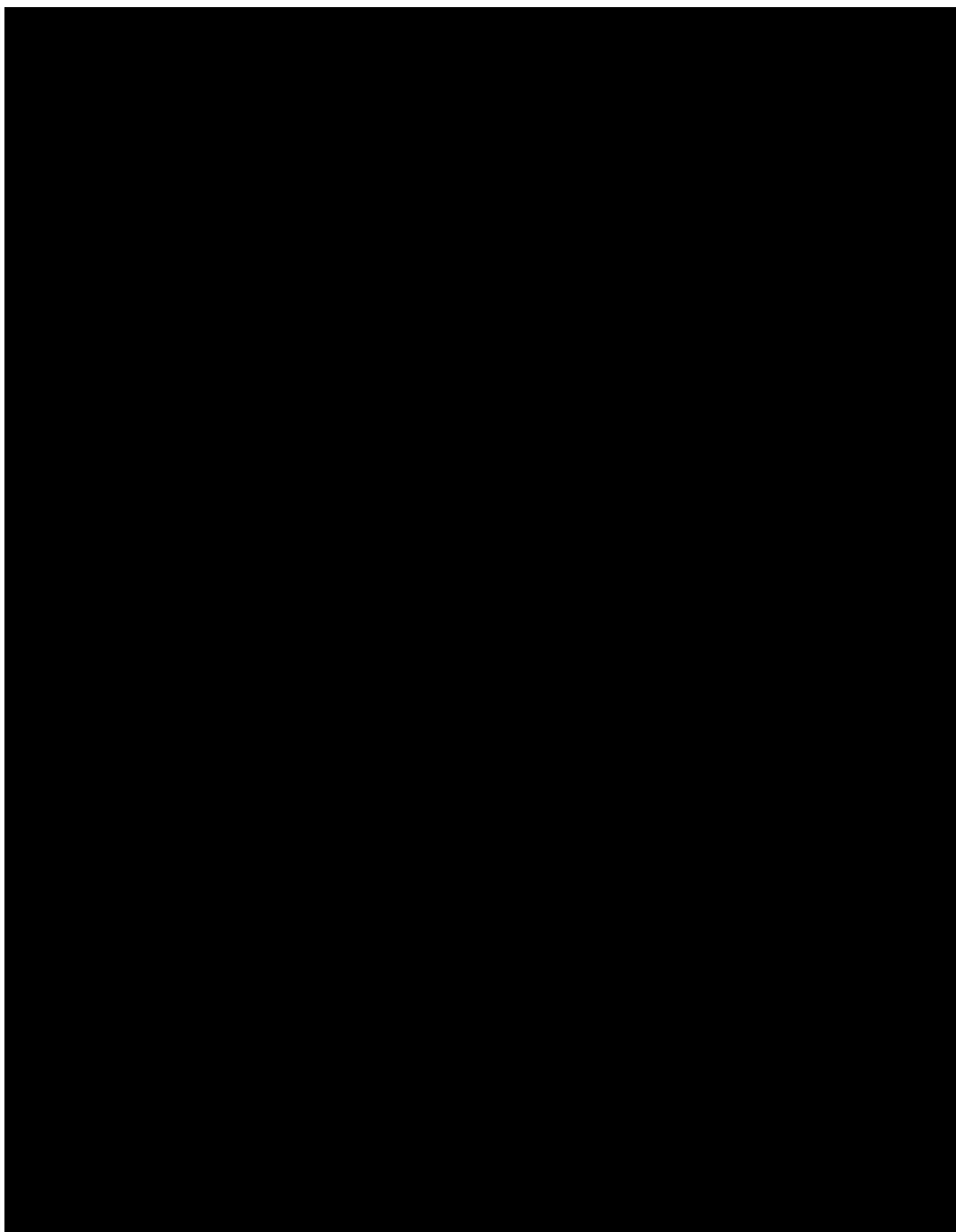


Figure 42: A portion of the USGS 7.5' Pine Village, Indiana Quadrangle showing the location of sites 12-Bn-195 to 12-Bn-201 and collector report site 12-Bn-20.

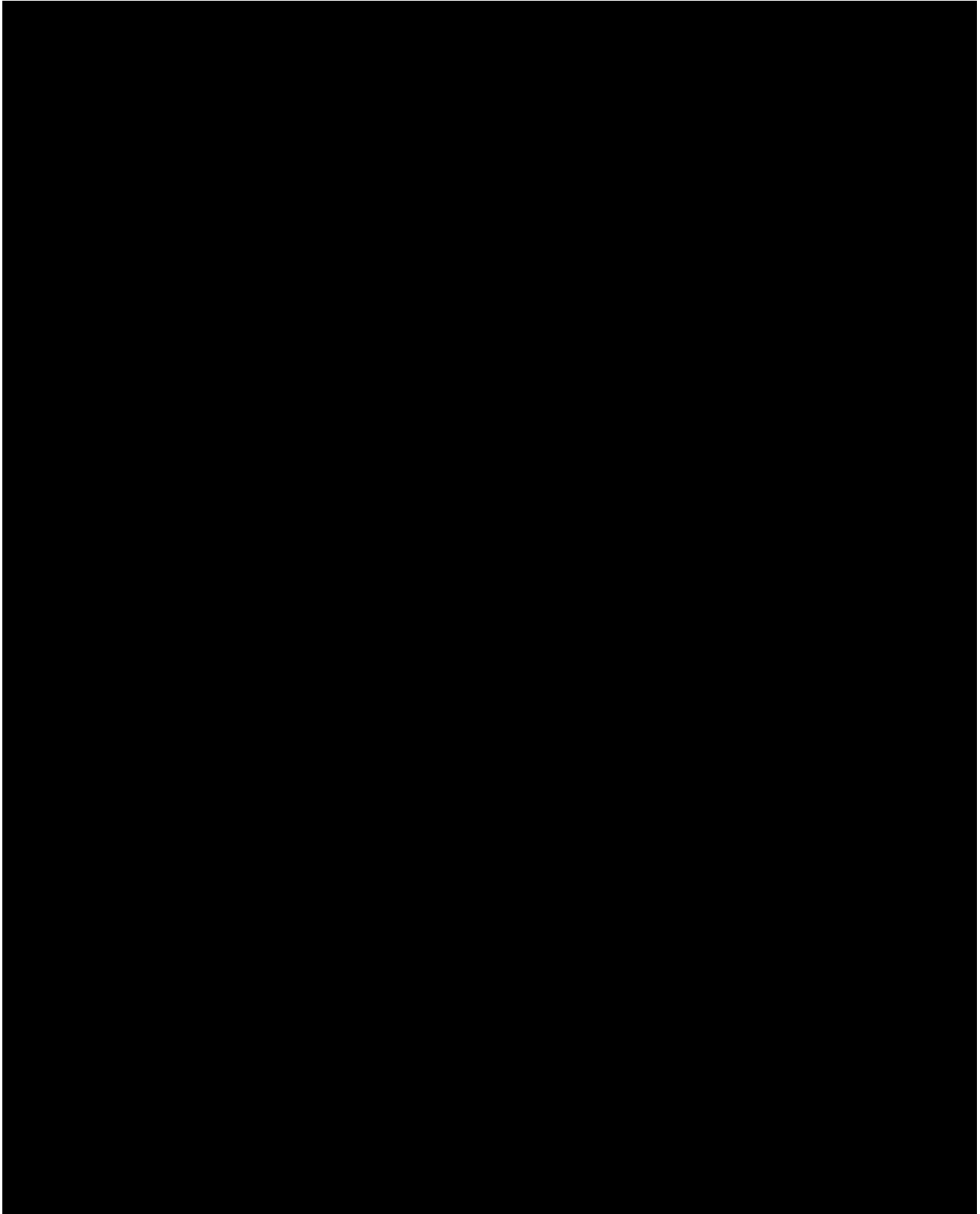


Figure 43: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-195 to 12-Bn-201 and collector report site 12-Bn-20.

Survey Area 4

Survey Area 4 was located in Oak Grove Township in [REDACTED] Township 24 North, Range 8 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Fowler, Indiana Quadrangle (Figure 44 and Figure 45). The property was surveyed on August 9, 2016. The field was planted in corn, standing between three to seven feet tall. Ground surface visibility was approximately 70-90 percent with some weeds and corn stalks themselves hindering visibility. A total of 51.6 acres was surveyed consisting of ground moraines and end moraines. The area contained Chalmers (Ch), Corwin (CsB2), and Odell (OlA) soils. Three sites (12-Bn-202 to 12-Bn-204) were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a historic scatter of 1011.71 square meters (0.25 acres).

Survey Areas 3, 4, and 5 are all owned by [REDACTED]. See Survey Area 3 discussion for initial information regarding the [REDACTED] collection. Detailed information about the [REDACTED] Collection can be found in the Collectors Visit section of this report.

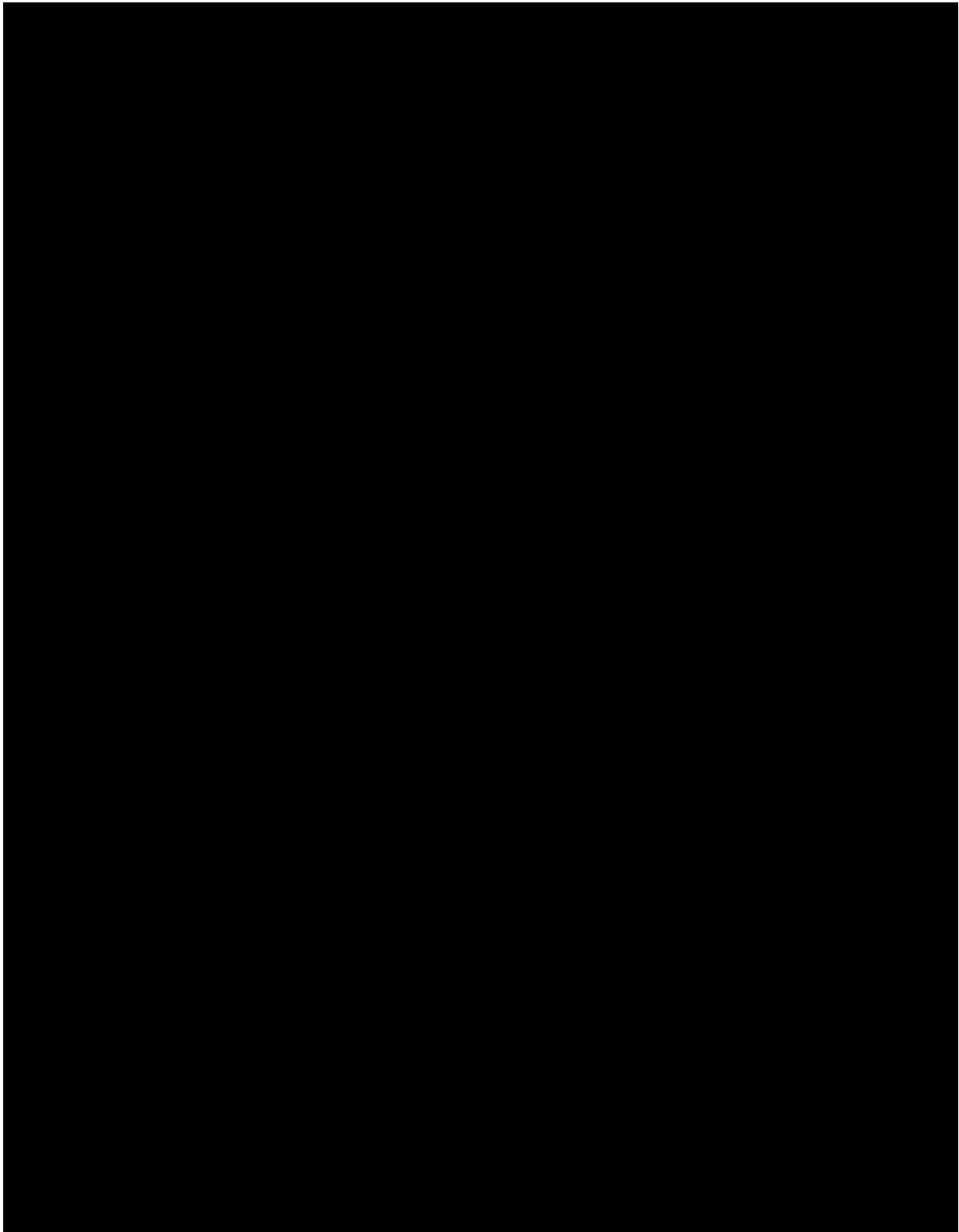


Figure 44: A portion of the map of Oak Grove Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 4. Note: Due to distortion in historical maps, the georeferenced location of SA4 is slightly off.

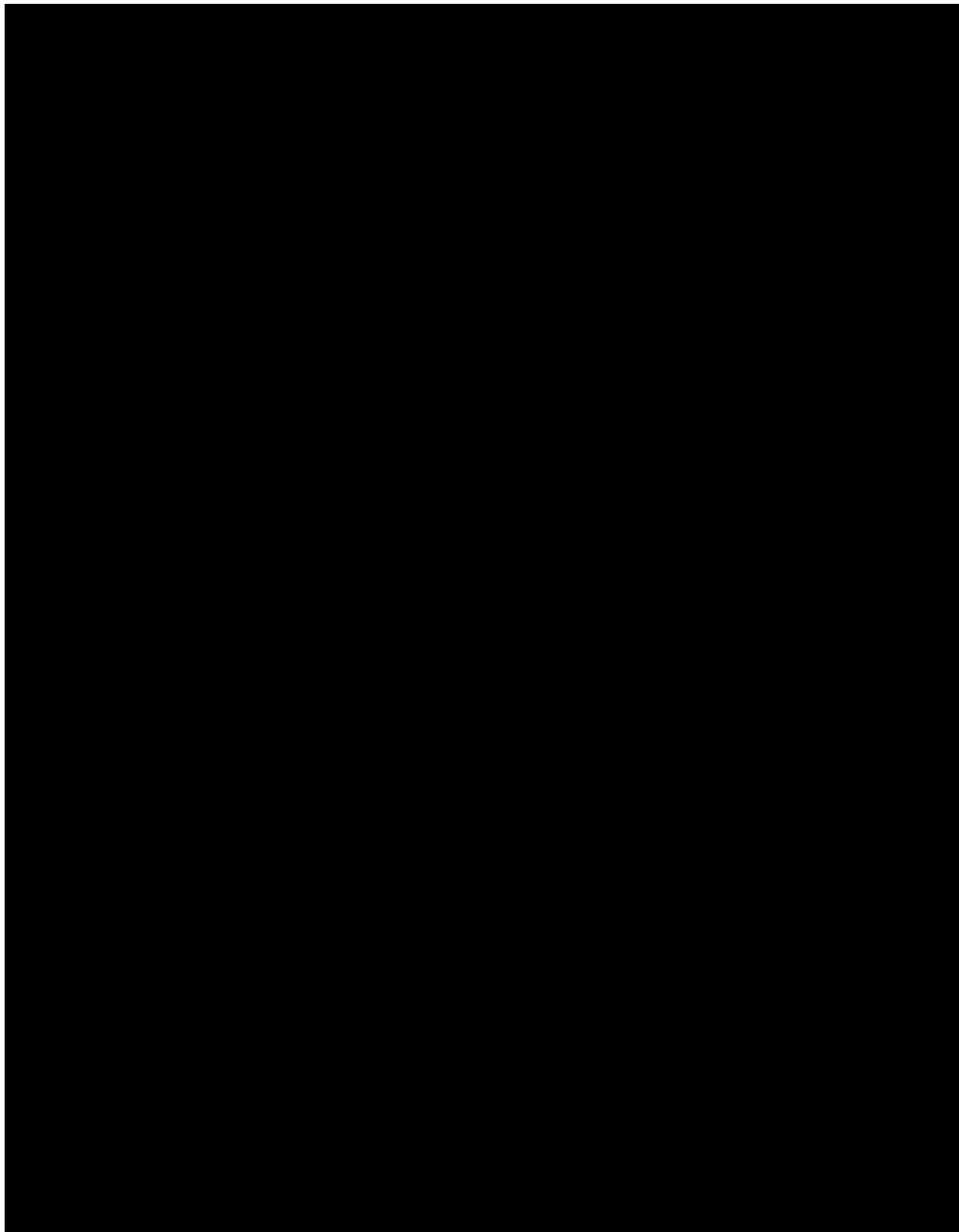


Figure 45: A portion of the USGS 7.5' Fowler, Indiana Quadrangle showing the location of Survey Area 4.

Artifacts

A total of 308 artifacts was collected in Survey Area 4. Table 12 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 46 through Figure 49. Artifacts are listed by individual site in Volume 2, Appendix E.

No artifacts were recovered from the Prehistoric period in Survey Area 4.

A total of 308 artifacts was identified in Survey Area 4 and 267 are diagnostic (Table 13). Chronologically expressed these items include Moriage redware from site 12-Bn-203 which was manufactured between 1725 to the present (Stelle 2001:Chapter 1). Earthenware with a salt glaze was recovered from site 12-Bn-203 and was manufactured from 1725 to the present (Stelle 2001:Chapter 1). Plain porcelain recovered from sites 12-Bn-203 and 12-Bn-204 was manufactured between 1745 to the 1850s (Stelle 2001:Chapter 1). Aqua glass from sites 12-Bn-203 and 12-Bn-204 was manufactured from 1800 to 1912 (IMACS 1992:18). Whiteware with maroon slip recovered from site 12-Bn-204 was manufactured from 1830 to 1870 (Stelle 2001:Chapter 1). Whiteware with blue slip recovered from sites 12-Bn-203 and 12-Bn-204 was manufactured from 1830 to 1870 (IMACS 1992:3). Plain whiteware recovered from site 12-Bn-204 was manufactured from 1820-1930 (Stelle 2001:Chapter 1). Plain yellowware was recovered from site 12-Bn-204 and was manufactured from 1830 to present (ODOT 1991:177). Stoneware with tan salt glaze was recovered from site 12-Bn-204 and was manufactured from 1835 to 1860 (Stelle 2001:Chapter 1). Unglazed stoneware was recovered from site 12-Bn-204 and was manufactured from 1835 to the present (Stelle 2001:Chapter 1). Stoneware with Bristol glaze interior and exterior was recovered from sites 12-Bn-203 and 12-Bn-204 and was manufactured from 1835 to the present (Stelle 2001:Chapter 1). Stoneware with Albany glaze interior and Bristol glaze exterior was recovered from sites 12-Bn-203 and 12-Bn-204 and was manufactured from 1835 to 1940 (Stelle 2001:Chapter 1). Stoneware with blue glaze recovered from site 12-Bn-203 was manufactured between 1835 to the mid-1890s (Stelle 2001:Chapter 1). Ironstone with green transfer print was recovered from site 12-Bn-203 and was manufactured from 1840 to 1860 (IMACS 1992:473(3)-474(4)). Ironstone with a brown and bronze handpainted design was recovered from site 12-Bn-203 and was manufactured from 1840 to 1860 (IMACS 1992:473(3)-474(4)). Red (rose) glass was recovered from site 12-Bn-204 and was manufactured between 1840-1880 (SHA 2016). Plain ironstone was recovered from site 12-Bn-203 and was manufactured between 1835 to the present (IMACS 1992:473(3)-474(4)). Plain semi-porcelain was recovered from site 12-Bn-203 and was manufactured from 1840 to 1904 (IMACS 1992:474(9)). Ironstone with J&G Meakin or Essex flower decoration was recovered from site 12-Bn-203 and was manufactured between 1851 to the 1970s (British Potters and Pottery Today 1956). Green glass was recovered from site 12-Bn-203 and was manufactured from 1860 to the present (IMACS 1992:473(18)). Amber glass was recovered from site 12-Bn-203 and was manufactured from 1860 to the present (IMACS 1992:473(19)). Clear glass was recovered from sites 12-Bn-203 and 12-Bn-204 and was manufactured from 1875 to the present (IMACS

1992:473(19)). Amethyst glass recovered from sites 12-Bn-203 and 12-Bn-204 was manufactured from 1880 to 1925 (IMACS 1992:473(19)). Cobalt glass was recovered from site 12-Bn-203 and was manufactured from 1890 to 1960 (IMACS 1992:473(19)). Milkglass was recovered from sites 12-Bn-203 and 12-Bn-204 and was manufactured from 1890 to 1960 (IMACS 1992:473(19)). Semi-porcelain was recovered from sites 12-Bn-203 and 12-Bn-204 and was manufactured between 1900 to the present (IMACS 1992:473(9)). Stoneware with a blue logo of the UHL Pottery Company was recovered from site 12-Bn-203 and was manufactured from 1940 to 1985 (The Huntingburg Independent 1937). Stoneware with Albany glaze interior and grey salt glaze exterior was recovered from site 12-Bn-203 and has a termination date of 1940 (Stelle 2001:Chapter 1). Stoneware with Albany glaze was recovered from site 12-Bn-203 and has a termination date of 1940 (Stelle 2001:Chapter 1). Stoneware with Albany glaze interior and tan salt glaze exterior was recovered from site 12-Bn-203 and has a termination date of 1940 (Stelle 2001:Chapter 1). Stoneware with Albany interior and exterior was recovered from site 12-Bn-204 and has a termination date of 1940 (Stelle 2001:Chapter 1).

Table 12: Artifacts from Survey Area 4.

Prehistoric	No.	Historic	No.
		Ceramic, Porcelain	6
		Ceramic, Semi-Porcelain	5
		Ceramic, Ironstone	6
		Ceramic, Whiteware	54
		Ceramic, Stoneware	30
		Ceramic, Redware	2
		Ceramic, Earthenware	1
		Glass, Cobalt	1
		Glass, Green	1
		Glass, Amethyst	10
		Glass, Milkglass	21
		Glass, Amber	6
		Glass, Aqua	68
		Glass, Clear	56
		Metal and Rubber, Wheel	1
		Metal, Iron Hinge	1
		Metal, Iron Nail	1
		Metal, Iron Band	1
		Metal, Iron Plate	1
		Metal, Iron	2
		Metal, Aluminum	1
		Concrete	4
		Brick	3
		Coal, Clinker	26
Total	0	Total	308

Table 13: Historic Diagnostics from Survey Area 4.

Artifact Type	Site	Date Range	Citation
Moriage Redware	12-Bn-203	1725-present	Stelle 2001: Chapter 1
Earthenware with Salt Glaze	12-Bn-203	1725 to present	Stelle 2001: Chapter 1
Plain Porcelain	12-Bn-203, 12-Bn-204	1745-1850	Stelle 2001: Chapter 1
Aqua Glass	12-Bn-203, 12-Bn-204	1800-1912	IMACS 1992:472(18)
Plain Whiteware	12-Bn-204	1820-1930	Stelle 2001:Chapter1
Whiteware with Maroon Slip	12-Bn-204	1830-1861	Stelle 2001:Chapter 1
Whiteware with Blue Slip	12-Bn-203, 12-Bn-204	1830-1870	IMACS 1992:472(3)
Plain Whiteware	12-Bn-203	1830-1904	IMACS 1992:472(3)
Plain Yellowware	12-Bn-204	1830 to present	ODOT 1991:177
Stoneware with Tan Salt Glaze	12-Bn-204	1835-1860	Stelle 2001:Chapter 1
Unglazed Stoneware	12-Bn-204	1835 to present	Stelle 2001:Chapter1
Stoneware with Bristol interior and exterior	12-Bn-203, 12-Bn-204	1835 to present	Stelle 2001:Chapter 1
Plain Ironstone	12-Bn-203	1835 to present	IMACS 1992:473(3)- 474(4)
Stoneware with Albany interior and Bristol exterior	12-Bn-203, 12-Bn-204	1835-1940	Stelle 2001:Chapter 1
Stoneware with Blue Glaze	12-Bn-203	1835-mid 1890	Stelle 2001:Chapter 1
Ironstone with green transfer print	12-Bn-203	1840-1860	IMACS 1992:473(3)- 474(4)
Ironstone with brown and bronze handpainted design	12-Bn-203	1840-1860	IMACS 1992:473(3)- 474(4)
Red (Rose) Glass	12-Bn-204	1840-1880	SHA 2016
Plain Semi-Porcelain	12-Bn-203	1840-1904	IMACS 1992:474(9)
Ironstone with flower decoration by J&G Meakin or Essex	12-Bn-203	1851-1970	British Potters and Pottery Today 1956
Green Glass	12-Bn-203	1860 to present	IMACS 1992:473(18)
Amber Glass	12-Bn-203	1860 to present	IMACS 1992:473(19)
Clear Glass	12-Bn-203, 12-Bn-204	1875 to present	IMACS 1992:473(19)
Amethyst Glass	12-Bn-203, 12-Bn-204	1880-1925	IMACS 1992:473(19)
Cobalt Glass	12-Bn-203	1890-1960	IMACS 1992:473(19)
Milkglass	12-Bn-203, 12-Bn-204	1890-1960	IMACS 1992:473(18)
Semi-Porcelain	12-Bn-203, 12-Bn-204	1900 to present	IMACS 1992:473(9)

Artifact Type	Site	Date Range	Citation
Stoneware with Blue Logo of the UHL Pottery Company	12-Bn-203	1940-1985	The Huntingburg Independent 1937
Stoneware with Albany interior and Grey Salt Glaze exterior	12-Bn-203	Termination date of 1940	Stelle 2001:Chapter 1
Stoneware with Albany Glaze	12-Bn-203	Termination date of 1940	Stelle 2001:Chapter 1
Stoneware with Albany interior and Tan Salt Glaze exterior	12-Bn-203	Termination date of 1940	Stelle 2001:Chapter 1
Stoneware with Albany interior and exterior	12-Bn-204	Termination date of 1940	Stelle 2001:Chapter 1



Figure 46: Representative historic ceramic artifacts recovered from Survey Area 4 (Photo by Kiya Mullins, Ball State University).



Figure 47: Representative glass artifacts recovered from Survey Area 4 (Photo by Kiya Mullins, Ball State University).



Figure 48: Metal and rubber wheel from 12-Bn-202 in Survey Area 4 (Photo by Kiya Mullins, Ball State University).



Figure 49: Representative iron artifacts from Survey Area 4 (Photo by Kiya Mullins, Ball State University).

Sites

Three archaeological sites, 12-Bn-202 to 12-Bn-204, were recorded in Survey Area 4 (Figure 50 and Figure 51). Summaries for the individual sites are contained in Volume 2, Appendix F. Two sites had diagnostic artifacts (12-Bn-203 and 12-Bn-204). One site (12-Bn-202) was a historic isolated find. Two sites (12-Bn-203 and 12-Bn-204) were historic scatters.

All three sites were found on a combination of end moraines and ground moraines. All three sites were found on Corwin silt loam (ScB2) soil.

Sites 12-Bn-203 and 12-Bn-204 are medium sized, dense historic scatters. Site 12-Bn-203 consisted of 230 historic artifacts and three bricks. Site 12-Bn-204 consisted of 75 historic artifacts. Both sites, along with the northern half of Survey Area 4, are in the general location of a farm structure, as seen on the 1876 Andreas (1968) map, which is taken from the *Standard Atlas of Benton County, Indiana: Include a Plat Book*. The *Benton County: Indiana Historic Sites and Structures Inventory* indicates that a c.1860/c.1910 farm was located in the general location of sites 12-Bn-203 and 12-Bn-204. The variety of historic artifacts recovered from both

sites includes bottle glass and ceramics, ranging from porcelain to stoneware, which are artifacts typically associated with domestic sites. The 1909 historic map did not indicate any structures in Survey Area 4 (Geo. A.Ogle & Co 1909). The variety of domestic artifacts within the vicinity of a listed structure indicates the potential to learn more about domestic mid-century to late century farm and farmhouse lifestyle, filling a gap in Benton County's history. Based on the archaeological evidence and our historic research, it appears sites 12-Bn-203 and 12-Bn-204 have the potential to yield additional information beyond the Phase I level and should be considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

The remaining site on Survey Area 8 (12-Bn-202) is a site type typically considered to not have the potential to yield additional information beyond the Phase I level and is therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 4 consisted of 51.6 acres of end moraines and ground moraines. Within Survey Area 4, a density of one site per 17.2 acres occurred and sites covered 0.93 percent of the surface area.

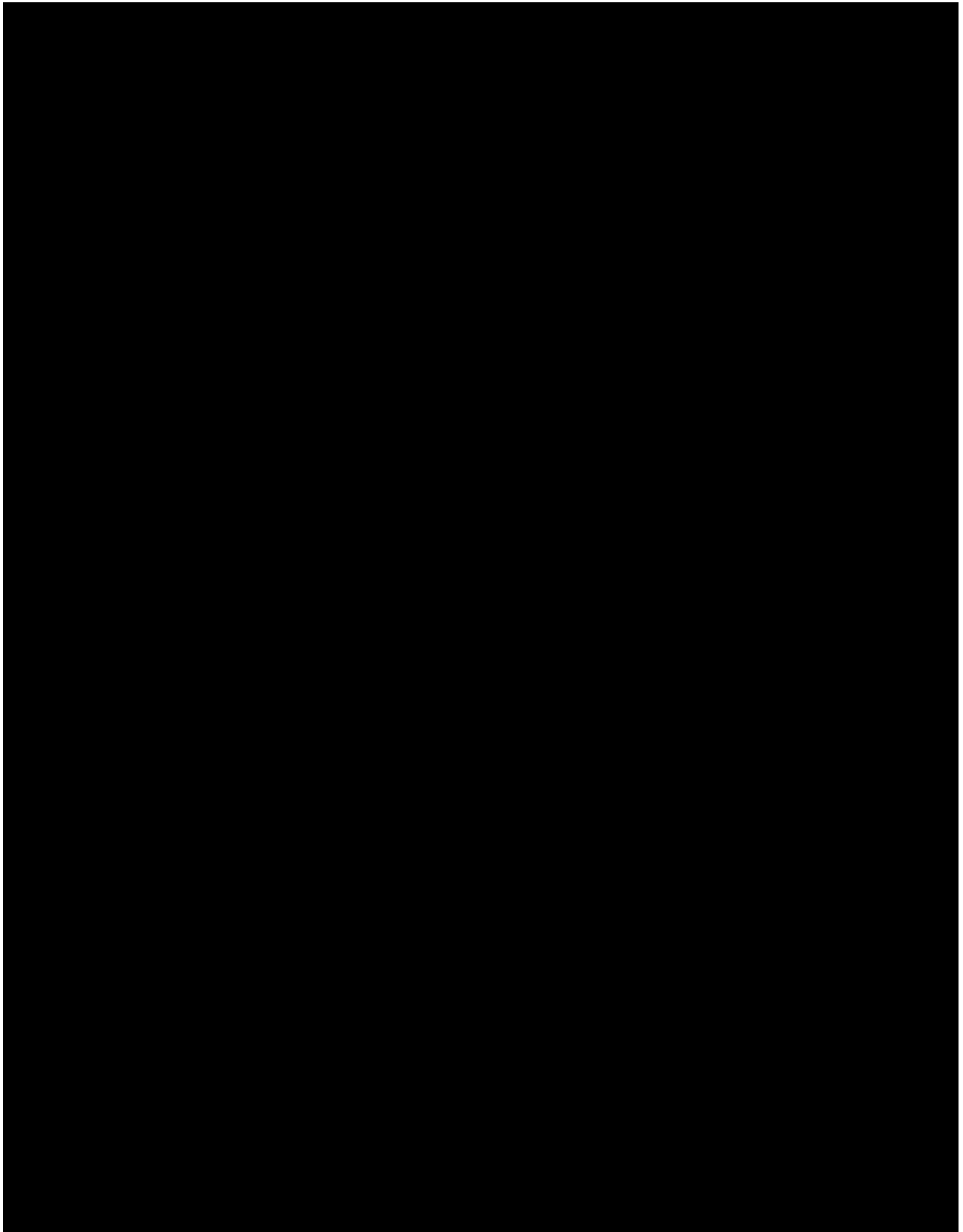


Figure 50: A portion of the USGS 7.5' Fowler, Indiana Quadrangle showing the location of sites 12-Bn-202, 12-Bn-203, and 12-Bn-204.

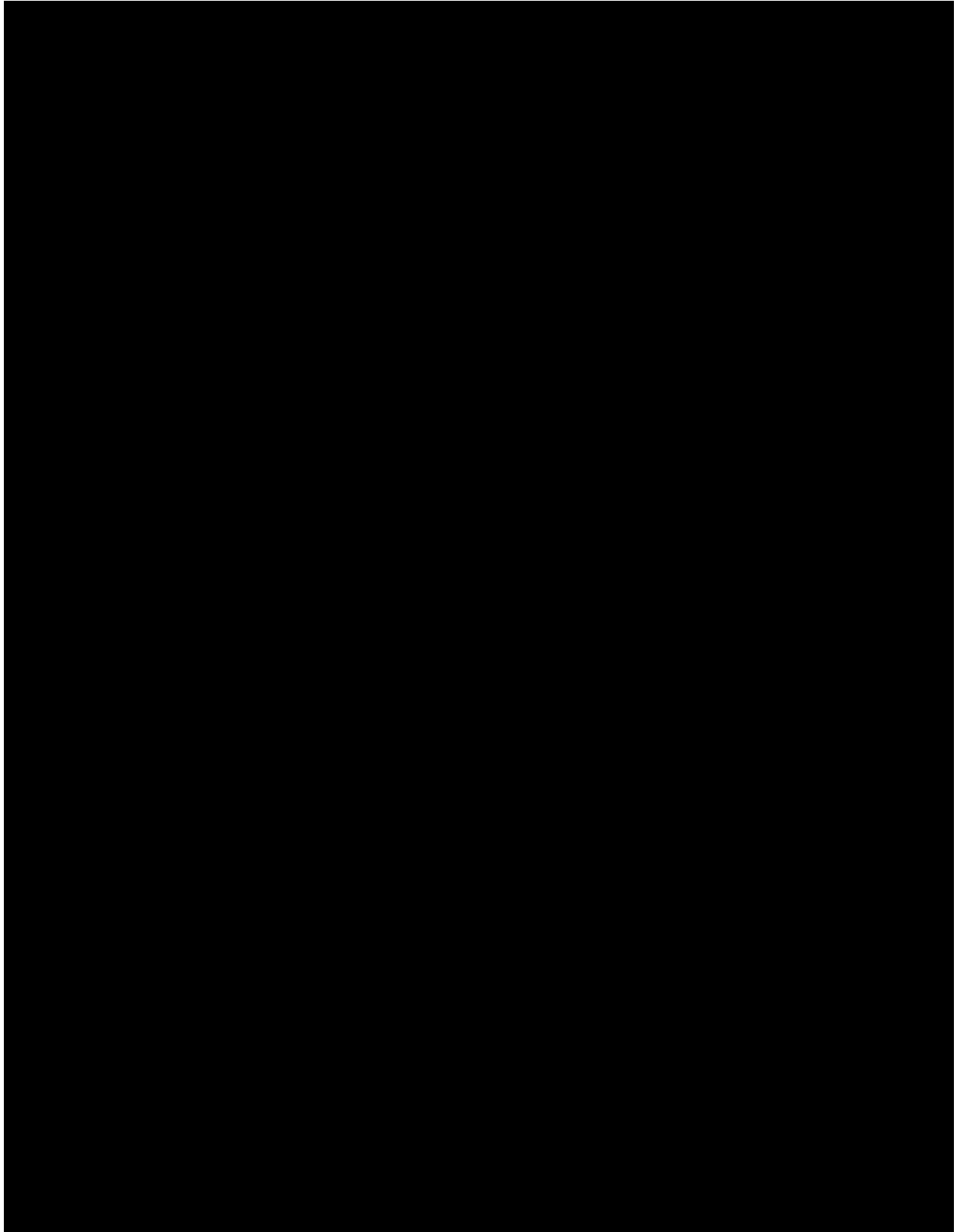


Figure 51: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-202, 12-Bn-203, and 12-Bn-204.

Survey Area 5

Survey Area 5 was located in Oak Grove Township in [REDACTED], Township 24 North, Range 8 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Fowler, Indiana Quadrangle (Figure 52 and Figure 53). The property was surveyed on August 10, 2016. The field was planted in corn, standing between three to seven feet tall. Ground surface visibility was approximately 60-80 percent with some weeds and corn stalks themselves hindering visibility. A total of 121.37 acres was surveyed consisting of ground moraines and end moraines. The area contained Chalmers (Ch), Corwin (CsA and CsB2), Darroch (Dp), Drummer (Du), Odell (OlA), and Miami (M1B2) soils. Nine sites (12-Bn-205 to 12-Bn-213) were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a multicomponent site of 161.87 square meters (0.04 acres) consisting of a historic isolate and a prehistoric isolate

Sites 12-Bn-11 and 12-Bn-12 are collector reported sites in SHAARD (Figure 54). Site 12-Bn-11 is located in the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of [REDACTED] Township 14N Range 8W and Site 12-Bn-12 is located in the NW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of [REDACTED] Township 24N Range 8W and within Survey Area 5. They were both reported by [REDACTED] the father of the current landowner [REDACTED] and recorded by Indiana University’s Noel Justice in 1977. Site 12-Bn-11 is listed as an Early Archaic St. Charles Point isolated find. Site 12-Bn-12 is listed as a possibly Late Archaic lithic scatter of unknown size consisting of 40 nutting stones (Division of Historic Preservation and Archaeology 2007).

Survey Areas 3, 4, and 5 are all owned by [REDACTED]. See Survey Area 3 discussion for initial information regarding the [REDACTED] collection. Detailed information about the [REDACTED] Collection can be found in the Collectors Visit section of this report.

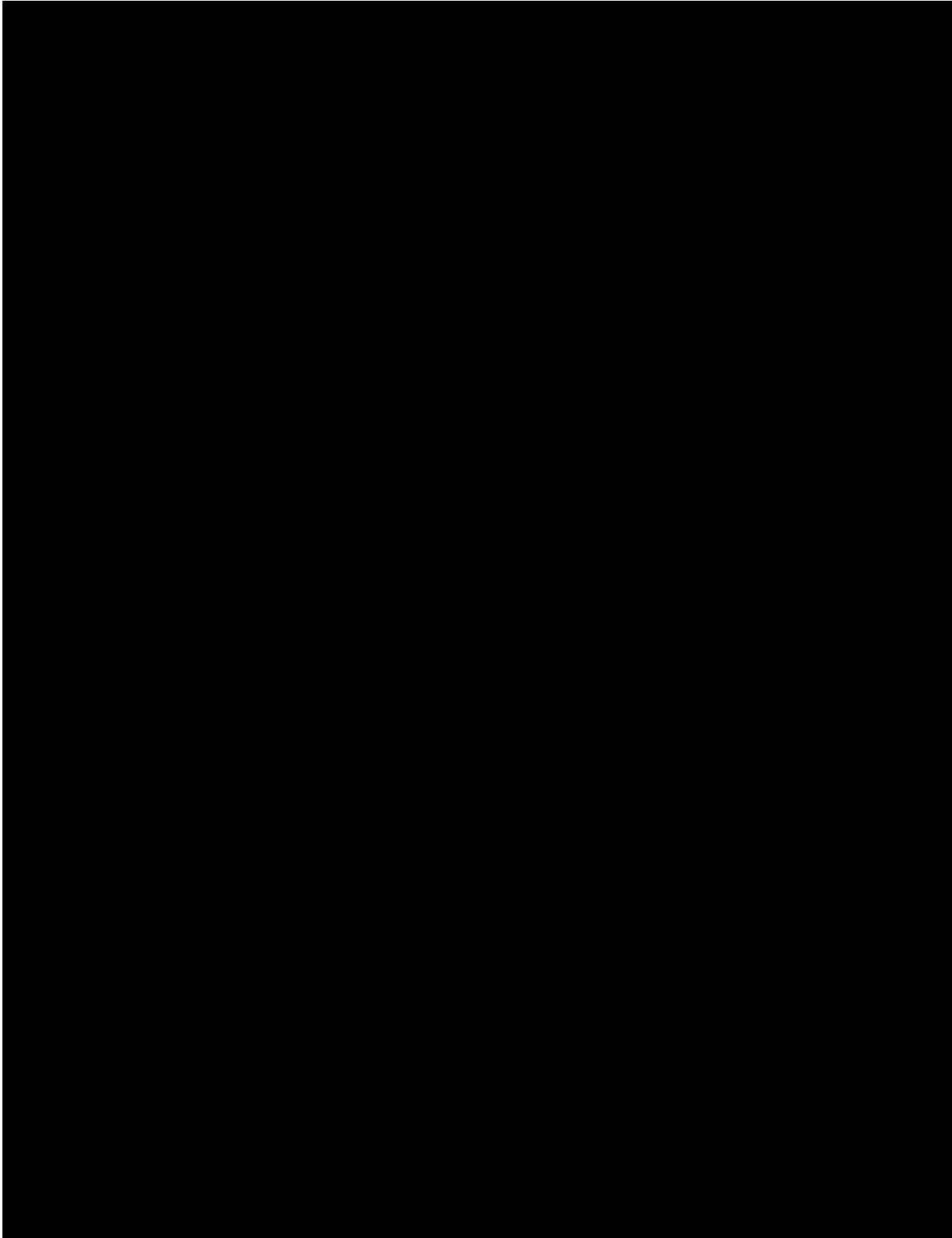


Figure 52: A portion of the map of Oak Grove Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 5. Note: Due to distortion in historical maps, the georeferenced location of SA5 is slightly off.

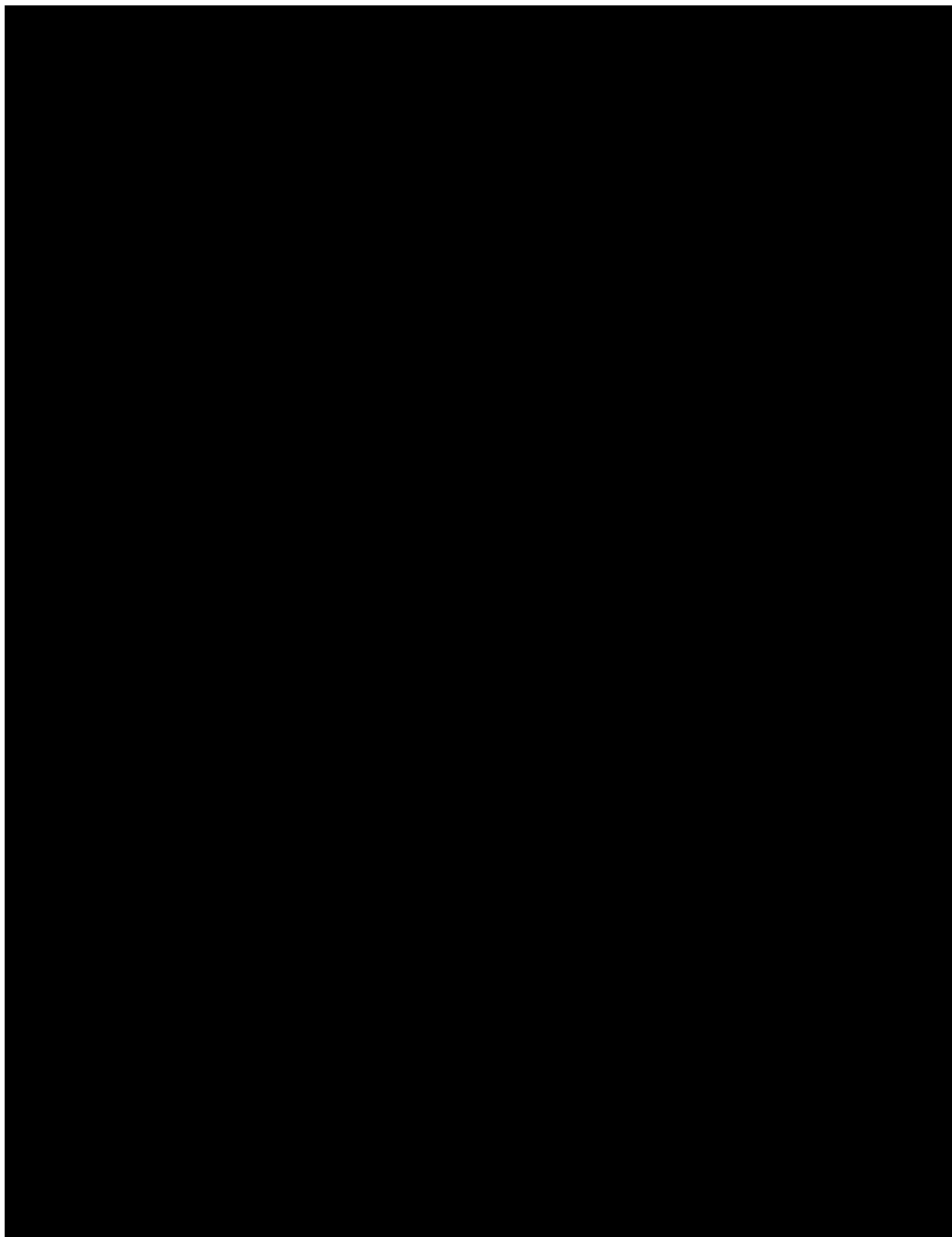


Figure 53: A portion of the USGS 7.5' Fowler, Indiana Quadrangle showing the location of Survey Area 5.

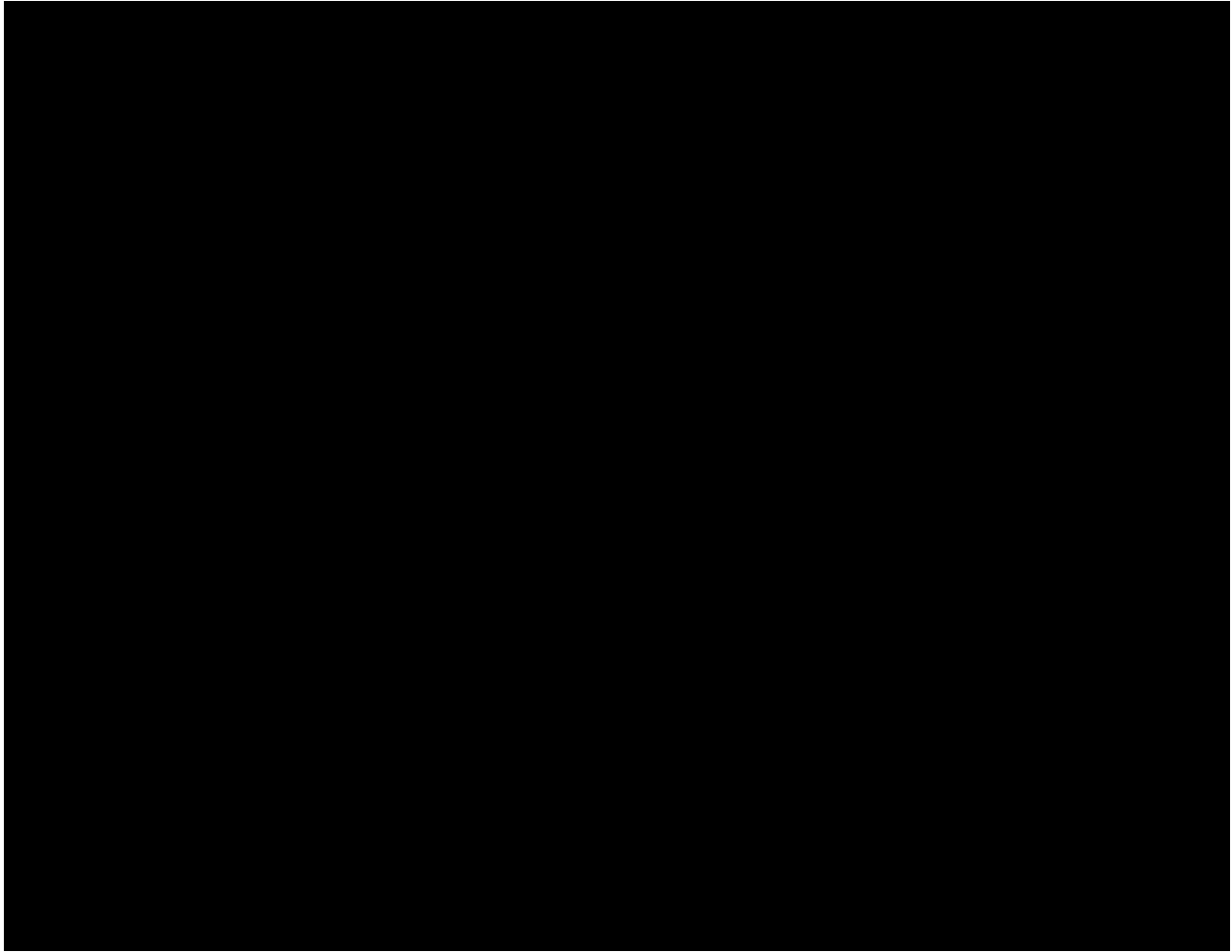


Figure 54: Approximate location of collector reported sites 12-Bn-11 and 12-Bn-12 within Survey Area 5.

Artifacts

A total of 15 artifacts was encountered in Survey Area 5. Table 14 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 55 through Figure 57 . Artifacts are listed by individual site in Volume 2, Appendix E.

Three prehistoric artifacts were recovered (Figure 55). None were diagnostic.

Twelve historic artifacts were recovered from Survey Area 5 and of those, seven are diagnostic (Table 15). Chronologically expressed these items include plain porcelain recovered from site 12-Bn-213 which was manufactured from 1745 to 1850 (Stelle 2001:Chapter 1). Plain whiteware recovered from sites 12-Bn-209 and 12-Bn-211 was manufactured from 1820 to the present (Stelle 2001:Chapter I). Amber glass recovered from site 12-Bn-206 was manufactured

between the 1860s to the present (IMACS 1992:473(19)). Clear glass recovered from site 12-Bn-205 was manufactured between 1860 to the present (IMACS 1992:473(19)).

Table 14: Artifacts from Survey Area 5.

Prehistoric	No.	Historic	No.
Flake, Medial	1	Ceramic, Porcelain	1
Flake, Distal	2	Ceramic, Whiteware	2
		Glass, Amber	3
		Glass, Clear	1
		Plastic, Unknown	1
		Brick	4
Total	3	Total	12

Table 15: Historic Diagnostics from Survey Area 5.

Artifact Type	Site	Date Range	Citation
Plain Porcelain	12-Bn-213	1745-1850	Stelle 2001:Chapter 1
Plain Whiteware	12-Bn-209, 12-Bn-211	1820 to present	Stelle 2001:Chapter 1
Clear Glass	12-Bn-205	1860 to present	IMACS 1992:473(19)
Amber Glass	12-Bn-206, 12-Bn-205	1860 to present	IMACS 1992:473(19)



Figure 55: Representative prehistoric artifacts from Survey Area 5 (Photo by Kiya Mullins, Ball State University).



Figure 56: Representative historic ceramics from Survey Area 5 (Photo by Kiya Mullins, Ball State University).



Figure 57: Representative historic glass from Survey Area 5 (Photo by Kiya Mullins, Ball State University).

Sites

Nine archaeological sites, (12-Bn-205 to 12-Bn-213), were recorded in Survey Area 5 (Figure 58 and Figure 59). Summaries for the individual sites are contained in Volume 2, Appendix F. Seven sites (12-Bn-205 through 12-Bn-209, 12-Bn-211, and 12-Bn-213) had diagnostic artifacts. Two (12-Bn-210 and 12-Bn-211) of the sites were prehistoric isolated finds and three sites (12-Bn-206, 12-Bn-207, and 12-Bn-208) were historic isolated finds. Three sites (12-Bn-205, 12-Bn-211, and 12-Bn-213) were historic scatters and one site (12-Bn-209) was a multicomponent site of a historic isolate and a prehistoric isolate.

All nine sites were found on end moraines and ground moraines. One site (12-Bn-208) was found on Odell silt loam (OlA) soil. One site (12-B-211) was found on Drummer silty clay loam (Du) soil. One site (12-Bn-212) was found on Miami silt loam (MlB2) soil. Two sites (12-Bn-205 and 12-Bn-206) were found on Chalmers silty clay loam (Ch) soil. Three sites (12-Bn-207, 12-Bn-209, and 12-Bn-210) were found on Corwin silt loam (CsB2) soil. One site (12-Bn-213) was found on multiple soil types, Darroch silt loam (Dr) and Corwin silt loam (CsB2) soils.

No sites were discovered in the general vicinity of collector reported sites 12-Bn-11 and 12-Bn-12.

Five sites (12-Bn-205, 12-Bn-206, 12-Bn-207, and 12-Bn-209) were discovered within 200 meters of collector reported site 12-Bn-11, which would cover the maximum site size as identified by the geographic location in SHAARD. Sites 12-Bn-206, 12-Bn-207, and 12-Bn-209 were historic isolates, 12-Bn-205 was a historic scatter with two artifacts, and 12-Bn-210 was a prehistoric isolate with one flake. None of these sites can confirm a more exact location or add to the context of collector reported site 12-Bn-11.

One site (12-Bn-212) was discovered within 300 meters of 12-Bn-12, which would cover the maximum site size as identified by the geographic location in SHAARD. Site 12-Bn-212 was a prehistoric isolate with one flake. This site cannot confirm a more exact location or add to the context of collector reported site 12-Bn-12.

The site types found in Survey Area 5 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National register of Historic Places.

Density

Survey Area 5 consisted of 121.37 acres of end moraines and ground moraines. Within Survey Area 5, a density of one site per 13.49 acres occurred and sites covered 0.17 percent of the surface area.

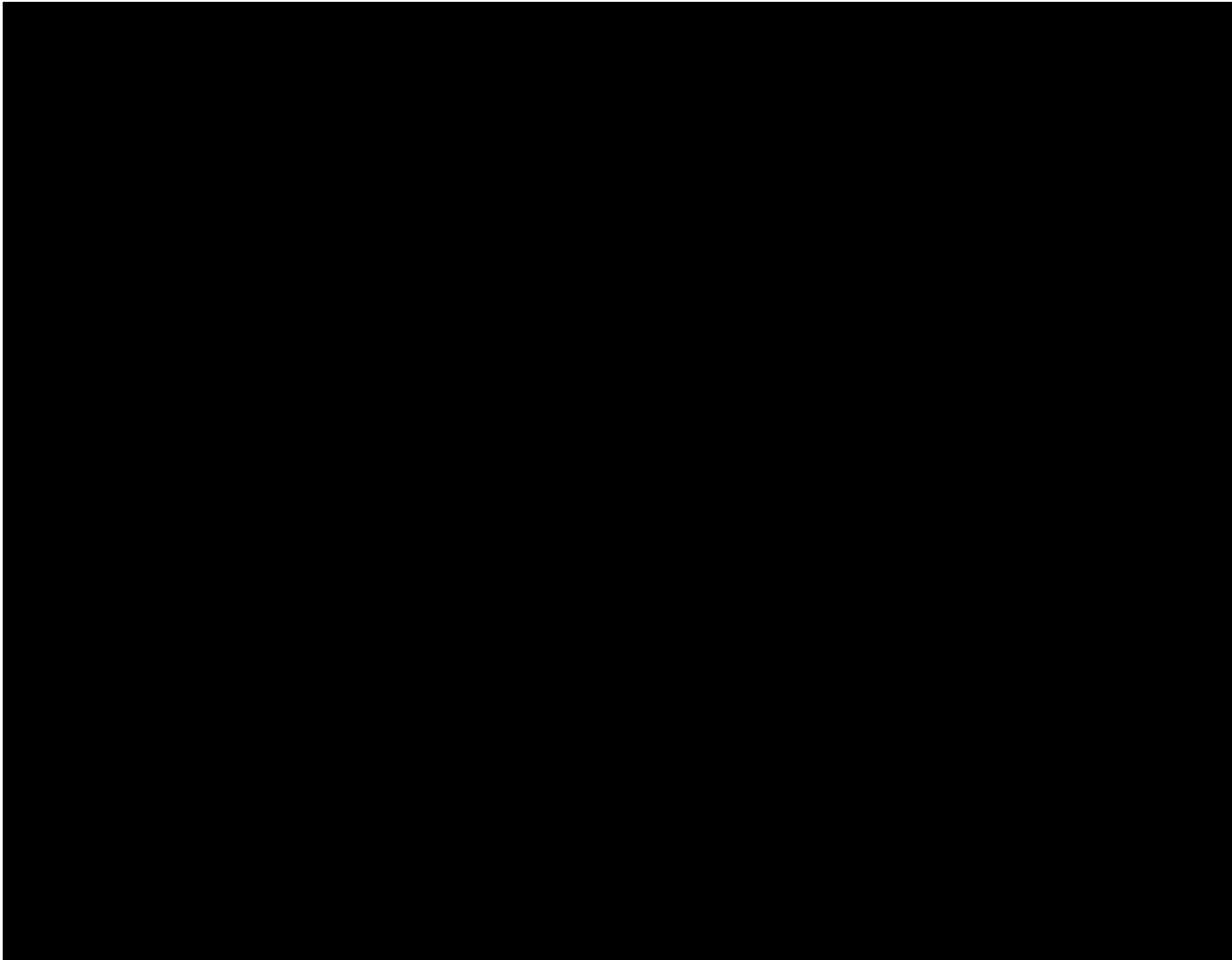


Figure 58: A portion of the USGS 7.5' Fowler, Indiana Quadrangle showing the location of sites 12-Bn-205 to 12-Bn-213 and collector reported sites 12-Bn-11 and 12-Bn-12.

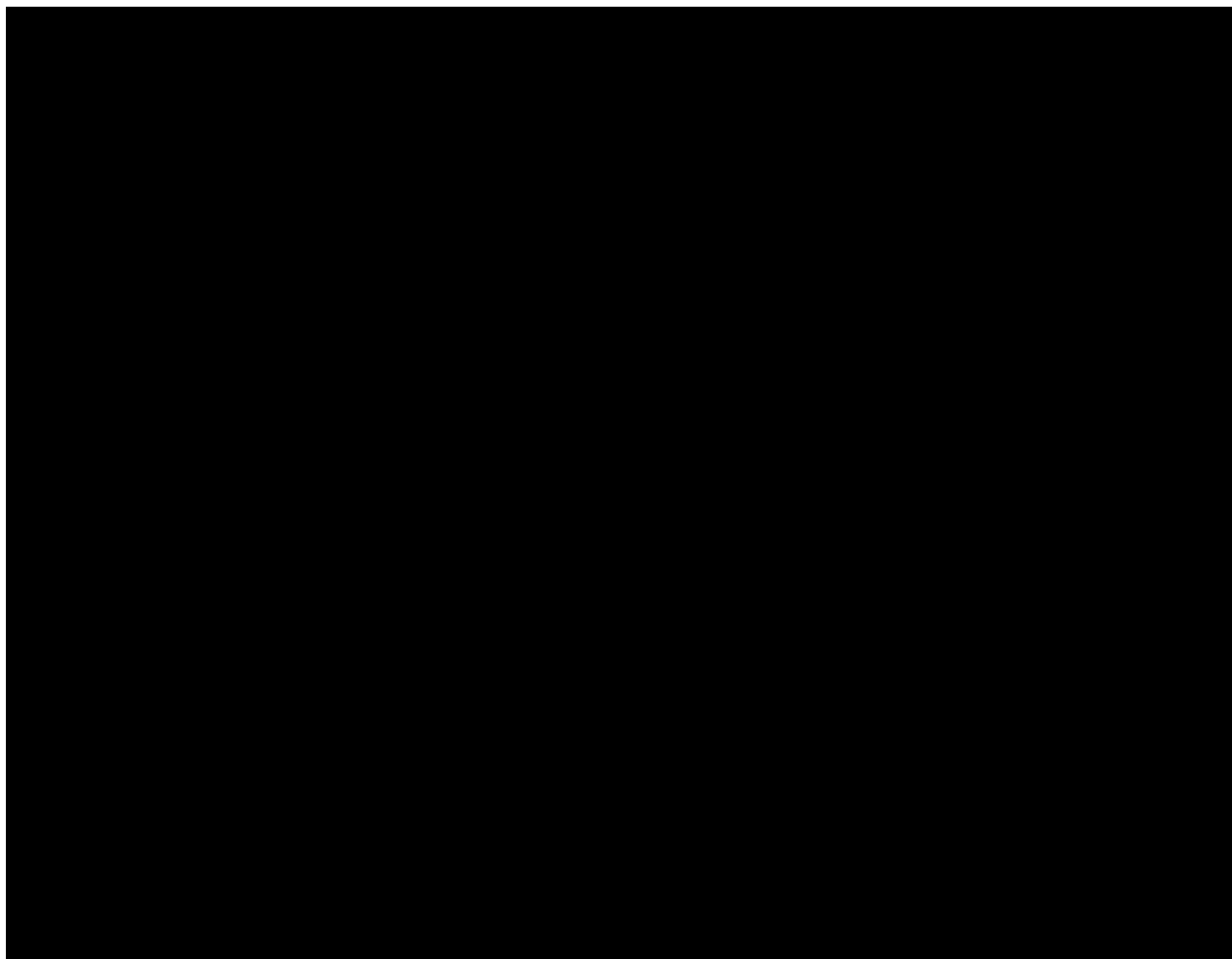


Figure 59: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-205 to 12-Bn-213 and collector reported sites 12-Bn-11 and 12-Bn-12.

Survey Area 6

Survey Area 6 was located in Grant Township in [REDACTED], Township 23 North, Range 8 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Pine Village, Indiana Quadrangle (Figure 60 and Figure 61). The property was surveyed on August 11, 2016. The field was planted in corn, standing between three to seven feet tall. Ground surface visibility was approximately 70-90 percent with some weeds and corn stalks themselves hindering visibility. A total of 56.5 acres was surveyed consisting of ground moraines and end moraines. The area contained Chalmers (Ch), Corwin (CsB2), Miami (M1B2), and Odell (O1B2) soils. Twelve sites (12-Bn-214 to 12-Bn-225) were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a multicomponent prehistoric and historic scatter of 768.90 square meters (0.19 acres).

Survey Area 1 and 6 are both owned by [REDACTED]. [REDACTED] invited the crew to examine their personal artifact collection. PI Christine Thompson and Graduate Assistant Amanda Balough visited with [REDACTED], who did not mention if any collected artifacts were found on Survey Area 6. Following the visit, the [REDACTED] donated their collection to the Applied Anthropology Laboratories. Detailed information about the [REDACTED] Collection can be found in the Collectors Visit section of this report.

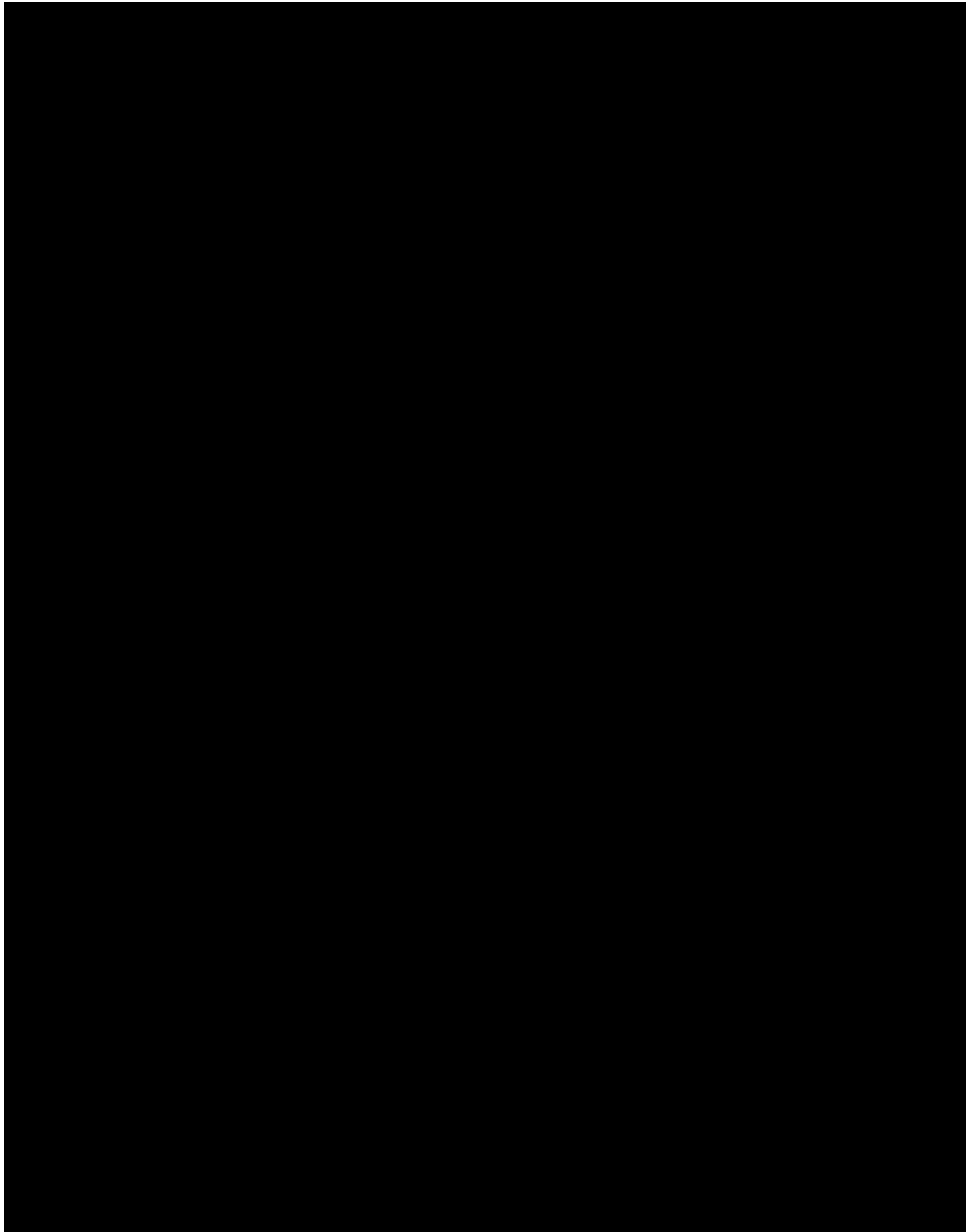


Figure 60: A portion of the map of Grant Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 6. Note: Due to distortion in historical maps, the georeferenced location of SA6 is slightly off.

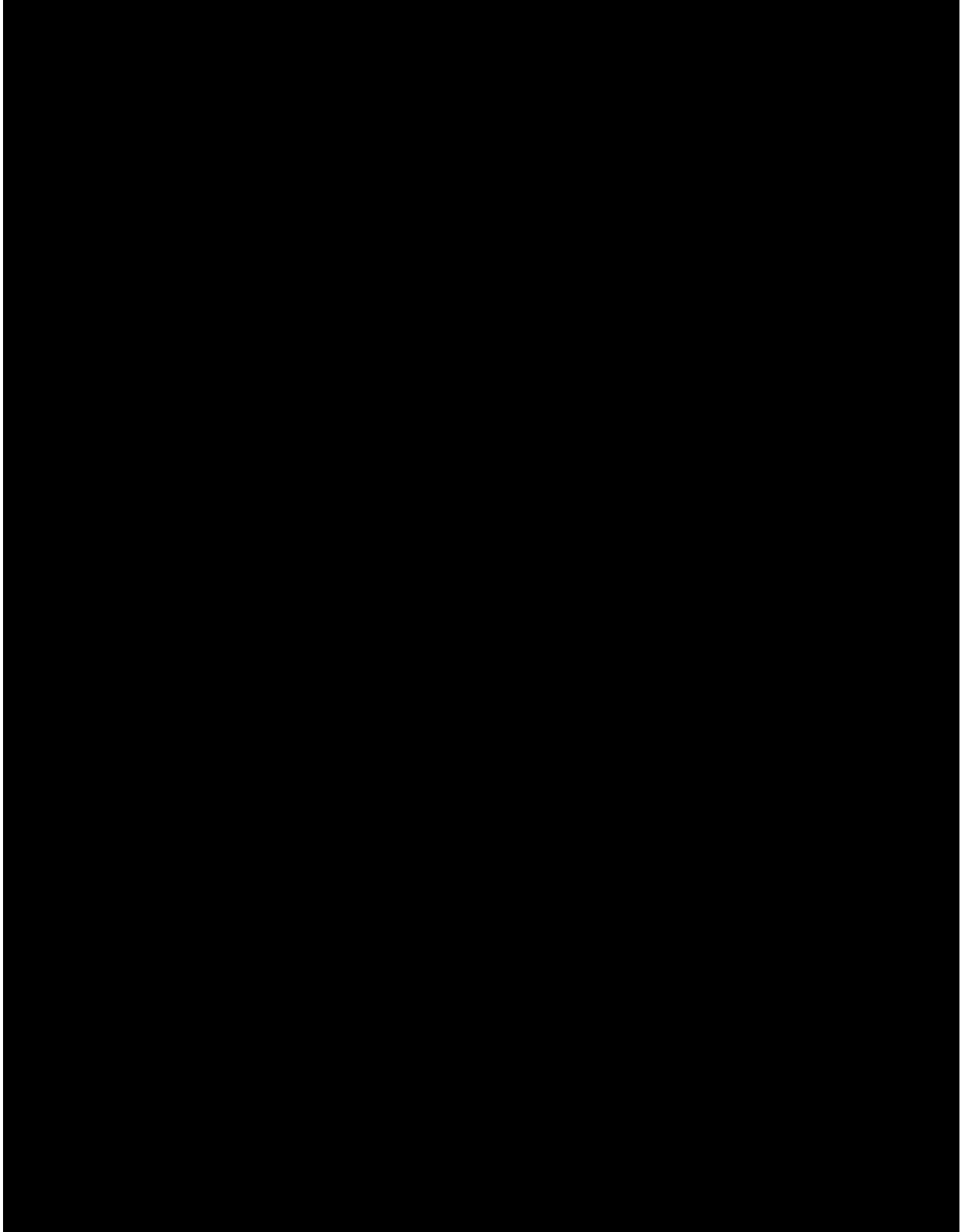


Figure 61: A portion of the USGS 7.5' Pine Village, Indiana Quadrangle showing the location of Survey Area 6.

Artifacts

A total of 32 artifacts was encountered in Survey Area 6. Table 16 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 62 to Figure 65. Artifacts are listed by individual site in Volume 2, Appendix E.

Twenty prehistoric artifacts were recovered from Survey Area 6 (Figure 62). None were diagnostic.

Twelve historic artifacts were recovered from Survey Area 6 and eight are diagnostic (Table 17). Chronologically expressed these items include aqua glass recovered from site 12-Bn-216 which was manufactured from 1800 to 1910 (IMACS 1992:473(19)). Stoneware with Bristol glaze interior and exterior was recovered from 12-Bn-221 and was manufactured from 1835 to the present (Stelle 2001:Chapter 1). Plain ironstone recovered from site 12-Bn-223 was manufactured from 1842 to 1930 (Stelle 2001:Chapter 1). Amber glass was recovered from sites 12-Bn-222 and 12-Bn-223 and was manufactured between 1860 to the present (IMACS 1992:473(19)). Clear glass was recovered from sites 12-Bn-219, 12-Bn-222, and 12-Bn-223 and was manufactured from 1875 to the present (IMACS 1992:473(19)).

Table 16: Artifacts from Survey Area 6.

Prehistoric	No.	Historic	No.
Core Tool, Retouched Scraper	1	Ceramic, Ironstone	1
Core Tool, Scraper	1	Ceramic, Stoneware	1
Core	2	Glass, Aqua	1
Flake, Complete	1	Glass, Amber	2
Flake, Proximal	1	Glass, Clear	3
Flake, Medial	2	Iron	2
Flake, Distal	7	Brick	2
Angular Shatter	5		
Total	20	Total	12

Table 17: Historic Diagnostics from Survey Area 6.

Artifact Type	Site	Date Range	Citation
Aqua Glass	12-Bn-216	1800-1910	IMACS 1992:473(19)
Stoneware with Bristol interior and exterior	12-Bn-221	1835 to present	Stelle 2001: Chapter 1
Plain Ironstone	12-Bn-223	1842-1930	Stelle 2001: Chapter 1
Amber Glass	12-Bn-222, 12-Bn-223	1860 to present	IMACS 1992:473(19)
Clear Glass	12-Bn-219, 12-Bn-222, 12-Bn-223	1875 to present	IMACS 1992:473(19)



Figure 62: Representative prehistoric artifacts from Survey Area 6 (Photo by Kiya Mullins, Ball State University).



Figure 63: Representative historic ceramic artifacts from Survey Area 6 (Photo taken by Kiya Mullins, Ball State University).



Figure 64: Representative glass artifacts from Survey Area 6 (Photo taken by Kiya Mullins, Ball State University).



Figure 65: Representative iron artifacts from Survey Area 6 (Photo taken by Kiya Mullins, Ball State University).

Sites

Twelve archaeological sites, 12-Bn-214 to 12-Bn-225, were recorded in Survey Area 6 (Figure 66 and Figure 67). Summaries for the individual sites are contained in Volume 2, Appendix F. Five sites (12-Bn-216, 12-Bn-219, 12-Bn-221, 12-Bn-222, and 12-Bn-223) had diagnostic artifacts. Three sites (12-Bn-214, 12-Bn-218, and 12-Bn-224) were isolated prehistoric finds and two sites (12-Bn-220 and 12-Bn-221) were isolated historic finds. Three sites (12-Bn-215, 12-Bn-217, and 12-Bn-225) were prehistoric scatters and one site (12-Bn-222) was a historic sites. Three sites (12-Bn-216, 12-Bn-219, and 12-Bn-223) were multicomponent sites. Site 12-Bn-216 was a prehistoric scatter and a historic scatter. Site 12-Bn-219 was a prehistoric isolate and a historic isolate. Site 12-Bn-223 was a historic scatter with a prehistoric isolate.

All sites were discovered on end moraines and ground moraines. One site (12-Bn-220) was found on Chalmers silty clay loam (Ch) soil. Three sites (12-Bn-219, 12-Bn-223, and 12-Bn-224) were found on Corwin silt loam (CsB2) soil. Two sites (12-Bn-214 and 12-Bn-215)

were found on Miami silt loam (MlB2) soil. Six sites (12-Bn-216, 12-Bn-217, 12-Bn-218, 12-Bn-221, 12-Bn-222, and 12-Bn-225) were found on Odell silt loam (OlB2) soil.

The site types found in Survey Area 6 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National register of Historic Places.

Density

Survey Area 6 consisted of 56.5 acres of end moraines and ground moraines. Within Survey Area 6, a density of one site per 4.71 acres occurred and sites covered 0.97 percent of the surface area.

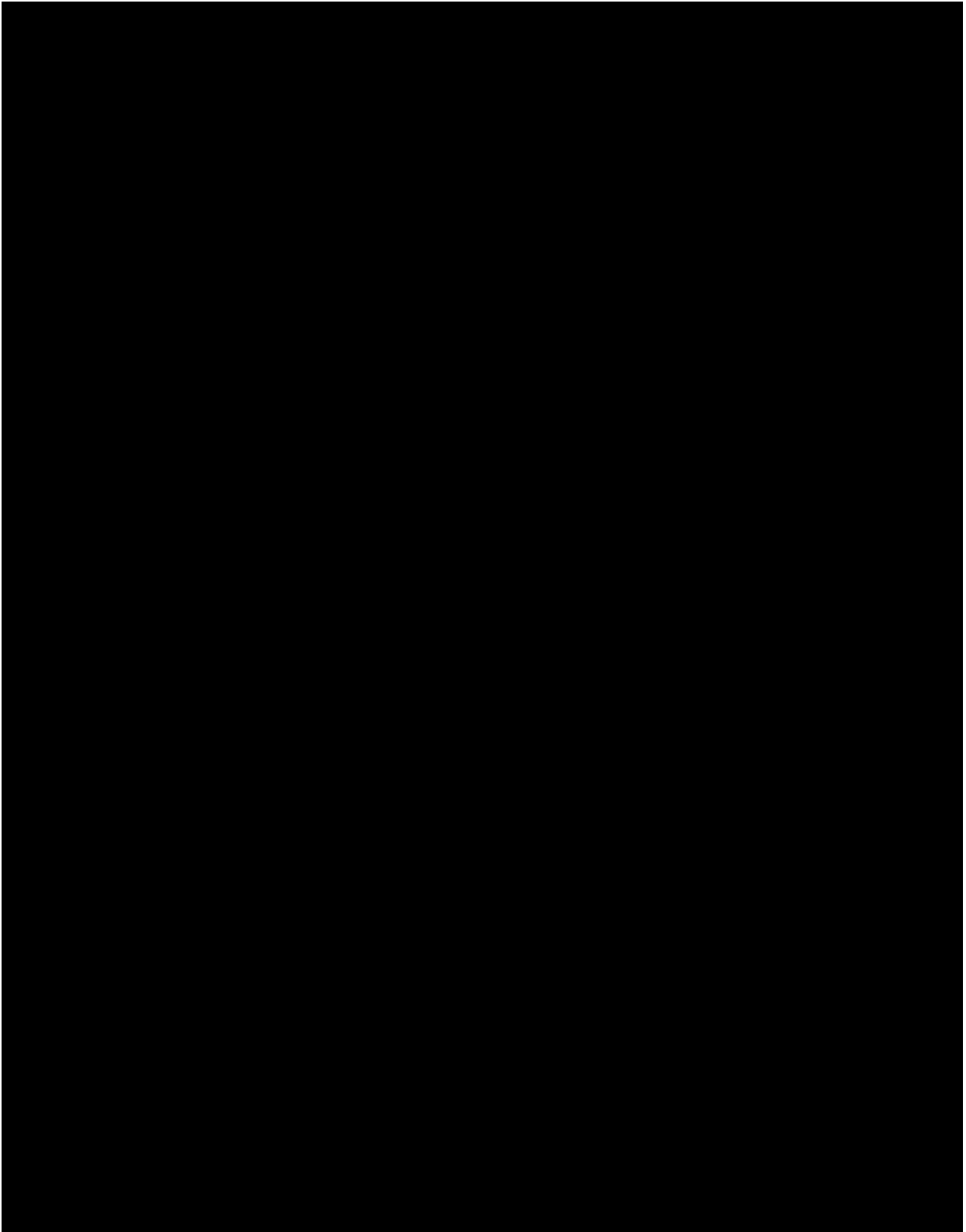


Figure 66: A portion of the USGS 7.5' Pine Village, Indiana Quadrangle showing the location of sites 12-Bn-214 to 12-Bn-225.

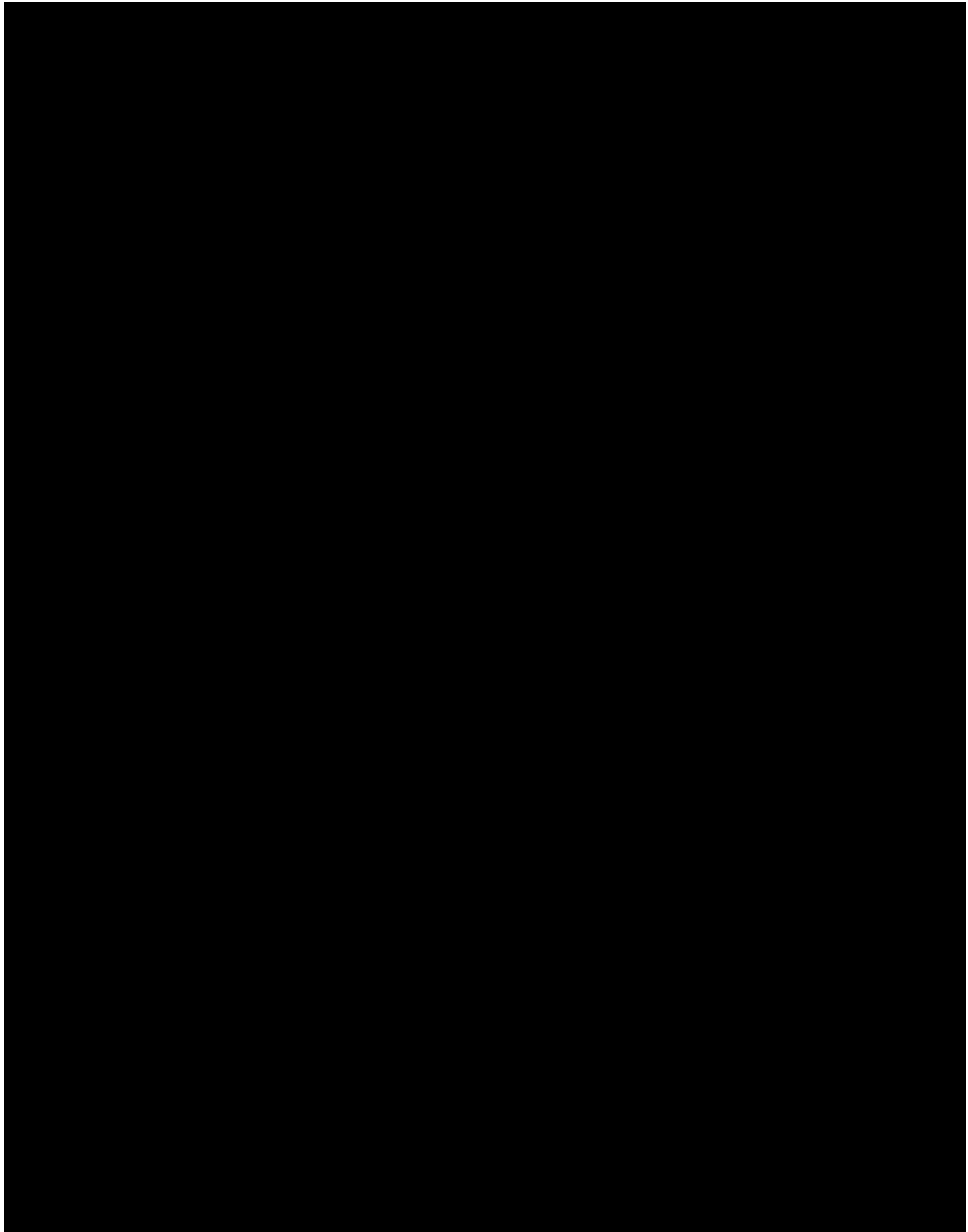


Figure 67: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-214 to 12-Bn-225.

Survey Area 7

Survey Area 7 was located in Hickory Grove Township in ████████ Township 24 North, Range 10 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Stockland, Indiana Quadrangle (Figure 68 and Figure 69). The property was surveyed on August 21, 2016. The field was planted in corn, standing between three to seven feet tall. Ground surface visibility was approximately 60-90 percent with some weeds and corn stalks themselves hindering visibility. Seventy-one acres were surveyed consisting of ground moraines and end moraines and outwash plains and terraces. The area contained Corwin (CsB2), Crane (Cu), Drummer (Du), Lisbon (LsA), and Odell (O1B2). Sixteen sites (12-Bn-226 to 12-Bn-241) were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a multicomponent prehistoric isolate and historic scatter of 2630.46 square meters (0.65 acres).

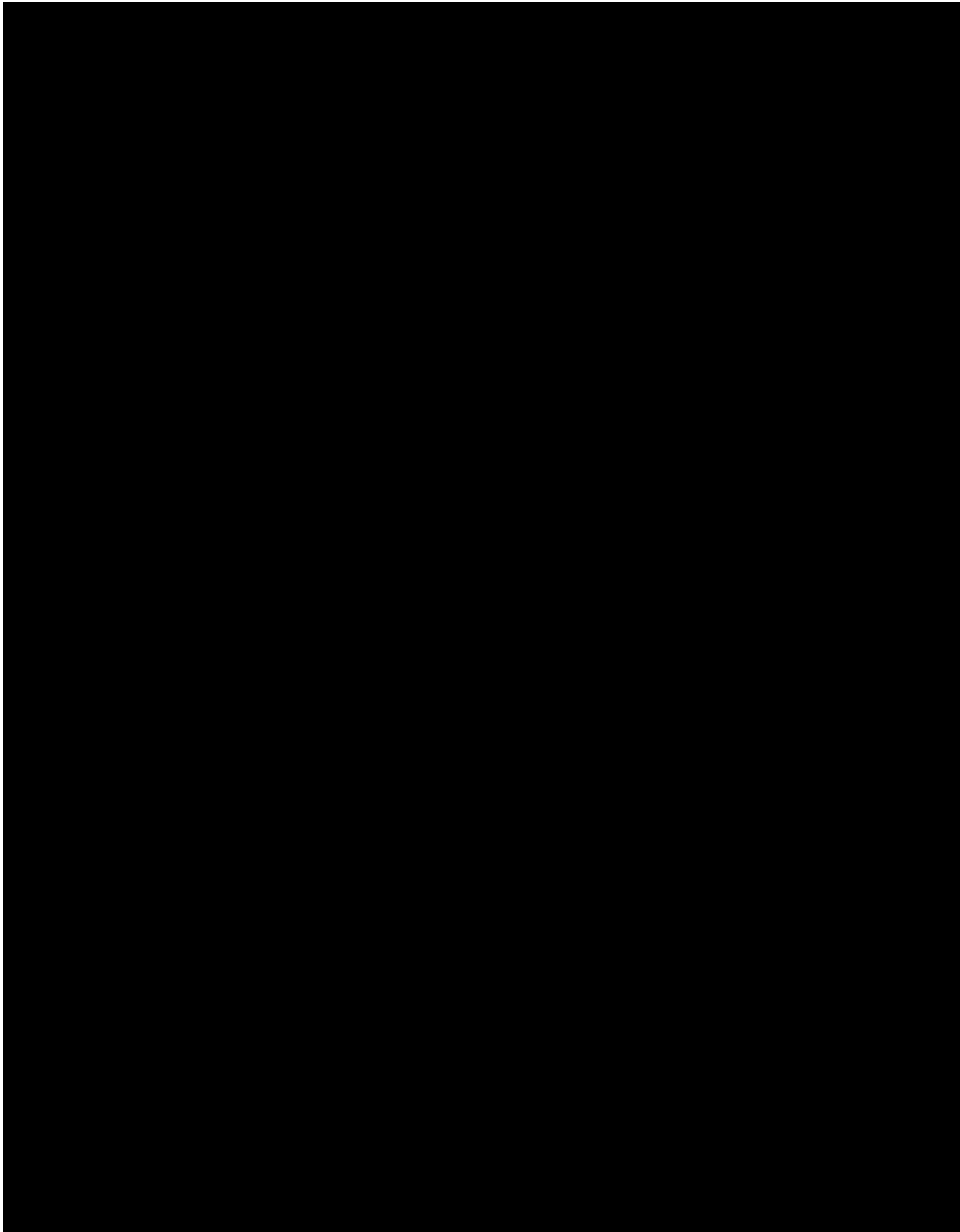


Figure 68: A portion of the map of Hickory Grove Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 7. Note: Due to distortion in historical maps, the georeferenced location of SA7 is slightly off.

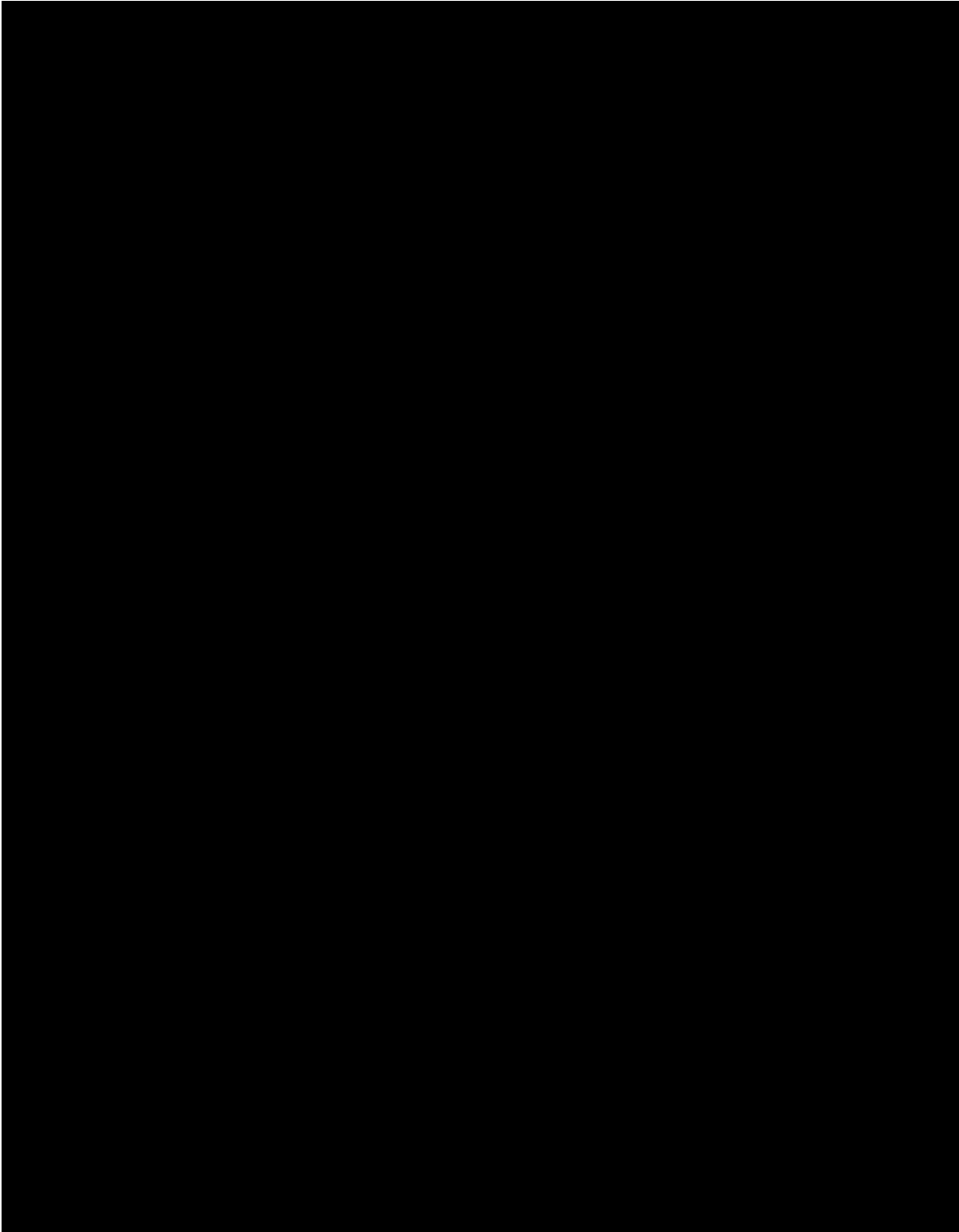


Figure 69: A portion of the USGS 7.5' Stockland, Indiana Quadrangle showing the location of Survey Area 7.

Artifacts

A total of 42 artifacts was encountered in Survey Area 7. Table 18 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 70 through Figure 75. Artifacts are listed by individual site in Volume 2, Appendix E.

Sixteen prehistoric artifacts were recovered from Survey Area 7 (Figure 70). None were diagnostic.

Twenty-six historic artifacts were recovered from Survey Area 7 and of those, twenty-two are diagnostic. Chronologically expressed these items include turquoise glass recovered from site 12-Bn-236 which was manufactured from 1800 to 1910 (IMACS 1992:473(18)). Aqua glass recovered from site 12-Bn-238 was manufactured from 1800 to 1910 (IMACS 1992:473(18)). Plain whiteware was recovered from sites 12-Bn-238 and 12-Bn-239 and was manufactured from 1820 to the present (Stelle 2001:Chapter 1). Amber glass was recovered from sites 12-Bn-222 and 12-Bn-223 and was manufactured from 1860 to the present (IMACS 1992:473(19)). A shield nickel (five cents piece), with an unreadable date, was minted for circulation from 1866-1883 (Collectors Universe, Inc. 2015). Clear glass was recovered from sites 12-Bn-219, 12-Bn-222, and 12-Bn-223 and was manufactured from 1875 to the present (IMACS 1992:473(19)).

Table 18: Artifacts from Survey Area 7.

Prehistoric	No.	Historic	No.
Core Tool	2	Ceramic, Ironstone	5
Core Fragment	1	Ceramic, Whiteware	2
Core	1	Ceramic, Stoneware	5
Flake, Complete	1	Glass Turquoise	1
Flake, Proximal	1	Glass, Amethyst	2
Flake, Medial	2	Glass, Aqua	4
Flake, Distal	5	Glass, Clear	2
Angular Shatter	3	Shield Nickel (1866-1883)	1
		Metal, Iron Stake	1
		Brick	2
		Fossil, Coral	1
Total	16	Total	26

Table 19: Historic Diagnostics from Survey Area 7.

Artifact Type	Site	Date Range	Citation
Turquoise Glass	12-Bn-236	1800-1910	IMACS 1992:473(18)
Aqua Glass	12-Bn-238	1800-1910	IMACS 1992:473(18)
Plain Whiteware	12-Bn-238, 12-Bn-239	1820 to present	Stelle 2001: Chapter 1
Amber Glass	12-Bn-222, 12-Bn-223	1860 to present	IMACS 1992:473(19)
Shield Nickel	12-Bn-238	1866-1883	Collectors Universe, Inc. 2015
Clear Glass	12-Bn-219, 12-Bn-222, 12-Bn-223	1875 to present	IMACS 1992:473(19)



Figure 70: Representative prehistoric artifacts from Survey Area 7 (Photo by Kiya Mullins, Ball State University).



Figure 71: Representative ceramic historic artifacts from Survey Area 7 (Photo by Kiya Mullins, Ball State University).



Figure 72: Representative historic glass artifacts from Survey Area 7 (Photo by Kiya Mullins, Ball State University).



**Figure 73: Representative historic metal artifact and coral fossil from Survey Area 7
(Photo by Kiya Mullins, Ball State University).**



Figure 74: Front of shield nickel (1866-1883) recovered from site 12-Bn-238 in Survey Area 7 (Photo by Kiya Mullins, Ball State University).



Figure 75: Back of shield nickel (1866-1883) recovered from site 12-Bn-238 in Survey Area 7 (Photo by Kiya Mullins, Ball State University).

Sites

Sixteen archaeological sites, 12-Bn-226 to 12-Bn-241, were recorded in Survey Area 7 (Figure 76 and Figure 77). Summaries for the individual sites are contained in Volume 2, Appendix F. Five sites had diagnostic artifacts (12-Bn-236, 12-Bn-238, 12-Bn-239, 12-Bn-240, and 12-Bn-241). Four sites were a historic isolated finds (12-Bn-226, 12-Bn-231, 12-Bn-239, and 12-Bn-241). Five sites (12-Bn-229, 12-Bn-230, 12-Bn-233, 12-Bn-234, and 12-Bn-235) were prehistoric isolated finds. Four sites (12-Bn-227, 12-Bn-228, 12-Bn-232, and 12-Bn-237) were prehistoric scatters. Two sites (12-Bn-236 and 12-Bn-240) were historic scatters and one site (12-Bn-238) was a multicomponent site with a prehistoric isolate and a historic scatter.

All 16 sites (12-Bn-226 to 12-Bn-241) were discovered on end moraines and ground moraines. Three site (12-Bn-226, 12-Bn-227, and 12-Bn-230) were found on Corwin silt loam (CsB2) soil. Three sites (12-Bn-228, 12-Bn-229, and 12-Bn-233) were found on Odell silt loam (OLA) soil. Six sites (12-Bn-231, 12-Bn-234, 12-Bn-237, 12-Bn-239, 12-Bn-240, and 12-Bn-241) were found on Drummer silty clay loam (Du) soil. Two sites (12-Bn-235 and 12-Bn-236) were found on Lisbon (LsA) soil. Two sites were found on multiple soil types. Site 12-Bn-232 was found on Odell silt loam (OLA) and Corwin silt loam (CsB2) soils. Site 12-Bn-238 was found on Drummer silty clay loam (Du) and Crane loam (Cu) soils.

Site 12-Bn-238 was a large, low density historic scatter with a prehistoric isolate and was 2630.457 square meters (0.65 acres) in size. Of the 26 historic artifacts recovered from Survey Area 7, 16 were recovered from 12-Bn-238. Of those recovered artifacts from the 12-Bn-238 scatter, three pieces were ironstone and one artifact was a sub-type 2 shield nickel. No subsurface features were encountered. Three historic maps (Andreas 1968; Geo. A. Ogle & Co 1909; Taylor 2009) were consulted and no structures were shown in Survey Area 7 on any of the historic maps consulted. The assemblage is not that which typically constitute secondary dump sites. The presence of the nickel, ironstone, and container glass suggests that site 12-Bn-238 may be a primary deposit. The nickel combined with many classes with termination dates in the early 20th century potentially offer an opportunity to learn more about early settler activity in Benton County around the time of the establishment of the railroads. The railroads were established in Benton County beginning in 1871, which increased the population in Benton County (Taylor 2009:12-13). Located 7.33 kilometers (4.6 miles) south of site 12-Bn-238 is the New York, Chicago, and St. Louis Railroad in the town of Ambia (Andreas 1968). The dates from the nickel indicate that early settler's expansion and settlement had reached the western side of Benton County by 1883. The distribution, low density, and shape of site 12-Bn-238 could suggest a primary deposit associated with a previously unmapped structure. Based on the archaeological evidence and our historic research, site 12-Bn-238 is considered to have the potential to yield additional information beyond the Phase I level and is therefore considered potentially eligible for the National Register of Historic Places.

The other site types found in Survey Area 7 (12-Bn-226 to 12-Bn-237, and 12-Bn-239 to 12-Bn-241) are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 7 consisted of 71.09 acres of end moraines and ground moraines and outwash plains and terraces. Within Survey Area 7, a density of one site per 4.44 acres occurred and sites covered 1.45 percent of the surface area.

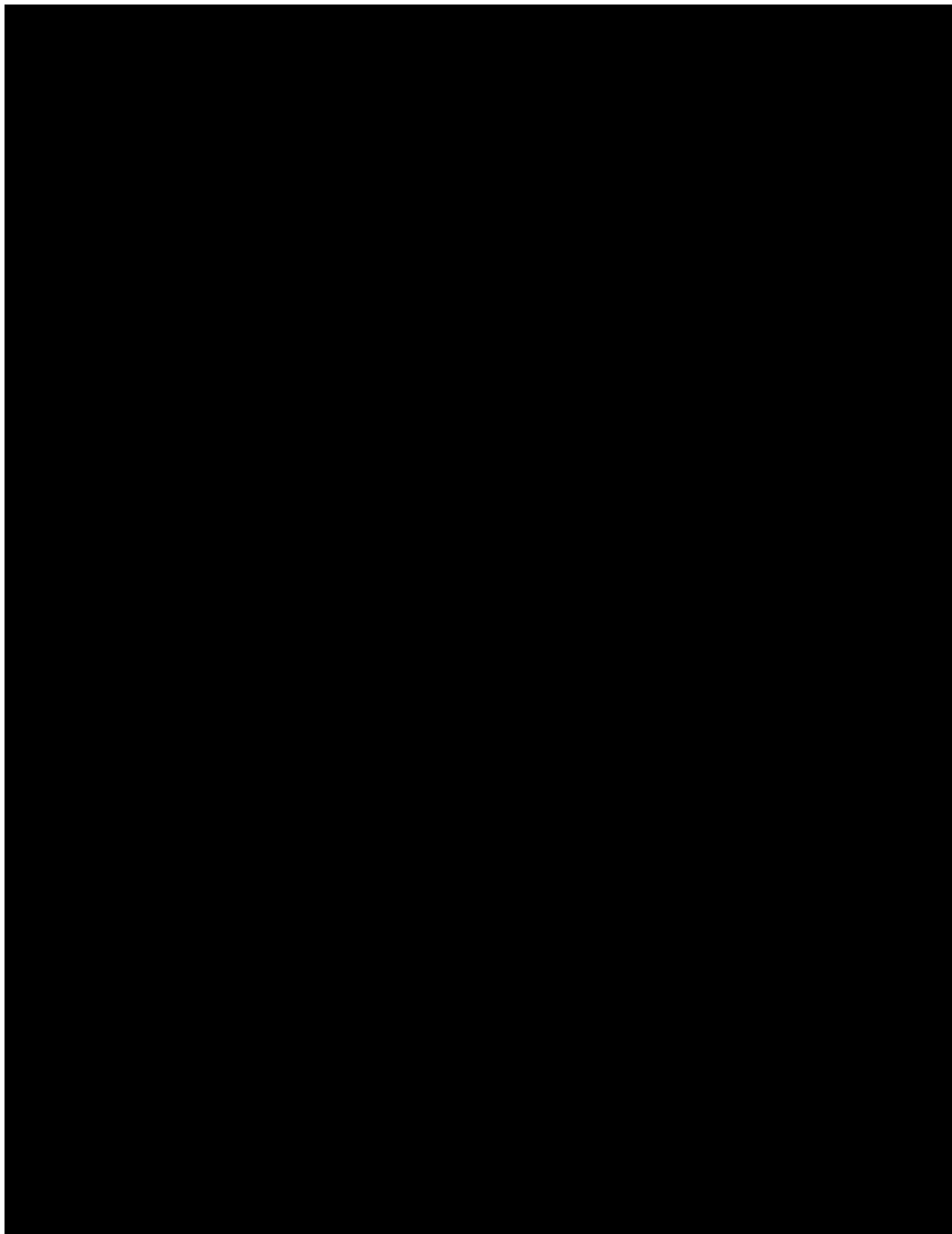


Figure 76: A portion of the USGS 7.5' Stockland, Indiana Quadrangle showing the location of sites 12-Bn-226 to 12-Bn-241.

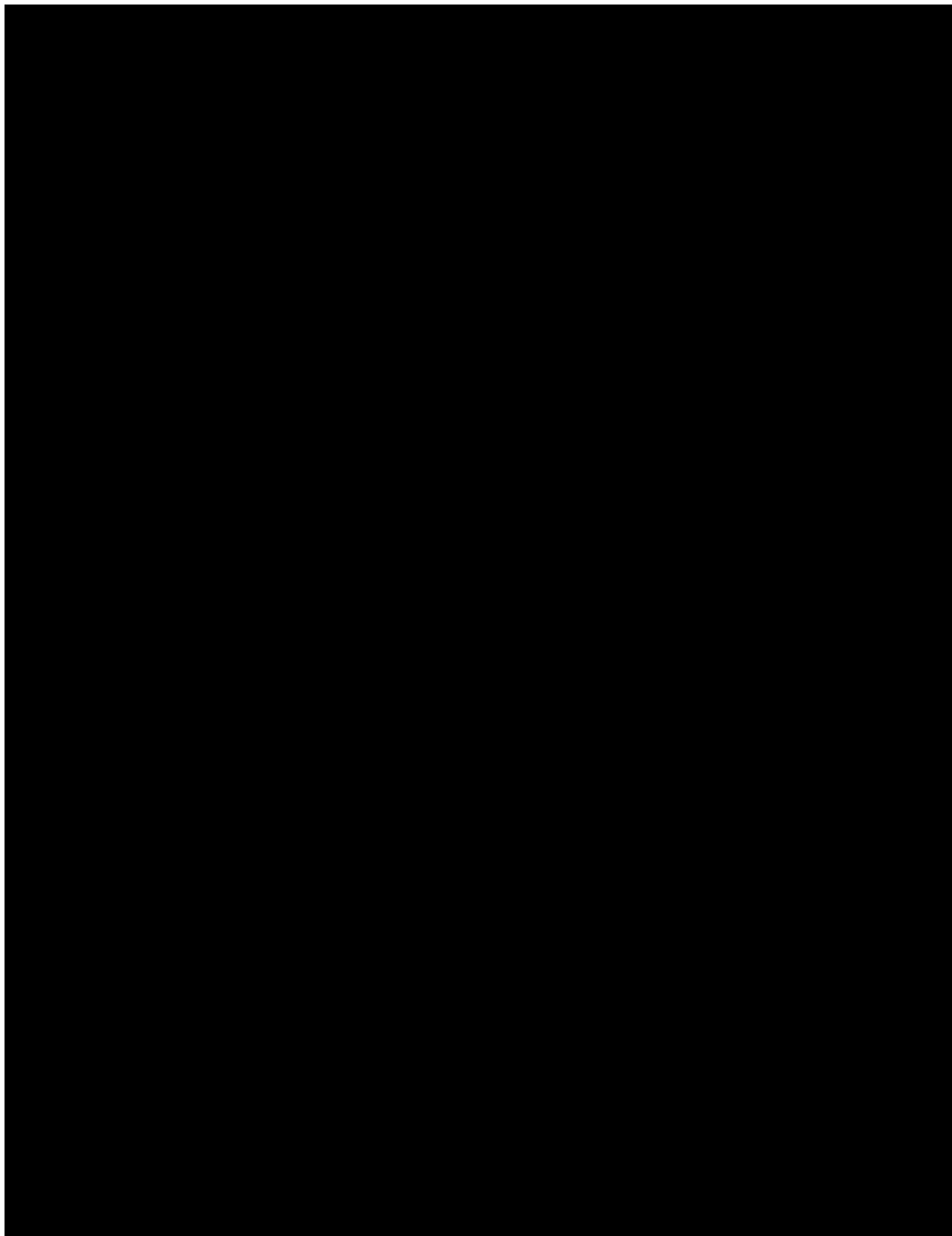


Figure 77: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-226 to 12-Bn-241.

Survey Area 8

Survey Area 8 was located in Hickory Grove Township in [REDACTED], Township 24 North, Range 9 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Tab, Indiana Quadrangle (Figure 78 and Figure 79). The property was surveyed on August 21, 2016 and August 28, 2016. The field was planted in corn, standing between three to seven feet tall. Ground surface visibility was approximately 60-90 percent with some weeds and corn stalks themselves hindering visibility. A total of 132.6 acres was surveyed consisting of ground moraines and end moraines. The area contained Barce (BaB2), Chalmers (Ch), Darroch (Do), Foresman (FpB2), Gilboa (G1A), and Peotone (Pn). Thirteen sites (12-Bn-242 to 12-Bn-254) were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a historic scatter of 7769.96 square meters (1.92 acres).

The irregular shape of Survey Area 8 is the result of the survey being cut short on August 28, 2016 due to a thunderstorm. Field crew exited the field after the current transect was complete. The field crew did not return to Survey Area 8.

The landowner, [REDACTED] contacted PI Christine Thompson on July 17, 2016, with questions about the project. In subsequent correspondence on August 26, 2016, [REDACTED] stated that his grandparents’ house once stood on Survey Area 8. The location of the house was not visible on any historic maps (Andreas 1968; Taylor 2009), but the gravel lane is visible on the 2013 aerial image (Indiana Spatial Data Portal 2015). The 1989 Google Earth aerial shows two driveways, a barn, and the location of the farmstead (Figure 80). [REDACTED] indicated that the farmstead was bulldozed and buried in the 1980s and 1990s. The land parcel was purchased by [REDACTED] grandfather in 1899. [REDACTED] shared an image (ca. 1903) of his grandparents’ house that stood on the property (Figure 81). The farmstead included the house, barn, corn crib, summer kitchen, and utility shed.

[REDACTED] also shared with Thompson images of prehistoric artifacts he personally collected, some of which came from Survey Area 8 (Figure 82). The artifacts collected by [REDACTED] include an axe, an awl, a corner notched biface, a side notched biface, a possible triangle biface, an ovate biface, and a possible groundstone. Although the label in Figure 82 coincides with Survey Area 8, [REDACTED] indicated via email that the axe and the large point were found on another parcel that he owns in Benton County.

[REDACTED] his wife, and his sister visited the Applied Anthropology Laboratories on April 3, 2017. They reviewed the collection from Survey Area 8 and also shared additional prehistoric artifacts collected on their parcels. Detailed information about the [REDACTED] Collection can be found in the Collectors Visit section of this report.

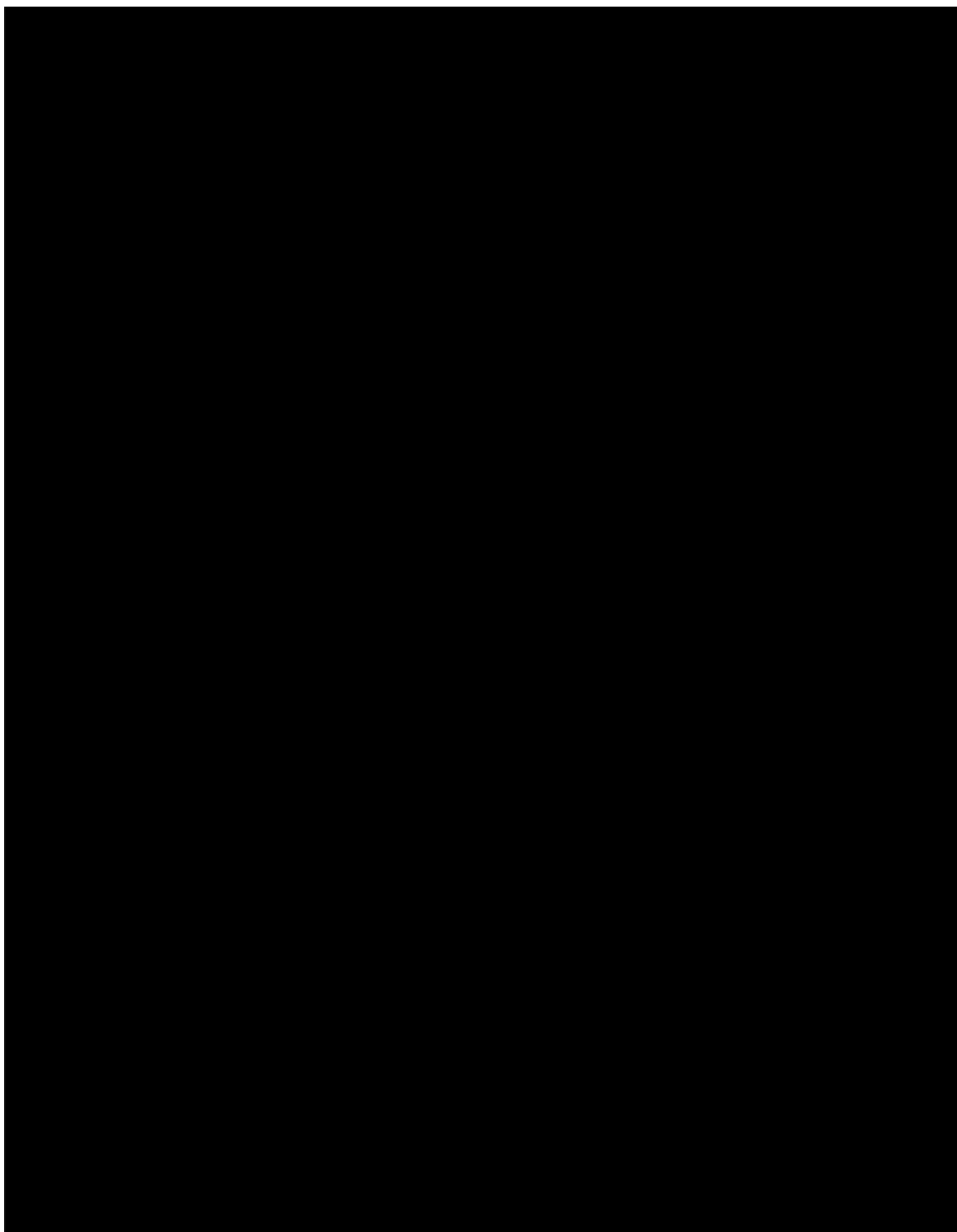


Figure 78: A portion of the map of Hickory Grove Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 8. Note: Due to distortion in historical maps, the georeferenced location of SA8 is slightly off.

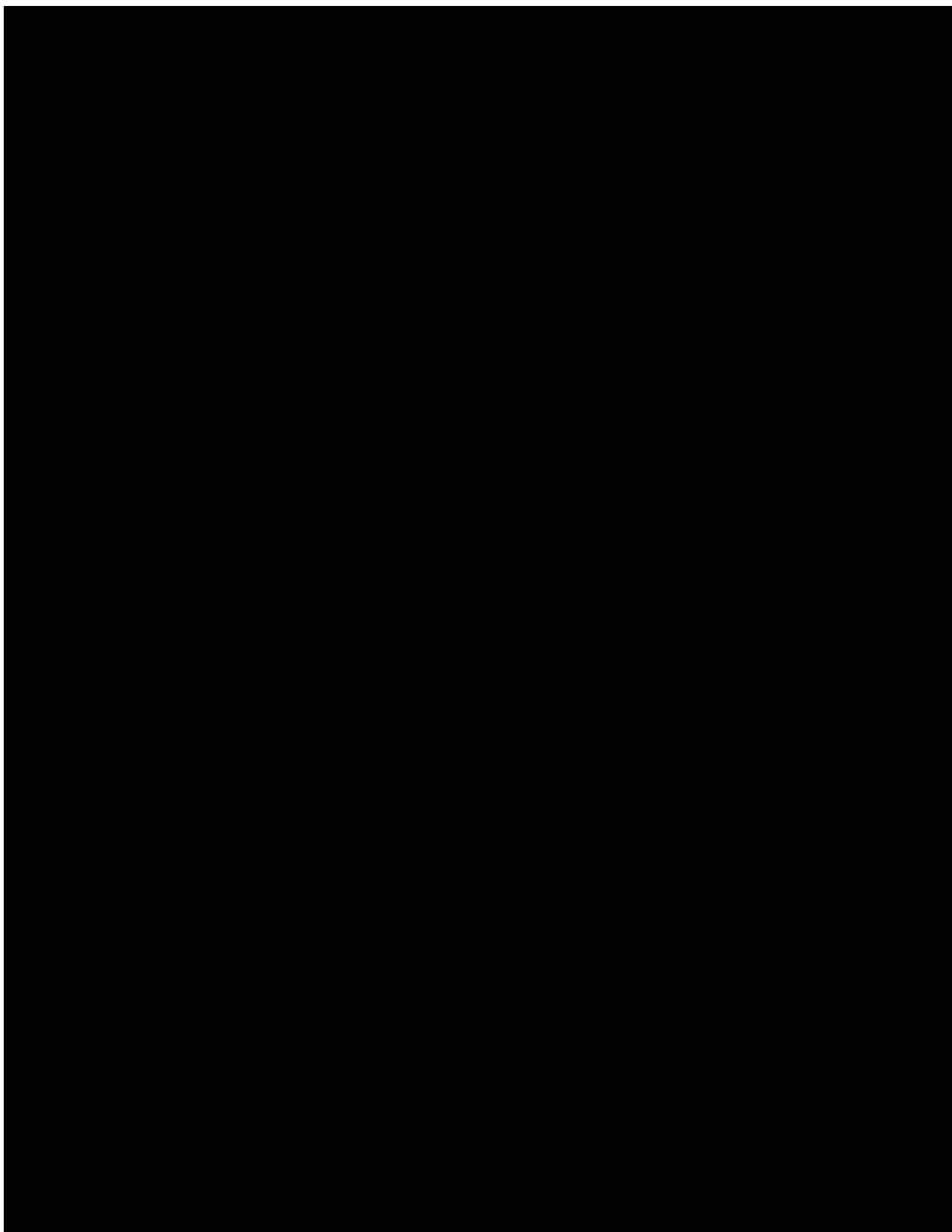


Figure 79: A portion of the USGS 7.5' Tab, Indiana Quadrangle showing the location of Survey Area 8.

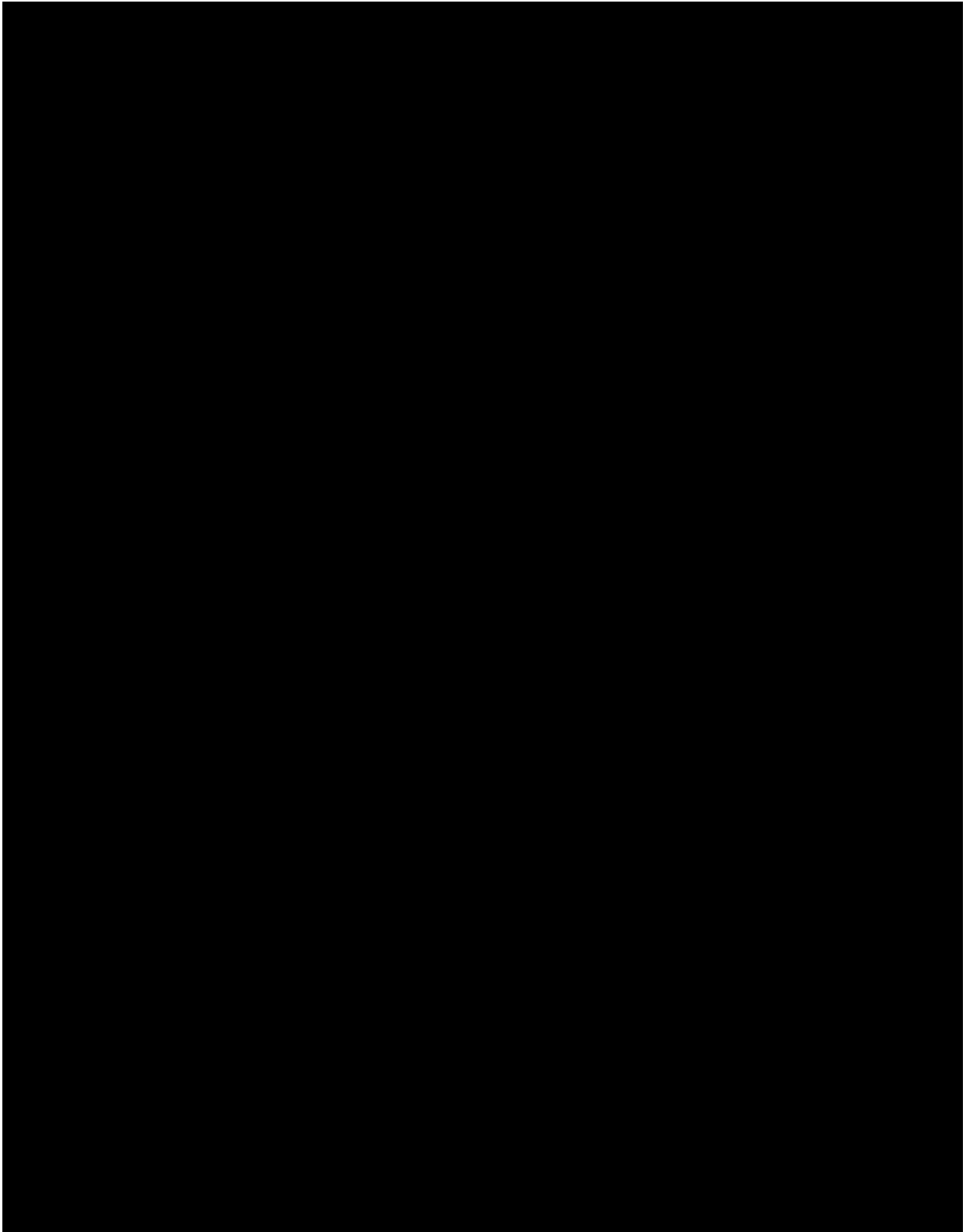


Figure 80: 1989 Google Earth Aerial showing [REDACTED] farmstead on Survey Area 8.



Figure 81: Photo of [REDACTED] grandparents' house and farmstead (ca. 1903) previously located on Survey Area 8 (Image courtesy of [REDACTED])

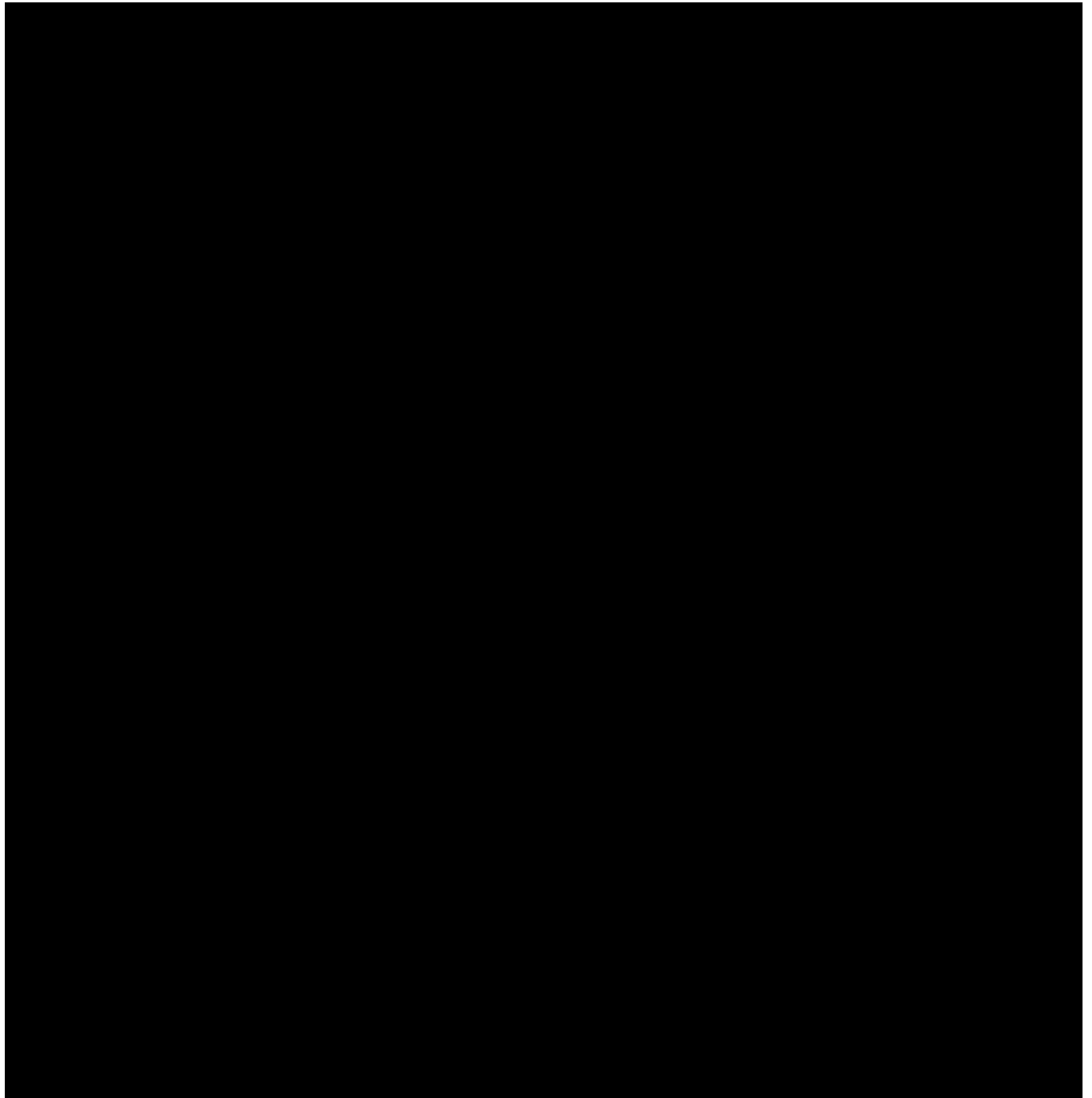


Figure 82: Artifacts collected from by landowner [REDACTED] [REDACTED] thinks that all artifacts except the axe and large point were discovered on Survey Area 8. The axe and large point were discovered on other parcels in Benton County owned by [REDACTED] (Photo courtesy of [REDACTED])

Artifacts

A total of 1,547 artifacts was encountered in Survey Area 8. Table 20 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 84 through Figure 89. Artifacts are listed by individual site in Volume 2, Appendix E.

Four prehistoric artifacts were recovered from Survey Area 8 (Figure 83 and Figure 84) and one was diagnostic. An Early Archaic Kirk Corner Notched hafted biface was recovered from site 12-Bn-242 (Figure 83).

A total of 1,543 historic artifacts was recovered from Survey Area 8 and 1259 are diagnostic (Table 21). Chronologically expressed these items include stoneware with Albany glaze interior and tan salt glaze exterior was recovered from site 12-Bn-247 and was manufactured from 1715 to 1920 (Noël Hume 19969:56-57). Stoneware with Albany glaze interior and grey salt glaze exterior was recovered from site 12-Bn-247 and was manufactured from 1715 to 1920 (Noël Hume 1969:56-57). Stoneware with Albany glaze interior and exterior and a salt glaze base was recovered from site 12-Bn-247 and was manufactured from 1715 to 1920 (Noël Hume 1969:56-57). Stoneware with Albany glaze interior and salt glaze exterior was recovered from site 12-Bn-247 and was manufactured between 1720 to the present (ODOT 1991:177, Stelle 2001:Chapter 1; Trussel 2010:13). Porcelain with gold flecking and scalloped molding was recovered from site 12-Bn-247 and was manufactured from 1745 to 1795 (Noël Hume 1969:137; ODOT 1991:72). Porcelain with a floral transfer print was recovered from site 12-Bn-247 and was manufactured from 1745 to 1795 (Noël Hume 1969:137; ODOT 1991:71). Plain porcelain was recovered from site 12-Bn-247 and was manufactured from 1745 to 1795 (Noël Hume 1969:137; ODOT 1991:71). Stoneware with a green glaze was recovered from site 12-Bn-247 and was manufactured from 1745 to 1795 (Stelle 2001:Chapter 1). Stoneware with a grey glaze interior and exterior was recovered from site 12-Bn-247 and was manufactured from 1780 to the present (Stelle 2001:Chapter 1). Stoneware with a white glaze interior and exterior was recovered from site 12-Bn-247 and was manufactured between 1780 to the present (Stelle 2001:Chapter 1). Turquoise glass was recovered from site 12-Bn-247 and was manufactured from around 1800 to around 1910 (IMACS 1992:172(18). Aqua glass was recovered from sites 12-Bn-247, 12-Bn-251, and 12-Bn-252 and was manufactured from around 1800 to around 1910 (IMACS 1992:172(18). Unglazed redware was recovered from site 12-Bn-247 and was manufactured from between the mid to late 1800s to the present (Stelle 2001:Chapter 1), Redware with a black glaze was recovered from site 12-Bn-247 and was manufactured from the mid to late 1800s to the present (Stelle 2001:Chapter 1). Redware with a white glaze interior and a clear glaze exterior was recovered from site 12-Bn-247 and was manufactured from the mid to late 1800s to the present (Stelle 2001:Chapter 1). Stoneware with an Albany glaze interior and exterior was recovered from site 12-Bn-247 and was manufactured from 1805 to 1920 (Ramsey 1939:21-2, 59). Stoneware with an Albany interior and grey exterior was recovered from site 12-Bn-247 and was manufactured from 1805 to 1920 (Ramsey 1939:21-22,

59). Stoneware with an Albany interior and tan exterior was recovered from site 12-Bn-247 and was manufactured from 1805 to 1920 (Ramsey 1939:21-22, 59). Stoneware with an Albany interior and unglazed exterior was recovered from site 12-Bn-247 and was manufactured from 1805 to 1920 (Ramsey 1939:21-22, 59). Plain whiteware was recovered from site 12-Bn-247 and was manufactured between 1820 to the present (ODOT 1991:177, Stelle 2001:Chapter 1; Trussel 2010:13). Stoneware with blue glaze on one side was recovered from site 12-Bn-247 and was manufactured from 1835 to the mid-1890s (Stelle 2001:Chapter 1). Stoneware with blue glaze interior and unglazed exterior was recovered from site 12-Bn-247 and was manufactured from 1835 to the mid-1890s (Stelle 2001:Chapter 1). Stoneware with Albany exterior and Bristol interior was recovered from site 12-Bn-247 and was manufactured from 1835 to the present (Oswald et al. 1982:19). Stoneware with Albany interior and Bristol exterior was recovered from site 12-Bn-247 and was manufactured from 1835 to the present (Oswald et al. 1982:19). Stoneware with Bristol interior and exterior was recovered from site 12-Bn-247 and was manufactured from 1835 to the present (Oswald et al. 1982:19). Stoneware with a white glaze interior and Bristol glaze exterior was recovered from site 12-Bn-247 and was manufactured from 1835 to the present (Oswald et al. 1982:19). Red rose glass was recovered from site 12-Bn-247 and was manufactured from 1840 to 1880 (Lindsey 2016). Yellowware with a scalloped rim was recovered from site 12-Bn-247 and was manufactured from 1840 to 1940 (Stelle 2001:Chapter 1). J.B. William Company clear glass was recovered from site 12-Bn-247 and was manufactured from 1840 to 1957 (Lindsey 2016). Plain ironstone was recovered from site 12-Bn-247 and was manufactured from 1842 to the present (ODOT 1991:177; Trussel 2010:14). Ironstone with a grey paste was recovered from site 12-Bn-247 and was manufactured from 1842 to the present (ODOT 1991:177; Trussel 2010:14). Amber glass was recovered from site 12-Bn-247 and was manufactured from 1860 to the present (IMACS 1992:472(19)). Green glass and olive glass was recovered from site 12-Bn-247 and was manufactured from 1860 to the present (IMACS 1992:472(18)). Dr. S. Pitcher's Castoria aqua glass was recovered from site 12-Bn-247 and was manufactured from 1868 to 1885 (Whitten 2016). Thomas Furnival and Sons plain ironstone was recovered from site 12-Bn-247 and was manufactured from 1871 to 1890 (State of California 2017). Milkglass lid liner was recovered from site 12-Bn-246 and was manufactured between 1871 to the 1950s (Whitten 2016). Clear glass was recovered from site 12-Bn-247 and was manufactured from 1875 to the present (IMACS 1992:472(19)). A Squibb Synton Bristle toothbrush was recovered from site 12-Bn-247 and was manufactured from 1878 to 2009 (Bristol-Myers Squibb Company 2017). Amethyst glass was recovered from site 12-Bn-247 and was manufactured from 1880 to 1925 (Newman 1970:74; IMACS 1992:472(7)). A Hazel Glass Company milkglass lid liner was recovered from site 12-Bn-247 and was manufactured from 1887 to 1896 (Lockhart et al. 2016:97). Log Cabin Syrup clear glass was recovered from site 12-Bn-247 and was manufactured from 1887 to 2007 (Pinnacle Foods Group LLC 2017). S.C. Johnson & Son bottle cap was recovered from site 12-Bn-247 and was manufactured between 1888 to the present (S.C. Johnson & Son, Inc. 2017). New York Quinine & Chemical Works clear bottle was

recovered from site 12-Bn-247 and was manufactured from 1890 to 1920 (Whitten 2016). Cobalt glass was recovered from site 12-Bn-247 and was manufactured from 1890 to 1960 (IMACS 1992:472 (18)). Plain milkglass was recovered from site 12-Bn-247 and was manufactured from 1890 to 1960 (IMACS 1992:472(18)). Hemingray Glass Company turquoise insulator was recovered from site 12-Bn-247 and was manufactured from the 1890s to the 1940s (Willis 2017). G.F. Brunts semi-porcelain insulator was recovered from site 12-Bn-247 and was manufactured from 1897 to 1907 (Tod 1977). Johnson Bros Co. porcelain was recovered from site 12-Bn-247 and was manufactured around 1900 to the present (Birks 2016). Circus glass was recovered from site 12-Bn-247 and was manufactured from 1900 to the 1930s (Doty 2015). Hazel-Atlas milkglass lid liner was recovered from site 12-Bn-247 and was manufactured from 1902 to the 1950s (Whitten 2016). Hazel-Atlas clear glass was recovered from site 12-Bn-247 and was manufactured from 1902 to 1964 (Whitten 2016). Philips' milk of magnesia aqua bottle was recovered from site 12-Bn-247 and was manufactured from 1906 to 1976 (Griffin 2014). Brockway amber glass was recovered from site 12-Bn-247 and was manufactured from 1907 to 1988 (Whitten 2016). Brockway clear glass was recovered from site 12-Bn-247 and was manufactured from 1907 to 1988 (Whitten 2016). Niloak stoneware with Mission Swirl glaze was recovered from site 12-Bn-247 and was manufactured from 1909 to 1949 (Grisham 2012). Emeralite lamp green and white glass was recovered from site 12-Bn-247 and was manufactured from 1909 to the 1950s (Bleier 2016). Illinois Electric Porcelain Co. semi-porcelain insulator was recovered from site 12-Bn-247 and was manufactured from 1910 to 1953 (Tod 1977). Owens Bottle Company apricot glass was recovered from site 12-Bn-247 and was manufactured from 1919 to 1929 (Lindsey 2016). Owens Bottle Company clear glass was recovered from site 12-Bn-247 and was manufactured from 1919 to 1929 (Lindsey 2016). Capstan Glass Co. clear glass was recovered from site 12-Bn-247 and was manufactured from 1919 to 1938 (Whitten 2016). Clorox Company amber glass was recovered from site 12-Bn-247 and was manufactured from 1929 to 1962 (The Clorox Company 2017). Owens-Illinois Co. amber and clear glass was recovered from site 12-Bn-247 and was manufactured between 1929 to the present (Lindsey 2016). Fairmont Co. amber glass was recovered from site 12-Bn-247 and was manufactured from 1933 to 1968 (Lindsey 2016). Possible tile was recovered from site 12-Bn-247 and was manufactured between 1935 to the present (Hamilton Parker Company 2017). Denizli polka dot frosted glass was recovered from site 12-Bn-247 and was manufactured between 1935 to the present (Denizli Cam 2016). Pennsylvania Bottle Company clear glass was recovered from site 12-Bn-247 and was manufactured from 1940 to 1952 (Whitten 2016). Metro Glass Bottle Co. clear glass was recovered from site 12-Bn-247 and was manufactured from 1949 to 1981 (Whitten 2016). Canadian semi-porcelain beehive insulator was recovered from site 12-Bn-247 and was manufactured between the 1950s to the 1970s (Tod 1977). Fleecy's amber glass was recovered from 12-Bn-247 and was manufactured in 1951 (The Kokomo Tribune 1951:26). Cristalerias Cattorini Hermanos green glass was recovered from site 12-Bn-247 and was manufactured between 1952 and the present (Whitten 2016). Tin

pull tab top was recovered from site 12-Bn-247 and was manufactured between 1962 and the present (Scarano 2012).

Table 20: Artifacts from Survey Area 8.

Prehistoric	No.	Historic	No.
Biface, Retouched Kirk	1	Ceramic, Porcelain	17
Corner Notched	1	Ceramic, Semi-Porcelain	5
Core	1	Ceramic, Ironstone	10
Flake, Retouched Proximal	1	Ceramic, Whiteware	83
Flake, Distal	1	Ceramic, Stoneware	87
		Ceramic, Yellowware	5
		Ceramic, Redware	5
		Ceramic, Possible Tile	19
		Glass, Red (Rose)	3
		Glass, Apricot	1
		Glass, Circus	1
		Glass, Cobalt	6
		Glass, Green	32
		Glass, Green (Olive)	2
		Glass, Amethyst	38
		Glass, Milkglass (Translucent)	2
		Glass, Milkglass	38
		Glass, Amber	86
		Glass, Turquoise	30
		Glass, Aqua	121
		Glass, Clear	662
		Metal, Iron axle and double sprocket	1
		Metal, Iron Hinge	2
		Metal, possible Iron Hinge	1
		Metal, Iron Handle	2
		Metal, Iron Plow	1
		Metal, Iron Outlet Cover	1
		Metal, Iron Nut, Bolt, and Pole	1
		Metal, Iron Nail, Bolt, and Washer	1
		Metal, Iron Flat Head Nail	1
		Metal, Iron Nail	6
		Metal, Iron Cap	1
		Metal, Iron Barbed Wire	1
		Metal, Iron Circular Band	1
		Metal, Iron Flat Band	4
		Metal, Iron Ring	1
		Metal, Iron Rod	2

Prehistoric	No.	Historic	No.
		Metal, Iron Wires	5
		Metal, Iron	58
		Metal, Copper Shot Gun	1
		Canister	1
		Metal, Tin Pull Tab Top	4
		Metal, Tin Cap	2
		Metal, Tin and Plastic Spray	1
		Can Depressant and Cap	1
		Metal, Tin	1
		Metal, Aluminum Top	1
		Metal, Aluminum Cap	1
		Metal, Aluminum Tubing	3
		Metal, Aluminum and Plastic	1
		Metal, Aluminum	2
		Plastic, Squibb Synton Bristle	1
		Toothbrush	1
		Plastic, Johnson's Glo-Coat	1
		Bottle Cap	1
		Plastic, Amethyst Tint Handle	1
		Plastic, Toy Doll Torso	1
		Plastic, Spray Can Dispenser	1
		Plastic, Cap	1
		Plaster	1
		Graphite, Battery Core	6
		Shoe Leather	24
		Rubber	1
		Possible Burnt Rubber-Like	1
		Material	1
		Unknown Mineral	1
		Brick (Collected)	3
		Brick (Uncollected)	126
		Charcoal, Clinker	14
Total	4	Total	1,543

Table 21: Historic Diagnostics from Survey Area 8.

Artifact Type	Site	Date Range	Citation
Stoneware with Albany Interior and Tan Salt Glaze Exterior	12-Bn-247	1715-1920	Noël Hume 1969:56-57
Stoneware with Albany Interior and Grey salt Glaze Exterior	12-Bn-247	1715-1920	Noël Hume 1969:56-57
Stoneware with Albany Interior and Exterior, Salt Glaze base	12-Bn-247	1715-1920	Noël Hume 1969:56-57
Stoneware with Albany Interior and Salt Glaze Exterior	12-Bn-247	1720 to present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Porcelain with Gold Flecking and Scalloped Molding	12-Bn-247	1745-1795	Noël Hume 1969:137; ODOT 1991:72
Porcelain with Floral Transfer Print	12-Bn-247	1745-1795	Noël Hume 1969:137; ODOT 1991:72
Plain Porcelain	12-Bn-247	1745-1795	Noël Hume 1969:137; ODOT 1991:72
Stoneware with Green Glaze	12-Bn-247	1780-present	Stelle 2001: Chapter 1
Stoneware with Grey Glaze Interior and Exterior	12-Bn-247	1780-present	Stelle 2001: Chapter 1
Stoneware with White Glaze Interior and Exterior	12-Bn-247	1780-present	Stelle 2001: Chapter 1
Turquoise Glass	12-Bn-247	ca. 1800-ca.1910	IMACS 1992:472(18)
Aqua Glass	12-BN-247, 12-Bn-251, and 12-Bn-252	ca. 1800-ca.1910	IMACS 1992:472(18)
Unglazed Redware	12-Bn-247	mid to late 1800s - present	Stelle 2001: Chapter 1
Redware with Black Glaze	12-Bn-247	mid to late 1800s - present	Stelle 2001: Chapter 1
Redware with White Glaze Interior and Clear Glaze Exterior	12-Bn-247	mid to late 1800s - present	Stelle 2001: Chapter 1
Stoneware with Albany Interior and Exterior	12-Bn-247	1805-1920	Ramsey 1939:21-22,59
Stoneware with Albany Interior and Grey Exterior	12-Bn-247	1805-1920	Ramsey 1939:21-22,59
Stoneware with Albany Interior and Tan Exterior	12-Bn-247	1805-1920	Ramsey 1939:21-22,59
Stoneware with Albany Interior and Unglazed Exterior	12-Bn-247	1805-1920	Ramsey 1939:21-22,59
Stoneware with Albany on One Side and Unglazed Other	12-Bn-247	1805-1920	Ramsey 1939:21-22,59
Plain Whiteware	12-Bn-247	1820-present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13

Artifact Type	Site	Date Range	Citation
Stoneware with Blue Glaze on One Side	12-Bn-247	1835-mid-1890	Stelle 2001: Chapter 1
Stoneware with Blue Glaze Interior and Unglazed Exterior	12-Bn-247	1835-mid-1890	Stelle 2001: Chapter 1
Stoneware with Albany Exterior and Bristol Interior	12-Bn-247	1835-present	Oswald et al. 1982:19
Stoneware with Albany Interior and Bristol Exterior	12-Bn-247	1835-present	Oswald et al. 1982:19
Stoneware with Bristol Interior and Exterior	12-Bn-247	1835-present	Oswald et al. 1982:19
Stoneware with White Glaze Interior and Bristol Exterior	12-Bn-247	1835-present	Oswald et al. 1982:19
Red (Rose) Glass	12-Bn-247	1840-1880	Lindsey 2016
Yellowware with Scalloped Rim	12-Bn-247	1840-1940	Stelle 2001: Chapter 1
J.B Williams Co. Clear Glass	12-Bn-247	1840-1957	Lindsey 2016
Plain Ironstone	12-Bn-247	1842-present	ODOT 1991:177; Trussel 2010:14
Ironstone with Grey Past	12-Bn-247	1842-present	ODOT 1991:177; Trussel 2010:14
Amber Glass	12-Bn-247	1860-present	IMACS 1992:472(19)
Green (Olive) Glass	12-Bn-247	1860-present	IMACS 1992:472(18)
Green Glass	12-Bn-247	1860-present	IMACS 1992:472(18)
Dr. S. Pitcher's Castoria Aqua Tint Glass	12-Bn-247	1868-1885	Whitten 2016
Thomas Furnival and Sons Plain Ironstone	12-Bn-247	1871-1890	State of California 2017
Milkglass Lid Liner	12-Bn-246	1871-1950s	Whitten 2016
Clear Glass	12-Bn-247	1875-present	IMACS 1992:472 (19)
Squibb Synton Bristle Plastic Toothbrush	12-Bn-247	1878-2009	Bristol-Myers Squibb Company 2017
Amethyst Glass	12-Bn-247	1880-1925	Newman 1970:74; IMACS 1992:472(7)
Hazel Glass Company Milkglass Lid Liner	12-Bn-247	1887-1896	Lockhart et al. 2016:97
Loc Cabin Syrup Glass Bottle	12-Bn-247	1887-2007	Pinnacle Foods Group LLC 2017
S.C. Johnson & Son Company Bottle Cap	12-Bn-247	1888-present	S.C. Johnson & Son, Inc. 2017
New York Quinine & Chemical Works Clear Bottle	12-Bn-247	1890-1920	Whitten 2016
Cobalt Glass	12-Bn-247	1890-1960	IMACS 1992:472 (19)
Translucent Milkglass	12-Bn-247	1890-1960	IMACS 1992:472(18)
Plain Milkglass	12-Bn-247	1890-1960	IMACS 1992:472(18)
Hemingray Glass Company Turquoise Insulator	12-Bn-247	1890s-1940s	Willis 2017
G.F. Brunt Semi-Porcelain Insulator	12-Bn-247	1897-1907	Tod 1977
Johnson Bros Co. Porcelain	12-Bn-247	ca. 1900-present	Birks 2016

Artifact Type	Site	Date Range	Citation
Circus Glass	12-Bn-247	1900-1930s	Doty 2015
Hazel-Atlas Milkglass Lid Liner	12-Bn-247	1902-1950s	Whitten 2016
Hazel-Atlas Clear Glass	12-Bn-247	1902-1964	Whitten 2016
Philips' Milk of Magnesie Aqua Bottle	12-Bn-247	1906-1976	Griffin 2014
Brockway Glass Amber Glass	12-Bn-247	1907-1988	Whitten 2016
Brockway Glass Clear Glass	12-Bn-247	1907-1988	Whitten 2016
Niloak Pottery Stoneware with Mission Swirl Glaze	12-Bn-247	1909-1949	Grisham 2012
Emeralite lamp Green and White Glass	12-Bn-247	1909-1950s	Bleier 2016
Illinois Electric Porcelain Co. Semi-Porcelain Insulator	12-Bn-247	1910-1953	Tod 1977
Owens Bottle Company Apricot Glass	12-Bn-247	1919-1929	Lindsey 2016
Owens Bottle Company Clear Glass	12-Bn-247	1919-1929	Whitten 2016
Capstan Glass Co. Clear Glass	12-Bn-247	1919-1938	Whitten 2016
Clorox Company Amber Glass	12-Bn-247	1929-1962	The Clorox Company 2017
Owens-Illinois Co. Clear Glass Bottle	12-Bn-247	1929-present	Whitten 2016
Owens-Illinois Co. Amber Glass	12-Bn-247	1929-present	Lindsey 2016
Fairmont Co. Amber Glass	12-Bn-247	1933-1968	Lindsey 2016
Possible Tile	12-Bn-247	1934-present	Hamilton Parker Company 2017
Denizli Polka Dot Frosted Glass	12-Bn-247	1935-present	Denivli Cam 2016
Pennsylvania Bottle Company Clear Glass	12-Bn-247	1940-1952	Whitten 2016
Metro Glass Bottle Co. Clear Glass	12-Bn-247	1949-1981	Whitten 2016
Canadian Semi-Porcelain Beehive Insulator	12-Bn-247	1950s-1970s	Tod 1977
Fleecy's Amber Glass	12-Bn-247	1951	The Kokomo Tribune 1951:26
Cristalerias Cattorini Hermanos Green Glass	12-Bn-247	1952-present	Whitten 2016
Tin Pull Tab Top	12-Bn-247	1962-present	Scarano 2012



Figure 83: Early Archaic Kirk Corner Notched hafted biface from Survey Area 8 (Photo by Kiya Mullins, Ball State University).



Figure 84: Representative prehistoric artifacts from Survey Area 8 (Photo by Kiya Mullins, Ball State University).



Figure 85: Representative historic ceramic artifacts recovered from Survey Area 8 (Photo by Kiya Mullis, Ball State University).



Figure 86: Representative glass artifacts from Survey Area 8 (Photo by Kiya Mullins, Ball State University).



Figure 87: Representative glass artifacts from Survey Area 8 (Phot by Kiya Mullins, Ball State University).



Figure 88: Representative metal artifacts from Survey area 8 (Photo by Kiya Mullins, Ball State University).



Figure 89: Representative leather, plastic, and graphite artifacts from Survey Area 8 (Photo by Kiya Mullins, Ball State University).

Sites

Thirteen archaeological sites, 12-Bn-242 to 12-Bn-254, were recorded in Survey Area 8 (Figure 90 and Figure 91). Summaries for the individual sites are contained in Volume 2, Appendix F. Eight sites had diagnostic artifacts (12-Bn-242, 12-Bn-243, 12-Bn-246, 12-Bn-247, 12-Bn-248, 12-Bn-251, 12-Bn-252, and 12-Bn-254). Seven sites were historic isolated finds (12-Bn-243, 12-Bn-244, 12-Bn-248, 12-Bn-250, 12-Bn-251, 12-Bn-252, and 12-Bn-254) and two sites were prehistoric isolates (12-Bn-242 and 12-Bn-253). One site was a prehistoric scatter (12-Bn-245) and three sites were historic scatter (12-Bn-246, 12-Bn-247, and 12-Bn-249).

All sites were discovered on end moraines and ground moraines (12-Bn-242 and 12-Bn-254). Four sites (12-Bn-242, 12-Bn-244, 12-Bn-246, and 12-Bn-248) were found on Gilboa silt loam (GlA) soil. Two sites (12-Bn-245 and 12-Bn-251) on Peotonne silty clay loam (Pn) soil. Three sites (12-Bn-252, 12-253, and 12-Bn-254) were found on Chalmers silty clay loam (Ch) soil. Four sites were found on multiple soil types. Site 12-Bn-243 was found on Gilboa silty loam (GlA) and Barce loam (BaB2) soils. Site 12-Bn-247 were found on Chalmers silty clay

loam (Ch), Barce loam (BaB2) and Gilboa silt loam (GlA) soils. Two sites, 12-Bn-249 and 12-Bn-250, were found on Chalmers silty clay loam (Ch) and Barce loam (BaB2) soils.

Site 12-Bn-247 is a large, dense historic scatter with 1403 historic artifacts and 118 bricks (3 collected, 115 uncollected). [REDACTED], the landowner, had said that his grandparents' house was located on Survey Area 8. Three historic maps (Andreas 1968; Geo. A. Ogle & Co. 1909; Taylor 2009:37) were consulted to assess potential for intact historic deposits. The historic maps failed to reveal a structure, but a 1998 aerial obtained from Google Earth shows the driveway, the barn, and the house. The USGS 7.5' Tab, Indiana Quadrangle and 2013 Aerial Indiana Spatial Data Portal both show the location of the driveway leading up to the house. The variety of historic artifacts recovered includes a wide selection of bottle glass, ceramics, and other materials, artifacts typically associated with domestic sites. The bricks (n=118), typically not used for agricultural structures, again suggests that site 12-Bn-247 was a domestic site. The variety of domestic artifacts indicate a potential to learn more about domestic mid-century farmhouse lifestyle, filling a gap in Benton County's history. Based upon the archaeological evidence and our historic research, it appears that 12-Bn-247 has the potential to yield additional information beyond the Phase I level and should be considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

The site types associated with the other sites in Survey Area 8 (12-Bn-242 to 12-Bn-246 and 12-Bn-248 to 12-Bn-254) are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 8 consisted of 132.6 acres of end moraines and ground moraines. Within Survey Area 8, a density of one site per 10.2 acres occurred and sites covered 1.66 percent of the surface area.

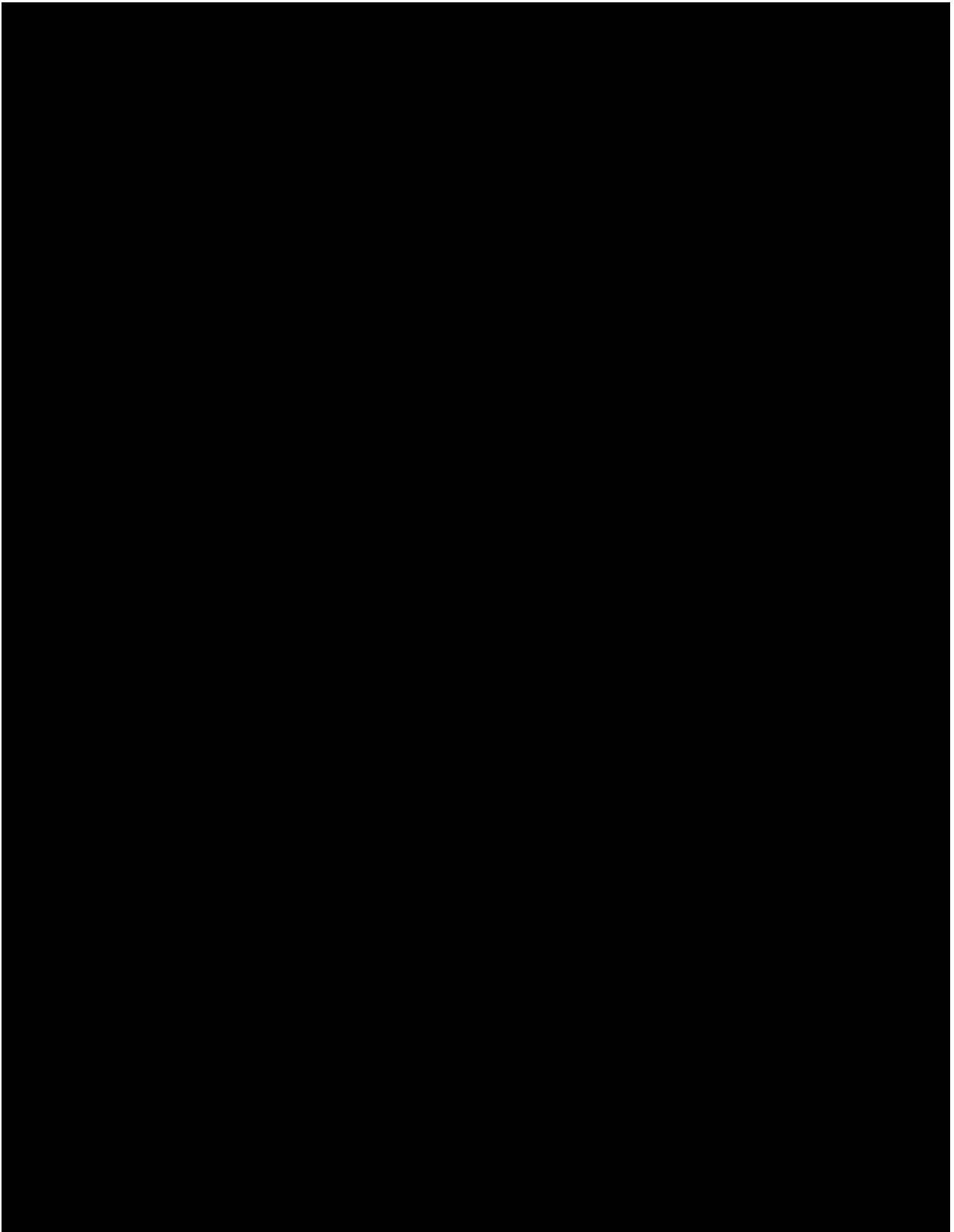


Figure 90: A portion of the USGS 7.5' Tab, Indiana Quadrangle showing the location of sites 12-Bn-242 to 12-Bn-254.

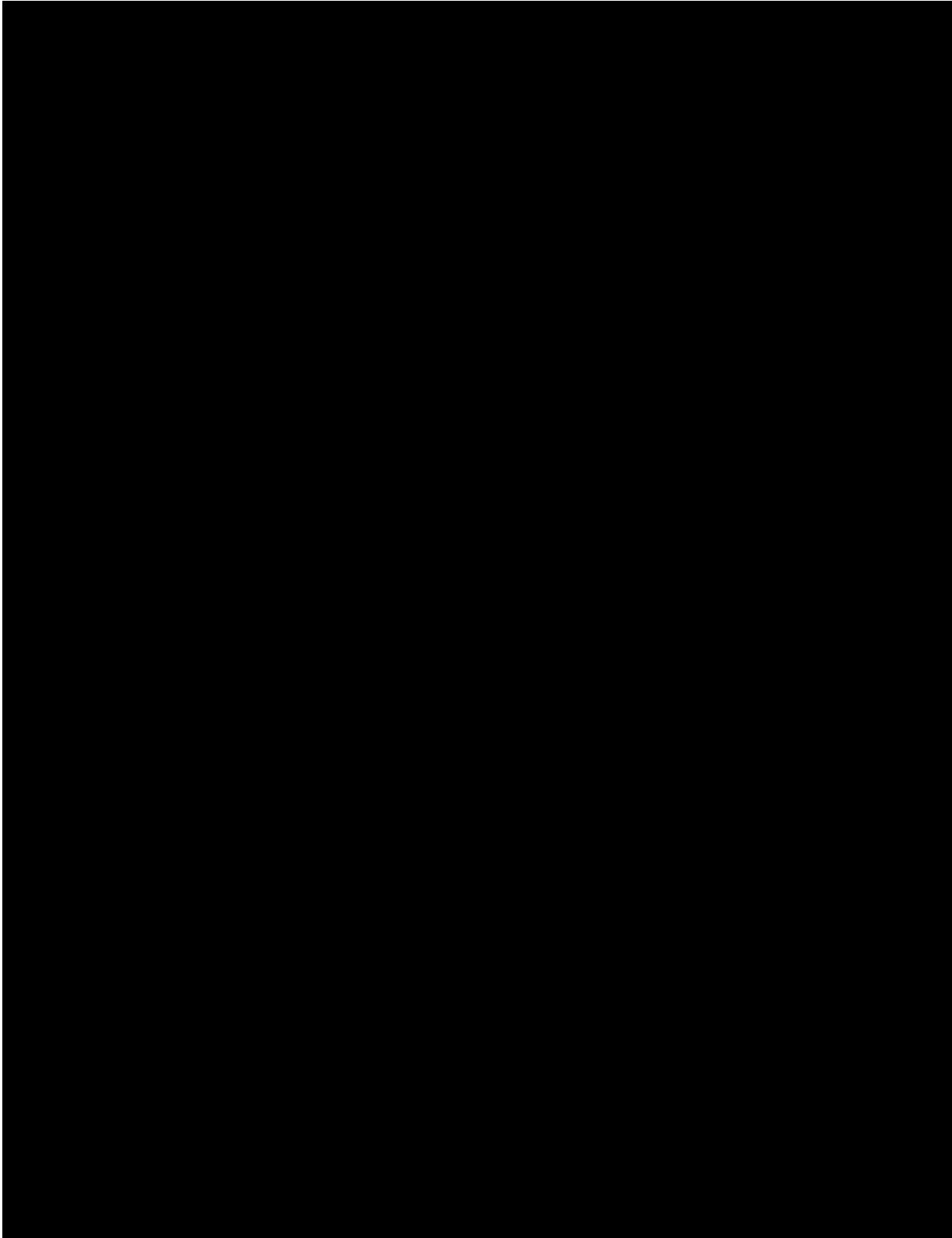


Figure 91: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-242 to 12-Bn-254.

Survey Area 9

Survey Area 9 was located in Grant Township in [REDACTED] Township 24 North, Range 9 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Tab, Indiana Quadrangle (Figure 21 and Figure 22). The property was surveyed on September 3, 2016. The field was planted in corn, standing between three to seven feet tall. Ground surface visibility was approximately 70-90 percent with some weeds and corn stalks themselves hindering visibility. Approximately 72.95 acres were surveyed consisting of ground moraines and end moraines. The area contained Chalmers (Ch), Darroch (Do and Dp), Drummer (Du), Foresman (FpB2), and Gilboa (GIB) soils. Ten sites (12-Bn-255 to 12-Bn-264) were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a multicomponent prehistoric scatter and historic isolate of 728.43 square meters (0.18 acres).

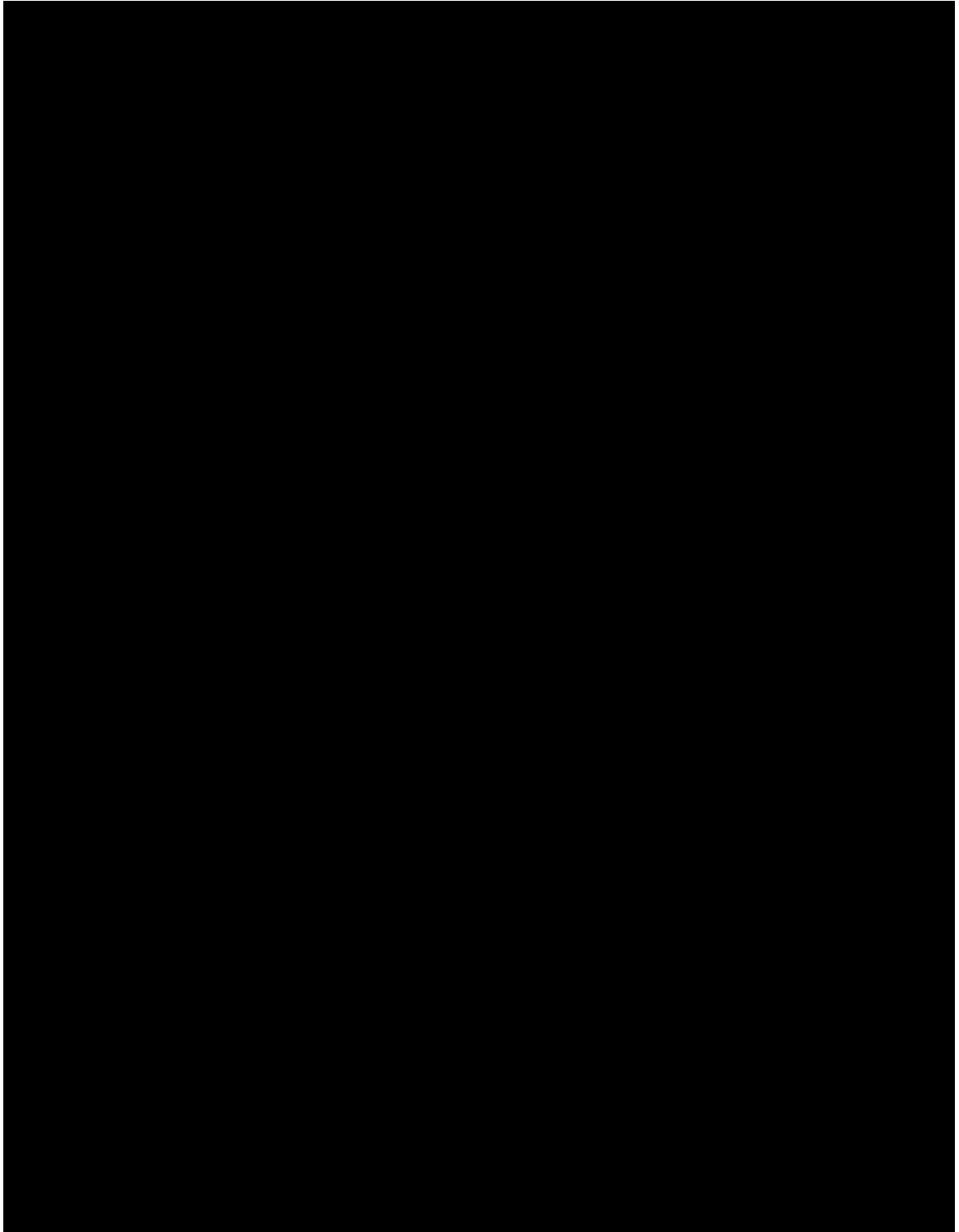


Figure 92: A portion of the map of Grant Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 9. Note: Due to distortion in historical maps, the georeferenced location of SA9 is slightly off.

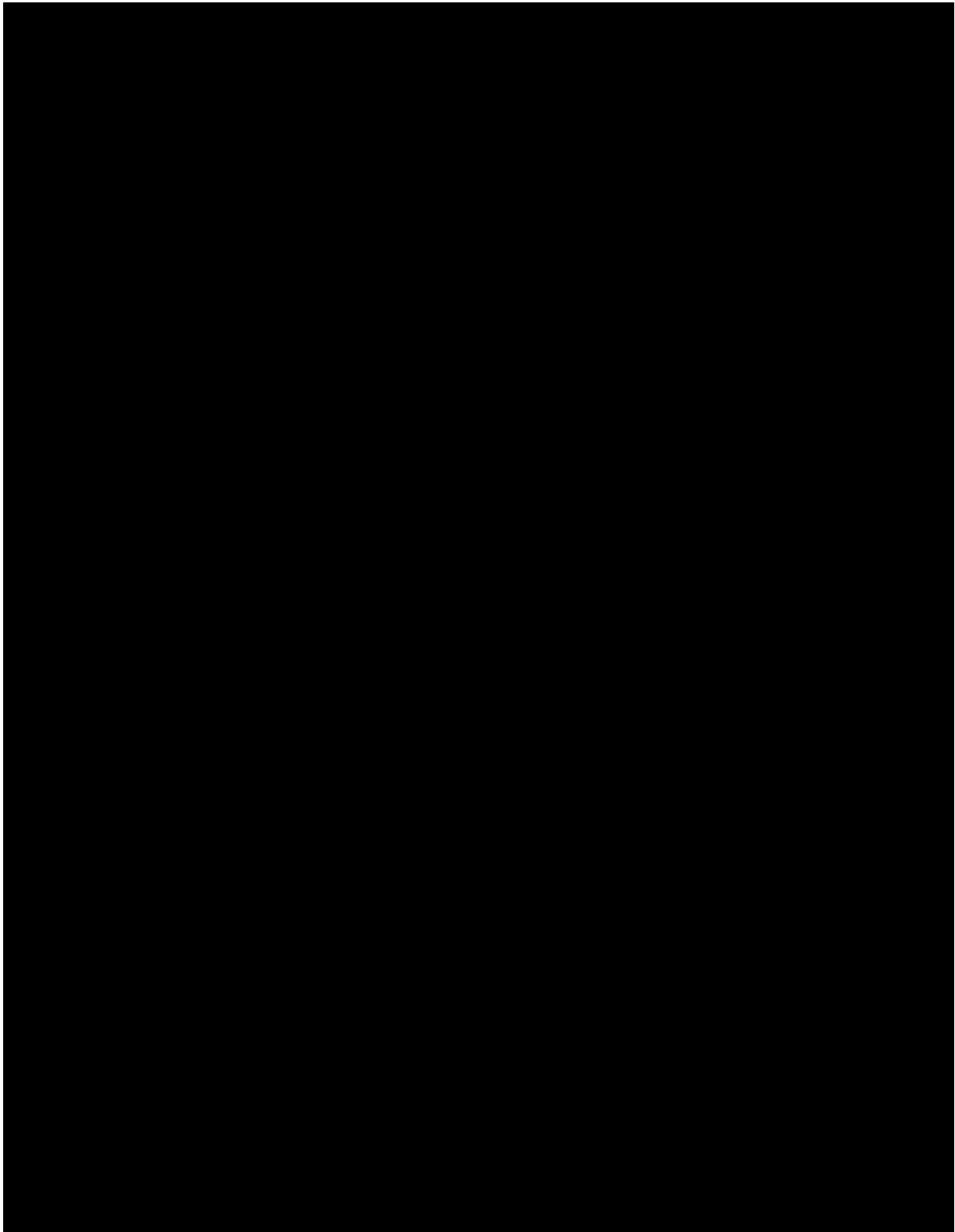


Figure 93: A portion of the USGS 7.5' Tab, Indiana Quadrangle showing the location of Survey Area 9.

Artifacts

A total of 99 artifacts was encountered in Survey Area 9, with an additional 75 observed in the field but not collected. Table 22 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 95 through Figure 98. Artifacts are listed by individual site in Volume 2, Appendix E.

Twelve prehistoric artifacts were recovered in Survey Area 9 (Figure 95). One diagnostic prehistoric artifact, a Middle Archaic Raddatz Side-Notched biface was recovered from site 12-Bn-263 (Figure 94).

Eighty-seven historic artifacts were recovered from Survey Area 5 and of those, nine are diagnostic (Table 23). Of the 87 historic artifacts, 75 were uncollected brick fragments from site 12-Bn-258. Chronologically expressed these items include aqua glass recovered from sites 12-Bn-255 and 12-Bn-256 which was manufactured from ca. 1810 to ca. 1910 (IMACS 1992:472(18)). Stoneware with an unglazed interior and Albany glaze exterior was recovered from site 12-Bn-262 was manufactured from 1805 to 1920 (Oswald et al. 1982:19). Stoneware with Albany glaze interior and Bristol glaze exterior was recovered from site 12-Bn-262 and was manufactured from 1835 to 1920 (Stelle 2001:Chapter 1). Amber glass was recovered from site 12-Bn-258 and was manufactured between 1860 to the present (IMACS 1992:473(19)). Clear glass was recovered from site 12-Bn-261 was manufactured between 1875 to the present (IMACS 1992:473(19)). Milkglass was recovered from site 12-Bn-256 and was manufactured from 1890 to 1960 (IMACS 1992:472(7)).

Table 22: Artifacts from Survey Area 9.

Prehistoric	No.	Historic	No.
Biface, Hafted	1	Ceramic, Stoneware	4
Biface, Unhafted	1	Glass, Milkglass	1
Flake, Complete	3	Glass, Amber	1
Flake, Proximal	2	Glass, Aqua	2
Flake, Distal	4	Glass, Clear	1
Fossil	1	Metal, Iron Stake	1
		Brick	1
		Brick (Uncollected)	75
		Charcoal, Clinker	1
Total	12	Total	87

Table 23: Historic Diagnostics from Survey Area 9.

Artifact Type	Site	Date Range	Citation
Aqua Glass	12-Bn-255, 12-Bn-256	ca. 1810-ca. 1910	IMACS 1992:472 (18)
Stoneware Unglazed interior and Albany glaze exterior	12-Bn-262	1805-1920	Oswald et al. 1982:473(19)
Stoneware Albany glaze interior and Bristol glaze exterior	12-Bn-262	1835-1920	Stelle 2001: Chapter 1
Amber Glass	12-Bn-258	1860 to present	IMACS 1992:473(19)
Clear Glass	12-Bn-261	1875 to present	IMACS 1992:473(19)
Milkglass	12-Bn-256	1890-1960	IMACS 1992:472(7)



Figure 94: A Middle Archaic Raddatz Side-Notched biface from site 12-Bn-263 (Photo by Kiya Mullins, Ball State University).



Figure 95: Representative lithic artifacts from Survey Area 9 (Photo by Kiya Mullins, Ball State University).



Figure 96: Representative historic ceramic artifacts from Survey Area 9 (Photo by Kiya Mullins, Ball State University).



Figure 97: Representative historic glass from Survey Area 9 (Photo by Kiya Mullins, Ball State University).



Figure 98: Historic iron artifact from Survey Area 9 (Photo by Kiya Mullins, Ball State University).

Sites

Ten archaeological sites, 12-Bn-255 to 12-Bn-264, were recorded in Survey Area 9 (Figure 99 and Figure 100). Summaries for the individual sites are contained in Volume 2, Appendix F. Seven sites had diagnostic artifacts (12-Bn-255, 12-Bn-256, 12-Bn-257, 12-Bn-258, 12-Bn-261, 12-Bn-262, and 12-Bn-263). Three of the sites were prehistoric isolated finds (12-Bn-259, 12-Bn-260, and 12-Bn-264). One site (12-Bn-263) was a prehistoric scatter. One site was a historic isolated find (12-Bn-261). Two sites were historic scatters (12-Bn-256 and 12-Bn-258). Three sites (12-Bn-255, 12-Bn-257, and 12-Bn-262) were multicomponent sites. Two sites (12-Bn-255 and 12-Bn-262) were historic scatters with a prehistoric isolate and one site (12-Bn-257) was a prehistoric scatter with a historic isolate.

All 10 sites were discovered on end moraines and ground moraines. Three sites (12-Bn-255, 12-Bn-257, and 12-Bn-263) were found on Foresman silty loam (FpB2). One site (12-Bn-258) was found on Chalmers silty clay loam (Ch) soil. Four sites (12-Bn-260, 12-Bn-261, 12-Bn-262, and 12-Bn-264) were found on Drummer silty clay loam (Du) soil. Two sites were found on multiple soil types. Site 12-Bn-256 was found on Darroch silt loam (Do and Dp) and Drummer silty clay loam (Du) soils. Site 12-Bn-259 was found on Darroch silt loam (Do and Dp) and Chalmers silty clay loam (Ch) soils.

Site 12-Bn-257 is a mid-sized prehistoric scatter and historic isolate consisting of five prehistoric artifacts and one charcoal clinker covering 728.43 square meters (0.18 acres) in size. Site 12-Bn-257 is located on the top of a rise in the southeast quarter of Survey Area 9. The five prehistoric artifacts recovered from 12-Bn-257 consist of one unhafted biface made from Attica chert, two complete flakes, one made from Burlington chert and the other made from Holland chert, and two distal flakes, both made from Attica chert. The variety of artifacts within one location is an indication of sustained activity on the site. Site 12-Bn-257 is located on a sliver of dry prairie (Udoll) soil surrounded by wet prairie (Aquoll) soil. The presence of Burlington chert and Holland chert, two chert types found in counties south of Benton, potentially indicates that people were coming north and bringing the chert with them. Based on the archaeological evidence, site 12-Bn-257 has the potential to yield additional information beyond the Phase I level and is considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

Site 12-Bn-258 was a small historic scatter of one piece of glass and 75 uncollected pieces of brick. No sub-surface features were encountered. Because of the concentration of brick, three historic maps (Andreas 1968; Geo. A. Ogle & Co 1909; Taylor 2009) were consulted but failed to show any structures located on Survey Area 9. 12-Site Bn-258 is located on the slope of a small rise, but is more than 400 meters from the road and is not likely to be a dumping site. Based on the archaeological evidence and our historic research, it does not appear

that site 12-Bn-258 has the potential to yield additional information beyond the Phase I level, and is therefore not considered eligible for the National Register of Historic Places.

The other nine sites in Survey Area 9 (12-Bn-255 to 12-Bn-257, and 12-Bn-258 to 12-Bn-264) are classified as site types that are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 9 consisted of 72.95 acres consisting of end moraines and ground moraines. Within Survey Area 9, a density of one site per 7.29 acres occurred and sites covered 0.85 percent of the surface area.

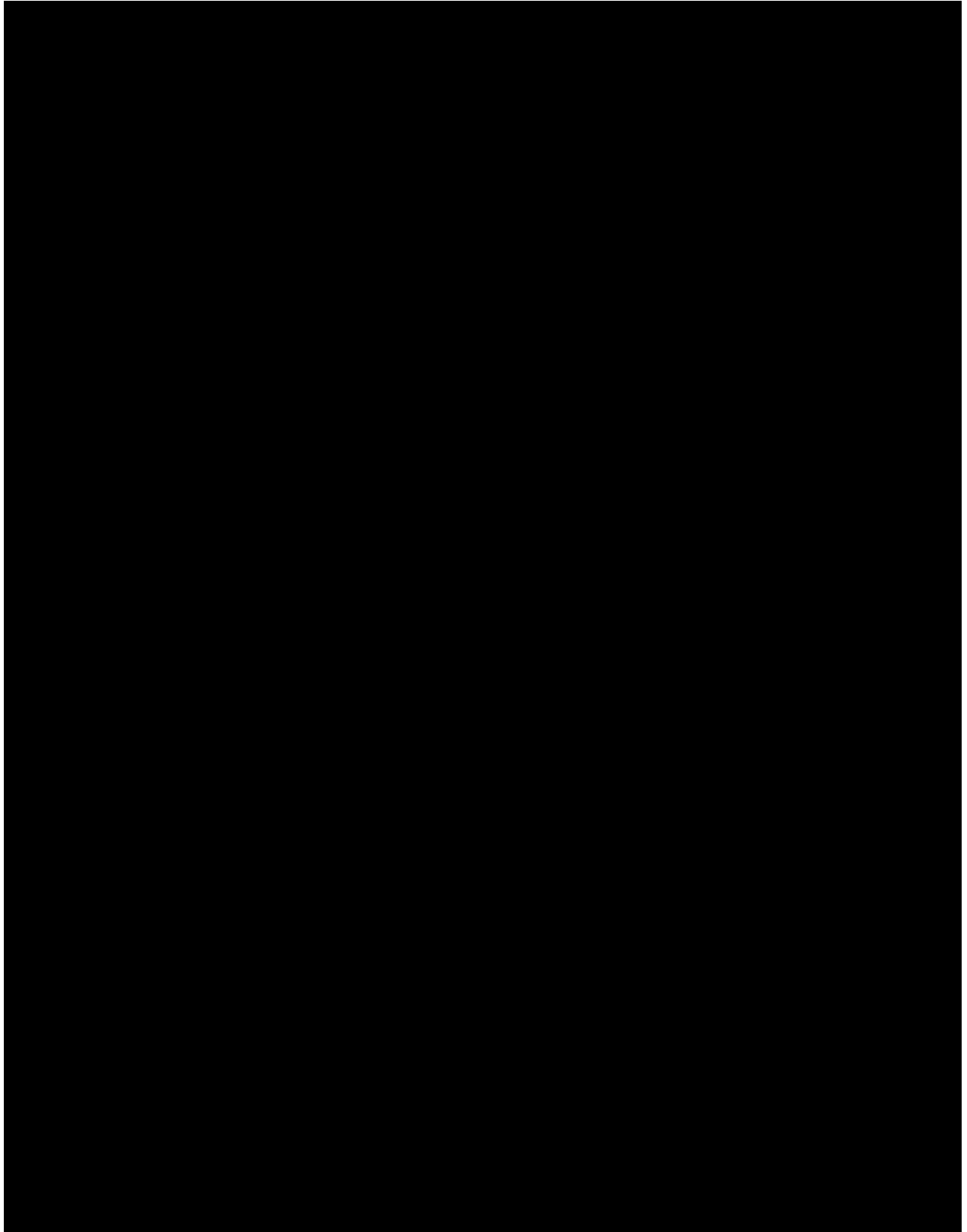


Figure 99: A portion of the USGS 7.5' Tab, Indiana Quadrangle showing the location of sites 12-Bn-255 to 12-Bn-264.

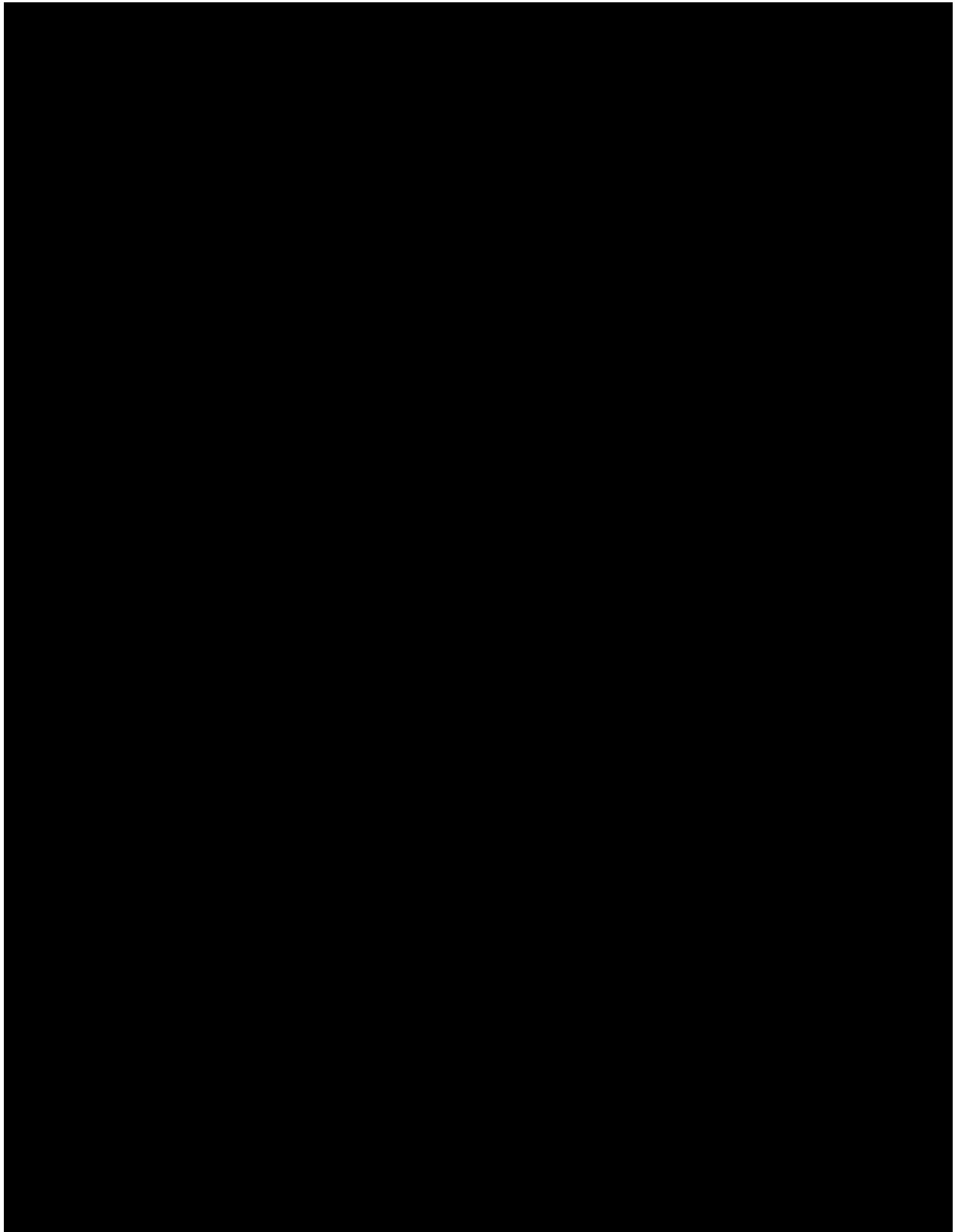


Figure 100: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-255 to 12-Bn-264.

Survey Area 10

Survey Area 10 was located in Grant Township in [REDACTED], Township 24 North, Range 8 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Fowler, Indiana Quadrangle (Figure 101 and Figure 102). The property was surveyed on September 3, 2016. Ground surface visibility was approximately 60 to 80 percent with some weeds and corn stalks themselves hindering visibility. The field surveyed was still planted in corn that was standing between six to eight feet tall. A total of 27.92 acres was surveyed consisting of end moraines and ground moraines. The area contained Chalmers (Ch), Corwin (CsB2), Darroch (Dp), and Odell (OLA) soils. Nine sites were encountered during the survey (12-Bn-265 to 12-Bn-268 and 12-Bn-272 to 12-Bn-276). Please note, this Survey Area does not include sites 12-Bn-269, 12-Bn-270, and 12-Bn-271. The sites ranged in size from historic isolated finds to a multicomponent site consisting of a historic scatter and a prehistoric isolate of 485.62 square meters (0.12 acres).

The Kankakee, Beaverville & Southern Railroad runs directly north of Survey Area 10 (Kankakee, Beaverville & Southern Railroad 2017; Taylor 2009:88). This rail line was previously known as the New York, Chicago & St. Louis Railroad (also referred to as the Nickel Plate Road) as shown on the Andreas (1968) map (Figure 101) and has been in existence since the late 1800s (Taylor 2009:88). Please note that there is a distortion with the historical map in Figure 101. The railroad runs directly to the north of Survey Area 10, not through Survey Area 10.

In August 2000, Sagamore Environmental Services Inc. completed an archaeological field reconnaissance for the construction of a wireless communications tower on 0.05 acres of land directly east of the southeast corner of Survey Area 10 (Figure 103). No sites were discovered (Martin 2000a).

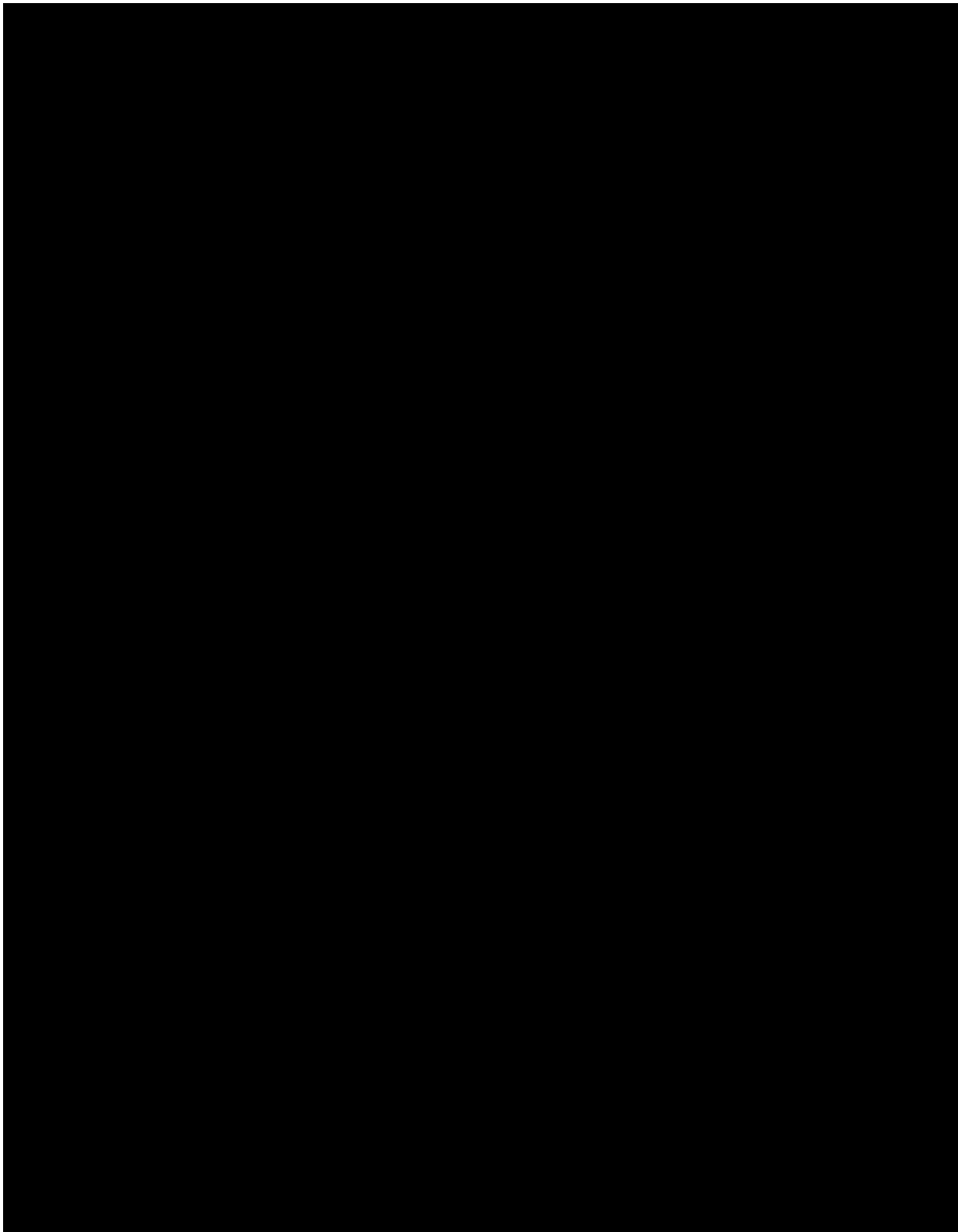


Figure 101: A portion of the map of Grant Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 10. Note: Due to distortion in historical maps, the georeferenced location of SA10 is slightly off.

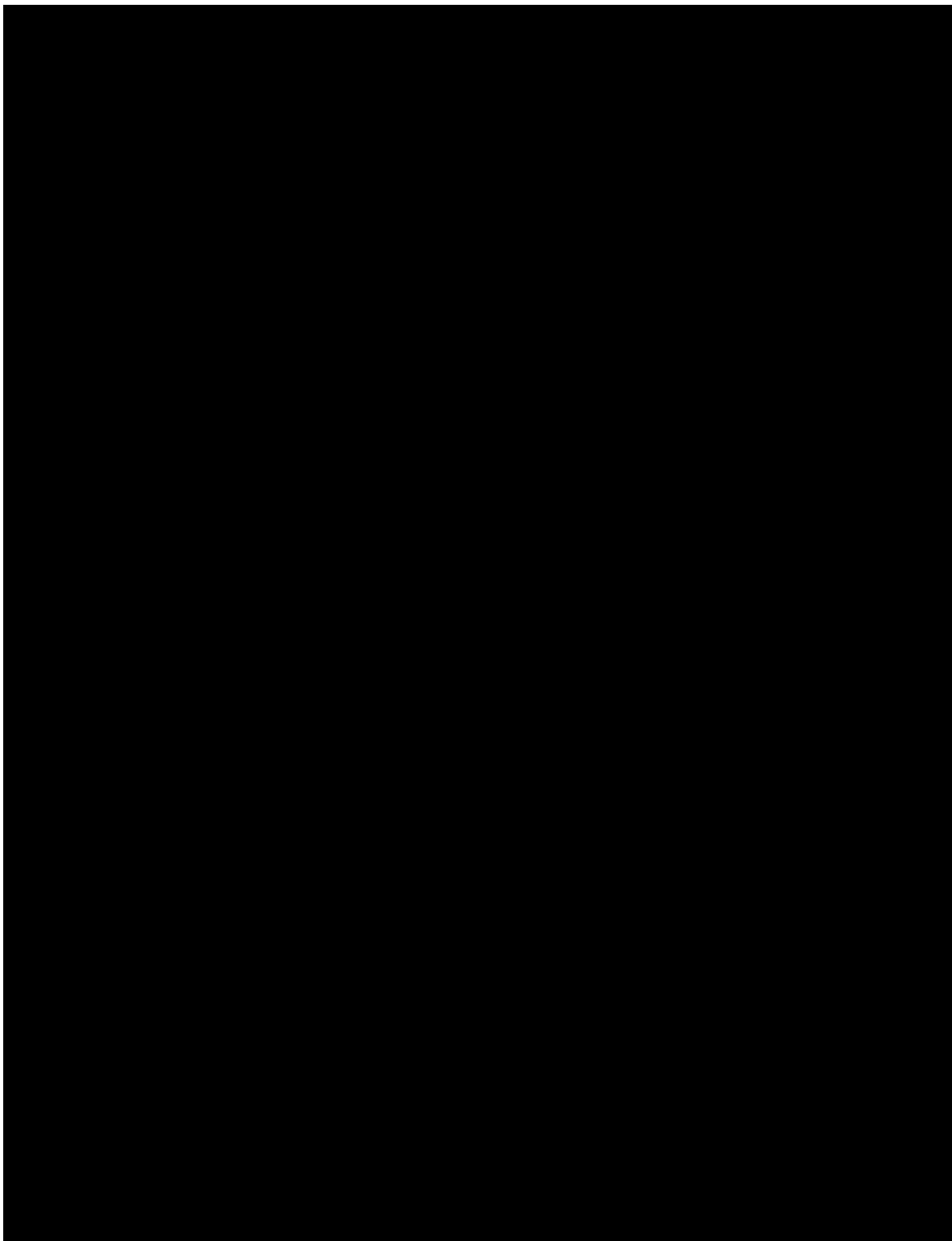


Figure 102: A portion of the USGS 7.5' Fowler, Indiana Quadrangle showing the location of Survey Area 10.

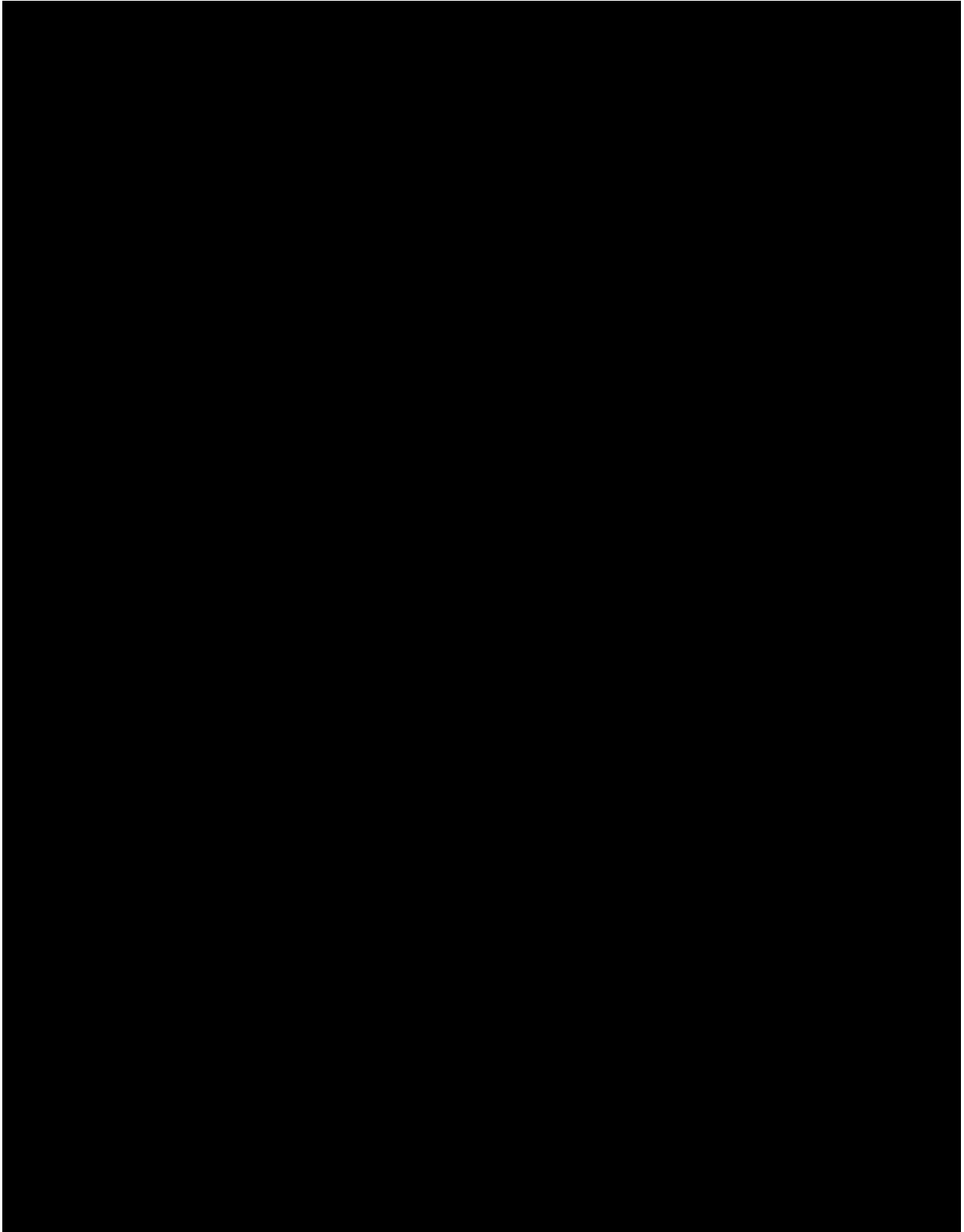


Figure 103: Project area of previous cell tower Phase Ia survey directly to the east of Survey Area 8 (Martin 2000a).

Artifacts

A total of 17 artifacts was encountered in Survey Area 10. Table 24 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 104 through Figure 106. Artifacts are listed by individual site in Volume 2, Appendix E.

One non-diagnostic prehistoric artifact was recovered (Figure 104) from Survey Area 10.

Sixteen historic artifacts were recovered from Survey Area 10 and of those, 14 are diagnostic (Table 25). Chronologically expressed these items include plain semi-porcelain recovered from site 12-Bn-274 manufactured from 1800 to 1830 (Noël Hume 1969:262). Plain porcelain was recovered from site 12-Bn-275 and was manufactured from 1800 to 1830 (IMACS 1992:472(18); ODOT 1991:72). Aqua glass was recovered from sites 12-Bn-266, 12-Bn-268, 12-Bn-272, and 12-Bn-276 and was manufactured from ca. 1800 to ca. 1910 (IMACS 1992:472(18)). Plain whiteware was recovered from site 12-Bn-274 was manufactured from 1820 to the present (ODOT 1991:177, Stelle 2001:Chapter 1; Trussel 2010:13). Stoneware with blue glaze was recovered from site 12-Bn-268 was manufactured from 1835 to the mid-1890s (Stelle 2001:Chapter 1). Stoneware with Bristol glaze interior and unglazed exterior was recovered from site 12-Bn-265 and was manufactured from 1835 to the present (Oswald et al. 1982:19). Plain ironstone was recovered from site 12-Bn-265 and was manufactured from 1842 to the present (ODOT 1991:177; Trussel 2010:14). Clear glass recovered from site 12-Bn-273 was manufactured between 1875 to the present (IMACS 1992:472(19)). Milkglass was recovered from site 12-Bn-274 was manufactured from 1890 to 1960 (IMACS 1992:472(18); ODOT 1991:72).

Table 24: Artifacts from Survey Area 10.

Prehistoric	No.	Historic	No.
Core Tool	1	Ceramic, Porcelain	1
		Ceramic, Semi-Porcelain	1
		Ceramic, Ironstone	1
		Ceramic, Whiteware	2
		Ceramic, Stoneware	1
		Glass, Clear	1
		Glass, Milkglass	1
		Glass, Aqua	5
		Glass, Clear	1
		Brick	1
		Stone, Marble	1
Total	1	Total	16

Table 25: Historic Diagnostics from Survey Area 10.

Artifact Type	Site	Date Range	Citation
Plain Semi-Porcelain	12-Bn-274	1800-1830	Noël Hume 1969:262
Plain Porcelain	12-Bn-275	1800-1830	IMACS 1992:472(18); ODOT 1991:72
Aqua Glass	12-Bn-266, 12-Bn-268, 12-Bn-272, 12-Bn-276	ca. 1800- ca. 1910	IMACS 1992:472 (18)
Plain Whiteware	12-Bn-274	1820 to present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Stoneware with Blue glaze	12-Bn-268	1835- mid 1890	Stelle 2001: Chapter 1
Stoneware with Bristol glaze interior and unglazed exterior	12-Bn-265	1835-present	Oswald et al. 1982:19
Plain Ironstone	12-Bn-265	1842-present	ODOT 1991:177; Trussel 2010:14
Clear Glass	12-Bn-273	1875-present	IMACS 1992:472(19)
Milkglass	12-Bn-274	1890-1960	IMACS 1992:472(18); ODOT 1991:72

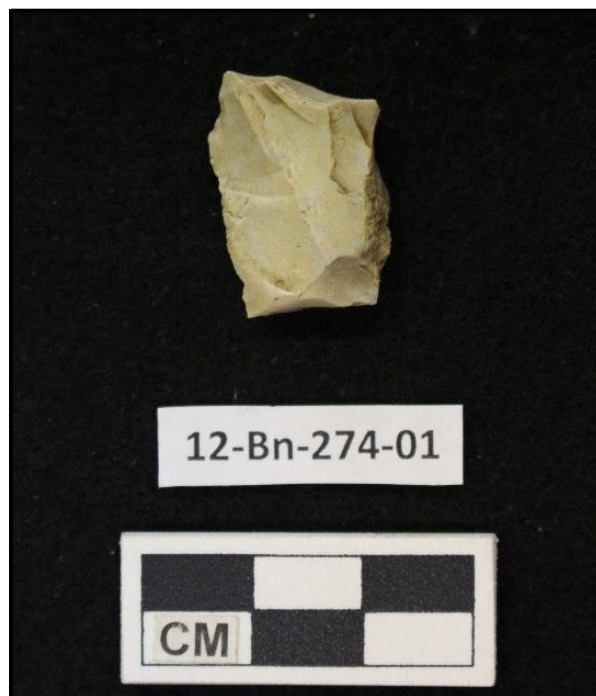


Figure 104: Prehistoric artifact from Survey Area 10 (Photo by Kiya Mullins, Ball State University).

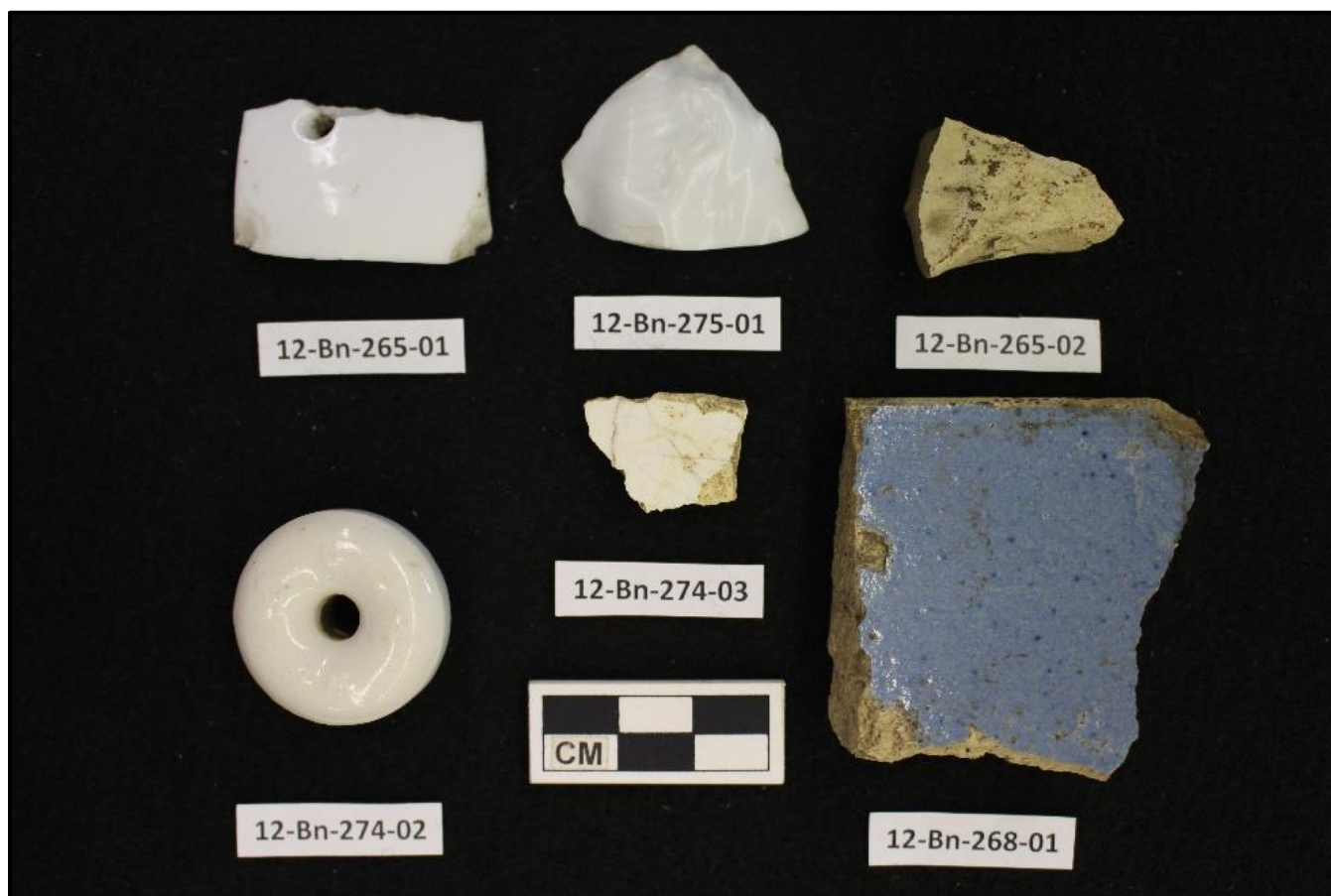


Figure 105: Representative historic ceramic artifacts from Survey Area 10 (Photo by Kiya Mullins, Ball State University).



Figure 106: Representative historic glass artifacts from Survey Area 10 (Photo by Kiya Mullins, Ball State University)

Sites

Nine archaeological sites, 12-Bn-265 to 12-Bn-268, and 12-Bn-272 to 12-Bn-276, were recorded in Survey Area 10 (Figure 107 and Figure 108). Summaries for the individual sites are contained in Volume 2, Appendix F. Eight sites had diagnostic artifacts (12-Bn-265, 12-Bn-266, 12-Bn-268, 12-Bn-272, and 12-Bn-273 to 12-Bn-276). Six sites were historic isolated finds

(12-Bn-266, 12-Bn-267, 12-Bn-272, 12-Bn-273, 12-Bn-275, and 12-Bn-276). Two of the sites were historic scatters (12-Bn-265 and 12-Bn-268). One site (12-Bn-274) was a multicomponent site with a prehistoric isolate and a historic scatter

All nine sites were discovered on end moraines (12-Bn-265 to 12-Bn-268 and 12-Bn-272 to 12-Bn-276). One site (12-Bn-267) was found on Corwin silt loam (CsB2) soil. Seven sites (12-Bn-265, 12-Bn-266, and 12-Bn-272 to 12-Bn-276) were found on Darroch silt loam (Do and Dp) soils. One site (12-Bn-268) was found on Corwin silt loam (CsB2) and Darroch silt loam (Do and Dp) soils.

The site types in Survey Area 10 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places

Density

Survey Area 10 consisted of 27.92 acres of end moraines and ground moraines. Within Survey Area 10, a density of one site per 3.1 acres occurred and sites covered 1.36 percent of the surface area.

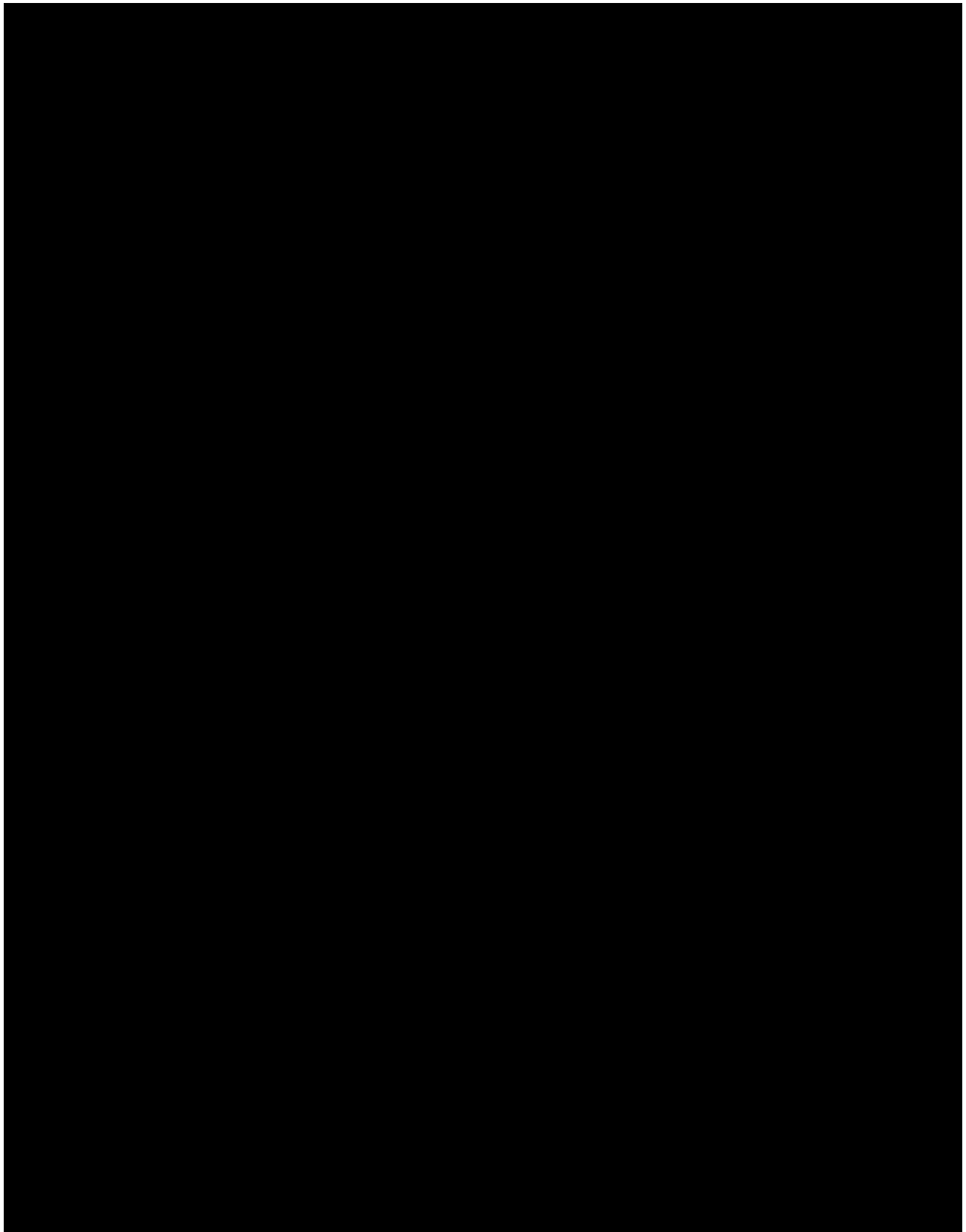


Figure 107: A portion of the USGS 7.5' Fowler, Indiana Quadrangle showing the location of sites 12-Bn-265 to 12-Bn-273.

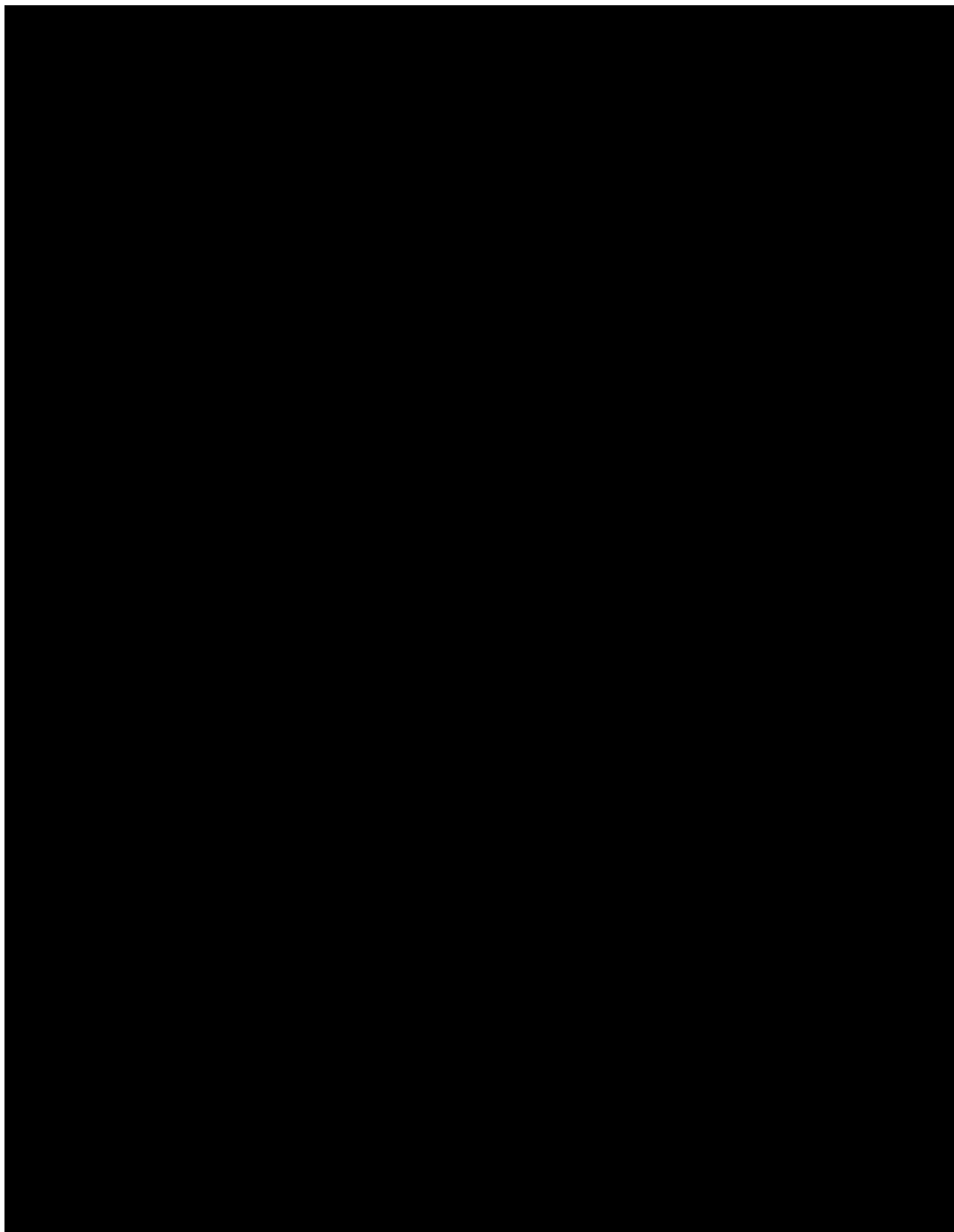


Figure 108: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-265 to 12-Bn-273.

Survey Area 11

Survey Area 11 was located in Bolivar Township in [REDACTED], Township 24 North, Range 6 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Chatterton Quadrangle (Figure 109 and Figure 110). The property was surveyed on October 10, 2016. Ground surface visibility was approximately 60-70 percent with some weeds and corn stalks themselves hindering visibility. The field surveyed was still planted in corn that was standing between five to eight feet tall. A total of 62.85 acres was surveyed consisting of end moraines, ground moraines, and outwash plains and terraces. The area contained Barces (BaB2), Crane (Cu), Darroch (Dp), Gilboa (GlA), and Selma (Sh) soils. Eleven sites were encountered during the survey (12-Bn-277 to 12-Bn-287). The sites ranged in size from prehistoric isolated finds to a multicomponent prehistoric isolate and historic scatter of 323.75square meters (0.08 acres).

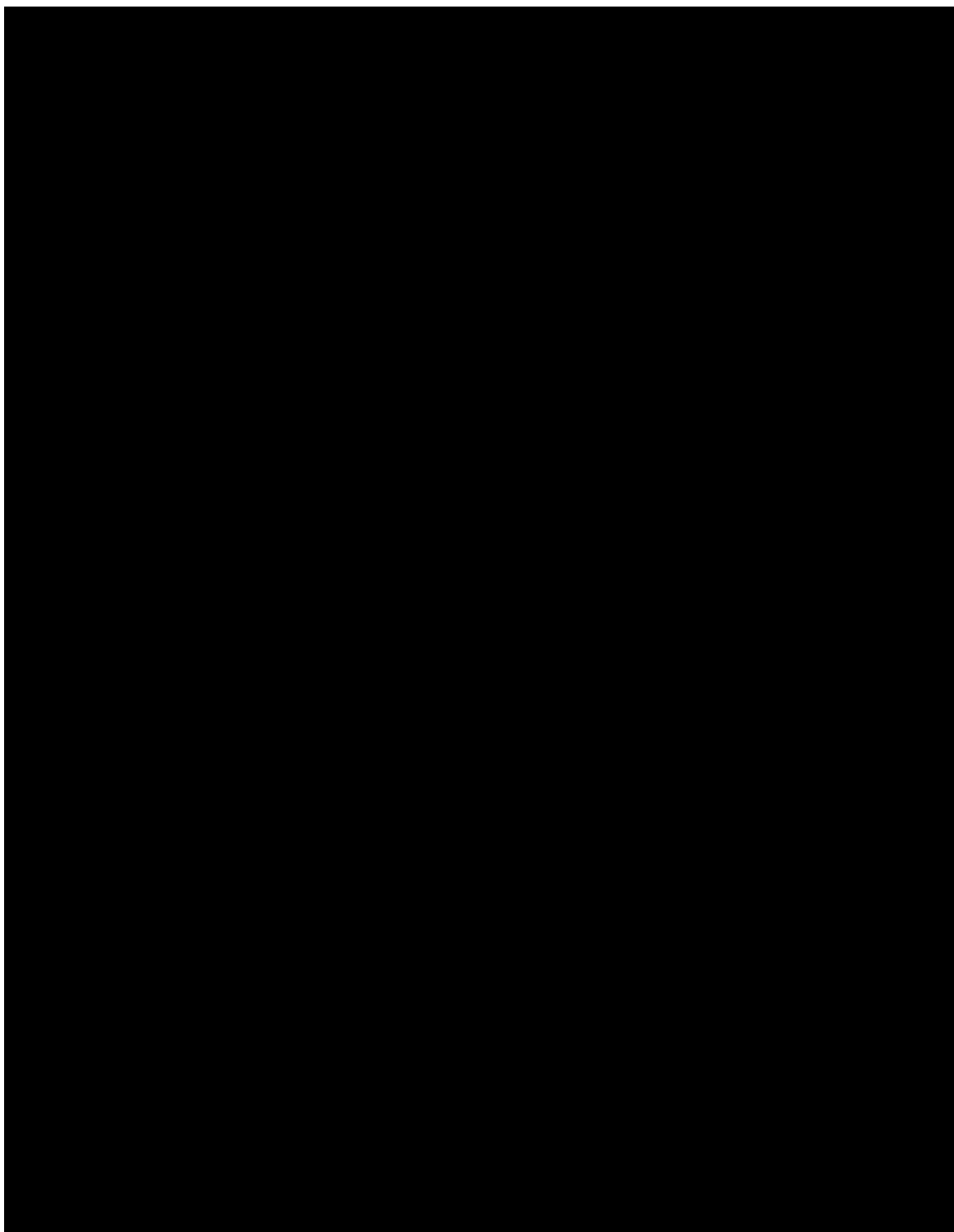


Figure 109: A portion of the map of Bolivar Township, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 11. Note: Due to distortion in historical maps, the georeferenced location of SA11 is slightly off.

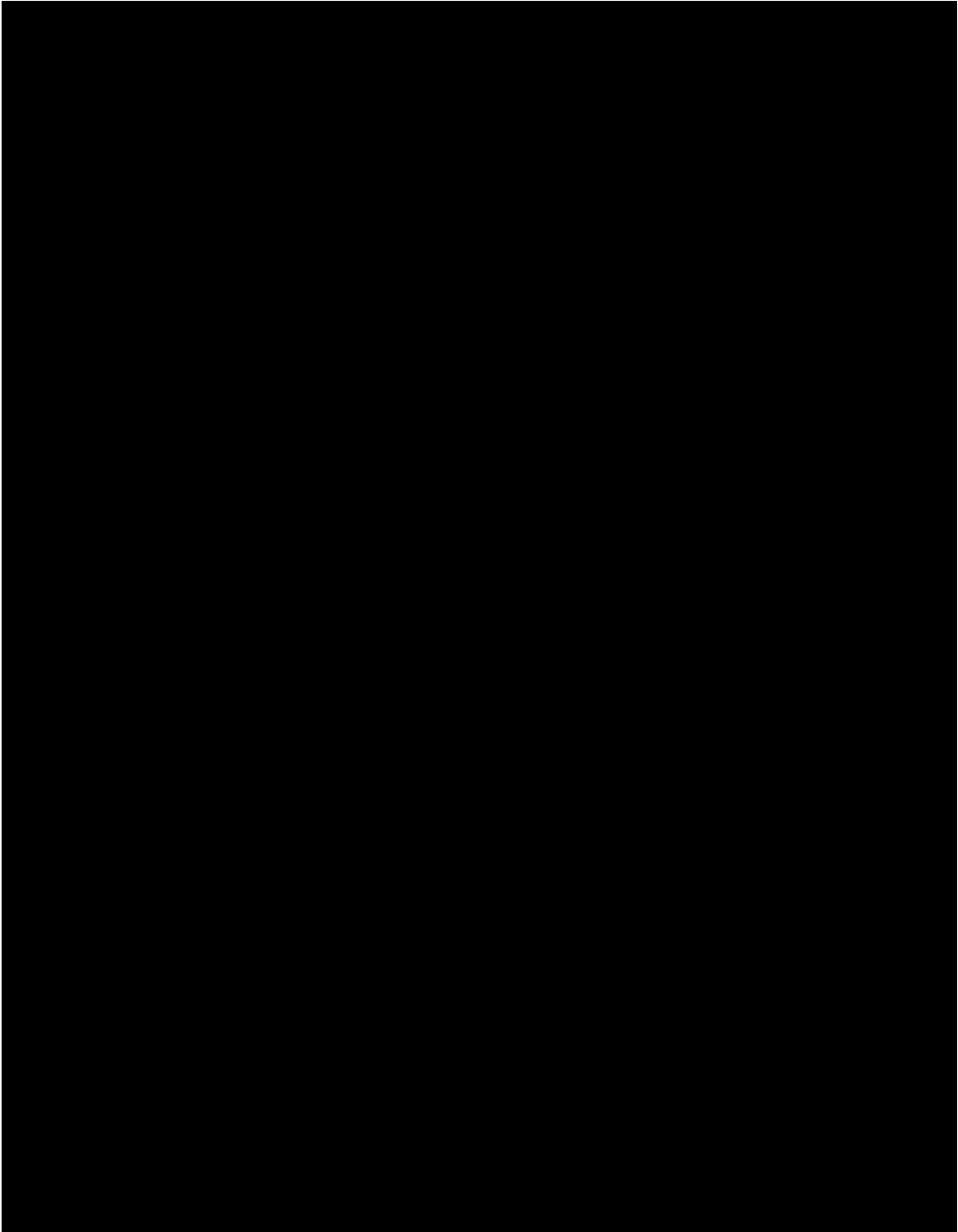


Figure 110: A portion of the USGS 7.5' Chatterton, Indiana Quadrangle showing the location of Survey Area 11.

Artifacts

A total of 27 artifacts was encountered in Survey Area 11. Figure 25 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 111 through Figure 113. Artifacts are listed by individual site in Volume 2, Appendix E.

Fourteen prehistoric artifacts were recovered from Survey Area 11 (Figure 111). None were diagnostic.

Thirteen historic artifacts were recovered from Survey Area 11 and all are diagnostic (Table 27). Chronologically expressed these items aqua glass recovered from site 12-Bn-284 which was manufactured from ca. 1800 to ca. 1910 (IMACS 1992:472(18)). Stoneware with Albany glaze interior and exterior was recovered from site 12-Bn-284 and was manufactured from 1805 to 1920 (Ramsey 1939:21-22, 59). Plain whiteware recovered from site 12-Bn-284 was manufactured from 1820 to the present (ODOT 1991:177, Stelle 2001:Chapter 1; Trussel 2010:13). Amber glass recovered from site 12-Bn-284 was manufactured from 1860 to the present (IMACS 1992:473(19)). Clear glass was recovered from sites 12-Bn-283, 12-Bn-284, and 12-Bn-285 and was manufactured from 1875 to the present (IMACS 1992:473(19)). Milkglass was recovered from site 12-Bn-284 and was manufactured from 1890 to 1960 (IMACS 1992:472(18)).

Table 26: Artifacts from Survey Area 11.

Prehistoric	No.	Historic	No.
Biface, Unhafted	1	Ceramic, Whiteware	3
Core	2	Ceramic, Stoneware	1
Flake, Complete	4	Glass, Milkglass	1
Flake, Proximal	1	Glass, Amber	1
Flake, Medial	2	Glass, Aqua	1
Flake, Distal	2	Glass, Clear	6
Angular Shatter	2		
Total	14	Total	13

Table 27: Historic Diagnostics from Survey Area 11.

Artifact Type	Site	Date Range	Citation
Aqua glass	12-Bn-284	ca. 1800-ca. 1910	IMACS 1992:472(18)
Stoneware with Albany glaze interior and exterior	12-Bn-284	1805-1920	Ramsey 1939:21-22,59
Plain Whiteware	12-Bn-284	1820 to present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Amber Glass	12-Bn-284	1860 to present	IMACS 1992:473(19)
Clear Glass	12-Bn-283, 12-Bn-284, 12-Bn-285	1875 to present	IMACS 1992:473(19)
Milkglass	12-Bn-284	1890-1960	IMACS 1992:472(18)



Figure 111: Representative prehistoric artifacts from Survey Area 11 (Photo by Kiya Mullins, Ball State University).



Figure 112: Representative historic ceramic artifacts from Survey Area 11 (Photo by Kiya Mullins, Ball State University).



Figure 113: Representative historic glass artifacts from Survey Area 11 (Photo by Kiya Mullins, Ball State University).

Sites

Eleven archaeological sites, 12-Bn-277 to 12-Bn-287, were recorded in Survey Area 11 (Figure 114 and Figure 115). Summaries for the individual sites are contained in Volume 2, Appendix F. Three sites had diagnostic artifacts (12-Bn-283, 12-Bn-284, and 12-Bn-285). Five sites were prehistoric isolated finds (12-Bn-287, 12-Bn-279, 12-Bn-281, 12-Bn-282, and 12-Bn-286). Three sites were prehistoric scatters (12-Bn-277, 12-Bn-280, and 12-Bn-287). Three sites were multicomponent. Sites 12-Bn-283 and 12-Bn-285 were prehistoric and a historic isolates and site 12-Bn-284 was a historic scatter and a prehistoric isolate.

Nine sites (12-Bn-277, 12-Bn-279, 12-Bn-280, 12-Bn-281, 12-Bn-282, 12-Bn-284, 12-Bn-285, 12-Bn-286, and 12-Bn-287) were discovered on end moraines and ground moraines. Two sites (12-Bn-278 and 12-Bn-283) were discovered on outwash plains and terraces. Two sites (12-Bn-281 and 12-Bn-285) were found on Barce loam (BaB2) soil. Two sites (12-Bn-278 and 12-Bn-283) were found on Crane loam (Cu) soil. Two sites (12-Bn-277 and 12-Bn-279) were found on Darroch silt loam (Dp) soil. Two sites (12-Bn-280 and 12-Bn-287) were found on Gilboa silt loam (GlA) soil. Three sites (12-Bn-282, 12-Bn-284, and 12-Bn-286) were found on Selma silty clay loam (Sh) soil.

The site types found in Survey Area 11 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 11 consisted of 62.85 acres of end moraines, ground moraines, and outwash plains and terraces. Within Survey Area 11, a density of one site per 5.71 acres occurred and sites covered 0.54 percent of the surface area.

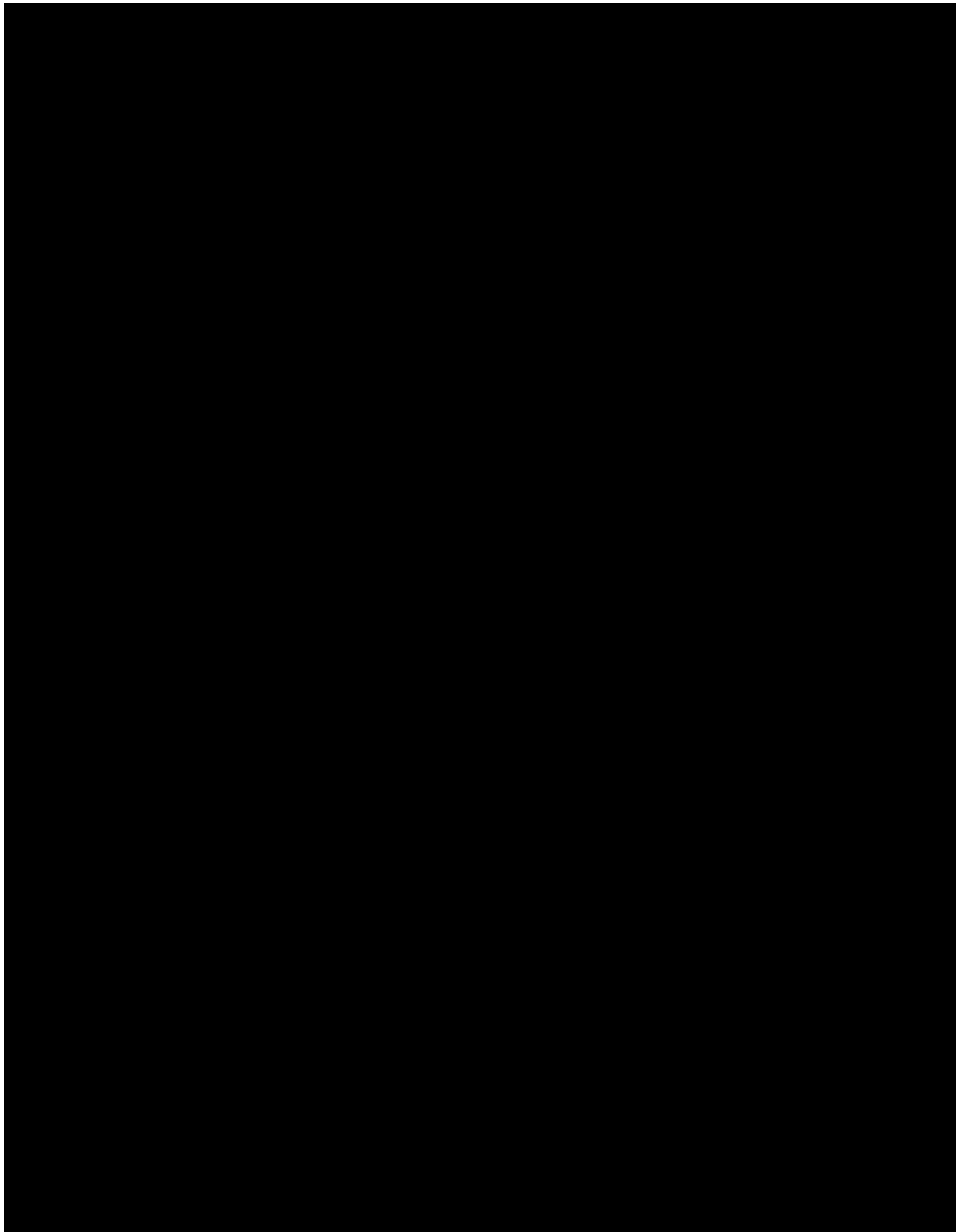


Figure 114: A portion of the USGS 7.5' Bolivar Indiana Quadrangle showing the location of sites 12-Bn-277 to 12-Bn-287.

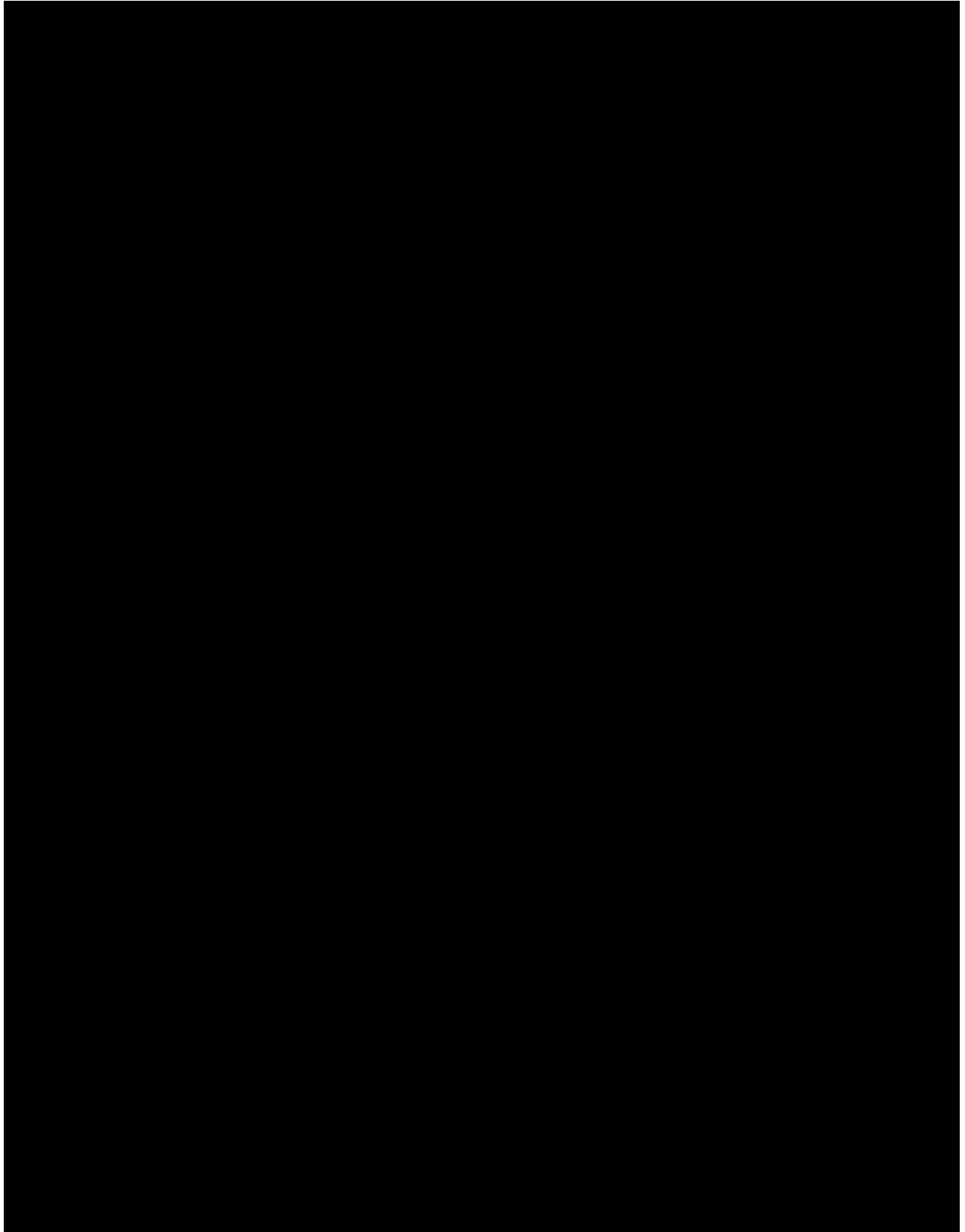


Figure 115: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-Bn-277 to 12-Bn-287.

Survey Area 12

Survey Area 12 was located in Bolivar Township in [REDACTED] Township 24 North, Range 6 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Round Grove and Templeton Indiana Quadrangle (Figure 116 and Figure 117). The property was surveyed on October 15, 2016. The field was planted in corn, standing between three to seven feet tall. Ground surface visibility was approximately 50-60 percent when in tractor rows with some weeds and corn stalks themselves hindering visibility. A total of 40.96 acres was surveyed consisting of end moraines and ground moraines. The area contained Chalmers (Ch), Darroch (Dp), Foresman (FpB2) and Odell (OlA) soils. One site (12-Bn-288) was encountered during the survey and was a historic isolate.

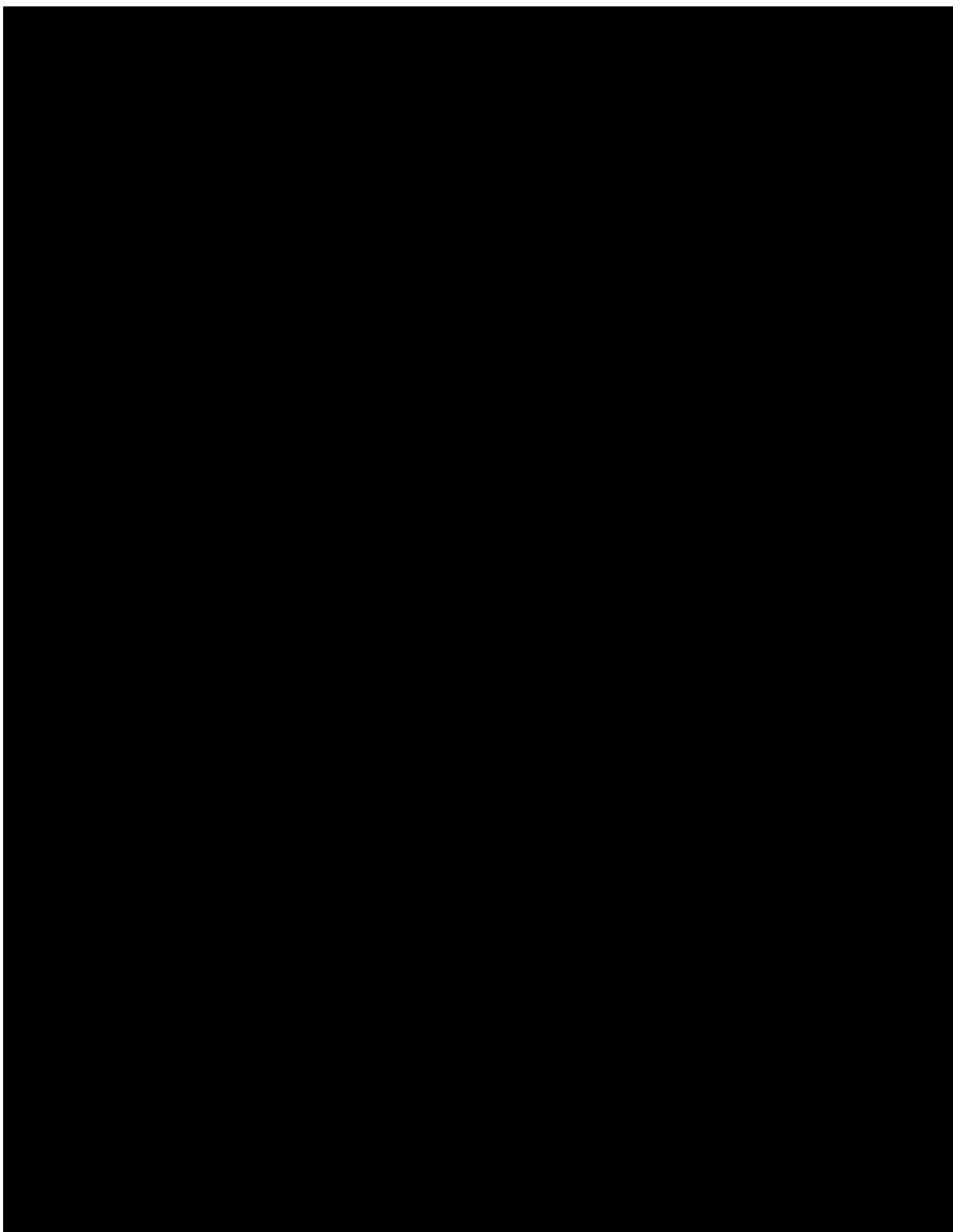


Figure 116: A portion of the map of Bolivar, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 12. Note: Due to distortion in historical maps, the georeferenced location of SA12 is slightly off.

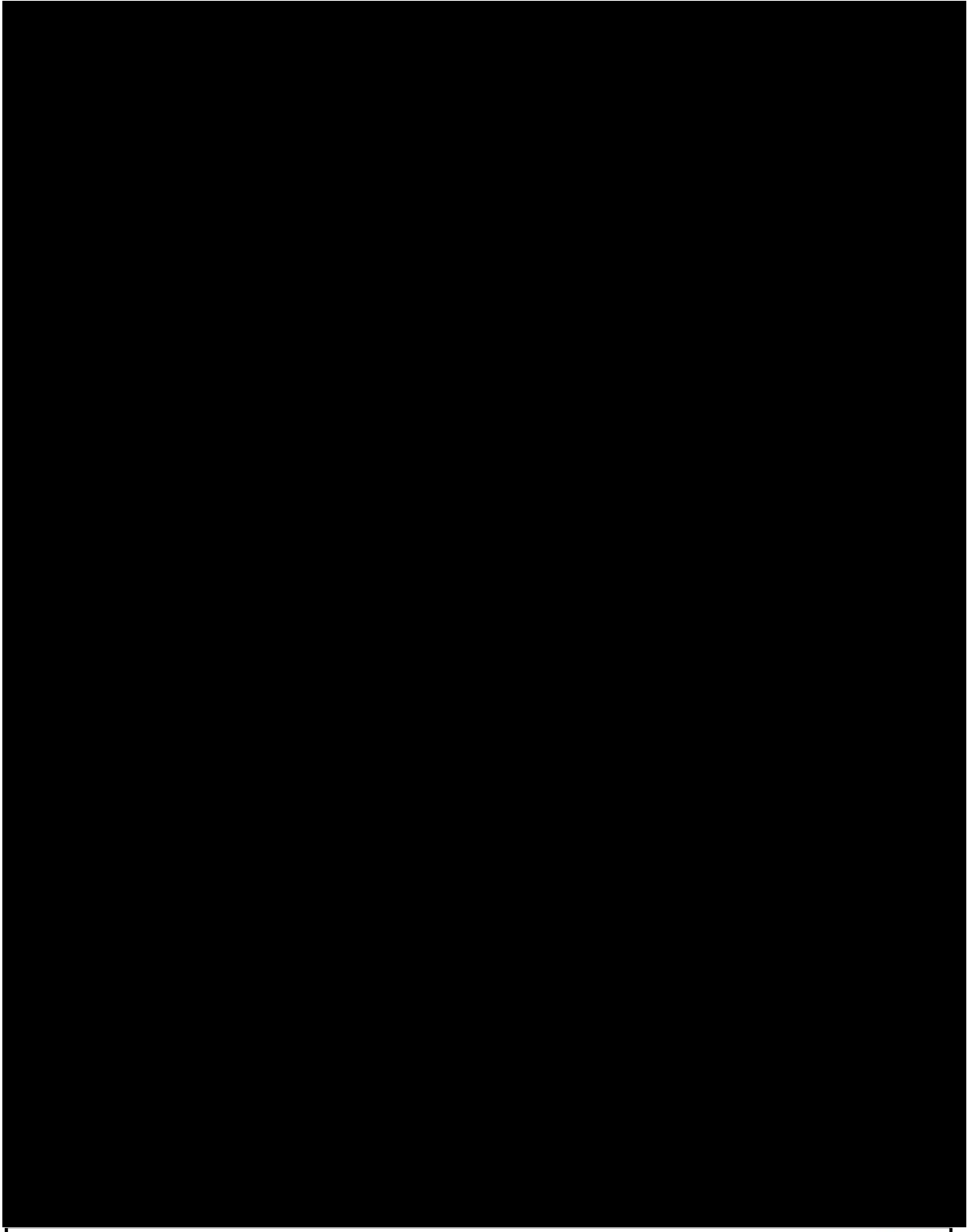


Figure 117: A portion of the USGS 7.5' Round Grove and Templeton Indiana Quadrangle showing the location of Survey Area 12.

Artifacts

A total of one artifact was encountered in Survey Area 12 Table 28 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 118. Artifacts are listed by individual site in Volume 2, Appendix E.

No prehistoric artifacts were recovered from Survey Area 12.

One historic artifact was recovered from Survey Area 12 and it is non-diagnostic (Figure 118).

Table 28: Artifacts from Survey Area 12.

Prehistoric	No.	Historic	No.
		Metal, Iron Hook	1
Total	0	Total Collected	1



Figure 118: Historic iron artifact recovered from site 12-Bn-288 (Photo by Kiya Mullins, Ball State University).

Sites

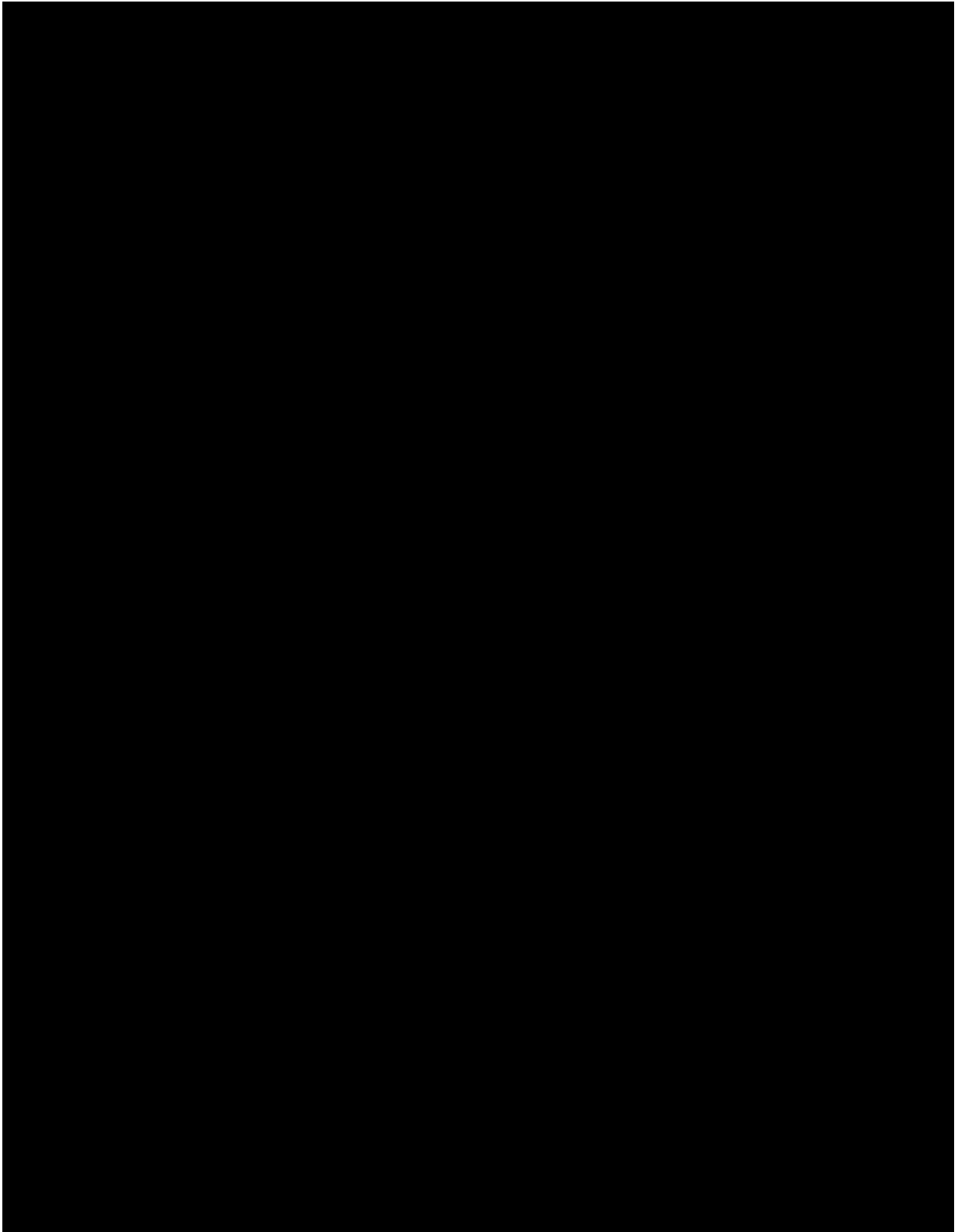
One archaeological site (12-Bn-288) was recorded in Survey Area 12 (Figure 119 and Figure 120). Summaries for the individual sites are contained in Volume 2, Appendix F. Site 12-Bn- 288 was a historic isolated find and was non-diagnostic.

Site 12-Bn-288 was discovered on end moraines and ground moraines. Site 12-Bn-288 was found on Chalmers silty clay loam (Ch) soil.

The site types found in Survey Area 12 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 12 consisted of 40.96 acres of end moraines and ground moraines. Within Survey Area 12, a density of one site per 40.96 acres occurred and sites covered 0.05 percent of the surface area.



**Figure 119: A portion of the USGS 7.5' Ground Grove and Templeton, Indiana
Quadrangle showing site 12-Bn-288 in Survey Area 12.**

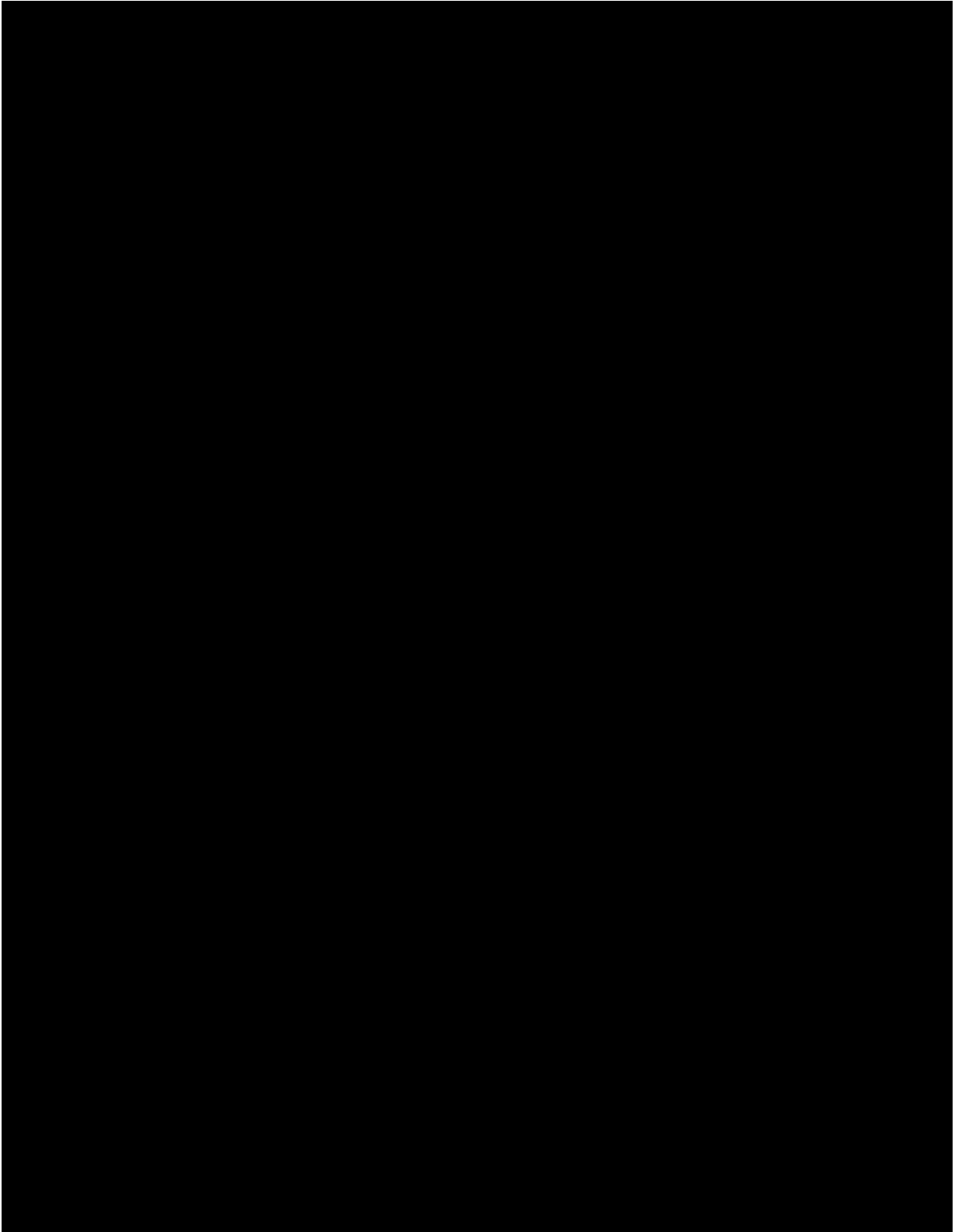


Figure 120: 2013 Aerial (Indiana Spatial Data Portal 2015) showing site 12-Bn-288 in Survey Area 12.

Survey Area 13

Survey Area 13 was located in Grant Township in [REDACTED] Township 33 North, Range 8 West as shown on the Benton County map in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) and the USGS 7.5’ Pine Village, Indiana Quadrangle (Figure 101 and Figure 102). The property was surveyed on September 3, 2016. Ground surface visibility was approximately 80 to 100 percent with some corn debris hindering visibility. The field had been planted in corn which had been harvested. A total of 79.89 acres was surveyed consisting of end moraines and ground moraines. The area contained Chalmers (Ch), Conover (CpA), Corwin (CsB2), Miami (MmC3 and MlB2), Montmorenci (MxB2), and Peotone (Pn) soils. Seventeen sites were encountered during the survey (12-Bn-289 to 12-Bn-305). The sites ranged in size from historic and prehistoric isolated finds to a multicomponent site consisting of a historic scatter and a prehistoric scatter of 1,659.21 square meters (0.41 acres).

Site 12-Bn-13 is a collector reported site in SHAARD located in the NW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of [REDACTED] Township 24N Range 8W and within Survey Area 13 (Figure 123). It was reported by [REDACTED], the father of the current landowner [REDACTED], and recorded by Indiana University’s Noel Justice in 1977. Site 12-Bn-13 is listed as a Early to Middle Archaic lithic scatter of unknown size with one celt, one gorget slate, one early Archaic Thebes point, and one Middle Archaic serrated point discovered (Division of Historic Preservation 2007).

After survey had been completed, the landowner [REDACTED] visited with the field crew to discuss what was discovered.

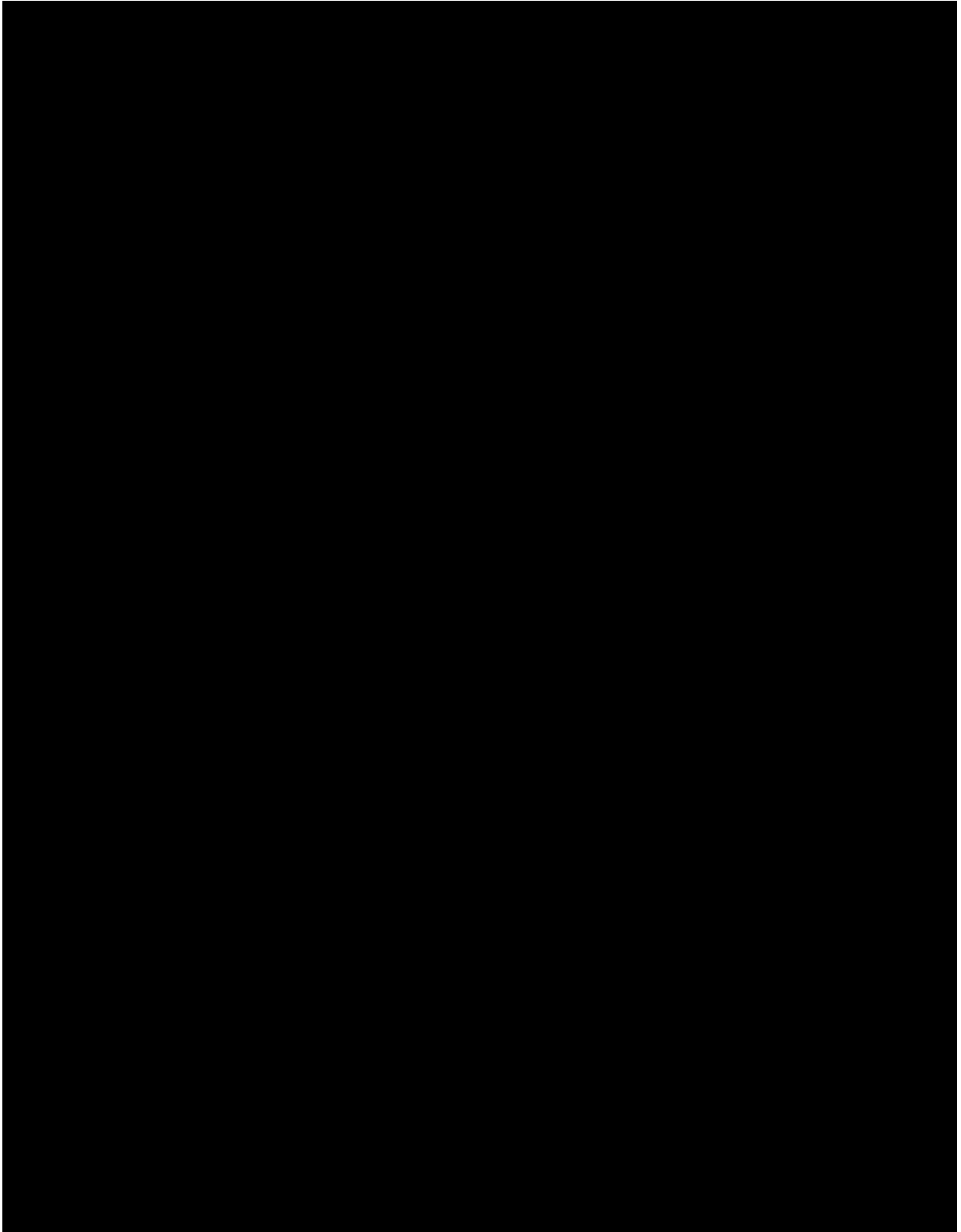


Figure 121: A portion of the map of Grant, Benton County in the “Illustrated Historical Atlas of the State of Indiana” (Andreas 1968) showing Survey Area 13. Note: Due to distortion in historical maps, the georeferenced location of SA13 is slightly off.

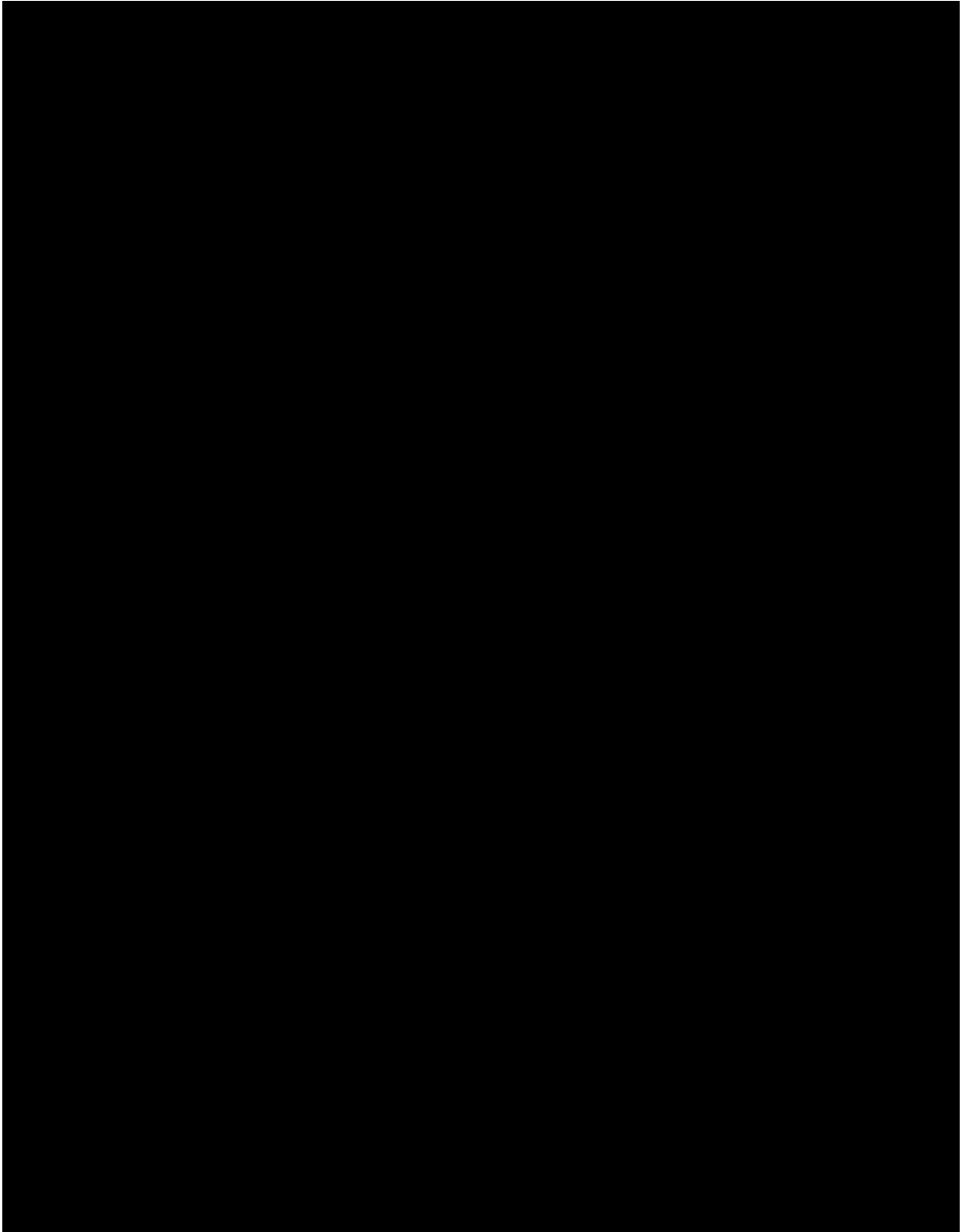


Figure 122: A portion of the USGS 7.5' Pine Village Indiana Quadrangle showing the location of Survey Area 13.

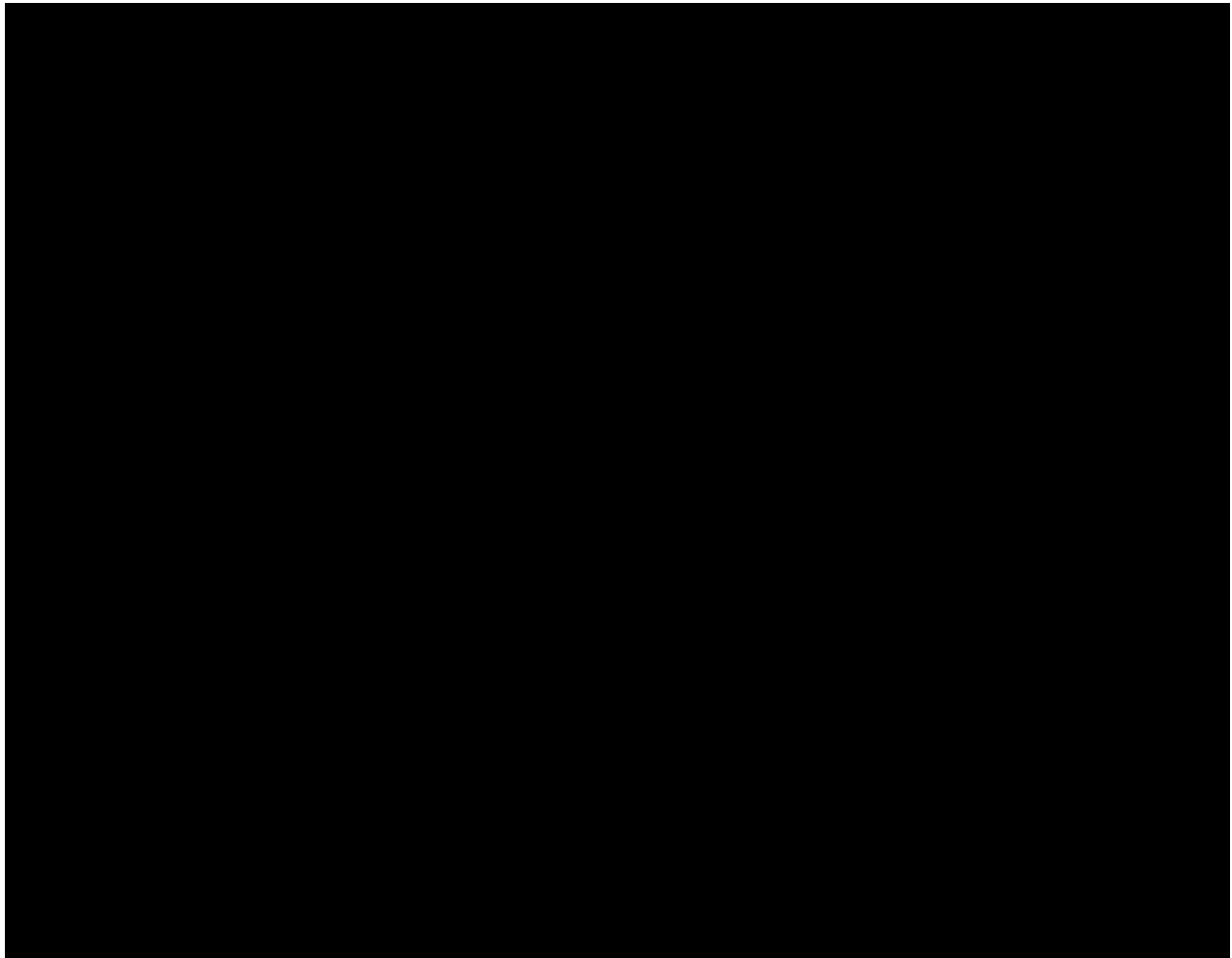


Figure 123: Approximate location of collector reported site 12-Bn-13 within Survey Area 13.

Artifacts

A total of 131 artifacts was encountered in Survey Area 11 and of those artifacts, 38 brick fragments were observed in the field but not collected. Table 29 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 124 through Figure 127. Artifacts are listed by individual site in Volume 2, Appendix E.

Twenty-four prehistoric artifacts were recovered from Survey Area 13 (Figure 124). None were diagnostic.

A total of 107 historic artifacts was recovered from Survey Area 13 and 68 are diagnostic (Table 29). Chronologically expressed these items include stoneware with unglazed interior and salt glaze exterior recovered from site 12-Bn-292 and manufactured from 1715 to 1775 (Noël Hume 1969:56-57). Stoneware with Albany glaze interior and salt glaze exterior

recovered from site 12-Bn-292 was manufactured from 1715 to 1920 (Noël Hume 1960:56-57; Ramsey 1939:21-22). Unglazed stoneware recovered from site 12-Bn-292 and was manufactured between 1715 to the present (Noël Hume 1969:56-57; Ramsey 1939:21-22, 59; Oswald et al. 1982:19). Redware with lead glaze recovered from site 12-Bn-292 was manufactured between 1725 to the present (Stelle 2001: Chapter 1). Unglazed redware was recovered from site 12-Bn-292 and was manufactured between 1725 to the present (Stelle 2001: Chapter 1). Aqua glass recovered from site 12-Bn-292 was manufactured from around 1800 to around 1910 (IMACS 1992:472(18)). Stoneware with Albany glaze interior and exterior recovered from site 12-Bn-292 was manufactured from 1805 to 1920 (Ramsey 1939:21-22, 59). Blue hand painted whiteware was recovered from site 12-Bn-292 and was manufactured between 1820 to the present (ODOT 1991:177; Stelle 2001: Chapter 1; Trussel 2010:13). Plain whiteware was recovered from site 12-Bn-292 and was manufactured between 1820 to the present (ODOT 1991:177; Stelle 2001: Chapter 1; Trussel 2010:13). Yellowware with Rockingham blue glaze was recovered from site 12-Bn-292 and was manufactured from the 1830s to the present (ODOT 1991:177). Stoneware with Albany glaze interior and Bristol glaze exterior was recovered from site 12-Bn-292 and was manufactured from 1835 to 1920 (Ramsey 1939:21-2,59; Oswald et al. 1982:19). Yellowware with Rockingham brown mottled glaze was recovered from site 12-Bn-292 and was manufactured from 1840 to 1900 (Stelle 2001: Chapter 1). Plain ironstone was recovered from site 12-Bn-292 and was manufactured between 1842 to the present (ODOT 1991:177; Trussel 2010:14). Green glass was recovered from site 12-Bn-292 was manufactured between 1860 to the present (IMACS 1992:472(18)). Amber glass was recovered from site 12-Bn-304 was manufactured between 1860 to the present (IMACS 1992:472(19)). Clear glass was recovered from site 12-Bn-292 was manufactured between 1860 to the present (IMACS 1992:472(19)). Amethyst glass was recovered from site 12-Bn-292 and was manufactured from 1880 to 1925 (Newman 1970:74; IMACS 1992:472(7)). Cobalt glass was recovered from site 12-Bn-292 and was manufactured from 1890 to 1960 (IMACS 1992:472(19)). Milkglass was recovered from site 12-Bn-292 and was manufactured from 1890 to 1960 (IMACS 1992:472(18)).

Table 29: Artifacts from Survey area 13.

Prehistoric	No.	Historic	No.
Drill, Hafted Y-Base	1	Ceramic, Ironstone	4
Core	3	Ceramic, Whiteware	21
Possible Core	1	Ceramic, Stoneware	11
Flake, Complete	6	Ceramic, Yellowware	3
Flake, Proximal	7	Ceramic, Redware	2
Flake, Distal	5	Glass, Cobalt	1
Flake	1	Glass, Green	2
		Glass, Amethyst	3
		Glass, Milkglass	1
		Glass, Amber	1
		Glass, Aqua	14
		Glass, Clear	5
		Metal, Iron Rod	1
		Brick (Uncollected)	38
Total	24	Total	107

Table 30: Historic Diagnostics from Survey area 13.

Artifact Type	Site	Date Range	Citation
Stoneware with with unglazed interior and salt glaze exterior	12-Bn-292	1715-1775	Noël Hume 1969:56-57
Stoneware with Albany glaze interior and salt glaze exterior	12-Bn-292	1715-1920	Ramsey 1939:21-22; Noël Hume 1960:56-57
Unglazed Stoneware	12-Bn-292	1715-present	Noël Hume 1969:56-57; Ramsey 1939: 21-22,59; Oswald et al. 1982:19
Redware with lead glaze	12-Bn-292	1725-present	Stelle 2001: Chapter 1
Unglazed Redware	12-Bn-292	1725-present	Stelle 2001: Chapter 1
Aqua Glass	12-Bn-292	ca.1800-ca.1910	IMACS 1992:472(18)
Stoneware with Albany glaze interior and exterior	12-Bn-292	1805-1920	Ramsey 1939:21-22, 59
Blue handpainted Whiteware	12-Bn-292	1820-present	ODOT 1991:177; Stelle 2001: Chapter 1; Trussel 2010:13
Plain Whiteware	12-Bn-292	1820-present	ODOT 1991:177; Stelle 2001: Chapter 1; Trussel 2010:13
Yellowware with Rockingham blue glaze	12-Bn-292	1830s-present	ODOT 1991:177
Stoneware with Albany glaze interior and Bristol glaze exterior	12-Bn-292	1835-1920	Ramsey 1939:21-2,59; Oswald et al. 1982:19
Yellowware with Rockingham brown mottled glaze	12-Bn-292	1840-1900	Stelle 2001: Chapter 1
Plain Ironstone	12-Bn-292	1842-present	ODOT 1991:177; Trussel 2010:14
Green Glass	12-Bn-292	1860-present	IMACS 1992:472(18)
Amber Glass	12-Bn-304	1860-present	IMACS 1992:472(19)
Clear Glass	12-Bn-292	1860-present	IMACS 1992:472(19)
Amethyst Glass	12-Bn-292	1880-1925	Newman 1970:74; IMACS 1992:472(7)
Cobalt Glass	12-Bn-292	1890-1960	IMACS 1992:472(19)
Milkglass	12-Bn-292	1890-1960	IMACS 1992:472(18)



Figure 124: Representative prehistoric artifacts from Survey Area 8 (Photo by Kiya Mullins, Ball State University).



Figure 125: Representative historic ceramics from Survey area 13 (Photo by Kiya Mullins, Ball State University).



Figure 126: Representative glass artifacts from Survey Area 13 (Photo by Kiya Mullins, Ball State University).



Figure 127: Historic iron artifact from Survey Area 13 (Photo by Kiya Mullins, Ball State University).

Sites

Seventeen archaeological sites, 12-Bn-289 to 12-Bn-305, were recorded in Survey Area 13 (Figure 128 and Figure 129). Summaries for the individual sites are contained in Volume 2, Appendix F. Two sites had diagnostic artifacts (12-Bn-292 and 12-Bn-304). Eight sites were prehistoric isolated finds (12-Bn-290, 12-Bn-293, 12-Bn-296, 12-Bn-297, 12-Bn-299, 12-Bn-300, 12-Bn-302, and 12-Bn-305). Three sites were historic isolates (12-Bn-291, 12-Bn-295, and 12-Bn-301). Four sites were prehistoric scatters (12-Bn-289, 12-Bn-294, 12-Bn-298, and 12-Bn-303). One site was a historic scatter (12-Bn-304). One site was multicomponent. Site 12-Bn-292 was a historic scatter and a prehistoric scatter.

All 17 sites (12-Bn-289 to 12-Bn-305) were discovered on end moraines and ground moraines. Two sites (12-Bn-289 and 12-Bn-294) were found on Conover silt loam (CpA) soil. Four sites (12-Bn-290, 12-Bn-297, 12-Bn-300, and 12-Bn-302) were found on Montmorenci silt loam (MxB2) soils. One site (12-Bn-291) was found on Chalmers silty clay loam (Ch) soil. Four sites (12-Bn-293, 12-Bn-296, 12-Bn-301, and 12-Bn-303) were found on Miami clay loam (MmC3) soil. Two sites (12-Bn-304 and 12-Bn-305) were found on Corwin silt loam (CsB2) soil. Four sites were found on multiple soil types. Two sites (12-Bn-292 and 12-Bn-295) were

found on Miami clay loam and Conover silt loam (MmC3 and CpA) soils. One site (12-Bn-298) was found on Montmorenci silt loam, Conover silt loam, and Miami clay loam (MxB2, CpA, and MmC3) soils. One site (12-Bn-299) was found on Motmorenci silt loam and Conover silt loam (MxB2 and CpA) soils.

Four sites (12-Bn-289, 12-Bn-300 12-Bn-301, 12-Bn-302) were discovered within 200 meters of collector reported site 12-Bn-13, which would cover the maximum site size as identified by the geographic location in SHAARD. Sites 12-Bn-301 and 12-Bn-302 were historic isolates. Site 12-Bn-289 was a prehistoric scatter with one flake and one side scraper, and 12-Bn-300 was a prehistoric isolate with one flake. None of these sites can confirm a more exact location or add to the context of collector reported site 12-Bn-13.

Site 12-Bn-292 is a large dense historic and prehistoric scatter with 67 historic artifacts, 35 uncollected bricks, and four non-diagnostic prehistoric artifacts. Site 12-Bn-292, along with the rest of Survey Area 13, is located within the grove on Mud Pine, three miles southeast of Boswell, and is potentially associated with the structure from the grove's historic occupation. The 1876 historic map (Andreas 1968) displays the grove with the house, while the other two historic maps (Geo. A. Ogle & Co. 1909; Taylor 2009) did not show a structure located in Survey Area 13. The grove, which is unnamed, was first occupied by James Martin and his parents in 1831. They lived in the grove until 1842, when they moved to Newton (then part of Jasper) County (F.A. Battery and Co. 1883:735). The Guernsey (1932) Department of Natural Resources historic map indicates that Survey Area 13 may also be located near the "Indian Trail from Greenville (O) to Chicago (Ill.)". A historic road (Andreas 1968) terminates in the grove east of Mud Pine Creek, within Survey Area 13, and proceeds northwest six miles to Parish Grove in southeastern Parish Grove Township. Site 12-Bn-292 is located on a slope in the northwest corner of Survey Area 13 and, based upon the 1876 map (Andreas 1968), is at the corner of a bend in a historic road. This location is not ideal for a structure and it is possible 12-Bn-292 was a dumping site. The variety of historic artifacts recovered includes bottle glass and stoneware, artifacts which are typically associated with domestic structures. The concentration of bricks (n=35), typically not used for agricultural structures, again suggests that site 12-Bn-292 was part of a domestic site. The variety of domestic artifacts and the historic structure located on Survey Area 13 indicate the potential to learn more about late 1800s farmhouse lifestyle, filling a gap in Benton County's history. Additionally, the variety of prehistoric artifacts recovered from site 12-Bn-292 provides the potential to learn more about prehistoric occupation. Of the 24 prehistoric artifacts recovered from Survey Area 13, four were recovered from site 12-Bn-292 including one complete flake, one proximal flake, and two distal flakes of various Silurian and Mississippian cherts. While the inventory is not substantial, 12-Bn-292 occupies a favorable spot (modest rise of alfisol surrounded by multiple ecozones) noted as representative of a type of precontact settlement patten in Benton County (Balough et al. 2016). The historic component may have impacted the precontact component, but the prehistoric

component of 12-Bn-292 also has the potential to provide significant information pertaining to the archaeological record of Benton County. Based on the archaeological evidence and our historic research, it appears that both the Historic and Prehistoric components of 12-Bn-292 have the potential to yield additional information beyond the Phase I level and should be considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

Site 12-Bn-294 is a small prehistoric scatter consisting of five prehistoric artifacts and was 323.75 square meters (0.08 acres) in size. Site 12-Bn-294, along with the rest of Survey Area 13, is located within the grove on Mud Pine, three miles southeast of Boswell, and is 0.85 miles (1.36 kilometers) east of Mud Pine Creek (Andreas 1968). Site 12-Bn-294 is located on the top of a rise in the southwest corner of Survey Area 13. The five prehistoric artifacts recovered from 12-Bn-294 consist of two cores, one Y-based, hafted drill, one heat-treated and retouched distal flake, and one bipolar flake. The variety of tool types within one location is atypical in Benton County and is an indication that tool production was occurring on the site. Site 12-Bn-294 is located on a rise of moderately well drained forest (Udalf) soil above wet prairie (Aquoll) soil. Prehistoric occupation of diverse micro-ecologies consisting of rises of dry soils surrounded by wet soils is a trend noticed in our previous survey (Balough et al. 2016) and by Surface-Evans (2015). Based on the archaeological evidence, site 12-Bn-294 has the potential to yield additional information beyond the Phase I level and should be considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

The site types associated with the other sites in Survey Area 13 (12-Bn-189 to 12-Bn-291, 12-Bn-293, and 12-Bn-295 to 12-Bn-305) are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

The site types found in Survey Area 11 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 13 consisted of 79.89 acres of end moraines and ground moraines. Within Survey Area 13, a density of one site per 4.7 acres occurred and sites covered 1.33 percent of the surface area.

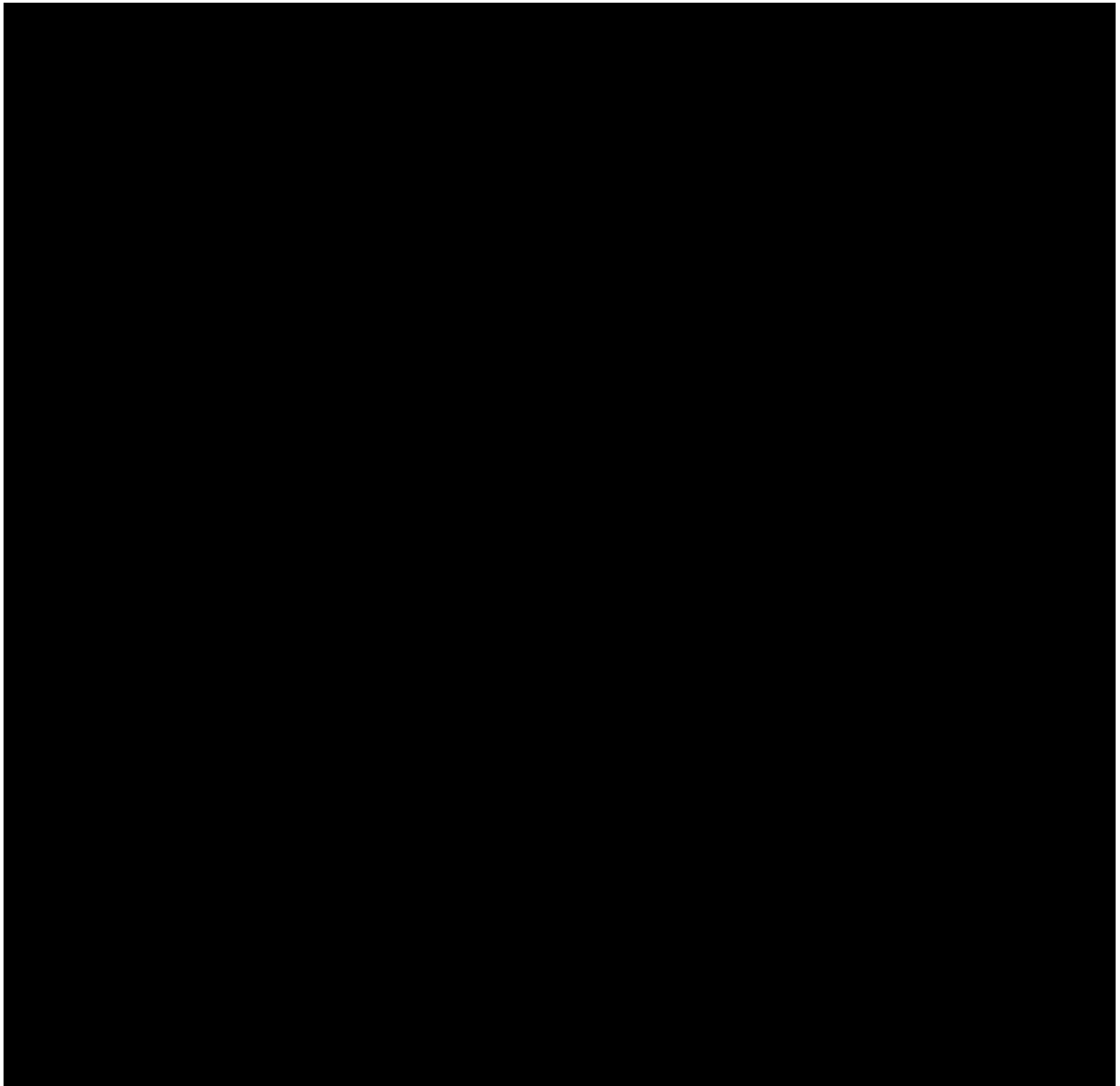


Figure 128: A portion of the USGS 7.5' Pine Village, Indiana Quadrangle showing sites 12-Bn-289 to 12-Bn-305 in Survey Area 13 and approximate location of collector reported site 12-Bn-13.

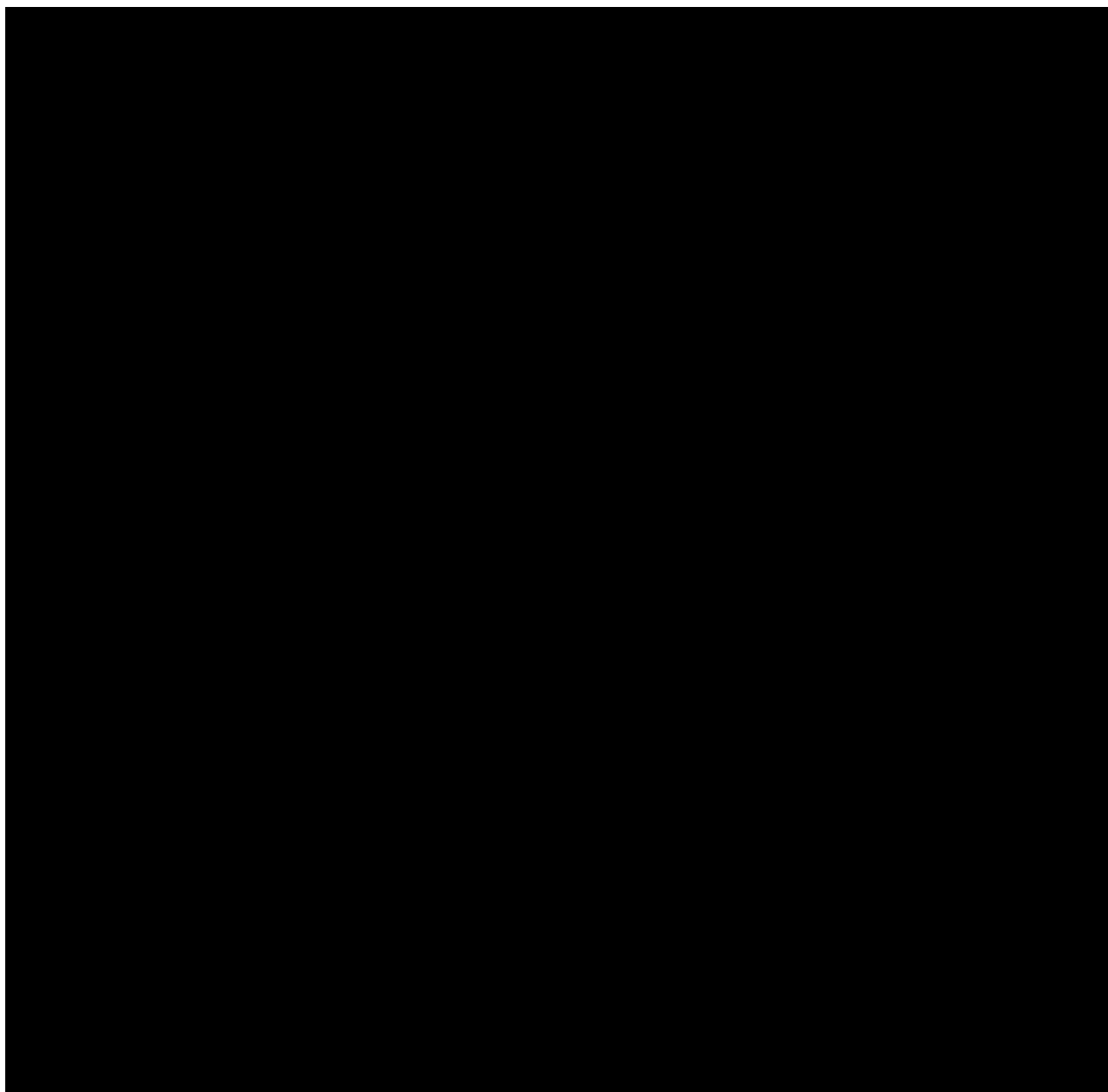


Figure 129: 2013 Aerial (Indiana Spatial Data Portal 2015) showing sites 12-Bn-289 to 12-Bn-305 in Survey Area 13 and approximate location of collector reported site 12-Bn-13.

Collector Visits

Three private collections from Benton County ([REDACTED] Collections) were viewed and analyzed as part of this grant project.

[REDACTED] Collection

On August 8, 2016, the PI Christine Thompson, Graduate Assistant Amanda Balough, and the field crew surveyed Survey Area 1, owned by [REDACTED]. [REDACTED] invited Thompson and Balough to examine her personal artifact collection. Part of the collection had been found in Survey Area 1, but it was not clear which specific artifacts were found there. Survey Area 1 is located in [REDACTED] Township 24 North, Range 8 West on the Fowler, Indiana Quadrangles. The rest of the collection had been found in the [REDACTED] fields further north in Benton County. [REDACTED] donated their collection to the Applied Anthropology Laboratories. The [REDACTED] collection consisted of 36 artifacts, which included four axes, 24 diagnostic bifaces, and eight non-diagnostic bifaces. Additional photos for the [REDACTED] collection are included in Volume 2, Appendix I.

Middle Archaic side notched points and Late Woodland to Middle Mississippian ovate points were well represented in the collection (Table 31). Of the nine side notched points analyzed, three (33%) were Attica chert. The distribution of raw material types among the base types in the [REDACTED] collection (Table 31) consisted of predominately Attica chert (44.44%). Other represented chert types include Laurel (13.89%), Liston Creek (16.67%), Holland (5.55%), Unknown (5.55%), Derby (2.78%), Indian Creek (2.78%), quartz (2.78%), Wyandotte (2.78%), and unknown heat-treated chert (2.78%).



Figure 130: Photograph of Stemmed, Corner Notched, and Side Notched Points from [redacted] Collection (Photo by Kiya Mullins, Ball State University).



**Figure 131: Photograph of Ovate Points from [REDACTED] Collection
(Photo by Kiya Mullins, Ball State University).**

Table 31: Distribution of Biface Base Types and Chert Types from the [REDACTED] Collection.

Chert Type	Side Notched	Triangular	Stemmed	Corner Notched	Ovate	Non-diagnostic	Total	%
Attica	3			2	3	8	16	44.44
Derby				1			1	2.78
Holland		1			1		2	5.55
Indian Creek			1				1	2.78
Laurel	2		1		1		5	13.89
Liston Creek	1		1		1	3	6	16.67
Quartz	1						1	2.78
Wyandotte	1						1	2.78
Unknown					2		2	5.55
Unknown (HT)	1						1	2.78
Total	9	1	3	3	8	12	36	
%	25	2.78	8.33	8.33	22.22	33.33		

[REDACTED] Collection

On December 4 and 5, 2016, AAL archaeologist Kevin C. Nolan and graduate student Amanda Balough visited [REDACTED] in Boswell, Indiana, to examine his private artifact collection.. [REDACTED] is the landowner of Survey Areas 3, 4, and 5. According to [REDACTED], some of the artifacts in his collection came from Survey Areas 3, 4, and 5. Other artifacts came from [REDACTED] other parcels which are located in Oak Grove and Grant Townships in [REDACTED], Township 24 North, Range 8 West as shown on the USGS 7.5' Pine Village and Fowler, Indiana Quadrangles.

According to [REDACTED], his father, the late [REDACTED], collected heavily from the surrounding fields and wooded areas, much of which is now owned by [REDACTED]. In 1977, [REDACTED] visited with Noel Justice at Indiana University's Glenn Black Laboratories to have his collection identified. This information is recorded in SHAARD as sites 12-Bn-2, 12-Bn-3, 12-Bn-7 through 12-Bn-25, and 12-Bn-33, all in Oak Grove and Grant Townships in Benton County. Most sites were geographically defined to within a ¼ ¼ ¼ ¼ section (an area of 2.5 miles). These 22 sites represent all precontact cultural periods in Indiana including Paleoindian, Early/Middle/Late Archaic, Early/Middle/Late Woodland, and Mississippian. Site types include prehistoric isolates, lithic scatters, camp, and habitation sites. Artifacts recovered from these sites include flakes, bifaces, scrapers, points, bannerstones, celts, slate gorgets, hammerstones, nutting stones, and copper (Division of Historic Preservation and Archaeology 2007). The [REDACTED] collection undoubtedly corresponds with these 22 archaeological

sites, however it is unclear which specific artifacts in the [REDACTED] Collection correspond with specific sites reported by [REDACTED].

The [REDACTED] Collection consists of an estimated 1,200+ artifacts. Approximately a third of the collection was photographed, identified, and scanned during the collector visit. Besides the 474 points analyzed and discussed below, the collection included a whetstone/abrading stone, a piece of copper, flakes, bifaces, bannerstones, axes, nutting stones, celts, pestles, and other groundstone tools. Additional photos for the [REDACTED] Collection are included in Volume 2, Appendix J.

Following the procedure established by Macleod et al. (2015), Nolan and Balough organized the lithic tools by base shape (Figure 132 and Figure 133). We counted totals for each base type and identified raw materials based on macroscopic examination (Table 32). All specimens were scanned with a Cannon LiDE 110 scanner on both sides. Several specimens were selected to 3D scanning using a NextEngine Desktop 3D Scanner.

Due to the size of the [REDACTED] collection, the full extent and number of diagnostic points is unknown, as is the variety of other stone tools. The entire collection consisted of 11 large display cases and at least 14 boxes (a combination of boxes, cigar boxes, and plastic buckets) with an estimate of over 1,200 artifacts. A sample of 474 diagnostic artifacts were analyzed during the visit. The sample consisted of all artifacts in 10 large display cases (designated as Cases 1 through 10) and additional artifacts in a box (designated as Box 1). The diagnostics from the sample was relatively evenly split with stemmed points (37.76%), corner notched points (23%), and side notched points (22.36%) making up a large proportion of the points analyzed. The stemmed points indicated a strong Archaic presence and possible Early Woodland presence in Benton County.

Early to Late Archaic stemmed points were well represented in the sample that was analyzed from the [REDACTED] collection (Figure 134). Of the 179 stemmed points analyzed, 67 points (37.43%) were Attica chert, 33 points (18.44%) were unknown material, and 21 points (11.73%) were Liston Creek chert. The strong presence of Attica chert is unsurprising considering that the closest chert source is an Attica outcrop, located less than 50 miles southeast of [REDACTED] property. A Liston Creek outcrop is located within 100 miles northeast of the [REDACTED] property and indicates that the Native groups were traveling and trading during the time period of the Archaic cultural period. The lower proportion (23%) of corner notched points (Figure 136) also indicates a preference for Attica chert. Of the 109 corner notched points analyzed, 56 points (51.38%) were identified as Attica chert.

The distribution of raw material types among the base types in the [REDACTED] collection (Table 32) consisted of predominantly Attica chert (43.88%). Other represented chert types include unknown (19.83%) and Liston Creek (9.28%), which were the two other most common types utilized followed by Burlington/Elwood-Joliet (6.12%) and Laurel (4.22%).

Muldraugh (1.90%), Burlington (1.69%), Holland (1.69%), Harmilda/Kenneth (1.48%), Wyandotte (1.48%), Jeffersonville (1.05%), Kenneth (1.05%), Derby (0.21%), Derby/Holland (0.21%), Haney (0.21%) were represented but were not abundant in the sampled collection. Burlington and Elwood-Joliet are two Illinois cherts that are commonly grouped together due to many morphological and compositional similarities.

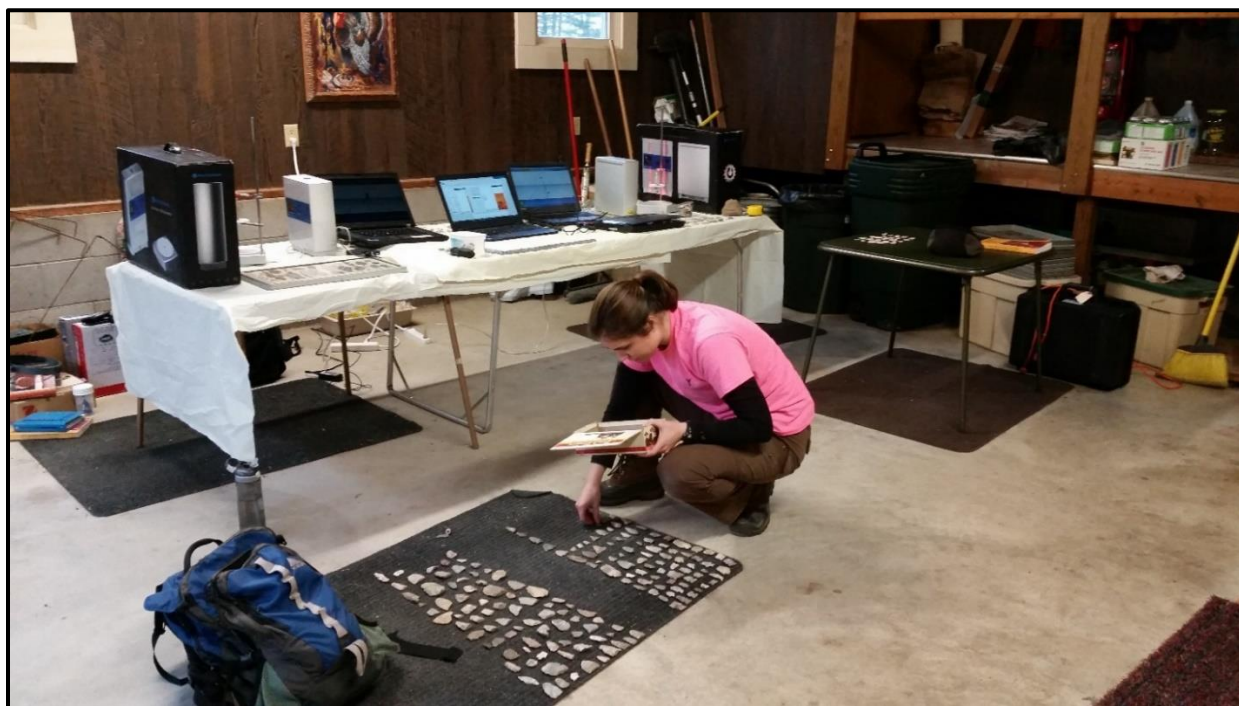


Figure 132: Graduate student Amanda Balough organizing points in the [REDACTED] Collection by base type (Photo taken by Kevin Nolan, Ball State University).

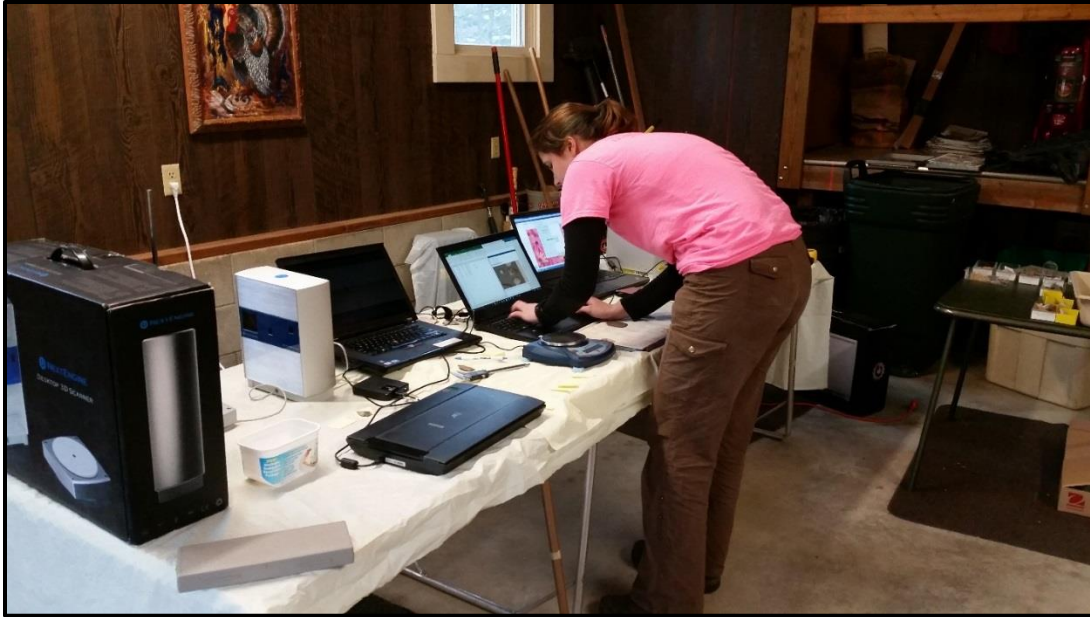


Figure 133: Scanning equipment used to document the [REDACTED] Collection in [REDACTED] garage (Photo taken by Kevin Nolan, Ball State University).



Figure 134: Scan of Stemmed Points from [REDACTED] Collection Box 1.



Figure 135: Scan of a sample of Side Notched Points from the [REDACTED] Collection Box 1.



Figure 136: Scan of a sample of Corner Notched Points from [REDACTED] Collection Box 1.

Table 32: Distribution of Base Types and Chert Types from the [REDACTED] Collection.

Chert Type	Side Notched	Triangular	Paleo	Stemmed	Corner Notched	Preform	Ovate	Bifurcate	Total	%
Attica	57	13	3	67	56		10	2	208	43.88
Burlington	1	1		2	3		1		8	1.69
Burlington/Elwood-Joliet	5	6		8	9		1		29	6.12
Derby				1					1	0.21
Derby/Holland	1								1	0.21
Haney				1					1	0.21
Harmilda/Kenneth	2			4	1				7	1.48
Holland	1	2		2	2		1		8	1.69
Jeffersonville	1	2		2					5	1.05
Kenneth	2			2	1				5	1.05
Laurel	7	1		9	3				20	4.22
Liston Creek	6	2	1	21	10		4		44	9.28
Mississippian	1			4	1				6	1.27
Muldraugh	3		1	2	2			1	9	1.90
Quartz				2					2	0.42
Silurian		1		10	1		1		13	2.74
Wyandotte		1		5	1				7	1.48
Unknown	19	10	1	33	18		9	4	94	19.83
Unknown (HT)		1		4	1				6	1.27
Total	106	40	6	179	109	0	27	7	474	
%	22.36	8.44	1.27	37.76	23.00	0.00	5.70	1.48		

[REDACTED] Collection

On April 30, 2017, Survey Area 8 landowner [REDACTED], his wife, and his sister visited the Applied Anthropology Laboratories. They reviewed the collection from Survey Area 8 and also shared photos of additional prehistoric artifacts collected on their parcels. According to [REDACTED] his collection came from fields on his property, some of which were investigated as Survey Area 8. His property is located in Hickory Grove Township in [REDACTED], Township 24 North, Range 9 West as shown on the USGS 7.5' Tab, Indiana Quadrangle. [REDACTED] explained that some of the artifacts from his collection were recovered from a sandy hill just north of Survey Area 8. [REDACTED] artifact photos were analyzed after his visit. The collection consists of 479 artifacts, of which 367 are diagnostic points with intact bases, 82 artifacts are non-diagnostic bifaces and flake tools, and 19 artifacts are groundstone tools. The chert type of the diagnostic prehistoric artifacts were not analyzed because only photographs were available.

Following the procedure established by Macleod et al. (2015), students Amanda Balough and Abby Clark counted the lithic tools shown in the photos by base shape (Figure 137 and Figure 138). We counted totals for each base type (Table 33). All artifact photos from the [REDACTED] Collection are shown in Volume II, Appendix K.

Table 33: Distribution of Base Type from the [REDACTED] Collection.

	Side Notched	Triangular	Paleo	Stemmed	Corner Notched	Preform	Ovate	Bifurcate	Non- Diagnostic	Total
Total	73	18	1	84	132	-	58	1	82	449
%	16.26	4.01	0.22	18.71	29.40	0.00	12.92	0.22	18.26	

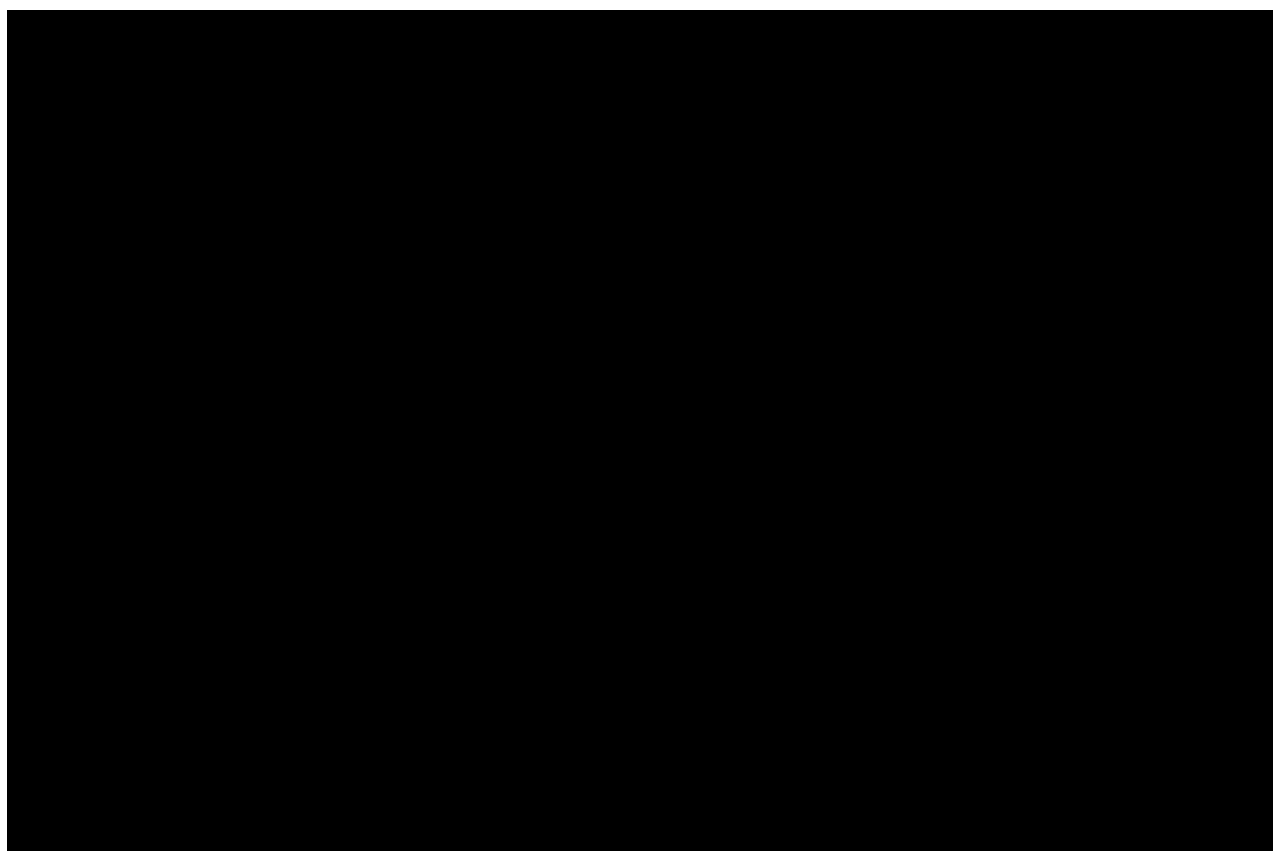


Figure 137: A variety of diagnostic points from the [REDACTED] Collection (photo provided by [REDACTED])



Figure 138: A variety of diagnostic points from the [REDACTED] Collection (photo provided by [REDACTED])

Summary and Analysis of Collector Visits

The collector results from the [REDACTED] Collections agree in certain respects. In all three collections, stemmed, corner notched, and side notched points were the three most abundant types of points within the collections. In the [REDACTED] Collection, side notched points (25%) were the most abundant, followed by ovate points (22.22%), and stemmed and corner notched both making up (8.33%) of the artifact assemblage (Table 31). In the [REDACTED] collection, stemmed points (37.76%) were the most abundant, followed by corner notched (23%), and side notched making up 22.36% of the collection (Table 32). Of the diagnostic points included in the [REDACTED] collection, the three most abundant types of bases include corner notched points (29.4%), stemmed points (18.71%), and side notched (16.26%) (Table 33).

Although no private collection was examined during the FY2015 HPF Grant in Benton County (Balough et al. 2016), the [REDACTED] and [REDACTED] Collections can be compared to the one private collection examined during the FY2016 Grant in Newton County (Clark et al. 2017), one private collection examined during the FY2015 HPF Grant in Newton County (Leeuwrik et al. 2016), and the two private collections examined during the FY2014 HPF Grant in Newton County (Leeuwrik et al. 2015). All four private collections from the three Newton County HPF Grant projects also had high proportions of side notched and stemmed points (Clark et al. 2017; Leeuwrik et al. 2015, 2016). The presence of

side notched points indicate a possible strong Middle Archaic signal and possible Middle Woodland signal in Benton and Newton counties.

The high number of Early to Late Archaic stemmed points from the [REDACTED] collection is similar to the well represented of Late Archaic and Early Woodland stemmed points from the four private collections from the three Newton County HPF Grant Projects. Both the [REDACTED] and [REDACTED] Collections contained a large number of stemmed points. While Attica chert had the strongest presence in both the [REDACTED] Collection (43.88%) and the [REDACTED] Collection (44.44%), Attica chert was a significantly smaller percentage of the artifact assemblage for the [REDACTED] and [REDACTED] Collections from the FY2015 HPF Newton County Grant project (Leeuwrik et al. 2016). Since an Attica chert outcrop is located approximately 30 miles south of Benton County in Warren County, and specifically less than 50 miles southeast of [REDACTED] property, it is possible that precontact people living in Benton County were traveling to this area for their chert source.

The collector results from the [REDACTED] and [REDACTED] collections agree in certain respects with the previously archaeological record. The Archaic predominance among prehistoric sites (see Table 33) may match up with the presence of Middle Archaic side notched points and Early to Late Archaic stemmed points in the collections respectively. The [REDACTED] collection also contained a large portion of stemmed and side notched points indicating the presence of precontact people during the Archaic period. However, the most prolific periods indicated by the [REDACTED] and [REDACTED] Collections do not match the official records from SHAARD, particularly the abundance of ovate points (i.e. Late Woodland to Middle Mississippian). While it is not likely that [REDACTED] [REDACTED] collection is representative of the entire county, it is a strong reminder that professional investigations only net a small proportion of the local archaeological record, and a more comprehensive and extensive record is contained within private collections that professional archaeologists ignore at the peril of misrepresenting the past (LaBelle 2003; Pitblado 2014; Peebles and Shott 1981; Shott 2008).

Summary/Discussion

A total of 928.36 acres was surveyed during this project and 115 new archaeological sites were recorded with a total of 134 components. No human remains were discovered as a result of this grant project. Thirteen parcels in southern Benton County were surveyed. The survey documented the human occupation of Benton County with a presence during the Early, Middle, and Late Archaic periods. The Historic period is the most strongly represented in the assemblages recovered during our survey (Table 34). Considering the limitations of Phase I surveys, it is presumptuous to assign functionality to sites identified during this survey. Site types were therefore not defined beyond isolates and scatters. However, it appears likely based upon the variation in artifact classes discovered on the sites that multiple sites types were represented.

Artifacts

The field survey recovered 102 prehistoric artifacts (1 per 9.1 acres), 2161 historic artifacts (1 per 0.43 acres), and two unknown (Table 34). The majority of prehistoric artifacts consist of flakes. Five of the formal lithic tools (Table 34) were projectile points, with three dating to the Early Archaic period, one dating to the Middle Archaic, and the other dating to the Late Archaic period (Justice 2006:67-69, 71-72, 82-85, 127-129). Other lithic artifacts consisted of scrapers, cores, and flake shatter, including two unhafted unidentified bifaces, and the broken tip of one biface. Historic artifacts included various types of ceramics, various colors and types of glass, metal objects, and brick fragments.

Chert

Lithic artifact chert types are shown in Table 35. The chert identification is listed by geologic time period as this is the most accurate and consistent means of identification. Chert is then listed by which type it is most consistent with in comparison with specimens in the AAL comparative collections and other resources (e.g., Cantin 2008; DeRegnaucourt and Georgiady 1998; Stelle and Duggan 2003). If the artifact material displayed characteristics that were consistent with multiple chert types, all applicable types were listed in the identification. No natural chert outcrops exist within Benton County. The locations of chert outcrops in Indiana and Illinois are shown in Figure 4.

A plurality of the lithic artifacts from this survey were of Silurian cherts (45.1%). Of the Silurian assemblage a plurality was consistent with Laurel chert (17.65%), followed closely by material consistent with Liston Creek (16.67%). Outcrops of Laurel chert exist in Decatur, Fayette, Franklin, Jefferson, Jennings, Ripley, and Wayne counties, the closest of which is

found in Wayne County and approximately 200 km to the southeast of Benton County (Cantin 2008). The closest Liston Creek outcrop exists in Miami County, which is approximately 85 km to the east of Benton. One Early Archaic projectile point was made from Silurian chert (12-Bn-193). This low number of bifaces in contrast to the high number of flakes may indicate that Silurian age chert was used primarily for non-point tool manufacture, or even expedient tool manufacture.

Table 34: Recovered artifacts from Benton County.

Prehistoric	No.	Historic	No.	Other	No.
Biface, Hafted	5	Ceramic, Porcelain	26	Fossil, Coral	1
Biface, Unhafted	3	Ceramic, Semi-Porcelain	12	Fossil	1
Core	9	Ceramic, Ironstone	30		
Core, Fragment	1	Ceramic, Whiteware	169		
Core, Possible	1	Ceramic, Yellowware	9		
Core, Tool	5	Ceramic, Stoneware	152		
Drill, Hafted	1	Ceramic, Earthenware	1		
Flake, Complete	17	Ceramic, Redware	9		
Flake, Proximal	10	Ceramic, Possible Tile	19		
Flake, Distal	20	Glass, Apricot	1		
Flake, Medial	8	Glass, Circus	1		
Angular Shatter	9	Glass, Amber	100		
Retouched Flake	8	Glass, Amethyst	54		
Flake Scraper	5	Glass, Turquoise	31		
		Glass, Green	38		
		Glass, Red (Rose)	4		
		Glass, Aqua	224		
		Glass, Cobalt	8		
		Glass, Clear	738		
		Glass, Milk	65		
		Iron	62		
		Iron, Band	7		
		Iron, Stake	3		
		Iron, Nail	8		
		Iron, Plate	1		
		Iron, Hinge	4		
		Iron, Hook	1		
		Shield Nickel, 1866-1883	1		
		Iron Axle and Double Sprocket	1		
		Iron, Handle	2		
		Iron, Plow	1		
		Iron, Outlet Cover	1		
		Iron, Nut, Bolt, and Washer	1		
		Iron, Barbed Wire	1		
		Iron and Rubber Wheel	1		
		Iron, Cap	1		
		Iron, Rod	3		
		Iron, Ring	1		
		Iron, Wires	5		
		Copper, Shot Gun Canister	1		
		Tin, Pull Tab Top	4		
		Tin, Cap	2		
		Tin and Plastic, Spray Can Depressant and Cap	1		
		Tin	1		
		Aluminum, Top	1		
		Aluminum, Cap	1		
		Aluminum, Tubing	3		

Prehistoric	No.	Historic	No.	Other	No.
		Aluminum and Plastic	1		
		Aluminum	3		
		Plastic, Squibb Synton Bristle Toothbrush	1		
		Plastic, Johnson's Glo-Coat Bottle Cap	1		
		Plastic, Amethyst Tint Handle	1		
		Plastic, Toy Doll Torso	1		
		Plastic, Spray Can Dispenser	1		
		Plastic, Cap	1		
		Plastic	1		
		Concrete	4		
		Plaster	1		
		Graphite, Battery Core	6		
		Shoe Leather	24		
		Rubber	1		
		Possible Burnt Rubber-Like Material	1		
		Unknown Mineral	1		
		Brick (collected)	16		
		Brick (not collected)	240		
		Clinker	45		
		Stone, Marble	1		
Total	102		2161		2

Mississippian chert had the second greatest representation in this survey (39.22%). Of the Mississippian material recovered, those consistent with Attica comprised the majority of the collection (29.41%), making it the most abundant chert type. Outcrops of Attica exist in Boone, Fountain and Warren counties, all of which are located approximately 15 km south of Benton County. Four of the five hafted projectile points recovered were made from Mississippian chert, which were consistent with Attica. Two of the points dated to the Early Archaic period (from sites 12-Bn-191 and 12-Bn-242) and the points dating to the Middle (from site 12-Bn-263) and Late Archaic (12-Bn-194) were made of chert consistent with Attica. Burlington chert (0.98%), which comes from southwestern Illinois is typically higher quality material than what is found in western Indiana, and would have been highly prized in prehistoric times. In fact, Burlington was widely traded at various periods in prehistory (see Greber et al. 1981; Nolan et al. 2007; Pacheco 1997; Ruby 1997; Seeman 1975).

Unknown chert has the third greatest representation in this survey (7.84%). Devonian chert has the fourth greatest representation in this survey (3.92%). Jeffersonville exist in Bartholomew, Decatur, Jefferson, Jennings, and Scott counties, all of which are located approximately 180 km to the southeast of Benton County. None of the points recovered during field survey were made of Jeffersonville chert.

Pennsylvanian chert is the fifth greatest in abundance (1.96%) with specimens most consistent with Holland chert and consistent with Perth. The low amount of Pennsylvanian chert is to be expected as the sources of these cherts in Indiana are located exclusively in the southern half of the state. Holland in particular outcrops about 240 km to the south in Dubois County. None of the points recovered during field survey were made of Pennsylvanian chert.

The breakdown of the chert tells us that prehistoric people living in Benton County were relying on a variety of materials, particularly from the south and east with only approximately one-third consisted of closer chert sources (Attica to the south and southeast of Benton County). The breakdown of the lithic assemblage could indicate that the peoples that inhabited southern Benton County before European contact migrated from or had exchange relations to the south and southeast, bringing chert materials with them. Southern Benton County may not have been an area of primary habitation due to the open prairies that provided little cover. However, there is a preference (especially among the sites with diagnostics) for areas of Udolls surrounded by Aqolls. The pattern may be illusory as the southern portion of the county is characterized by areas of Udolls surrounded by tongues of Aqolls. Few of our current survey areas have alfisols present, thus limiting our ability to explore the pattern identified in the FY2015 survey; however, where alfisols are a substantial portion of the survey areas (SA3 and SA13) artifacts tend to cluster on the forest soils near ecotones (see particularly 12-Bn-292 and 12-Bn-294). Unfortunately, none of our diagnostic prehistoric artifacts come from these settings in the current survey.

Table 35: Chert Raw Materials.

Chert	No.	% Assemblage
Silurian Chert	46	45.10
Consistent with Fall Creek	2	1.96
Consistent with Kenneth	1	0.98
Consistent with Kenneth/Harmilda	1	0.98
Consistent with Laurel	18	17.65
Consistent with Laurel/Liston Creek	1	0.98
Consistent with Liston Creek	17	16.67
Unknown	6	5.88
Silurian or Mississippian Chert	1	0.98
Consistent with Liston Creek/Elwood Joliet	1	0.98
Silurian/Devonian Chert	1	0.98
Consistent with Liston Creek/Jeffersonville	1	0.98
Devonian Chert	4	3.92
Consistent with Jeffersonville	3	2.94
Consistent with Delaware/Jeffersonville	1	0.98
Mississippian Chert	40	39.22
Consistent with Attica	30	29.41
Consistent with Bryantsville	1	0.98
Consistent with Burlington	1	0.98
Consistent with Cataract	1	0.98
Consistent with Derby	1	0.98
Consistent with Indian Creek	4	3.92
Consistent with Muldraugh	1	0.98
Unknown	1	0.98
Pennsylvanian Chert	2	1.96
Consistent with Holland	1	0.98
Consistent with Perth	1	0.98
Unknown Chert	8	7.84
Unknown	8	7.84
Total	102	100

Sites

Of the 115 archaeological sites, 61 had unidentified Prehistoric components (Table 36). The identified precontact components consisted of three Early Archaic sites, one Middle Archaic site, and one Late Archaic site. Sixty-eight sites had Historic components, dating from the early 18th century to present. There are a total of 17 multicomponent sites.

Table 36: Summary of Components

Component	No.	Comment
Unidentified Prehistoric	61	17 Multicomponent (16 Historic)
Early Archaic	3	
Middle Archaic	1	1 Multicomponent
Late Archaic	1	
Historic	68	16 Multicomponent (16 Unidentified Prehistoric)
Total	134	

Historic Settlement

Sixty-eight sites with Historic components were discovered. These sites ranged from isolates to extensive historic scatters and were occasionally multicomponent with Unidentified Prehistoric isolates or scatters. The historic component sites yielded the vast majority of artifacts recovered during the project (Table 34).

Survey Areas 2, 4, 7, 8, 9, and 13 contained sites with relatively substantial historic assemblages that had early historic dates between the latter half of the 1700s and 1850, but also artifacts dating into the mid to late nineteenth century and early twentieth century (12-Bn-194, 12-Bn-203, 12-Bn-204, 12-Bn-238, 12-Bn-247, 12-Bn-258, and 12-Bn-292). Based on historic research and the lack of subsurface features, two of these sites (12-Bn-194 and 12-Bn-258) appear to be historic dumpsites, or secondary deposits from relatively recent to modern activity, rather than primary deposits and locations of structures or activity areas possibly associate with early occupation of the county. This could indicate social attitudes in the area towards refuse dumps and the inclination of the people to dump their items elsewhere rather than on house lots. Sites 12-Bn-203, 12-Bn-204, 12-Bn-238, 12-Bn-247, and 12-Bn-292 were recommended for further study; however, sites 12-Bn-194, and 12-Bn-258 were not recommended potentially eligible because there was no indication that they have the potential to yield additional significant information beyond the Phase I level. Prior to this survey, there were 66 historic scatters reported for Benton County; this project has greatly supplemented the available data on historic land use and refuse disposal patterns in the county. Further research and analysis of our data could greatly increase our understanding of early historic occupation in Benton County.

Density

The project documented an average of one site per 8.07 acres (one component every 6.93 acres) and an average artifact density of one artifact per 0.41 acres surveyed. The project documented an average density of one historic artifact per 0.43 acres surveyed and an average prehistoric artifact density of one per 9.01 acres surveyed. Artifact densities by survey area are presented in Table 37.

Table 37: Site and Artifact Densities by Survey Area

Survey Area	No. Acres	No. Sites	Sites per Acre	No. Artifacts	Artifacts per Acre
SA 1 (Ground moraines and end moraines)	80.07	4	20.02	6	13.35
SA 2 (Ground moraines, end moraines, and outwash plains)	55.41	4	13.85	26	2.13

SA 3 (Ground moraines and end moraines)	75.15	7	10.74	15	5.01
SA 4 (Ground moraines and end moraines)	51.6	3	17.20	308	0.17
SA 5 (Ground moraines and end moraines)	121.37	9	13.49	15	8.09
SA 6 (Ground moraines and end moraines)	56.5	12	4.71	32	1.77
SA 7 (Ground moraines, end moraines, and outwash plains/terraces)	71.09	16	4.44	42	1.69
SA 8 (Ground moraines and end moraines)	132.6	13	10.20	1547	0.09
SA 9 (Ground moraines and end moraines)	72.95	10	7.30	99	0.74
SA 10 (Ground moraines and end moraines)	27.92	9	3.10	17	1.64
SA 11 (Ground moraines, end moraines, and outwash plains/terraces)	62.85	11	5.71	26	2.42
SA 12 (Ground moraines and end moraines)	40.96	1	40.96	1	40.96
SA 13 (Ground moraines and end moraines)	79.89	16	4.99	131	0.61
Total	928.36	115	8.07	2265	0.41

Recommendations

Of the 115 archaeological sites discovered by this project, 108 are considered not eligible for listing on the Indiana Register of Historic Sites and Structures or the National Register of Historic Places (Table 38). Most of these ineligible sites were prehistoric isolated finds, historic isolated finds, small scatters of historic artifacts, or small scatters of lithic artifacts. Seven sites (12-Bn-203, 12-Bn-204, 12-Bn-238, 12-Bn-247, 12-Bn-257, 12-Bn-292, and 12-Bn-294) are considered eligible for listing on the Indiana Register of Historic Sites and Structures or the National Register of Historic Places. Though there were a limited number of recommended sites in this survey, all seven of the sites that we recommend could be significant in their contribution to the understanding of Benton County historic settlement.

Sites 12-Bn-203 and 12-Bn-204 are medium sized, dense historic scatters. Site 12-Bn-203 consisted of 230 historic artifacts and three bricks. Site 12-Bn-204 consisted of 75 historic artifacts. Both sites, along with the northern half of Survey Area 4, are in the general location of a farm structure, as seen on the 1876 Andreas (1968) map, which is taken from the *Standard Atlas of Benton County, Indiana: Include a Plat Book*. The *Benton County: Indiana Historic Sites and Structures Inventory* indicates that a c.1860/c.1910 farm was located in the general

location of sites 12-Bn-203 and 12-Bn-204. The variety of historic artifacts recovered from both sites includes bottle glass and ceramics, ranging from porcelain to stoneware, which are artifacts typically associated with domestic sites. The 1909 historic map did not indicate any structures in Survey Area 4 (Geo. A. Ogle & Co 1909). The variety of domestic artifacts within the vicinity of a listed structure indicates the potential to learn more about domestic mid-century to late century farm and farmhouse lifestyle, filling a gap in Benton County's history. Based on the archaeological evidence and our historic research, it appears sites 12-Bn-203 and 12-Bn-204 have the potential to yield additional information beyond the Phase I level and should be considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

Site 12-Bn-238 was a large, low density historic scatter with a prehistoric isolate and was 2630.457 square meters (0.65 acres) in size. Of the 26 historic artifacts recovered from Survey Area 7, 16 were recovered from 12-Bn-238. Of those recovered artifacts from the 12-Bn-238 scatter, three pieces were ironstone and one artifact was a sub-type 2 shield nickel. No subsurface features were encountered. Three historic maps (Andreas 1968; Geo. A. Ogle & Co 1909; Taylor 2009) were consulted and no structures were shown in Survey Area 7 on any of the historic maps consulted. The assemblage is not that which typically constitute secondary dump sites. The presence of the nickel, ironstone, and container glass suggests that site 12-Bn-238 may be a primary deposit. The nickel combined with many classes with termination dates in the early 20th century potentially offer an opportunity to learn more about early settler activity in Benton County around the time of the establishment of the railroads. The railroads were established in Benton County beginning in 1871, which increased the population in Benton County (Taylor 2009:12-13). Located 7.33 kilometers (4.6 miles) south of site 12-Bn-238 is the New York, Chicago, and St. Louis Railroad in the town of Ambia (Andreas 1968). The dates from the nickel indicate that early settler's expansion and settlement had reached the western side of Benton County by 1883. The distribution, low density, and shape of site 12-Bn-238 could suggest a primary deposit associated with a previously unmapped structure. Based on the archaeological evidence and our historic research, site 12-Bn-238 is considered to have the potential to yield additional information beyond the Phase I level and is therefore considered potentially eligible for the National Register of Historic Places.

Site 12-Bn-247 is a large, dense historic scatter with 1403 historic artifacts and 118 bricks (3 collected, 115 uncollected). [REDACTED] the landowner, had said that his grandparents' house was located on Survey Area 8. Three historic maps (Andreas 1968; Geo. A. Ogle & Co. 1909; Taylor 2009:37) were consulted to assess potential for intact historic deposits. The historic maps failed to reveal a structure, but a 1998 aerial obtained from Google Earth shows the driveway, the barn, and the house. The USGS 7.5' Tab, Indiana Quadrangle and 2013 Aerial Indiana Spatial Data Portal both show the location of the driveway leading up to the house. The variety of historic artifacts recovered includes a wide selection of bottle glass, ceramics, and

other materials, artifacts typically associated with domestic sites. The bricks (n=118), typically not used for agricultural structures, again suggests that site 12-Bn-247 was a domestic site. The variety of domestic artifacts indicate a potential to learn more about domestic mid-century farmhouse lifestyle, filling a gap in Benton County's history. Based upon the archaeological evidence and our historic research, it appears that 12-Bn-247 has the potential to yield additional information beyond the Phase I level and should be considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

Site 12-Bn-257 is a mid-sized prehistoric scatter and historic isolate consisting of five prehistoric artifacts and one charcoal clinker covering 728.43 square meters (0.18 acres) in size. Site 12-Bn-257 is located on the top of a rise in the southeast quarter of Survey Area 9. The five prehistoric artifacts recovered from 12-Bn-257 consist of one unhafted biface made from Attica chert, two complete flakes, one made from Burlington chert and the other made from Holland chert, and two distal flakes, both made from Attica chert. The variety of artifacts within one location is an indication of sustained activity on the site. Site 12-Bn-257 is located on a sliver of dry prairie (Udoll) soil surrounded by wet prairie (Aquoll) soil. The presence of Burlington chert and Holland chert, two chert types found in counties south of Benton, potentially indicates that people were coming north and bringing the chert with them. Based on the archaeological evidence, site 12-Bn-257 has the potential to yield additional information beyond the Phase I level and is considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

Site 12-Bn-292 is a large dense historic and prehistoric scatter with 67 historic artifacts, 35 uncollected bricks, and four non-diagnostic prehistoric artifacts. Site 12-Bn-292, along with the rest of Survey Area 13, is located within the grove on Mud Pine Creek, three miles southeast of Boswell, and is potentially associated with the structure from the grove's historic occupation. The 1876 historic map (Andreas 1968) displays the grove with the house, while the other two historic maps (Geo. A. Ogle & Co. 1909; Taylor 2009) did not show a structure located in Survey Area 13. The grove, which is unnamed, was first occupied by James Martin and his parents in 1831. They lived in the grove until 1842, when they moved to Newton (then part of Jasper) County (F.A. Battery and Co. 1883:735). The Guernsey (1932) Department of Natural Resources historic map indicates that Survey Area 13 may also be located near the "Indian Trail from Greenville (O) to Chicago (Ill.)". A historic road (Andreas 1968) terminates in the grove east of Mud Pine Creek, within Survey Area 13, and proceeds northwest six miles to Parish Grove in southeastern Parish Grove Township. Site 12-Bn-292 is located on a slope in the northwest corner of Survey Area 13 and, based upon the 1876 map (Andreas 1968), is at the corner of a bend in a historic road. This location is not ideal for a structure and it is possible 12-Bn-292 was a dumping site. The variety of historic artifacts recovered includes bottle glass and stoneware, artifacts which are typically associated with domestic structures. The concentration

of bricks (n=35), typically not used for agricultural structures, again suggests that site 12-Bn-292 was part of a domestic site. The variety of domestic artifacts and the historic structure located on Survey Area 13 indicate the potential to learn more about late 1800s farmhouse lifestyle, filling a gap in Benton County's history. Based on the archaeological evidence and our historic research, it appears that 12-Bn-292 has the potential to yield additional information beyond the Phase I level and should be considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research. Additionally, the variety of prehistoric artifacts recovered from site 12-Bn-292 provides the potential to learn more about prehistoric occupation. Of the 24 prehistoric artifacts recovered from Survey Area 13, four were recovered from site 12-Bn-292 including one complete flake, one proximal flake, and two distal flakes of various Silurian and Mississippian cherts. While the inventory is not substantial, 12-Bn-292 occupies a favorable spot (modest rise of alfisol surrounded by multiple ecozones) noted as representative of a type of precontact settlement pattern in Benton County (Balough et al. 2016). The historic component may have impacted the precontact component, but the prehistoric component of 12-Bn-292 also has the potential to provide significant information pertaining to the archaeological record of Benton County. Based on the archaeological evidence and our historic research, it appears that both the Historic and Prehistoric components of 12-Bn-292 have the potential to yield additional information beyond the Phase I level and should be considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

Site 12-Bn-294 is a small prehistoric scatter consisting of five prehistoric artifacts and was 323.75 square meters (0.08 acres) in size. Site 12-Bn-294, along with the rest of Survey Area 13, is located within the grove on Mud Pine, three miles southeast of Boswell, and is 0.85 miles (1.36 kilometers) east of Mud Pine Creek (Andreas 1968). Site 12-Bn-294 is located on the top of a rise in the southwest corner of Survey Area 13. The five prehistoric artifacts recovered from 12-Bn-294 consist of two cores, one Y-based, hafted drill, one heat-treated and retouched distal flake, and one bipolar flake. The variety of tool types within one location is atypical in Benton County and is an indication that tool production was occurring on the site. Site 12-Bn-294 is located on a rise of moderately well drained forest (Udalf) soil above wet prairie (Aquoll) soil. Prehistoric occupation of diverse micro-ecologies consisting of rises of dry soils surrounded by wet soils is a trend noticed in our previous survey (Balough et al. 2016) and by Surface-Evans (2015). Based on the archaeological evidence, site 12-Bn-294 has the potential to yield additional information beyond the Phase I level and should be considered potentially eligible under Criteria D for the National Register of Historic Places and recommended for additional research.

Table 38: Site Recommendations.

Recommendation	Site No.
No further archaeological investigations recommended; n=108	12-Bn-187 to 12-Bn-202, 12-Bn-205 to 12-Bn-237, 12-Bn-239 to 12-Bn-246, 12-Bn-248 to 12-Bn-256, 12-Bn-258 to 12-Bn-268, 12-Bn-273 to 12-Bn-291, 12-Bn-293, and 12-Bn-295 to 12-Bn-305
Further archaeological investigations recommended (lithic scatter); n=2	12Bn-257, 12-Bn-294
Further archaeological investigations recommended (historic scatter); n=4	12-Bn-203, 12-Bn-204, 12-Bn-238, 12-Bn-247
Further archaeological investigations recommended (lithic scatter, historic scatter; n= 1	12-Bn-292

Public Outreach and Student Involvement

On September 24, 2016, Ball State University's Applied Anthropology Laboratories took part in Mound State Park's annual Indiana Archaeology Month activities. There were numerous hands-on demonstrations and participant activities for visitors. A poster explaining the methodology and goals of the FY2015 Grant surveys in Benton and Newton counties was presented to visitors. Ball State archaeologists and students used this public event to speak with numerous local individuals fostering public interest and awareness in this HPF Grant survey. Approximately 300 members of the public attended this event at Mounds State Park in Anderson, Indiana.

On November 30, 2017, an Open House was held in the Applied Anthropology Laboratories. The goals of the open house were to showcase current projects that included student involvement, encourage additional student involvement, and to invite possible community and professional collaborators to view our work and in-process projects. The focus of the Newton and Benton County FY2016 Historic Preservation Fund Grant exhibit (Figure 139) was threefold. Historic and prehistoric artifacts were displayed and explained to the public in order to demonstrate the diversity of knowledge necessary for archaeological investigations such as this. Student lab technicians were demonstrating artifact processing and identification. In addition, chert and lithic identification with hands-on demonstrations of the identification and cataloging processes were given to Open House attendees.

On May 2, 2017, a public presentation was given at the Benton County Government Annex in Fowler, Indiana, by AAL archaeologist Christine Thompson and Department of Anthropology graduate student Amanda Balough (Figure 140 and Figure 141). The presentation was sponsored by the Benton County Historical Society. The hour-long presentation reviewed all aspects of the grant including background, methodology, and results. Both historic and prehistoric artifacts representative of newly discovered sites were available for the attendees to view. A student created video was also shown that described and illustrated our methodology, field techniques, artifact processing, and identification. Over 50 people attended the presentation which included a question and answer session, and a short discussion of Indiana archaeology laws. Coverage of this presentation and project proceedings in general were also posted to the AAL's Facebook page and various other social media sites.

Throughout this project there was broad support for the pedestrian surveys from the residents of Benton County. Landowners who granted permission to survey their property were very enthusiastic and eager to have their fields surveyed. Landowners were deeply interested in the types of artifacts that were found and how their property was used in prehistory and during Euro-American contact. Four of the landowners (six survey areas) requested that the artifacts discovered be returned to them (see Volume 2, Appendix D). Numerous personal phone calls were made with various landowners who expressed great interest in participating in the survey

and shared with the author the types of artifacts that had been surface collected on their property in the past. It became apparent that Benton County has an active and involved public that displays a great interest in their county's history, both historic and prehistoric.

In addition to public presentations and demonstrations, the results of the Benton County HPF grant are being published in various ways. An article on the overall results of this FY2016 Grant will be published in the Indiana Archaeology journal, compiled and distributed by DHPA.

Throughout this project, there has been a very large amount of Ball State University Department of Anthropology student involvement and participation. All students were supervised and mentored by co-PIs Thompson and Nolan. Twenty students were involved with the fieldwork and participated in field surveys. Two students were involved in washing and labeling of artifacts. One student was responsible for artifact photography and cataloging. Two students compiled and checked all data entered into the SHAARD database. One student assisted with the presentation at the Benton County Government Annex on May 2, 2017. One student from the 2012 Blackford County HPF project created the methodology video that was shown during that this year's HPF Grant presentation.



Figure 139: Students discussing the Benton and Newton County HPF grants at the AAL Open House in November 2016 (Photo by Kiya Mullins, Ball State University).



Figure 140: Crowd gathering for the FY2016 HPF grant presentation for Newton and Benton Counties held at the Benton County Government Annex (photo by Christine Thompson, Ball State University).



Figure 141: Attendees viewing the posters and exhibits at the FY2016 HPF grant presentation for Newton and Benton Counties held at the Benton County Government Annex (photo by Christine Thompson, Ball State University).

Alignment with Cultural Resources Management Plan for Indiana

This FY2016 HPF Grant addressed various goals and objectives in Indiana's Cultural Resource Management Plan for 2013-2019 (Division of Historic Preservation and Archaeology 2012) by increasing and fostering public awareness and interest in the archaeological resources of Benton County. This grant project enhanced understanding and relationships in Benton County from curious citizens, to landowners, to collectors.

The first goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:33) is to increase public awareness, public understanding, and public support for preservation archaeology. Through numerous waves of letters mailed to 54 landowners in Benton County, through public events such as the annual Archaeology Month Activities at Mound State Park, and with the public presentation held in Benton County on May 2, 2017, AAL has been able to make the public aware of both our HPF grant surveys and the importance of archaeology. The AAL has received broad support, interest, and enthusiasm from the people of Benton County. The local community has shown a great interest in the history and prehistory of their county, and are excited to be a part of the surveys to learn more about their own property. They also realize the importance of protecting these archaeological resources as evidenced by the attendance and interest at the presentation at the Benton County Historical Society in Benton County. These activities have helped meet Indiana's objectives of increasing public awareness through varied efforts, media, and programs aimed at all Hoosiers; increasing public understanding of Indiana's cultural resources and our statewide heritage; and increasing the public support for heritage preservation by marketing its benefits.

The second goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:34) is to broaden the preservation and archaeology communities and promote archaeology preservation communities. As stated in the first goal, numerous public events and presentations have taken place as part of the FY2016 Benton County HPF Grant. In addition, several articles have been or are being submitted to the Indiana Archaeology journal and may be submitted to other publications or presented at conferences. Redacted versions of both grant reports will be available for public review on AAL's web site. The activities listed in Goal 1 and the publications listed here have helped and will help meet Indiana's objectives of building relationships among people and groups with similar or complementary purposes and to identify new partners and develop opportunities for collaboration.

The third goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:35) is to advocate for preservation opportunities and options for all community, cultural, and heritage resources. Although AAL's FY2016 HPF

Grant did not have a direct impact on this goal, it is hoped that our grant projects could be the foundation for future preservation opportunities and options for Benton County.

The final goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:37) is to advance preservation as economic development. Again, AAL's FY2016 HPF Grant did not have a direct impact on this goal. However, it is hoped that through the presentations, online journal articles, and the online redacted versions of the two grant reports the public may start to think of ways to protect, promote, and capitalize on their cultural and archaeological resources.

Research Questions

The following research questions, while not exhaustive, guided this project.

1. What is the cultural chronology for Benton County?
 - a. Is the prevalence of Late Archaic among collector reported sites a result of bias, or representation of real pattern in precontact use of the Grand Prairie Natural Region?
2. What are the densities and distributions of archaeological sites in southern Benton County?
 - a. Are there patterns in the use of various ecologies through time?
 - b. Can this survey inform our knowledge of landscape change?
 - c. How does this compare to utilization of similar and different environments within the Central Till Plains?
3. What is the settlement pattern for Euro-American people in southern Benton County?
4. What is the average site density within the county?
5. Is prehistoric occupation more extensive and/or more intensive at the ecotones between the environmental zones?

We will address our findings of each of these questions, in order, below.

1. *What is the cultural chronology for Benton County? Is the prevalence of Late Archaic among collector reported sites a result of bias, or representation of real pattern in precontact use of the Grand Prairie Natural Region?*

Prior to this year's survey, Benton County had 87 Unidentified Prehistoric components, six Paleoindian components, 28 Archaic components (9 Early Archaic, 4 Middle Archaic, 13 Late Archaic, and 2 unidentified Archaic), eight Woodland components (1 Early Woodland, 3 Middle Woodland, and 4 Late Woodland), three Late Prehistoric components, 66 Historic sites, and four sites with unknown time periods (Table 39).

This project has added to the cultural chronology of the county with 115 sites including 61 Unidentified Prehistoric site components, three Early Archaic components, one Middle Archaic component, one Late Archaic component, and 68 historic site components (Table 39).

No new projectile point types were added to the Benton County precontact inventory by this year's survey (Table 40). The five formal lithic tools were projectile points, with three dating to the Early Archaic period, one to the Middle Archaic period, and another to the Late Archaic period (Justice 1987).

Table 39: Number of Site Components Added.

Cultural Period	Added	Previous	Total
Unidentified Prehistoric	61	87	148
Paleoindian (ca. 10,000 – 7500 B.C.)	0	6	6
Archaic	5	28	33
Early Archaic (ca. 8000 – 6000 B.C.)	3	9	12
Middle Archaic (ca. 6000 – 3500 B.C.)	1	4	5
Late Archaic (ca. 4000 – 700 B.C.)	1	13	14
Unidentified Archaic	0	2	2
Woodland	0	8	8
Early Woodland (ca. 1000 – 200 B.C.)	0	1	1
Middle Woodland (ca. 200 B.C. – A.D. 600)	0	3	3
Late Woodland/Late Prehistoric (ca. A.D. 500 – 1650)	0	4	4
Unidentified Woodland	0	0	0
Mississippian	0	3	3
Protohistoric/Contact	0	0	0
Historic (post A.D. 1650)	68	66	134
Unknown	0	4	4
Total	134	202	336

Table 40: Documented Points within Benton County (* indicates point found during this survey).

Cultural Period	Projectile Point Types
Paleoindian	Clovis, Dalton
Early Archaic	Barbee Corner Notched, Dovetail, Hardin Barbed, Kirk Corner Notched*, Kirk Stemmed*, Palmer, St. Charles, Thebes
Early-Middle Archaic	Raddatz Side Notched*
Middle- Late Archaic	Unidentified Concave Base, Unidentified Side Notched
Late Archaic	Brewerton, Durst, Lamoka*, Matanza, Riverton, Vosberg Corner Notched, Unidentified Side Notched, Unidentified Expanding Stem
Terminal Late Archaic	N/A
Early Woodland	Perkiomen Broad, Susquehanna Broad
Middle Woodland	Snyder
Late Woodland/ Late Prehistoric	Jack's Reef, Steuben Expanding Stem, Unidentified Side Notched

Precontact settlement within Benton County is dominated by Archaic cultural periods, especially by Late Archaic and Early Archaic, followed by Paleoindian, Middle Archaic, and then Late Woodland cultural periods. Very little information has been recovered for the Early

and Middle Woodland, and Mississippian period. These results may be skewed by the bias of landowner permission, but seem well aligned with previous results. The low density of occupation, especially after the advent of agriculture, may be explained by the environmental setting. Benton County has no major river and the county is drained by five smaller streams: Big Pine Creek, Mud Pine Creek, Sugar and Mud Creek, and Carpenter Creek. The water supply for Benton County is primarily ground water from deposited glacial till (Barnes 1989:2). A lack of accessible surface water and the predominance of poorly drained prairie soils is not conducive for settlement and Benton County is comprised primarily of Argiudoll and Endoaquoll soils, which are somewhat poor and poorly drained soils, with rises of Hapludalf soils, which are well and moderately well drained soils. The micro-ecologies created by this combination of well and moderately well drained soils are generally small and present a unique diversity of resources (Barnes 1989: 1). There are fewer areas of Hapludalf soils in the southern portion of the county, so the previously documented preference for occupation of alfisols surrounded by diverse resources could not be detected this year. However, we do see a pattern of relative avoidance of Endoaquolls in favor of Argiudolls where the two are nearly always intermingled.

Benton County is primarily agricultural land, and as such remains largely within the private sector. Compared to other counties, Benton County has had less archaeology conducted as a result of federal requirements or state regulations. These archaeological surveys have helped build the cultural chronology in other counties by requiring investigations in areas that would not have otherwise been targeted by researchers. As a result, it is likely that the surveys conducted in Benton County have neither been extensive enough nor sampled enough landforms within the county to locate underrepresented cultural time periods. With the information gathered, especially in those areas not typically surveyed, we will begin to reconstruct the history of use and the differential spatial patterns of exploitation associated with specific soils, topographic features, and environments.

The Archaic period, especially the Late Archaic, was overrepresented in previously reported sites. It must be remembered that much of this record comes from collector reported sites and may reflect the bias of an individual collector and not the record. It remains to be discovered if this temporal distribution is representative. This year's FY2016 HPF Benton County survey recovered five diagnostic points with temporal assignments: an Early Archaic Kirk Stemmed biface from 12-Bn-191, Early Archaic Kirk Corner Notched bifaces from sites 12-Bn-193 and 12-Bn-242, a Middle Archaic Raddatz Side Notched biface from site 12-Bn-263, and a Late Archaic Lamoka from 12-Bn-194. No diagnostic points were recovered from either before or after the Archaic. The temporal distribution encountered for the current and the FY2015 HPF survey in Benton County matches the marked preference for Archaic period sites; however, the preponderance of Early Archaic from both of our surveys is at odds with the Late Archaic predominance in the previous record. Further survey will be required to determine if this is collection location bias, rather than being a representation of a real pattern in precontact use of

the Grand Prairie Natural Region. However, the consistency between the previous record and both of our surveys suggests a pattern.

2. *What are the densities and distributions of archaeological sites in southern Benton County? Are there patterns in the use of various ecologies through time? Can this survey inform our knowledge of landscape change? How does this compare to utilization of similar and different environments within the Central Till Plains?*

The densities and distributions of sites are important for modeling and prediction. Following a pattern established for previous HPF surveys (Balough et al. 2016; Leeuwrik et al. 2015, 2016; Macleod and Donovan 2014; Macleod et al. 2015), we tallied site distribution by landform and cultural period, and the amount of the surface that was covered by individual sites to analyze the percentage of utilized surface by landform (Table 41, Table 42, Table 43). For example, five small lithic scatters on a given landform may utilize a smaller portion of the landscape than one large lithic scatter on another landform. The percentage of utilized landscape may provide a further refined perspective of how settlement occurred within the research universe.

Benton County is predominantly comprised of ground moraine and end moraine landform, and ten of the Survey Areas investigated in this project were found on this landform with Survey Areas 2, 7, and 11 also partially located on floodplains and outwash terraces/plains. There are substantially more sites, artifacts, and percent of the landscape utilized on upland than lowland areas.

Although very limited, the results from the 928.36 acres of the FY2016 HPF Grant survey shows an Early Archaic through Late Archaic period occupation in the southern portion of the county. No evidence of the Paleoindian presence was recovered in this survey. Ninety-eight percent of the sites discovered in this survey were located on ground moraines and end moraines. Two percent of the total sites were located on floodplains and outwash terraces/plains. The location of projectile points on prairie soils could indicate a pattern of exploiting the wet prairie/prairie ecotone, extracting diverse resource sets, seasonally or on a permanent basis. Further, the pattern of preference for slightly elevated dry forest soils surround by prairie and wet prairie is somewhat replicated in this survey, though with not temporal information (cf. Balough et al. 2016). These patterns warrant future investigation. Whether this is representative or not is unknown as more than ninety percent of the surveyed area was on uplands (89% of the county vs. 98% of surveyed area), which was due to limited permission and visibility issues. This slightly disproportionate percentage of upland landform surveyed needs to be kept in mind when comparing results to previous HPF grant surveys conducted (e.g., Macleod and Donovan 2014; Swihart and Nolan 2013, 2014). A larger area of

lowland landforms is needed to determine the true nature, extent, and intensity of use of these landforms. However, it is clear that lowlands were low intensity use spaces.

Aside from the Early Archaic period (12-Bn-191, 12-Bn-193, and 12-Bn-242), the Middle Archaic (12-Bn-163), and Late Archaic (12-Bn-194) time periods, the settlement patterns for different prehistoric cultural contexts are difficult to analyze due to the lack of recovered diagnostic materials during our surveys in the southern portion of the county. In total, 98.26 percent (n=113) of sites and 99.87 percent (n=2263) of recovered artifacts located on ground and end moraines, with floodplains having the lowest encounter rates (Table 42). The fact that survey was limited to a majority of upland landforms means that the sample of the archaeological record in Benton County obtained during our efforts is mostly representative of one type of geological setting.

Table 41: Projectile Point Site Numbers and Cultural Periods Per Landform.

Landform	Sites and Cultural Periods
Ground moraines and end moraines	12-Bn-191 (Early Archaic) 12-Bn-193 (Early Archaic) 12-Bn-242 (Early Archaic) 12-Bn-263 (Middle Archaic) 12-Bn-194 (Late Archaic)

Table 42: Site Densities and Distributions By Landform.

Landform	# of acres	# of sites	Site Acreage	Density	Distribution
Ground moraines and end moraines	909.09	113	7.48	1 site per 8.05 acres	Sites cover 0.82% of surface area
Flood plains and outwash terraces/plains	19.27	2	0.04	1 site per 9.64 acres	Sites cover 0.21% of surface area

Table 43: Number of Artifacts per Landform.

Landform	# of artifacts	% of artifacts recovered
Ground moraines and end moraines	2263	99.87%
Flood plains and outwash terraces/plains	3	0.13%

While there is very little variation of landforms in Benton County, the vegetation in Benton County was primarily wetlands with dry prairie. Previous research had noted that there was a trend for habitation of groves, which was supported by archaeological information. From this year's HPF 2016 survey and last year's HPF2015 survey, four survey areas (FY2015 Survey Area 1 and FY2016 Survey Areas 2, 6, and 13), were in relative proximity to groves and were representative of early settlement among groves. Because of the arrival of the railroad, in 1871, settlers were able to begin to branch out from the groves and begin to turn the prairies and wetlands into agricultural fields. Modern developments have taken advantage of the open, tree-less landscape and converted much of the open landscape into windfarms.

The open landscape caused by glacial movement and remnants of moraines, which create nearly flat to gently rolling glacial till plains is characteristic of the Central Till Plains (Schneider 1966:41). All of Benton County is within the Central Till Plain and much of the county's economic income is based upon agricultural and windfarm energy.

3. What is the settlement pattern for Euro-American people in southern Benton County?

The historic cultural context was present in Survey Areas 1-13 and was representative of the initial mid-19th century settlement of the county thru modern times. Mean dates were taken for each survey area by using artifacts that displayed a date range (Table 44). This excluded non-diagnostics and anything with unanchored parameters (i.e. pre-1940). Results indicate that the majority of survey areas were most likely active during the late 19th and early 20th centuries. This is corroborated by the mean historic date of the whole survey which was 1899. Both of these pieces of information are in keeping with the literature narrative. The European settler population stayed very low until 1840 with the official establishment of Benton County and only then did the population increase. Population increased in 1871 with the establishment of the railroad along the old Indian trails and in 1882, the Indiana and Chicago Railroad laid tracks through Oxford, creating a way for farmers to have easy shipping (Taylor 2009:12-13). The railroads made westward expansion easier and connected the groves of Benton County, which were inhabitable groups of trees. Many historic sites in Benton County were found in or near the groves.

Table 44 Survey Area Mean Dates for Historic Artifacts.

Survey Area	Mean Date
Survey Area 1	1889
Survey Area 2	1882
Survey Area 3	1915
Survey Area 4	1897
Survey Area 5	1914
Survey Area 6	1923
Survey Area 7	1895
Survey Area 8	1894
Survey Area 9	1892
Survey Area 10	1878
Survey Area 11	1923
Survey Area 12	N/A
Survey Area 13	1890
All Survey	1899

4. *What is the average site density within the county?*

Before this survey, there were 186 documented sites (202 components) in the county (Volume 2, Appendix A). Upon completion of the survey, 115 sites (134 components) were added to the site database making the total 301 sites (336 components) in Benton County. For this survey, the average site density was one site every 8.07 acres with survey area densities ranging from one site per 40.96 acres (SA12) to one site per 3.10 acres (SA10). Although previous indications of density vary, prior surveys have indicated a positive ratio survey of one positive survey per 4.30 surveys conducted. The site encounter frequency for the southern half of Benton County is slightly higher than that documented for the northern half or one site every 9.9 acres (cf. Balough et al. 2016). The average density for both surveys is one site every 8.85 acres surveyed. If we evaluate our survey areas as individual surveys, our ratio of successful surveys for this study is 1:1. The high rate of successful surveys for this study could be due to the large amount of land and high visibility. Conversely the lower positive rate of previous surveys may be influenced by low survey acreage (total and per survey), different methodologies, or poor field conditions.

5. *Is prehistoric occupation more extensive and/or more intensive at the ecotones between the environmental zones?*

Of the thirteen surveyed areas, eight survey areas had a prehistoric component with more than three prehistoric artifacts. Survey Areas 6, 7, 11, and 13 yielded 72.5 percent (n=74) of prehistoric artifacts recovered from Benton County (Table 45). More than sixty percent of

Benton County is comprised of Argiudolls and Endoaquolls, which are prairie and wet prairie soils, respectively (Figure 142). Interspersed are Endoaqualfs, and Hapludalfs occasionally on subtle rises. There are a few locations where a combination of three or more soil great groups creates an ecotone, or unique micro-ecology, on the landscape and specific environmental settings offer a diversity of resources that can be exploited. Survey Areas 3, 5, 6, and 13 may have examples of, or are in close proximity to, this micro-ecology. We do note that where alfisols are present, clusters of artifacts follow; however, none of these areas produced diagnostic artifacts. Subjectively, it does appear that artifacts are more prevalent near the juncture of contrasting environmental types (e.g., dry prairie and wet prairie, forest soils surrounded by prairie), and the greatest density of prehistoric artifacts are found on alfisols.

The lack of representation can also be attributed to sample bias, as all survey areas are comprised partly or completely of Inceptisols and Mollisols. Survey Areas 3, 5, 6, and 13 were the only survey areas the displayed a third type, Alfisols. This limits the variation of vegetation required to create micro-ecologies. The sample bias, while unintentional, limits the scope of research and analysis.

Table 45: Survey Areas with Prehistoric and Historic Artifacts in Benton County.

Survey Area	Historic	Prehistoric
SA1	5	1
SA2	22	4
SA3	10	5
SA4	308	0
SA5	12	3
SA6	12	20
SA7	25	16
SA8	1543	4
SA9	87	11
SA10	16	1
SA11	13	13
SA12	1	0
SA13	107	24
Total	2161	102

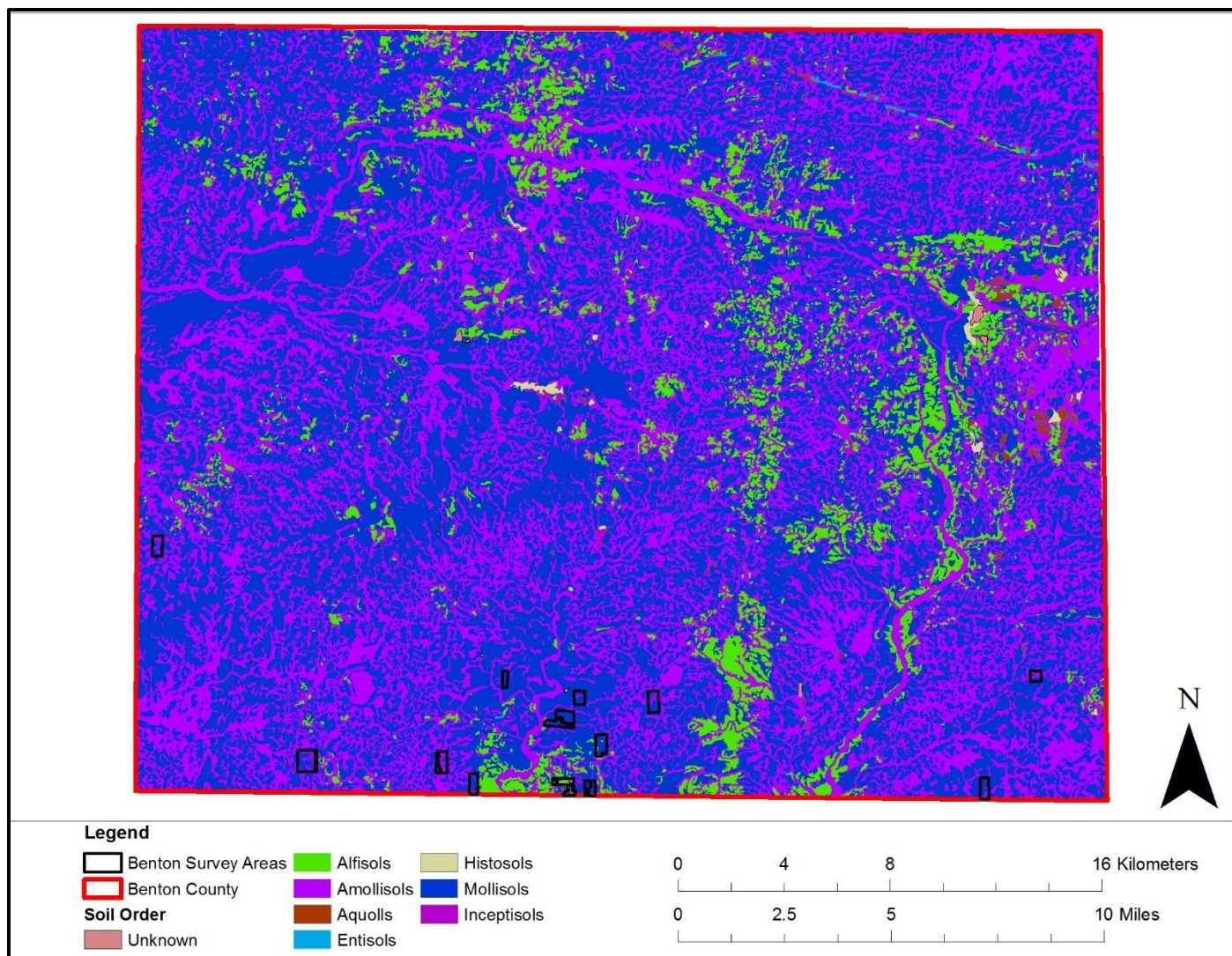


Figure 142: Survey Areas with Prehistoric Component on Soil Suborder Classifications (USDA/NRCS 2015a).

Conclusions and Recommendations

This project primarily targeted the southern half of Benton County, Indiana. The project area was selected due to the lack of known archaeological sites in the SHAARD database and the identification of Benton County as a data deficient county. The goals of the project were to increase the site database, construct a more complete cultural chronology for the county, understand and refine both the settlement patterns and the patterns of interaction between and among early Euro-American settlers and Native Americans.

Prior to last year's FY2015 HPF survey, Benton County displayed low relative and absolute density of archaeological sites and materials officially recorded. This is consistent with results of previous surveys conducted in and around Benton County (see references in Table 2). It is very likely that the soils and available forest resources during prehistoric times and into the mid-1800s heavily influenced the habitability of the area. There are no major rivers running through Benton County and the county is drained by five smaller streams: Big Pine Creek, Mud Pine Creek, Sugar and Mud Creek, and Carpenter Creek. The county was originally predominately comprised of dry prairie and wetlands with pockets of forest (Figure 18, Figure 142). Prehistorically, wetlands would have been economically important, and potentially attracted people from atypical distances seasonally. The fluctuations of surface moisture seasonally and through the centuries would have exerted a great influence on prehistoric activity distributions. Wetland communities in Benton County have decreased due to increasing artificial drainage for agricultural purposes (Taylor 2009:15). However, the variably extensive wetlands would have dramatically restricted both livable land and resources in the area for the incoming Euro-American settlers during the historic period. This constraint would have predisposed those individuals who were there to select the few well-drained upland features to avoid the marshlands that were so prevalent throughout the county. This would explain why relatively late Euro-American settlement focused more around the scattered groves, pushing the majority of the historic settlement dates to much later in the 19th century. Expansion did not take place until 1871 with the establishment of the railroad along the old Indian trails and in 1882, with the Indiana and Chicago Railroad (Taylor 2009:12-13). The railroads made westward expansion easier and connected the groves of Benton County.

The diagnostic prehistoric artifacts recovered from the survey areas date to the Early Archaic through Late Archaic time periods. Though the amount of recovered prehistoric diagnostics from the survey is not enough to make generalizations regarding occupation habits, we may be able to use this information in order to identify the use of the land during these periods. Since prehistoric habitation sites would have been located on higher, dry ground, the location of the points and the variety of chert used to make lithic artifacts could indicate that those areas were used to manufacture lithic tools, either as part of a wider exploitation and activity strategy or as an isolated activity.

The majority of the precontact sites were unable to be identified by cultural period; however, three prehistoric cultural periods were documented: Early, Middle, and Late Archaic. Four historic sites (12-Bn-203, 12-Bn-204, 12-Bn-238, and 12-Bn-247), two prehistoric sites (12-Bn-257 and 12-Bn-294), plus 12-Bn-294's historic and prehistoric components were recommended for further investigation. The remaining 108 sites were recommended as not eligible for listing on the Indiana Register of Historic Sites and Structures or the National Register of Historic Places.

The surveys conducted in Benton County are unable to be compared to those of other Indiana counties whose results show a greater evidence of land use in upland areas due to the large sample of surveys of upland features in Benton County (Leeuwrik et al. 2015; Macleod et al. 2015; Swihart and Nolan 2014). Due to 97 percent of surveys and 88.5 percent of the county being located on upland landforms it is difficult to make a comparison to the occupation patterns as found on other varieties of landforms. Previous surveys have indicated a site preference for upland landforms, but this site trend could be biased due to lack of archaeological survey and disproportion ratio of uplands to lowlands across the county. However, we can say that a larger proportion of the surface area is occupied on upland landforms than lowland, and the artifact density is greater in the uplands. For the future, survey of a greater variety of landforms would be beneficial in expanding the knowledge of occupation patterns across the county and making inferences about upland feature occupation preferences. Permissions to survey and current land use were limiting factors for the current effort.

Many factors could have influenced the project data including the location of the surveyed properties, whether a field was tilled recently or not, the collection of fields by lithic enthusiasts and even local weather patterns prior to field survey. Further research into prehistoric landform usage is recommended within Benton County.

Benton County would benefit from further archaeological investigations, especially those focusing on the procurement of diagnostic prehistoric materials and systematization of landform use prehistorically. Included in this should be further large scale pedestrian surveys to complement the findings in this report as well as identify potentially new areas of interest. Particularly surveys that attempt to capture representative samples of the topographic, geomorphic, hydric, and texture properties of landforms and soils given the peculiar hydrological history of this area and the already documented peculiar distribution of archaeological materials in this portion of the state (Macleod et al. 2015; Surface-Evans 2015; and this report). Surveys designed in this way could add not only to our understanding of shifting resource procurement and settlement strategies throughout prehistory, but could also be used to hypothesize changes in overall drainage properties of the region.

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