PHASE 1a AND PHASE 1c ARCHAEOLOGICAL SURVEY OF THE LOOP ISLAND WETLANDS, FLOYD COUNTY, INDIANA

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Technical Report No. 2

FALLS OF THE OHIO ARCHAEOLOGICAL SOCIETY

_____
(Signature)

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Abstract

From June 30, 2011 through June 20, 2012, the Falls of the Ohio Archaeological Society (FOAS), a professional/avocational archaeological group, conducted Phase 1a and Phase 1c archaeological investigations of the property known as the Loop Island Wetlands in Floyd County, Indiana. FOAS, a not-for-profit 501 (c) 3 corporation was awarded a Historic Preservation Fund Archaeological Grant administered by the Indiana Department of Natural Resources Division of Historic Preservation and Archaeology to do the study, which was triggered by multiple compelling considerations. Important among these was the comparative dearth of information on archaeological resources for this area in comparison to nearby counties, the rapid loss of shoreline due to erosion, loss of integrity due to documented looting, and upcoming changes in property ownership. The project was undertaken with the permission and cooperation of the current landowner, Mr. Al Goodman, who has been an excellent steward of local resources for some years. In addition to the archaeological survey, the project included a geomorphological assessment provided by Haywood Archaeological Services of Ohio, the research and preparation of prehistoric and historic contexts for the area, and development of public education materials, the latter in keeping with the mission statement of FOAS. Corn Island Archaeology LLC of Louisville provided logistical support for the project in the areas of equipment, laboratory facilities, financial support, and donated in-kind labor.

The survey entailed ground surface inspection, shovel probing, augering, backhoe trenching, and stream bank profiling. The southern portion of the project area was found to be buried beneath 1 to 2 meters of recent alluvium. Along the upper terrace in the northern end, alluvium was not present in any significant amounts, and near-surface archaeological remains were identified. The area was found to be largely disturbed by earth moving activities.

Four archaeological sites were discovered and recorded as a result of the study. Site 12FL117 is comprised of the material remains of an industrial building. Based on its apparent age, the building was likely occupied at the same time as the nearby the Moser Leather Company Complex, although its function does not appear to have been involved in the tannery process. The building may, perhaps, have been associated with the railroad. Although the precise nature of the work conducted at the site was not determined during the survey, the artifact patterning clearly indicates the building was not residential.

Site 12FL118 is a residential complex, consisting of two structures. Site 12FL118 may have been occupied by workers or care tender of site 12FL118, although this is speculative. Of the two structures noted at this location, the structure on the western upper slope appears to have been the residence, while the structure on the lower slope may have been a supporting building, such as a shed or garage, although a specialty workshop cannot be ruled out.

Site 12FL119 is the Moser Leather Company Complex. This site, consisting of a series of standing buildings, also contains the locations where several buildings burned or were otherwise demolished. The area is surrounded by the built environment. Pavement and gravel lots precluded shovel probing, and artifact recovery was low. This site is well documented in regards to the industrial processes that occurred at the location.

Site 12FL120 is a prehistoric site located along the eroding Ohio River shoreline. This site was not well defined either horizontally or vertically. It is entirely probable that most of the site has been carried into the river through erosion. The site appears to have dated from at least the middle to late Woodland prehistoric period.

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Abbreviations

ACHP	Advisory Council on Historic Preservation
A.D.	after the birth of Christ
amsl	above mean sea level
B.C.	before the birth of Christ
BHT	backhoe trench
BP	before present
ca.	circa
CFR	Code of Federal Regulations
CL	Clark County
cm	centimeter(s)
CRM	cultural resources management
DHPA	Division of Historic Preservation and Archaeology
e.g.	example
FCR	fire-cracked rock
FL	Floyd County
FR	Federal Register
FS	Field Site
ft	foot (feet)
GIS	Geographic Information System
GPS	Global Positioning System
GSV	ground surface visibility
ha	hectare
IAW	in accordance with
IDEM	Indiana Department of Environmental Management
m	meter(s)
mi	mile(s)
mm	millimeter(s)
NA	not applicable
n.d.	no date
NHPA	National Historic Preservation Act of 1966
NRHP	National Register of Historic Places
PI	Principal Investigator
PL	Public Law
ROW	Right-of-way
RPA	Registered Professional Archaeologist
SHPO	State Historic Preservation Office
SOI	Secretary of the Interior
SOW	Statement (Scope) of Work
STP(s)	shovel test probe(s)
USC	United States Code
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
YR	Yellow-Red (Munsell Color)

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1

INTRODUCTION

On May 18, 2011, the Falls of the Ohio Archaeological Society (FOAS) was awarded $13,381.00 (Federal share) through a Historic Preservation Fund Archaeological Grant (Grant No. #31921-6) provided by the Indiana Department of Natural Resources (IDNR) Division of Historic Preservation and Archaeology (DHPA) to complete a Phase 1a and Phase 1c archaeological survey of the 47-acre parcel known as the Loop Island Wetlands in Floyd County, Indiana. In addition to the archaeological survey, the project included a geomorphological assessment, the research and preparation of prehistoric and historic contexts for the area, and development of public education materials. The total project costs ($19,116.00) include $5,735.00 of non-Federal matching funds. The 47-acre, 19-hectare (ha), project area is located along the Ohio River on the eastern border of Floyd County (**Figure 1** and **Figure 2**). As discussed below, this project addressed an urgent need for assessment of the area for variable reasons. The project was driven primarily, however, by the intention of the current landowner to reconstruct a berm on the property that breached, causing a small pond to drain. The landowner, Mr. Al Goodman, who has been a good steward of local resources, wished to ensure that no sensitive archaeological deposits would be impacted during the process. The idea for surveying the entire property grew from this initial need.

FOAS was incorporated in Indiana as a 501 (c) (3) "not-for-profit" corporation and is in its tenth year of operation. Corn Island Archaeology LLC (CIA) of Louisville, Kentucky agreed to act as a sponsor for the project, contributing supplies and equipment, lab facilities, and in-kind professional services to the project.



Floyd County, Indiana.

Compliance Requirements

The investigation was coordinated with the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology (IDNR-DHPA) prior to demolition and earth-moving activities. The archaeological investigation was conducted in accordance with Indiana Code IC 14-21-1-18. The investigation adheres to the requirements specified in *Guidebook: Archaeological Guidelines to Support 310 IAC and the Indiana Historic Preservation Act of 1981* (IDNR-DHPA 1989). A project workplan was submitted to the IDNR-DHPA by CIA. It was approved by letter dated October 24, 2011, and assigned IDNR-DHPA # 2011051 (**Appendix A**).

Because federal funds were involved, the archaeological fieldwork and documentation of this project met compliance requirements relative to 36 CFR §800 and Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470 f). The project complied with specifications for field investigations and National Register of Historic Places (NRHP) assessment as set forth in the *Secretary of the Interior Standards and Guidelines for Archaeology and Historic Preservation* (*Federal Register*, Vol. 48, No. 190, 1983).

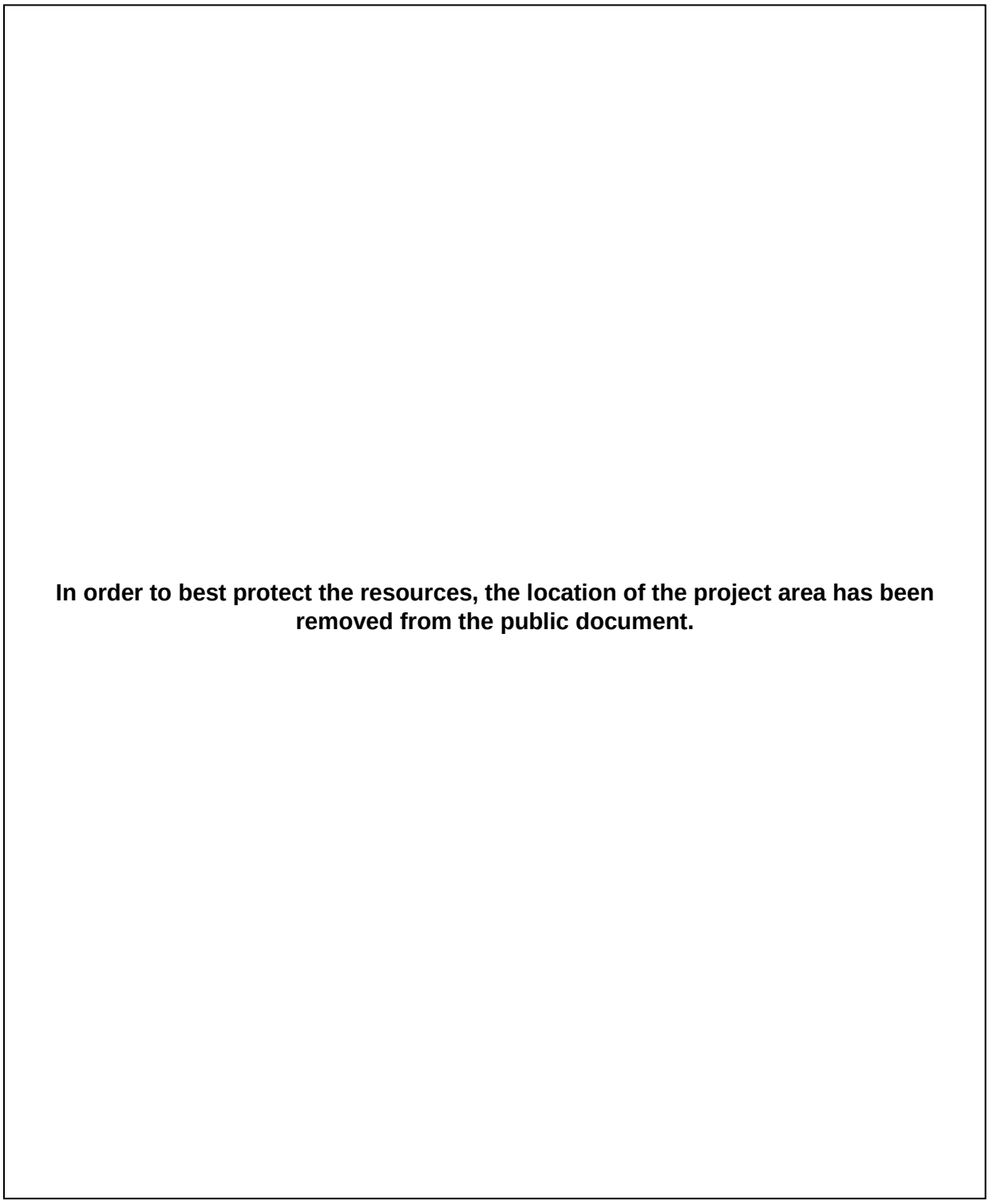


Figure 1. Section of *New Albany, IN-KY* 7.5' USGS topographic quadrangle showing project area.

In order to best protect the resources, the location of the project area has been removed from the public document.

Figure 2. Segment of *New Albany, IN- KY* 7.5' USGS topographic quadrangle showing location of Loop Island Wetlands.

Project Description

Under most conditions, water occupies 21 acres of the 47-acre property, leaving 26 acres available for survey. Physiographically, the property lies within an old meander scar of Silver Creek downriver or below its confluence with the Ohio River. The project area includes two ponds or lagoons. Documentation from the landowner suggests the larger pond had been a naturally created feature within the oxbow. The smaller pond, however, dates from 1963 at which time up to 7 feet (ft) of soil were taken for fill. However, a recent breach in the earthen containing wall for the smaller pond has allowed another seven acres to be accessible. Therefore, 33 acres (13.3 ha) were available for intensive surface and subsurface archaeological investigation.

The project area lies adjacent to developed areas (**Figure 3**). The Loop Island Wetlands are currently open to the public, and, with the development of the Ohio River Greenways project bordering the parcel, additional foot traffic and continued looting can be expected.

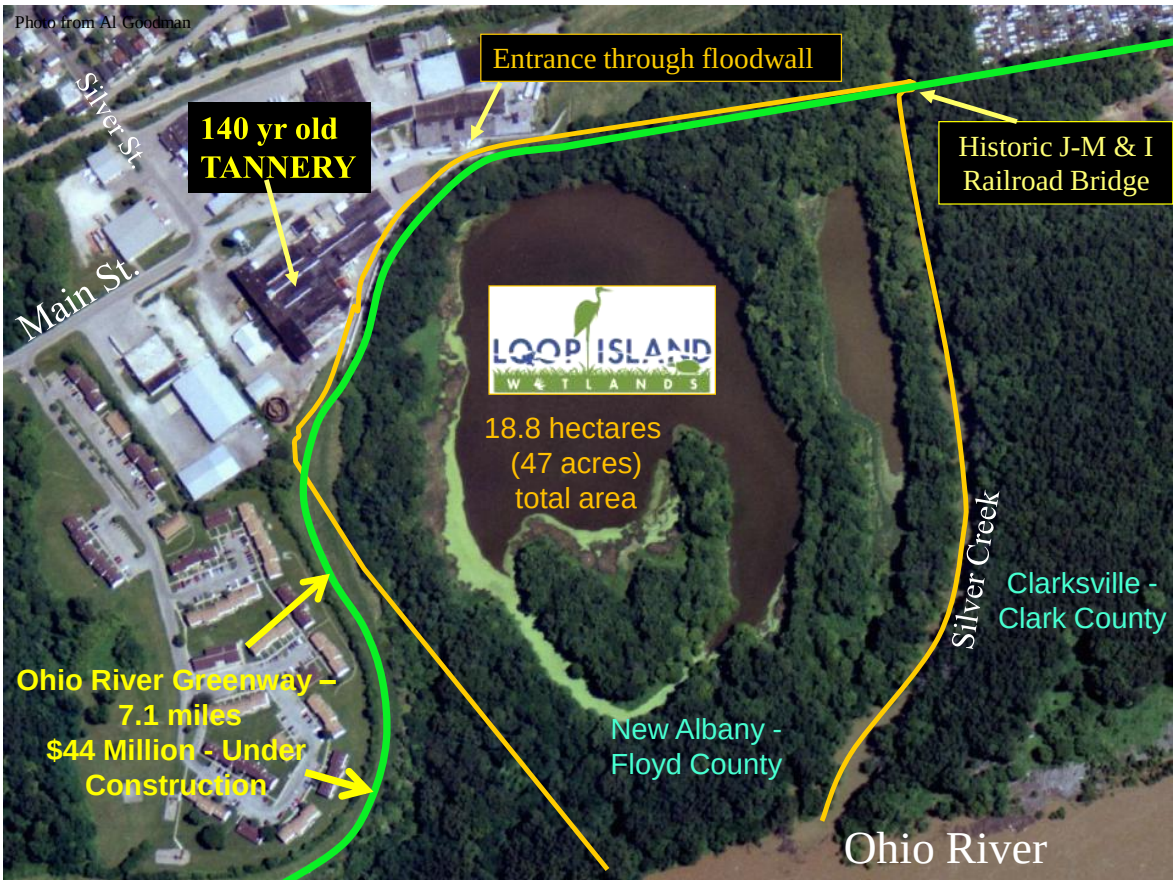


Figure 3. Aerial view of project area showing nearby cultural features.

Among the reasons to conduct the investigation were the following compelling arguments.

- The smaller of the two lagoons drained due to a breach in the berm that contained it. The current landowner wished to repair the berm, and fill the pond. Prior to that, the landowner wished to ensure that no archaeological materials would be affected during the reconstruction. Further, he felt that this offered an opportunity to study the previously excavated area within the drained pond for deeply buried deposits that might be beyond the reach of a backhoe.
- The investigation of high-probability, previously unsurveyed parcels in Floyd County has been identified as a high priority by the IDNR-DHPA. Records in SHAARD document a large discrepancy between the numbers of archaeological sites identified in Floyd County compared to Clark County (91 records compared to greater than 500, respectively). The project is evaluated as a high probability area based on its location at the confluence of Silver Creek and the Ohio River and the presence of significant sites such as Mill Creek (12CL1), Newcomb (12CL2), and Clark's Point (12CL3) a short distance to the east.
- As the project area was located along the Ohio River at the confluence of a navigable waterway, the location is considered to be a high probability area.
- Looting for prehistoric artifacts has been a problem along the exposed banks of the Ohio River in recent years.
- Due to turbulent currents caused by the lower gates of the McAlpine Locks and Dam which are directed at the southern Indiana shoreline, erosion of the river banks has occurred at alarming rates. This includes the area of Loop Island.
- Multiple archaeological investigations in the immediate area above Silver Creek in Clark County have demonstrated very rich prehistoric cultural deposits.
- A portion of Old Clarksville is shown to have been platted in what is now Floyd County, across Silver Creek, intruding into what is now Loop Island property. The town of Old Clarksville is currently the focus of study and the possible development of an archaeological park.
- The ownership of Loop Island was scheduled to change in upcoming months. The current landowner has been very favorable to public visitation and study of the area; the attitudes of the new owners are uncertain.

Project Statement of Work

The overall project goal is to derive a better understanding of prehistoric and historic landuse(s) at the 47-acre Loop Island property through the on-the-ground identification of archaeological sites and the development/refinement of prehistoric and historic contexts. As described detail below, the project objectives include archaeology, historic and archival research, and public education.

Archaeological Investigation. FOAS proposes to conduct a Phase 1 (a-c) archaeological survey of the 47-acre Loop Island property. The island's situation at the foot of the Falls of the Ohio River and the mouth of Silver Creek as it enters the Ohio and its rich environmental resources associated with a former slough or cut-off of Silver Creek, make it an ideal setting for prehistoric occupation. Its known proximity to highly significant archaeological sites such as 12CL1 and 12CL2 attest to this supposition. Along the eroding Ohio River shoreline, artifacts are commonly exposed to passersby. Loop Island has been subjected to recent – and undoubtedly long term – looting for artifacts. An archaeological survey will serve to identify and formally record the locations of archaeological resources on the property, and

therefore provide the basis for future protective measures. Specifically, the archaeological goals include the following:

- To determine if archaeological sites are present within the project area;
- To ascertain the nature, depth, and integrity of cultural deposits, if any are discovered; and
- To provide a preliminary determination, if possible, on the NRHP eligibility of all archaeological sites discovered within the project APE.

To achieve these objectives, the Phase I archaeological fieldwork entailed the following tasks:

- Ground surface inspection;
- Shovel probing
- Augering
- Backhoe trench excavation; and
- River and stream bank profiling.

Under the original October 24, 2011 workplan, CIA was tasked with the following:

- a routine background records search at the IDNR-DHPA to determine the level of existing documentation relevant to recorded archaeological sites and prior archaeological investigation(s), if any, at and nearby the site of the proposed project;
- a review of local libraries and/or historical societies to review archival documentation pertaining to past landuse(s) of the project area that may have affected its integrity;
- ground surface inspection;
- shovel probing across accessible areas;
- augering;
- backhoe trenching with up to 10 trenches;
- artifact analyses;
- preparation of a professional technical report of findings per the standards of the Secretary of the Interior and the IDNR-DHPA; and
- Curation of any artifacts with the landowner.

As it became clear during the initial stage of fieldwork that the majority of the project area lay beneath deep deposits of silt that precluded access to any cultural deposits through shovel probing, the project statement of work was amended to reduce the level of shovel probing and to include a geomorphological assessment by a qualified professional.

Historic and Archival Research. Loop Island boasts a rich and diverse body of local lore relative to the historic occupation of the area that includes shipbuilding, dueling, local industries such as a tannery, farming, and possibly river trafficking along the Ohio River. The landowner has acquired much information on the property over the years, including depictions of the meander loop on William Clark's 1785 survey. There are still data gaps, however. FOAS proposes to conduct more thorough historic and archival research and develop a historic context(s) for the property. The research was directed to obtain data relative to the interpretation of the rich history within the unique environmental setting that has become known as Loop Island.

Public Education. FOAS has a mission of educating the general public within the Falls of the Ohio River area. Outreach extends to both adults and children. Over the years, FOAS has

been successful in establishing a core group of members who have been trained in archaeological techniques and have been instilled with a value for the past. Through projects such as Loop Island, the society continues to expand that core group to include members of the Floyd County community and the Falls area in general. As part of this project, FOAS prepared materials for public interpretation to be placed with institutions, such as libraries and museums, as well as for public schools. These materials were designed to convey and share the members delight with the rich local history and prehistory of the area with the local community.

Findings

Four archaeological sites, 12FL117 through 12FL120, were documented as a result of the survey. Site 12FL117 is an early twentieth century industrial site of unknown function. Site 12FL118 is a historic site containing the remains of two structures, one of which is believed to be residential. Sites 12FL117 and 12FL118 may have been associated with the railroad. Site 12FL119 is the Moser Leather Company Site, a 165-year-old complex that until 2005 processed hides and produced leather goods. Site 12FL120 is a buried prehistoric site located along the Ohio River shoreline that dates at least from the middle to late Woodland period.

Curation

All artifacts were processed and bagged in archival quality bags. They will be labeled with provenience-based accession numbers. All items were photographed, and appropriate items were measured as well. The collection will be returned to the landowner, Mr. Al Goodman, who will ensure that they are available for future study.

Project Scheduling and Staffing

As stipulated by the grant requirements, the project was to be performed between June 1, 2011 and June 30, 2012. The grant was authorized in June 2011. Fieldwork was delayed to allow procurement of a geomorphologist and due to weather concerns. Non-invasive fieldwork began in the summer of 2011. Shovel probing and augering began February 17, 2012 with the trenching occurring on February 2 and February 21, 2012. Fieldwork continued on a non-continuous schedule through March and was completed April 14, 2012.

The project Principal Investigator, Anne Tobbe Bader, M.A. RPA, is a Registered Professional Archaeologist (RPA) and abides by the code of ethics of this organization. Ms. Bader served as Field Director for the project. She was supported in the field by archaeologists William Hill (M.A., RPA), David Schatz (B.A.), and Perry Harrell. Crew included FOAS members Randy Hollis, Paul Olliges, Bett Etenohan, Jeff Stoner, Danny Carlton, Bob Dement., Rhonda Huff, Renee Quintos, Rick Hardin, Kathy Danner, and Jeremy Wingler. Interested members of the public who worked alongside FOAS included Devin Lewis, Loren Miller, John Cherry, and Conner Cherry. Al Goodman, landowner, was present during a good part of the fieldwork.

The geomorphology aspect of the project was performed by Norm Haywood of Haywood Archaeological Services. Artifact processing was completed by FOAS and the analysis was done by Kathryn J. McGrath (M.A., RPA). David Schatz and Melinda King Wetzel prepared the graphics for this report.

Acknowledgment

The FOAS acknowledges the cooperation of Mr. Al Goodman (**Figure 4**)—the landowner who invited us to participate in the project on his land. Mr. Goodman has owned the property since 2002. He has been researching the environmental setting and history of the property since the 1990s as the environmental consultant for the adjacent tannery. He provided us with significant background information on the site that reflects many hours of his personal efforts to study the history of the site. He also provided FOAS with historic aerial photographs and maps, along with beautiful photographs he shot of the property. Mr. Goodman was demonstrated an uncommon stewardship in the property known as Loop Island Wetlands. His willingness to involve FOAS in this project reflects his personal commitment to local history and preservation. His contribution to the public is greatly appreciated.



Figure 4. Landowner, Mr. Al Goodman.

2
ENVIRONMENTAL CONTEXT

This section provides brief environmental and cultural contexts for the Loop Island Wetlands, the Falls of the Ohio area and especially for Floyd County. The physical environment is one of many factors that influenced the cultural development of an area. An awareness of the natural setting and available resources of an area allows informed interpretations of cultural issues such as settlement patterns, sedentism and mobility, and resource utilization and exploitation. A summary of the prehistoric and historic cultural development of the area follows in **Section 3: Cultural Context**.

The study of prehistoric and historic cultures extends beyond the actual material remains of a society to provide an understanding of the ways in which that society interacted with its environment and available natural resources. The physical environment is one of many factors that influenced the cultural development of an area. The following environmental context provides data on regional ecological patterns such as floral and faunal distributions and communities, regional geomorphology, soils, and hydrology. An understanding of the natural setting of an area allows interpretations on such cultural issues as prehistoric/historic settlement patterns and mobility, resource availability and exploitation, and more.

Naturally occurring processes can affect the interpretation of an area's archaeological potential. Areas of alluvial and colluvial activity can result in the burial of archaeological remains under deep deposits of silt and soil. Likewise, archaeological remains originally deposited in areas of active erosion can be totally eliminated through time or secondarily deposited elsewhere. An examination of Landuse patterns over time can also provide information regarding the potential for encountering intact cultural deposits in a given location. Intensive historical use modifications can result in mixed or disturbed deposits that could, in some cases, totally preclude the capability of archaeologists to extract any meaningful information at a site.

Physiography

Floyd County lies mainly within the Norman Uplands physiographic zone of Indiana (**Figure 5** and **Figure 6**). This area consists of steep-sided hills and valleys. Elevations in the county range from the highest of about 1,006 feet above sea level west of New Albany to the lowest at about 382 feet above sea level in an area along the Ohio River where it leaves Floyd County (Neyhouse et al. 2007:3).

The county is drained by several significant streams that empty into the Ohio River which flows along the southeastern boundary of the county. Silver Creek, the largest of these tributary streams, drains the central portion of Clark County and the eastern portion of Floyd County (**Figure 7**). Valleys that are both narrow and wide, ranging up to half a mile in width with gently sloping and nearly level terraces, border Silver Creek. Other notable streams include Big and Little Indian Creeks, Falling Run, Richland Creek Georgetown Creek, Knob Creek, Corn Creek, and Jacob's Creek. Indian Creek drains the western portion of Floyd County. Valleys that range from one-fourth mile to a dozen yards in width border Indian Creek.



Figure 5. General view of Norman Uplands physiographic zone.

The southern portion of Floyd County is bordered by the Ohio River. The Falls of the Ohio, with its broad floodplains, is the northern terminus for what has been called the “constricted” Ohio River valley. Below the Falls of the Ohio region, the river is entrenched in a narrow, deep, sinuous, and gorge-like valley with relatively few floodplains or bottomland pockets. These bottomlands are generally less than 1 km in width, but may reach 2 km (Ray 1974:3). They are usually restricted to one side of the river or the other, with steep bluffs rising from the water level on the opposing side. The constricted portion of the valley is dominated by a floodplain swell-and-swale topography, discontinuous linear terraces of the Ohio River, and the adjoining steep upland. Elevations range from 396 ft (121 m) above mean sea level (AMSL) at the floodplain, to 420-440 ft (128-134 m) AMSL at the terrace remnants, to over 902 ft (275 m) AMSL in the upland.

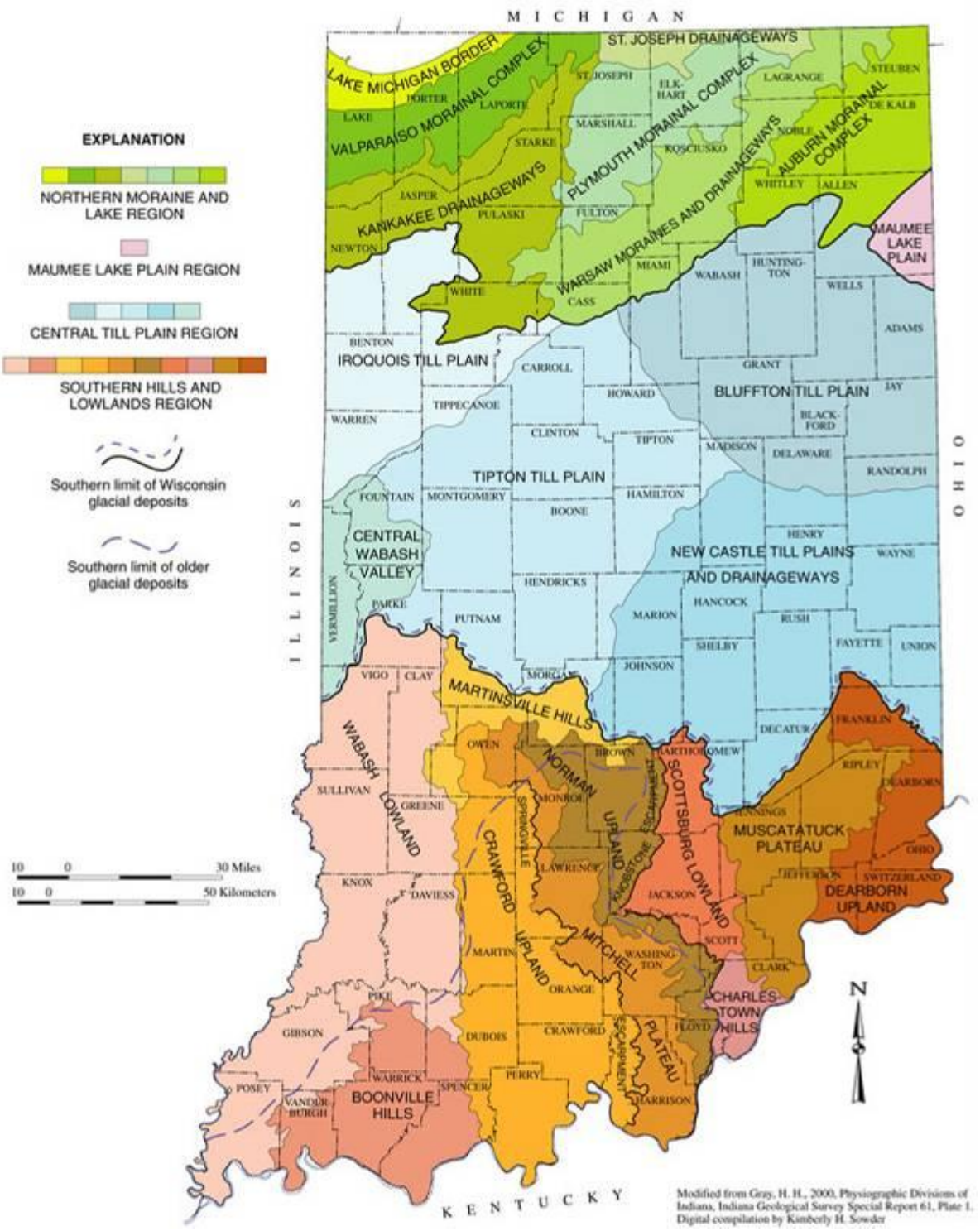


Figure 6. Physiographic regions of Indiana[1].

[1] Modified from Gray, H.H., 2000, Physiographic Divisions of Indiana, IGS Special Report 61, Plate 1. Digital compilation by Kimberly H. Sowder.
http://igs.indiana.edu/geology/maps/statephysiography/physiography.cfm



Figure 7. Aerial view of Loop Island Wetland showing Silver Creek in lower right corner. Photograph used with permission by Mr. Al Goodman.

Geology

The majority of Floyd County is underlain by rock formations of the Lower Mississippian period. In the upper elevations, the rock formations consist of resistant interbedded brown sandstone, siltstone, and shale. These rocks make up the bedrock known as the Borden Group. At lower elevations, rock formations consist of grey-green shale, known as soapstone. In limited areas to the extreme west of the county, in the highest elevations, limestone of the Lower Mississippian is exposed. Where Silver Creek enters into the Ohio River, 350 to 400 million year old Middle Devonian rock layers display an amazing diversity of fossils. Just downriver from the creek, on Loop Island, geologists, including James Conkin (geology professor, University of Louisville) discovered an ancient pond deposit with intact leaves in the silt. The leaves were carbon dated at 2000 years old.

More recent materials have affected the geology of Floyd County. These materials are widely variable, consisting of Illinoian age glacial till and outwash (collectively known as glacial drift); Illinoian, and Wisconsin age lacustrine deposits or lakebed material; limestone, sandstone, and shale residuum; alluvium; and windblown silt or loess (Nickell 1974). Glacial till, consisting of stones, sand, silt, and clay, was deposited over bedrock with the receding of the Illinoian glaciation. Glacial outwash, sand, and gravel carried by fast moving melt water were laid down

in stratified layers. When the ice receded, glacial drift blocked many valleys, creating lakes. Sand and silt were deposited in these lakes by fast-moving melt water. Over time, the water flow slowed, leaving behind deposits of finer materials of silt and clay. These were later overlain by lacustrine soils, consisting of fine-textured, calcareous material deposited by Wisconsin age drift (Nickell 1974). The material originated from local sources as well as more remote areas of the Ohio Valley. A thin layer of loess was deposited over most of the area, accounting for the high silt content of the upper part of most local soils. This deposit provides a distinct boundary between the loess and the underlying residuum.

Soils

According to a 2007 soil survey of Floyd County, the soils in the area formed in glacial till of Illinoian age; lacustrine deposits of Wisconsinan age; residuum derived from limestone, siltstone, black shale, and graygreen shale; alluvium; and loess (Neyhouse et al. 2007:2). Specific to the current project area, soil formation was affected as described below:

> *As the ice receded, a thin mantle of till was left over the bedrock. Ice from the Wisconsinan glacier did not reach [the survey area] but the glacier influenced the formation of lacustrine soils near the mouth of Silver Creek and other streams in the county. This fine textured, calcareous material deposited by drift of Wisconsinan age was carried down the Ohio River in meltwaters and deposited in the stream valleys. The clays settled out and left broad plains. Recent erosion has dissected these plains, leaving them several feet above the current streambed. Most of the black shale is buried beneath till and other parent materials. Only a few areas have soils that formed in the black shale.*

Specifically within the Loop Island area, soils have been identified as Udifluvents, Udarents, and Udorthents (USDA-NRCS 2012). **Table 1** summarizes the soils, and **Figure 8** provides a map showing the spatial extent of the soil type within the project area. Udifluvents comprise nearly half the project area. These soils are cut and filled-Urban land complex situated on 0 to 2 percent slopes that are occasionally flooded for brief durations (USDA-NRCS 2012). Nearly 7 percent of the soils are Udarents. These soils formed in loamy substratum, and are situated on 0 to 3 percent slopes on the river terrace. About 1 percent of the project area is comprised of Udorthents, which formed in areas of weakly cemented rock, such as shale. These are recently formed soils formed on the floodplain but impacted by urban development.

Udifluvents are described as follows:

> *These soils generally consist of mixed loamy soil materials in areas that have been filled or in areas from which material has been borrowed for fill. The soils are subject to occasional flooding, most likely during January, February, March, April, May, and June* (Neyhouse etal. 2007:53).

Udarents are:

> *These soils generally consist of loamy materials in disturbed areas. They have a mantle of silty materials in some places. The soils are well drained to somewhat poorly drained. A perched seasonal high water table is at a depth of about 0.5 foot to more than 6 feet. There is generally no restrictive feature within a depth of 60 inches. The soils are normally not subject to ponding or flooding (Neyhouse et al. 2007:58).*

Udorthents are characterized as:

> *These soils generally consist of mixed loamy or clayey soil materials in areas that have been borrowed for fill materials or in areas of the fill material itself (Neyhouse et al. 2007:52).*

The generally disturbed nature of the soils reduces the potential for encountering near-surface prehistoric archaeological sites. However, while much of the project area consists of soils that have been imported through fill or otherwise recently developed, they overlay older more deeply buried alluvial deposits. Undisturbed soils in the general project vicinity of the Falls of the Ohio River have been found to contain deeply buried archaeological deposits.



Figure 8. Soils within project area (USDA-NRCS 2012).

Table 1. Soil Series Mapped for the Project Area

Soil Series with Map Symbol	Approximate Acres in Project Area (% of Total)	Parent Material	Landform	Characteristics	Potential for Intact Sites
Udorthents, cut and filled Uaa	0.5 (1%)	form in areas of weakly cemented rock, such as shale		low to no frequency for flooding more than 80 inches to water table	none
Udifluvents, cut and filled and Urban land, complex, 0 to 2 percent slopes UaoAK	26.4 (48.6%)	formed in alluvium that may be flooded during any season in forest vegetation or pasture	floodplains	occasional frequency for flooding more than 80 inches to water table little to no evidence of alteration in the fine stratification of the alluvium; identifying the stratification may be difficult	variable
Urban land and Udarents, loamy substratum, complex, terrace, 0 to 3 percent slopes UnpA	3.7 (6.8%)	formed in fill material	stream terraces	low to no frequency for flooding more than 80 inches to water table	none
Water W	23.4 (43%)		streams/ rivers	NA	none

In 2011, geoarchaeological field investigations were conducted by Michael Aiuvalasit, RPA of Geoarchaeology Research Associates (GRA) at site 12CL937, located upriver in Clark County, Indiana. In coordination with Phase 1c archaeological survey of the site, ten trenches were excavated. The purpose of the assessment was to identify if deeply buried or undisturbed sediments and soils were present. Underlying several fill episodes, a natural soil development was documented consisting of an Ap horizon between 65 and 90 cmbs, a Bw1 between 90 and 180, and a Bw2 between 180 and 250 cmbs. The Ap horizon was documented to be a historic

ground surface. Comparison of the conditions encountered during this investigation and conclusions of regional studies along the Ohio River (Stafford and Creasman 2002) led the geoarchaeologist to conclude that the potential for encountering deeply buried cultural remains was low (Pritchard et al. 2011:80). Aiuvalasit states:

> Identifications were made of an intact buried soil (Ab) at the top of natural overbank deposits of the Ohio River. This soil preserves remnants of historical activity towards the top, which suggests it was once a historical surface. It is approximately 30 cm thick. Otherwise the thick overbank silts contain no evidence of deeply buried surfaces. This sequence is analogous to the Late Holocene levee/overbank sequence described by Stafford and Creasman (2002: Table 1). They note that buried archaeological deposits are rare within the thick overbank silts, but can be identified in the capping overthickened buried A horizon. This horizon has been dated to approximately 1000 radiocarbon yr BP, which dates to the Fort Ancient period (Stafford and Creasman 2002: 131-132) (Pritchard et al.2011:80).

Following Bettis (1992), Stafford and Creasman (2002) defined six Landform Sediment Assemblages (LSA) during their investigation of the depositional history at the confluence of the Great Miami and Ohio rivers, north of the current project area. They defined the following deposits: (Ia) historic overbank deposits; (1b) nineteenth century spoil; and (IIa) late Holocene (less than 3000 BP) overbank/floodplain deposits.

In 2006, across the Ohio River in Louisville, Kentucky, geotechnical borings were completed in preparation for the Kennedy Bridge Interchange Area. This was monitored by personnel from Cultural Resource Analysts (Herndon and Faberson 2007). The monitored project area consisted of 329 acres (133 ha) that were determined to be areas of high probability for archaeological resources and subjected to 57 bore holes. The old channel of Beargrass Creek was one such location. Of the 57 bore holes, 23 holes contained cultural material. Both prehistoric and historic material was recovered. Although a range of material was recovered, historic material most often dated from the late nineteenth to early twentieth centuries. In some locations, however, these deposits extended to at least 4 m (13 ft). In other bore holes, cultural material began at approximately 3 m (10 ft) beneath a fill layer and extended to at least 9.1 m (30 ft). Prehistoric material—none diagnostic—were also recovered, although in small amounts. A number of bore holes extended into a sandy alluvial C horizon to a depth of approximately 9 m (30 ft). This horizon was interpreted as having a low potential for prehistoric material due to the absence of fine-grained Holocene sediments. Farther upstream, however, soil deposits of sandy textures were the locations of Late Archaic interment sites, such as found at the Railway Museum Site (15JF630) and Habich Site (15JF550) (Simpson et al. 2003).

Climate

The climate in the study area today is considered to be moderate continental with warm humid summers and cool winters. The area experiences wide ranges in temperatures. The temperature extremes recorded for Floyd County vary from -32°F (-36°C) to 105°F (41°C). Average temperatures for winter and summer, however, are more moderate. In winter, the average temperature is 32.7°F (0.4°C) with a maximum snow depth of 20 inches. In summer, the average temperature is 73.9°F (23.3°) with the majority of precipitation occurring during the April to October growing season. These records fall within the expected range of the Mesic Udic temperature and moisture regimes mapped for the region. Rainfall averages 42.9 inches with the greatest rainfall occurring in late spring and early summer. Thunderstorms occur on about 49 days per year, mostly in the summer (Nickell 1974:95-96). The average snowfall is 12.1

inches annually, occurring as early as October and sometimes as late as May. As of 1970, the largest recorded snow depth was 17 inches. The average relative humidity in mid-afternoon during the summer ranges from 40-90 percent. In the winter, the average humidity ranges from 60 to 90 percent (Neyhouse et al. 2007:4).

Climate fluctuations, however, have varied from these ranges throughout the Earth's history. According to the Milankovich model, these periodic fluctuations are caused by changes in the Earth's elliptical orbit every 100,000 years, its quivering spin on its axis every 21,000 years, and its tilt on its axis every 41,000 years (Selby 1985:510). The pollen record shows that relatively mild temperature fluctuations have occurred since the end of the Pleistocene. After about 10,000 B.P., there was a gradual warming trend that resulted in generally higher temperatures than are known today. The highest temperatures appear to have occurred around 5000 B.P. This warming trend continued until the beginning of the Little Ice Age (A.D. 1450 to 1850) when a significant drop in temperature occurred. After the Little Ice Age, temperatures became more moderate (Davis 1983:176). A few of the fluctuations that have occurred since the Wisconsinan glaciation are summarized in **Table 2** (Buol et al. 1989; Fagan 2000; Selby 1985).

Table 2. Some Major Climate Fluctuations over the Past 10,000 years

Years BP	Fluctuation	Event	Source
8200-4500 B.C.	+1-2.5° C warmer drier prairie expands	Hypsithermal, Altithermal, Climatic Optimum	Buol et al. 1989:180; Selby 1985
3000-1200 B.C.	-1-2°C cooler wetter		Buol et al. 1989:180; Selby 1985
1050-750 (A.D.900-1200)	warmer droughts	Medieval Warm period	Buol et al. 1989; Fagan 2000
650 (A.D.1300)	cooler	Little Ice Age	Fagan 2000
350 (A.D.1600)	warmer	variation within the Little Ice Age	Buol et al. 1989
250 (A.D.1700)	cooler	variation within the Little Ice Age	Buol et al. 1989

Organisms (Flora and Fauna)

Immediately south of the Pleistocene ice sheets, tundra, loess semi-deserts, and boreal forests existed over much of the current project area (Overpeck et al. 1992; Selby 1985). Boreal forests were characterized by coniferous species such as pine, spruce, and fir. Tamarack may also have been present. In an immature sandy environment such as the glacial outwash of the project area, jack pine (*Pinus banksiana*) particularly would have been adapted.

As the climate warmed, the boreal forests slowly changed to sub-boreal then to deciduous. Trees that may have forested the project APE include cottonwood (*Populus deltoides*), silver

maple (*Acer saccharinum*), ash (*Fraxinus*), sycamore (*Platanus occidentalis*), willows (*Salix*), beech (*Fagus grandifolia*), walnut or butternut (*Juglans*), sugar maple (*Acer saccharum*), and tulip poplar (*Liriodendron tulipifera*). Understory species might have included sassafras (*Sassafras albidum*), pawpaw (*Asimina triloba*), hawthorn (*Crataegus spp.*), and wild plum (*Prunus Americana*) (Dickman and Leefers 2003). Other plants common to riparian environments include Jerusalem sunchoke (*Helianthus tuberosus*), cattails (*Typha latifolia*), and river cane (*Arundinaria gigantea*).

Some of the most important botanical materials to native populations, however, were the weedy plants that grew in the disturbed soil surrounding their camps (Riley et al. 1990; Smith 1989). These were gathered for many years and, as a result, became domesticated. They are summarized in **Table 3**.

Table 3. Some Plants Domesticated by Prehistoric Native Americans

Plant	Indigenous Crop or Introduced?	Early Date	Site	Source
marshelder/sumpweed (*Iva annua*)	indigenous	4000 BP	Napoleon Hollow	Smith 1989
sunflower (*Helianthus annuus*)	indigenous	3500 BP	Higgs	Smith 1989
chenopodium (*Chenopodium berlandieri*)	indigenous	3500 BP	Cloudsplitter	Riley et al. 1990
squash (*Cucurbita pepo ssp ovifera*)	indigenous	2850 BP	Cloudsplitter	Smith 1989
maize (*Zea mays*)	introduced	AD 100	Ice House Bottom	Riley et al. 1990
beans (*Phaseolus vulgaris*)	introduced	AD 1000	Muir (Fort Ancient)	Riley et al. 1990

It is known that the Ohio River and its tributaries supported a highly variable faunal population prehistorically. The large biomass and high carrying capacity of the area was one of the significant factors which attracted man seasonally to his portion of the country from 10,000 B.C. to the present. The rich resource base would have been important in providing prehistoric subsistence and other needed materials.

During glacial periods of Quaternary times, the mammoth and mastodon were residents of the region, which was treeless tundra. Other types of large and now-extinct animals such as the giant peccary, ground sloth, as well as the bison, horse, elk, deer and beaver would also have been available to the Paleoindians (Shelford 1963; Wayne and Zumberge 1965). By approximately 10,000 B.P., mixed deciduous forests had developed in the area of southern Indiana. The primary vegetation cover was consistent with a mesic upland forest. Hickories, oaks, elms, maple, ash, and tulip trees would have been common. From a period of 8000-4000 B.P., during the Hypisthermal Interval, the climate was somewhat warmer and drier than at the present time. Post-Hypsithermal, the flora and fauna of the area were probably typical of the Carolinian province biotic assemblage.

The black bear, elk, wolf and passenger pigeon and other animal species are no longer found in Floyd County. The white-tailed deer was a major source of food favoring the restricted valleys of

the upland for yarding during winter (Shelford 1963) and is still found in the county. The local fauna today, as well as in the past, includes such small mammals as the red fox, groundhog, cottontail rabbit, opossum, raccoon, squirrels, and beaver, as well as many species of birds, including turkey and waterfowl. Bobcat and coyote have been documented in Charlestown State Park. The population of mink, fox, and most other animals has been reduced, due to the loss of habitat and hunting.

A wide variety of fauna would also have been present from the early Holocene to early historic times. Other food sources would likely have included extensive faunal resources that would have been available to native peoples. Situated as it is along the riparian environment along the Ohio River, inhabitants of the region would have had access to exploit a number of habitats including riverine, forest, possible meadow or prairie, and backswamp. Amphibians such as frogs and salamanders would have been available from the numerous tributaries of the Ohio Rover such as nearby Silver and Mill Creeks. Reptiles such as hard- and soft-shell turtles would have been available from land and riverine sources. From the Ohio River, numerous species of freshwater mussels and other shellfish such as gastropods were present and used by the aboriginal inhabitants. Fish including bluegill, catfish, bass, and shovel-nosed sturgeon, and arthropods such as crawfish could have been extracted from the river (Jordan and Evermann 1902). Studies of various Indiana and Kentucky shell mounds have yielded remains suggesting that major fish populations used prehistorically were the drumfish (*Applodinotus gruniens*) and catfish (*Ictalurus sp.)* which fed upon the mussel populations. In addition, the riparian environment would have included many bird species, especially during spring and fall migrations. These would have included herons, gulls, terns, grebes, ducks, and sandpipers as well as migrating warblers and flycatchers. Bird species would likely have included red-tailed hawks, ruffed grouse, great horned and eastern screech owl, pileated woodpecker, wild turkeys, and blue jay among others (Kricher 1988:12). A variety of ducks and geese also could have been present during the Fall and Spring migrations.

Conditions prevailed in present form from roughly 1000 B.C. to the present. This period contains the major segments of the Adena, Woodland, Mississippian, and Fort Ancient cultural stages wherein horticulture and agriculture were introduced into the area. Floral and faunal species have remained relatively constant until modern times when Europeans began to severely modify the regional ecology (Delcourt and Delcourt 1981).

During the early settlement period, much of Indiana's forests were cleared for agriculture. Fortunately, the common practice used in Indiana during this period was not clearcutting. Clearcutting leads to massive sheet erosion, thereby depleting much of the fertile topsoil. David Thomas, a botanist from 1816, documented the common practice of land clearing during this time--felling numerous trees at once, but burning the stumps *in situ* (Lindsey 1966). Not only did this help anchor the soil during early clearing, it also increased fertility by adding nutrients back into the soil. The felling of so many trees within a relatively short period was detrimental to many other aspects of the biotic community, including the extinction or expulsion of some native animals. Wild turkeys were gone from Indiana by 1900 (to be reintroduced later), buffalo by 1825, and elk by 1830. Extinctions included the Carolina parakeet and the passenger pigeon by 1914 (Lindsey 1966).

Today, along the tributaries of the Ohio River, are stands of cottonwood, sycamore, water maple, black willow, and elm. On inland terraces, white oak, black oak, yellow poplar, hickory, beech, and hard maple predominate. On the drier portions of the area maple, oak, sweetgum, tupelo, sassafras, black locust, and ash occur. The American chestnut, a common species during prehistoric times as a canopy tree, has been reduced to an understory tree by a blight introduced into North America in historic times (Kricher 1988:58). Specifically at Loop Island,

black locusts dominate the upper levels along with box elder and hackberry, with an understory of hawthorne and honeysuckle. Closer to the Ohio River, water maples become dominant, with cottonwood and mulberry. On the shores of the river sycamore and willow are found.

Numerous grasses and perennials such as smartweed, goosefoot, and amaranth are found in areas that are not farmed. Many of these species were present prehistorically and were utilized to various degrees as food, construction material, fuel, and fiber.

3
CULTURAL CONTEXT

The history of human activity in Floyd County and the surrounding region of Indiana spans thousands of years. The earliest groups to leave a definitive material record of their presence were early Paleoindians who entered the region during the Late Pleistocene glacial epoch more than 10,000 years ago. Their descendants, and the descendants of other Native American groups, who migrated to the region, lived along the Ohio River for the next ten millennia. This long prehistoric era lasted until the arrival of the first European explorers and settlers in the seventeenth and eighteenth centuries during what has come to be known as the Contact period.

While cultural change is a slow and continual process, archaeologists and other researchers divide the human history of a region into distinct cultural periods. Archaeologists and historians recognize four broadly defined prehistoric periods for the Eastern Woodland and in particular the Ohio River Valley. These include the Paleoindian (ca. 10,500 to 8000 B.C.), the Archaic (8000 to 1000 B.C.), the Woodland, (1000 B.C. to A.D. 1000) and the Mississippi or Late Prehistoric (A.D. 1000 to ca. 1650). The Contact period (A.D. 1540 to 1795) began with the arrival of the first European explorers and colonists. The Historic period (1795 to Present) deals primarily with European and other non-native derived cultures.

Prehistoric Context

The prehistoric cultural sequence in Indiana follows the same general trends as documented elsewhere in the Eastern Woodland of the United States. However, given Indiana's location among different Great Lakes-Riverine cultural areas, and its geographic and environmental setting bordering the Southeast and the Upper Great Lakes area, one would expect, and indeed does find, a number of cultural manifestations and historic contexts unique to the state. Several of the latter possess a combination of traits and attributes of cultures from nearby cultural areas and similar time frames, while others are unique to the region.

Floyd County's location along the Ohio River near the Falls of the Ohio has made it an especially attractive environment for habitation for centuries. Prehistoric peoples migrated to this area and the surrounding region around 12,000 years ago, setting the basis for a rich cultural history. The area has been occupied from the Late Pleistocene epoch until the Contact period and follows the same general trends of those found in other parts of the Eastern Woodlands. Researchers typically break the prehistoric occupation span of 10,000 or so years into four relatively distinct and definable periods; the Paleoindian period (ca. 12,000 to 8000 B.C.), the Archaic period (ca. 8000 to 1000 B.C.), The Woodland period (ca. 1000 B.C. to A.D. 1000), and the Late Prehistoric (Mississippi) period (ca. A.D. 1000 to 1650). These are followed by the Contact period, marking the arrival of European explorers in the seventeenth century and initiating a dramatic shift in the demography of the region.

Paleoindian Period (ca. 12,000 to 8000 B.C.)

The first humans to leave an identifiable archaeological record in Indiana were the Paleoindians. The Paleoindians were small mobile hunter-gather groups of possibly 25 to 30 related individuals who traveled across extensive areas and therefore left little evidence of their presence (Tankersley 1989). Paleoindian sites, as a result, are small and scattered across the landscape. Previous studies have identified sites on high points overlooking river confluences, within or adjacent to river valleys, in karstic areas around sinkholes, and in rockshelters.

The basic subsistence of Paleoindian peoples required utilization of the natural resources that were available. They showed a propensity for selectively choosing high quality cherts such as Wyandotte (Seiber et al. 1989; Strezewski and McCullough 2005). They hunted a wide variety of large game animals such as mammoth, mastodon, bison, elk, and deer (Tankersley 1992), although the hunting of megafauna was rare, and few sites east of the Mississippi evidence this activity (Fagan 1991).

These peoples are recognized by their efficient chipped stone toolkit. Paleoindian sites discovered in Indiana are characterized by well-made stone tools such as fluted projectile points, bifacial tools, unifacial blades, and endscrapers. Diagnostic projectile points include Clovis, Cumberland, Quad, Beaver Lake, Agate Basin, Hi-Lo, and Plainview. Paleoindian sites documented in Indiana include the Magnet or Alton site, a multicomponent prehistoric site located on a terrace of the Ohio River in Perry County (Smith 1984) and the Potts Creek Rockshelter (Justice 2006).

Archaic Period (ca. 8000 to 1000 B.C.)

A warming climate following the Ice Age resulted in the grasslands and coniferous forests becoming replaced by mixed, deciduous forests. This caused the fauna of the environment to change as well, and consequently, human adaptation followed. The Archaic period is marked by an increase in population and a decrease in mobility. A wider range of resources were utilized for food, and supplies became more stable, allowing for localization and regionalization of Archaic cultures. For ease and continuity of discussion, the Archaic period is further divided into Early (8000 to 6000 B.C.), Middle (6000 to 3500 B.C.), and Late (3500 to 1000 B.C.).

Early Archaic (ca. 8000 to 6000 B.C.). Early Archaic cultures were quite similar to those of the Paleoindian period, consisting of small groups of hunter-gatherers exploiting the abundant natural resources of the area. A marked difference is the disappearance of fluted points from the lithic toolkit and the diversification of other stone tools. Projectile point types such as Kirk, St. Charles, MacCorkle, St. Albans, LeCroy, Thebes, etc., as well as several bifurcated-base styles are common to the Early Archaic period (Broyles 1971; Chapman 1975; Justice 1987; Lewis and Kneberg 1959). Overall, points became smaller, more diversified, and less finely made (Dragoo 1976; Justice 1987). Other tools such as awls, drills, and gouges appear, along with tools indicating utilization of plant resources such as axes and adzes. Groundstone mortars and pestles (Chapman 1975; Jennings 1968) were used for processing nuts and seeds.

Early Archaic sites are found in greater frequencies and in more varied geographic locations than Paleoindian sites, suggesting an increase in population. Early Archaic sites in Indiana include Swan's Landing (12HR304), a tool manufacturing and habitation site along the Ohio River in Harrison County (Smith 1986). In recent years, a significant Early Archaic Kirk

component at the James Farnsley site (12HR520) has been identified and investigated in Harrison County as part of the Caesar's Casino Project (Stafford and Cantin 2009).

Middle Archaic (ca. 6000 to 3500 B.C.). The climate continued to warm during the Middle Archaic period, and populations of both humans and animals continued to grow. This warming and drying period is known as the Hypsithermal. Deciduous forests appeared, replacing evergreens. An even greater variety of food resources became available, allowing Middle Archaic peoples to become increasingly sedentary or semi-sedentary, and establish seasonal or multi-seasonal occupations that resulted in the accumulations of large midden deposits. With a greater variety of natural resources, the diet became more diversified, and deer, small mammals, fish, migratory waterfowl, and a wide variety of plant foods were exploited. Middle Archaic peoples began to establish seasonally occupied sites and continued to utilize more and more of the diverse natural resources (Cleland 1966). Additionally, with a greater emphasis placed on plant resources, the first hints of agriculture are observed.

In terms of technology, the Middle Archaic tool assemblage broadened as well. Projectile points became even smaller, and side-notching was the predominant hafting technique. T-shaped drills, new groundstone tool types such as nutting stones and grooved axes became common. A well developed bone tool industry included elaborately decorated bone pins. Specialization in some activities was a factor leading to more complex social structures and status differentiation. The Middle Archaic tool assemblage continued to diversify as well, with diagnostic projectile points including Stanly Stemmed, Karnak, Godar, Matanzas, and Raddatz appearing in the Middle Archaic toolkit (Jones and Johnson 2003; Justice 1987). Projectile points continue to decrease in size with features such as side notching and straight bases becoming common. More and more groundstone tools like mortars, manos, metates, pestles, nutting stones, grooved axes, and celts are also common finds at Middle Archaic sites, indicating increased reliance on plant resources such as nuts and starchy seeds. Spear thrower weights also appear during the Middle Archaic (Jones and Johnson 2003).

Interpretation of the Middle Archaic settlement pattern in the Ohio Valley varies. Some infer Middle Archaic peoples were larger, more sedentary groups of people who occupied large base camps and small intermittent camps mainly in large river valleys to exploit seasonal resources (Stafford 1994; Winters 1969). Others postulate the Middle Archaic site pattern was created by small mobile groups that seasonally revisited the same location repeatedly over time (Boisvert 1986). Examples of Middle Archaic sites found in southern Indiana include 12CL1 (Elrod), 12FL1 (Reid), 12OR12 (the Miler A Site), and the Bluegrass Site, among others.

Late Archaic (3500 to 1000 B.C.). Late Archaic sites share many similarities with those of the Middle Archaic period, while at the same time transitioning into the Early Woodland where societies show at least a partial dependence on agriculture (Hicks 1992). The effects of the Hypsithermal moderated after 3000 B.C. and cooler, wetter climate encouraged the forest to rebound. Late Archaic populations across much of the region became more dispersed and numerous.

A notable change from the Middle Archaic period is that settlement patterns expanded beyond large river valleys to include a wider range of settings such as rockshelters, upland campsites, and smaller riverine valleys (Munson 1986). Late Archaic sites include a diverse range of types, from shallow lithic upland scatters, rockshelters, and cave sites to deep shell middens along the major rivers. Some have argued that Late Archaic subsistence strategies were scheduled in such a way as to enable the simultaneous exploitation of several microenvironments, thereby reducing the need for seasonal movement and leading to increased sedentism. However, there

is evidence that occupation at some Late Archaic sites was sporadic and short-term in contrast to that of the Middle Archaic. An increased population density, perhaps leading to pressure and competition over resources between neighboring groups, may explain the causes of this situation. Late Archaic groups experimented in horticulture, augmenting their hunter-gatherer diet with squashes and other domesticated native plant species.

The period is one of increasing regional specialization because locally varying environmental conditions triggered differential resource exploitation. This trend is reflected in changes in social and economic organization. Long distance trade networks that had their origins in the Middle Archaic period became increasingly important. The differential burial treatment of individuals in some Late Archaic mortuary areas provides evidence of a developing social stratification during this time. The Late Archaic also marked the appearance of larger multi-seasonal occupations with evidence of greater political and economic complexity. These large communities typically appear on first terraces near waterways (Markman 1991; Skinner and Norris 1981; Yerkes 1987).

Late Archaic peoples continued to diversify their utilization of the resources at hand and to develop a wider variety of tools. The Late Archaic artifact assemblage is comprised of a range of forms and raw materials. Chipped stone tools appear to have been manufactured from locally available - and usually somewhat poorer grades - of chert. Late Archaic projectile points vary from the side-notched versions of the Middle Archaic period in that the hafting element is typically comprised of straight, expanding, and contracting stems. Projectile points such as Karnak and Matanzas continued to be used, while other hafted and stemmed varieties such as McWhinney, Ledbetter, and Saratoga appear in the archaeological record (Justice 1987). Bannerstones - ground and polished stone ornaments often found in human burials - are found during the Late Archaic, and evidence of trade networks in the form of non-native materials such as copper, obsidian, and marine shell appear (Chapman and Otto 1976; Winters 1968). These exotic materials, often recovered in burials, indicate greater emphasis on mortuary ceremonialism and attest to the increased economic complexity of the Late Archaic. A variety of groundstone tools have also been recovered, including three-quarter grooved axes. Bone and antler tools are well represented from Late Archaic sites, and include atlatl hooks, fishhooks, awls, pins, and antler projectile points.

Numerous Late Archaic sites, especially those associated with shell middens, have been tested and excavated within the Falls of the Ohio area (Bader and Granger 1989; Driskell 1979; Janzen 1977; Mocas 1976; White 2004). Janzen (1977) proposed a Late Archaic settlement pattern for the Falls area based upon exploitation of multiple environmental and physiographic zones. The Terminal Archaic Riverton period is known primarily from excavations at the Villier Site along the Southwest Jefferson County Floodwall (Robinson and Smith 1979) of Louisville and from the Townsend site in the Caesars Archaeological Project area in Harrison County, Indiana (Mocas 2006). Notable Late Archaic sites in adjacent Clark County include the Clark's Point Site (12CL3) (White 2004), the Old Clarksville Site (12CL1), and the Miles Farm Site (12CL158) (White 2002).

Woodland Period (ca. 1000 B.C. to A.D. 1000)

The Woodland period is traditionally considered to be distinctive from the Late Archaic by the introduction of pottery. In truth, the transition between the two time periods is not so clear cut, since pottery has now been discovered at sites in the Midwest dating as early as 2550 B.C. Like the Archaic period, the Woodland period is further divided into Early (1000 to 200 B.C), Middle (200 B.C. to A.D. 600), and Late (A.D. 600 to 1000).

Early Woodland (1000 to 200 B.C.). The Early Woodland culture is based upon trends established in the Late Archaic, such as increased social complexity and inequality, coupled with sophisticated mortuary practices. These trends culminated in the Adena and Hopewell cultural traditions. However, technological innovations serve to differentiate the Woodland from the Archaic as a developmental stage. Traditionally, the Archaic and the Woodland lifestyles were separated by the introduction of pottery. Recent evidence however suggests that pottery may have been manufactured as early as 2550 B.C., well before the Woodland tradition. In terms of other artifacts, the ungrooved celt replaced the Archaic grooved axe, and bone beamers took the place of endscrapers. Production of thick-walled and coarse-tempered ceramics became widespread during Early Woodland times. This became more important as societies relied more heavily on cultigens and required vessels for storage and processing of plant materials. This early grit-tempered pottery was very thick and porous (Galm 1975). Hunting and gathering were still major sources of sustenance as evidenced by diagnostic projectile points such as Ledbetter, Dickson, Kramer, and Adena (Justice 1987).

In some areas, Early Woodland settlement patterns, social organization, and subsistence mechanisms remained relatively unchanged from the Late Archaic (Boszhardt et al. 1986), although a change in mortuary customs in the construction of elaborate earthen mounds occurs during the Early Woodland. The period is marked by the appearance of social or ritual spaces aside from the domestic dwellings, including earthen enclosures and burial mounds. Adena appeared during the late Early Woodland and continued into the early Middle Woodland when it intensified into the Hopewell Tradition. This ceremonial complex included the construction of large ceremonial mounds with log tombs containing the interred remains of high-status individuals. Adena practices included trade of exotic goods over vast exchange networks. Adena did not represent a distinct population, but was more likely a ceremonial tradition shared by many.

The Nowlin Mound, The C.L. Lewis Stone Mound, the earthwork complexes at Mounds State Park, and the New Castle Site all contain Early Woodland components in Indiana.

Middle Woodland (200 B.C. to A.D. 600). The transition between the Early and Middle Woodland Periods is blurry. During the Middle Woodland period, subsistence activities changed, with horticulture becoming a major supplement to hunting and gathering. An intensified form of horticulture that emphasized native plant species developed. Goosefoot, sumpweed, and sunflower were actively cultivated. Maize was not yet an important part of the diet. Hunting and gathering continued to play the major role of nutrition, with seasonal resources exploited. However, the Middle Woodland peoples became more sedentary, relying heavily on cultivated foods such as goosefoot, sumpweed, and sunflowers. In areas outside the major river valleys, settlements occurred in a wider variety of environmental settings in temporary and seasonal camps, hamlets and small villages (Ottesen 1985).

The range of Middle Woodland site types expanded to include ritual spaces, including burial mounds early in the tradition and earthen enclosures later during the period. Large-scale mound construction is indicative of significant community effort and politically complex, ranked societies. Geometric earthworks and burial mounds became more elaborate than those of the earlier Adena times. Another significant feature of the Middle Woodland period is the Adena and Hopewell tradition in which intensification of large-scale trade networks developed that brought exotic items from across North America into the region. This reached its climax with the Hopewell exchange network centered in southern Ohio and southern Indiana. Examples of ceremonial artifacts produced include obsidian knives and blades, stone platform effigy pipes, copper breastplates, earspools, and bracelets, zoomorphic and geometric mica cutouts, and

highly decorated ceramic vessels as well as gorgets, incised stone and clay tablets, pipes, barite and galena bars, and bone and shell beads. High-quality imported cherts included Wyandotte and Burlington.

Grit-tempered ceramic technology became more refined, and pottery styles ranged from rounded, wide-mouthed jars to smaller decorative forms associated with the elaborate Hopewell ceremonialism. Middle Woodland ceramics include conoidal and barrel shaped jars with flat, rounded, or pointed bottoms, with plain, cordmarked, dowel-impressed, or fabric impressed surfaces. Decorative forms are found on both ceremonial and utilitarian forms, including punctates, incising, and cordmarking, as well as zoned and stamped designs early in the period. Whereas most Early Woodland pottery was generally thick and crude, some Middle Woodland ceramics were designed for ritual or ceremonial use and exhibit thin walls and elaborate decorations. Decoration in the form of nodes, zoned incised punctuation, or incised dentate stamping have been recovered from sites of this period.

Projectile points typical of the period include expanded stem and shallow, notched points, including Snyders and Copena. Lithic artifacts attributed to the Hopewell are Snyders points, Hopewell leaf-shaped blades, small side-notched points, prismatic blades and associated polyhedral cores and ungrooved axes or celts. Towards the latter half of the period, Steuben, Lowe Flared Base, Chesser, and Bakers Creek types prevail.

The Mann Site in Posey County is an example of a Middle Woodland site in Indiana with elaborate earthworks and a village complex and artifacts made of exotic materials. The Goodall Site is another Middle Woodland site with 22 mounds in northwestern Indiana. The Middle Woodland of the Falls area is known from two major projects. Excavations at 12CL103 and 12CL92 in the Clark Maritime Centre Archaeological District (Sieber and Ottesen 1986) provided the initial look at this cultural/temporal period, and intensive excavations at the Knob Creek Site in the Caesars Archaeological Project area (Mocas 2006) resulted in refinement of the understanding of local Middle Woodland settlement and subsistence systems.

Currently, Middle Woodland data is forthcoming from the Knob Creek Site (12HR481) excavated during the Caesars Casino Site Project in adjacent Harrison County (Mocas, personal communication 2006). The Knob Creek site, which lies between Knob Creek and the Ohio River, was occupied by Woodland peoples by at least 2600 years ago with the largest occupation ended about 2000 years ago. Excavations of the Middle Woodland occupation yielded evidence of two structures. One was about 24 ft in diameter. It had many pit features as well as cleared areas for activities or living areas. The posts on opposite sides of the circular house were apparently aligned through the center post, but it is not known whether the walls and ceilings on the structures were made by bending saplings and tying them to the center post or whether the walls were vertical and separate rafters descended from the center post to rest on the wall posts (Mocas, personal communication 2006). The number and variety of associated artifacts found within and around the house indicate that it was indeed occupied. One structure was burned. It was about 21 ft in diameter but may have been destroyed before it was completed. Only half of the structure was identified. Burned soil from the walls was found in the interior. No pit features were found inside the shelter; therefore, it may not have been occupied.

Late Woodland (A.D. 600 to 1000). Whereas the lines between Early, Middle and Late Archaic and Early and Middle Woodland are blurred and often difficult to define, the transition between the Middle Woodland and Late Woodland appears more distinct. Two important changes occur, namely the development of the bow and arrow, and adoption of intensive cultivation of maize, beans, and squash.

The Late Woodland period is generally perceived to be a period of decline in the importance of the ritual that characterized the Middle Woodland period. The period was marked by distinct changes affecting the political and economic structures of the Middle Woodland and the appearance of nucleated settlements along with accelerated population growth. Earthwork construction stopped and long-distance exchange collapsed dramatically. The societies became small and dispersed. They were located in a variety of environmental settings. Settlement patterns shifted away from large riverine villages with elaborate earthworks towards smaller, nucleated settlements (Green 1987; Markman 1991) Early historic groups documented the presence of these small nucleated sites that were occupied on a seasonal basis. This shift towards smaller villages resulted in a change in mortuary practices as well, with cemeteries or clusters of small mounds appearing rather than the large mound complexes. While mounds are still present, they are small, and few appear in large complexes as was common during the Middle Woodland. The Hopewell Interaction Sphere appears to have been disrupted by the increased concentration on horticulture (Cleland 1966). The increased self-sufficiency of Late Woodland peoples required less reliance on an exchange-redistribution network (Farnsworth 1973).

In many ways, Late Woodland artifact assemblages are not very different than those of the Middle Woodland period. Ceramic styles vary during the Late Woodland, but thin, grit-tempered, harder, and thinner wares predominated. Cordmarking was a common surface treatment. There was little in the way of decoration as opposed to Middle Woodland ceramics with Hopewellian motifs.

Development of the bow and arrow is shown in the archaeological record by the appearance of small triangular-shaped projectile points such as Madison, Raccoon Side-Notched, and Jack's Reef Corner Notched (Justice 1987). This technological development greatly increased hunting efficiency, providing an important subsistence base. These tools were manufactured primarily from local cherts. Artifacts indicating the elevation of agriculture during the time period include hoes and more refined ceramics which included thinner, grit-tempered vessels for storage and processing of foods. Vessels were often cordmarked, punctated, or collared.

The Hersher Site, the Van Nuys Site, the Morrell-Sheets Site, and the Commissary Site are examples of Late Woodland sites in Indiana. Late Woodland materials were found in Clark County at the Clark Maritime Centre and in Floyd County at Cannon Acres.

Mississippi Period (ca. A.D. 1000 to 1650/Contact)

A highly productive economic base developed during the late prehistoric period within the fertile central Mississippi River Valley. The culture of the Mississippian peoples spread to the peoples of the major river valleys of the Midwest and Southeast. However, the socioeconomic structure of the Woodland Period led in part to the development of the highly organized, chiefdom-based Mississippian culture. At the Falls of the Ohio River in Indiana, the Late Prehistoric period is represented primarily by these Mississippian peoples.

Mississippian cultures were ranked societies in which individuals of elite rank in some way controlled the subsistence economy and distribution of subsistence goods. Platform mounds, plaza centers, nucleated villages with nearby hamlets, palisaded villages, and cemeteries are all characteristics of a typical Mississippian settlement. The central Mississippi Valley was the heart of the culture, but the peoples of the major river valleys of the Midwest and Southeast also followed the lifestyle. Central Indiana's Upper Mississippian culture is known as the Oliver Phase, combining the Langford and the Fort Ancient material cultures. Fort Ancient culture area

in Indiana was concentrated east of the Falls of the Ohio in the southeastern portion of the state.

The population in the villages was generally large and residence was year-round and permanent. This was made possible by full scale agricultural practices supported by hunting and fishing. Cultivated crops included maize, beans, and squash. The economy supported an elite class. Burials provide evidence of social stratification or status rank in the numbers of grave goods, retainer sacrifice and even effigy figurines of those of high status. Other individuals were interred without goods, extended in shallow stone box graves or within the floors of the houses, usually below the hearth. Craft specialization was probably practiced, as shown by burial caches of tools and effigies of almost perfect duplication on pre-selected materials procured from specific sources.

The principal weapon was the bow and arrows tipped with small triangular points. Projectile points diagnostic to the period include Madison, Nodena, and Cahokia (Justice 1987). Pottery vessels were made in many specialized forms of a fine shell-tempered paste. Bottles, dishes, bowls, cups, plates, and other forms were decorated by painting, incising or molding effigy forms. Elbow pipes were used for smoking the tobacco that was also regularly grown. The finely-shell-tempered pottery also indicates craft specialization in the clear distinction between ceremonial and utilitarian wares. The Mississippian people used many forms of ornamentation such as gorgets, bracelets, and necklaces of various types of beads and pendants.

The Angel Site near Evansville, Indiana is the most easterly of the major Mississippian centers in the Ohio Valley that has survived into the twentieth century. However, there was once a significant concentration of Mississippian villages at the Falls as seen by recent excavations at the Newcomb Site (12CL2) in Clark County, Indiana and the Shippingport Site near Louisville, Kentucky. The Eva Bandman Site, also near Louisville, is another recently investigated Mississippian site that shows evidence of interaction with the Fort Ancient peoples to the north and east. Other important Mississippian sites in the Falls area include the Prather Site (12CL4) in southern Clark County, Indiana. The Prather Complex likely represents the easternmost extension of Mississippian sites along the Ohio River. Other coeval cultural expressions interacted with the region's Mississippian peoples. The Fort Ancient culture, better known from southern Ohio and north-central Kentucky, was present in the Falls area. As mentioned earlier, in what is now central Indiana, the Oliver Phase reflects a combination of Langford and the Fort Ancient material cultures.

Historic Native Americans

The presence of Historic Native Americans was recorded in Indiana as early as the 1690s, with most groups being relatively new to the area having been displaced by other Native American groups and Europeans intruding from the north, east, and south (Sieber et al. 1989; Tanner 1987). Tribes in the state in the seventeenth century included the Miami, Kickapoo, Wea, Piankeshaw, Mascouten, Wyandotte, Potawatomi, Delaware, and the Shawnee. Most Native Americans in Indiana in the seventeenth century were relatively new arrivals to the area. Most Native American tribes were removed from Indiana by the mid-nineteenth century.

Historic Context

Floyd County

Situated on the northern bank of the Ohio River, Floyd County is surrounded by Clark, Harrison, Scott, and Washington counties. Floyd County covers 150 square miles and its topography is defined by its connection to the river and gently rolling knobs (Kleber 2001). Several creeks bisect the county, including Silver, Falling Run, Big Indian, Little Indian, Richland, and Jacobs Creek. The county divides into five townships: Franklin, Georgetown, Greenville, Lafayette, and New Albany. It was created in 1819 from Clark and Harrison counties. Two theories exist as to the origin of the name (Kleber 2001). In one theory, the county received its name from Davis Floyd, a prominent Clark County politician who advocated making New Albany the county seat. He would become the county's first circuit court judge. The other theory was that the county was named after Floyd's uncle, John Floyd. This Floyd was a Kentucky native who was an American Revolution hero. New Albany is the county seat.

The region that would become Floyd County was not opened for settlement until after the American Revolution. In 1783, the Virginia Legislature awarded George Rogers Clark and his troops 150,000 acres in payment for an expedition down the Ohio River that resulted in the capture of the British and Native American forts at Kaskaskia, Cahokia, and Vincennes (Clark-Floyd Counties Convention-Tourism Bureau 2012). This immense land grant included all of modern Clark County and portions of modern Floyd County. Despite this early opening, it was not until 1804 that the first permanent settlers arrived in what would become Floyd County. Robert LaFollette and his wife settled in the area and built a cabin in what would become Franklin Township (Kleber 2001). One year later, Patrick Shields and his family moved to the region from Virginia. No longer a temporary residence along the Buffalo Trace, by 1807, George Waltz of Pennsylvania established Georgetown in the western part of the county and began selling plots of land. By 1813, three brothers, Joel, Abner, and Nathaniel Scribner, established a small community on an 826-acre tract of land that they called New Albany, named after the city of their birth in New York, Albany (Kleber 2001). It would become Floyd County's largest city and county seat.

The major path of development in what would become Floyd County was the Buffalo Trace, an early buffalo trail used by Native Americans and then explorers, trappers, and settlers that ran from Illinois to the salt licks in Kentucky. This early highway traversed across the county and provided the impetus for several settlements, including Floyds Knobs, Galena, Greensville, and New Albany. As the main trail from the Falls of the Ohio, the Buffalo Trace was Floyd County's first business route. When Indiana became a state in 1816, portions of the trail were paved, including a route from New Albany to Vincennes to Paoli. On January 2, 1819, Floyd County was officially established, and within a year the New Albany - Paoli Turnpike was a major road of transportation for travel, business, and settlement in the county. The New Albany - Paoli Turnpike was soon joined by the New Albany – Corydon Turnpike, which ran from New Albany to the state's first capital, Corydon. These two major highways initially served as the dominant method of exporting agrarian goods. The other major highway in the region was the Ohio River. Not only was it beneficial to farmers exporting the cattle and oats grown in the region, but the shipbuilding industry became the county's most successful industry in the early nineteenth century (Kleber 2001).

No actual battles of the Civil War occurred in Floyd County. However, when the Civil War erupted in 1860, Floyd County played a vital role in the life of run-away slaves. After the war, Floyd County and New Albany witnessed a huge growth in population numbers due to

immigration. Large numbers of African American, French, German, and Irish immigrants moved into the area to work in the growing farming, quarrying, and iron industries. New Albany was a prime settlement area for these workers. In addition to these industries, plate glass and textiles became successful industries in the county (Kleber 2001). The Panic of 1893 caused many of these businesses to close.

Because of the closure of many of these industries, Floyd County moved back to an agrarian economy in the twentieth century. Dairy and beef cattle, chickens, hogs, corn, wheat, and oats became the dominant exports until after World War II (Kleber 2001).

New Albany

Colonel John Paul of Madison, Indiana entered at Vincennes (or purchased from the Government) an 826-acre tract of land between the Clarkws Grant Line and the foot of the Knobs. Paul's interest in the area dated to as early as 1808, as he recognized the advantages of location for the site in terms of transportation, markets, and agricultural productivity (L.A.Williams & Co. 1882). By 1813, three brothers, Joel, Abner, and Nathaniel Scribner, established a small community on the tract that they acquired for ten dollars an acre, and named the place New Albany after the city of their birth in Albany, New York (Kramer, C. E. 2001a). It was not until three years later that the first plat of the town was drawn. New Albany was formally incorporated in 1817. The city was from the outset intended to be developed for manufacturing purposes. In time, New Albany later became Floyd County's largest city and county seat.

Because of its location on the Ohio River, shipbuilding emerged as the county's most successful industry in the early nineteenth century (Kramer, C. E. 2001a). The industry was well supplied with materials from the nearby knobs (Kramer, C.E. 2001a). Some of the more lavish riverboats, such as the Eclipse and the Robert E. Lee, were built in New Albany. More than 350 steamboats were built in New Albany between 1817 and 1867 (Kramer, C.E. 2001). The boats were designed for the southern rivers, largely due to the fact that New Albany was located below the Falls of the Ohio. As the Civil War developed, southern steamboat owners refused to order boats from Yankee markets, and the market declined (Kramer, C. E. 2001b).

> In the year 1819 two boats were built in New Albany, but the name has not been ascertained. From 1820 to 1825 but one boat appears to have been built here, but from the latter date to 1830 twelve were built. It was about this time ascertained that the very best of ship timber existed on the bottoms north of New Albany, and there being a demand for steamboats, the business grew and developed rapidly. Six of these twelve boats were built by Washington Garrison, who hailed from Cape May. He located his establishment at Gut ford on Silver Creek, in the midst of the best ship timber. It is said his boats were roughly built, but strong and substantial. As fast as they were completed he floated them down Silver creek to the Ohio, where he sold them [L. A. Williams & Co. 1882:169].

Although shipbuilding was initially the major economic force in the county, it was replaced by railroad in the early 1850s. In 1851, the New Albany & Salem Railroad opened, reaching Lake Michigan by the end of the decade (Kleber 2001). By the beginning of the Civil War, the shipbuilding business would decline, and the railroads, along with its associated industries, would pick up the slack. By 1870, when the Louisville, New Albany, & St. Louis Railroad was completed, the shipbuilding industry had almost completely died out.

New Albany was a strategic supply center for the Union armies during the Civil War. One of seven early National Cemeteries was established in New Albany by Abraham Lincoln. New Albany was also a major stopping point on the Underground Railroad (Kramer, C.E. 2001b). By the beginning of the war, the city had the highest African American population in the state. Despite the apparent image of pro-Union sentiment from the large run-away slave population and the Union encampment at the Floyd County Fairgrounds (renamed Camp Noble), the lifestyle of former slaves was harsh due to extreme poverty, prejudice, and discrimination (Kramer 2001). Many former slaves moved to the western edge of New Albany to an area known as West Union, also called "Contraband Quarters" (Kramer, C.E. 2001b). Camp Noble gained fame for serving as the training center of the 38th Indiana Volunteer Infantry Regiment that served at Atlanta, Chattanooga, Chickamauga, Perryville, Sherman's March to the Sea, and Stones River.

New Albany was the largest city in Indiana by the middle of the nineteenth century. Large numbers of African American, French, German, and Irish immigrants moved into the area to work in the growing farming, quarry, and iron industries that prospered between 1876 and 1892. New Albany was a prime settlement area for these workers. An 1890 map of the city highlights the Ohio Falls Iron Works along with a furniture factory, railroad shops and yards, a woolen mill, hosiery mill, cotton mill, the Klerner Furniture Mill, and the J. Gardner Foundry (Miller 1934). In addition to these industries, plate glass and textiles became successful industries in the county (Kramer, C.E. 2001b). Tanneries, stove works, warehouses, sawmills, breweries, and a box factory thrived at this time as well (Bruckman 1997). Around the industries were one and two-story dwellings, a few grocers, saloons and beer gardens, drugstores, and barber shops. The former dominance of agriculture gave way to these industries for almost two decades until the 1890s, at which time the Panic of 1893 caused many of these businesses to close.

The commercial district of New Albany saw rapid expansion after 1890. New public buildings were opened, and a variety of retail businesses and entertainment houses were located in the district. Also at this time, new sections of working and middle to upper class housing areas were developed to house the workers in the nearby factories. This working class district is known as the Oak Street District (Bruckman 1997; Thayer and Charron 1994:72). New Albany remains the industrial center of the county today. In addition to the agrarian economy of the majority of the county, New Albany houses many industries, including plastic moldings, automotive parts, air filters, and electrical components.

4
BACKGROUND RESEARCH

Previous Archaeological Research

Records on file at the IDNR/DHPA were reviewed prior to the initiation of fieldwork to identify recorded archaeological sites within and near the project APE, as well as previous archaeological surveys and investigations in the area. No sites have been recorded within the project APE; however. Ten sites (in bold) are located within the project vicinity (**Table 4**). Other sites in the county in the vicinity are also provided in the table below.

Table 4. Sites Located in the Vicinity of the Project APE.

Site ID/Name	Cultural Affiliation	Additional information
12CL1	prehistoric Archaic through historic	badly damaged but considered important
12CL2	prehistoric Mississippi	portions currently under excavation; NRHP eligible
12CL3	prehistoric Late Archaic and Early Historic	NRHP eligible
12CL37	unknown prehistoric	likely destroyed
12CL38	unknown prehistoric	likely destroyed
12CL638	unknown prehistoric	identified during deep testing; portions potentially NRHP eligible
12CL732	prehistoric Late Archaic	isolated find: Karnak Stemmed ppk
12CL745	unknown prehistoric	identified during deep testing
12FL1 (Reid Site)	Later Paleoindian through Middle Woodland occupations	several investigations; Middle to Late Archaic shell mound
12FL4	unknown/Archaic?	floodplain site in agricultural field
12FL5	Late Archaic, Early/Middle Woodland	floodplain site in agricultural field; undetermined prehistoric; high potential to yield information and recommended eligible.
12FL7 (Whitsell Site #1)	Archaic/Woodland	located on the terraces of the Ohio River floodplain; Knob Creek and associated Knobstone Escarpment, 500m west of Knob Creek; two projectile points were recovered, including one Adena
12FL8 (Whitsell Site #2)	Archaic/Woodland?	located on a terrace below site 12FL7
12FL10	Early Archaic	site (Kirk) located on the terraces of the Ohio River
12FL11 (Randall Site)	Paleoindian	Fluted Clovis and Beaver Lake projectiles

Site ID/Name	Cultural Affiliation	Additional information
12FL12	Archaic	On the riverbank at 400-410 feet AMSL; along 50 yards of riverbank
12FL13	Archaic/Mississippian	Archaic shell midden Mississippian as well as Mid-Late Archaic; several ceramics recovered
12FL52	unknown	located on an active floodplain ridge along the Ohio River, buried prehistoric site (midden) of unknown cultural affiliation
12FL56	Late Archaic through the Middle Woodland	prehistoric habitation occupied from the Late Archaic through the Middle Woodland, with a light historic component; (potentially eligible?)
12FL57	Middle Woodland, Late Woodland / Mississippi periods and potential Fort Ancient interaction / historic	prehistoric base camp, Middle Woodland, Late Woodland / Mississippi periods and potential Fort Ancient interaction with a light historic component; (potentially eligible?)
12FL58	Late Archaic / historic	possibly disturbed; light historic component. (ineligible?)
12FL59	unknown	prehistoric habitation of unknown age and cultural affiliation
12FL60	Unidentified prehistoric; Historic scatter	Potential for subsurface features
12FL65	historic, nineteenth- to twentieth centuries	eight residential features; eligibility undetermined
12FL77	unknown	floodplain site in agricultural field, undetermined prehistoric habitation site
12FL78	unknown	floodplain site in agricultural field, undetermined prehistoric habitation site
12FL79	unknown prehistoric	Located on a floodplain terrace; eligibility undetermined

Previous Archaeological Surveys in Immediate Area

The following discussion focuses on the archaeological investigations in the immediate area. Eight archaeological surveys have been conducted in the vicinity of the Loop Island project area since 1981. These surveys have resulted in the identification of ten archaeological sites, only one of which is located in Floyd County. The rest are located in Clark County. The surveys and the sites associated with them are described below.

The first documentation in the vicinity of the Loop Island project area was part of a 1981 legislative report for the George Rogers Clark home site (12CL3) by the Town Board of Clarksville. This document did not report any archaeological findings related to the site. Rather, it was background historical information as part of proposed legislation and appropriations related to development at the site (Gen.George Rogers Clark Homesite Committee 1981). According to the SHAARD database, site 12CL3 is a Late Archaic shell midden and early historic site overlooking the Ohio River. It has been investigated several times but not using modern methodology until 2004 (below).

It was not until 1997 that the first reported archeological investigation was conducted in the vicinity of the project area. This project was a Phase 1a literature review and archaeological sampling

project for the proposed S. Ellen Jones School/Park project in New Albany. The project was conducted by Gray and Pape and resulted in the identification of one field site (12FL65) with eight components; six privies, and two cisterns. No archaeological assessment of the site was made beyond the identification of features, but further archaeological investigations were considered warranted to make a NRHP recommendation (Miller and Jackson 1997).

In 2002, Gray and Pape conducted two surveys for the proposed Ohio River Greenway Corridor in Floyd and Clark counties. The first of these surveys was submitted in early 2002. The survey consisted of a series of bucket augers at 22.5 m (75 ft) intervals in order to assess the potential for intact cultural strata. The first survey identified two archaeological sites only one of which was located in the vicinity of the Loop Island project area. Site 12FL79 was an isolated prehistoric isolated find of unknown cultural origin located in the top 18 cm of the auger test. No additional testing was completed around this find, but it was recommended that shovel testing be conducted along the alignment that site 12FL79 was located within (Picklesimer and Pritchard 2002).

The second survey for the proposed Ohio River Greenway Corridor was reported in late 2002. This survey identified three sites including two within the vicinity of the current project area. The first site identified was within the boundary of the previously recorded site 12CL3. Thirteen artifacts were recovered from this site including flakes, fire-cracked rock, and historic debris. The artifacts were found within 90 cm of the ground surface in both auger test and shovel probes. No further work was recommended at this site because there was evidence of modern disturbances, and the portion of site 12CL3 impacted was to be capped with fill, thus protecting the deposits. The second site (12CL638) was located in what was called the Lewis and Clark Plaza. This site was identified during deep testing of the area. Shovel tests were also excavated, but no artifacts were recovered from them. Four deep trenches contained cultural material including two hearth features between 2.7 m and 3.05 m below ground surface. Sixty-seven artifacts were recovered, which mainly consisted of fire-cracked rock. This site was thought to have excellent research potential, and further work was recommended to assess its NRHP eligibility (Newhard et al. 2002).

In 2004, excavations were conducted by Indiana University – Purdue University Fort Wayne at the Clark's Point site (12CL3) in advance of the construction of a chimney for a log building on the property. Excavations were limited to a small area approximately 1.85 m by 2.45 m and 1 m in depth. The excavations found that the entire 1 m column was within the prehistoric midden within the site. Augering at the base of the excavation indicated that the midden extended to a depth of 190 cm below the current ground surface. Recovered artifacts consisted of faunal remains, lithic debitage, stone and bone tools, and fire-cracked rock. Diagnostic artifacts were recovered dating to the Late Archaic period. No further work in the area of the chimney pad was recommended but the site was considered to be eligible for listing in the NRHP (White 2004).

Excavations were also conducted in 2004 by AMEC at the Newcomb site (12CL2). Site 12CL2 was a Mississippian residential site with intact house features and burials that was eroding out of the Ohio River bank following the collapse of Emery Crossing Road. Salvage excavations were conducted to mitigate potential impacts to the archeological resources prior to restoring the road bed. At least three prehistoric house basins were excavated and hundreds of artifacts of all classes were recovered, including diagnostic pottery and stone tools. At least two burials were excavated, although they were not well preserved. It was recommended that the site be protected and that it was eligible for listing in the NRHP (Bader 2004).

In 2006, the University of Indiana completed deep testing for the proposed Lewis and Clark Park. The testing was conducted in an area adjacent to site 12CL638 and succeeded in identifying more artifacts related to it. Another previously identified site--12CL745-- also was identified. The

extension of site 12CL638, present within four trenches, was ephemeral and consisted of both lithic debitage and fire-cracked rock. This extension of site 12CL638 was not considered eligible for listing in the NRHP, and no further work was recommended. The other site--12CL745--was identified in a fifth trench and consisted of lithic debitage. Like the extension of site 12CL638, site 12CL745 was not considered eligible for listing in the NRHP (Munson 2006).

Cultural Resource Analysts conducted a survey in 2011 for a proposed Lewis and Clark Parkway extension. This survey included shovel testing and found no evidence of cultural resources present within the project area. No further work was considered warranted, and it was recommended that the project proceed (Martin 2011).

Four archaeological sites not associated with reports on file at DHPA were identified on the SHAARD database. Site 12CL1 was a prehistoric mound and village site recorded by Donald Janzen in 1972. It was first excavated in the 1930s by Gurnsey, but no records exist of this early work. Artifacts representing the Late Archaic, Woodland, Mississippi, and historic periods are present at the site. The site has been extensively damaged by erosion and looting. The site is considered significant and in need of NRHP assessment.

Sites 12CL37 and 12CL38 were identified in 1958 during the construction of SR 62 and site forms were filed by Cheryl Munson in 1973. Site 12CL37 is listed as a prehistoric village of unknown cultural affiliation. Lithic artifacts were recovered although the density was quite low. Like site 12CL37, site 12CL38 was also a prehistoric of unknown cultural affiliation with a sparse artifact collection. No NRHP eligibility is recorded for either site.

Site 12CL732 was an isolated find identified in 2003, this find consisted of a Karnak Stemmed point. As an isolated find, it was not eligible for listing in the NRHP.

Site 12CL2 is currently being excavated by AMEC (2011-2012) to mitigate potential damage from the proposed Ohio River Greenway project.

Previous Archeological Surveys Elsewhere in Floyd County

In 1992, Glenn A. Black Laboratory of Archaeology conducted a subsurface reconnaissance of the proposed location of the power transmission tower south of the Paddy's West Switching Station at the request of Louisville Gas and Electric Company (Smith 1992). One deeply buried archaeological site, 12FL52, was discovered to be present between 0.9 m and 1.2 m below surface (mbs). The site yielded only charcoal flecks and burnt clay, with several fire-cracked rocks and an occasional chert flake. However, the potential for more substantive cultural deposits was noted by the author based on investigations conducted proximal to the proposed tower location. In fact, it was unclear if the materials discovered represented a new site or was a southern extension of site 12FL46--a shell mound site located approximately 177 m to the north. Because the sheet midden observed in the single backhoe trench excavated at this site was limited in terms of revealing feature clusters previously noted in the area, the site was considered potentially eligible for listing on the NRHP (Smith 1992).

Glenn A. Black Laboratory of Archaeology also conducted an archaeological reconnaissance for a proposed marina at the Gallagher Power Generating Station property in 1993 (Kearney and Bailey 1993a). Sixteen acres were examined along Middle Creek. One site, 12FL56, was discovered. The site, which encompasses 6.4 acres, contains a primary prehistoric component dating from the Late Archaic through Middle Woodland periods, and a minor historic component dating from the early nineteenth to early twentieth centuries. It was recommended to avoid the site since the prehistoric

component was considered potentially eligible for listing in the NRHP. The historic component was judged to be ineligible (Kearney and Bailey 1993).

Glenn A. Black Laboratories returned to the Gallagher Power Station property later in 1993 (Kearney and Bailey 1993b). The survey examined 94 acres, most of which was located in a former borrow pit. One new prehistoric site, 12FL59, and three new sites with both prehistoric and historic components (12FL57, 12FL58, and 12FL60) were discovered. Site 12FL56, discovered earlier (Kearney and Bailey 1993a) was also addressed in this investigation. The prehistoric component of site 12FL56, which dates from the Late Archaic through Middle Woodland periods, was recommended for avoidance or Phase II evaluation. The historic component was not believed to be significant. The prehistoric component of site 12FL57, which dates from the Middle Woodland through Late Woodland/Mississippi periods, was also recommended for avoidance or Phase II evaluation. Again, the historic component was not believed to be significant. Site 12FL58 is a Late Archaic prehistoric site, and was recommended for avoidance or Phase II evaluation. Site 12L59 is a prehistoric site of unknown temporal and cultural affiliation. However, since it may be an extension of sites 12FL56 and 12FL57, a recommendation was made to avoid the site or to more fully evaluate its potential. Site 12FL60 contains a prehistoric component of undetermined age, and since it may also be an extension of sites 12FL56 and 12FL57, it was therefore recommended for avoidance or evaluation. The historic component at site 12FL60 was not particularly outstanding in that no concentrated area of historic occupation was noted. However, because the area lies in proximity to two residential areas that lay below soil disposal piles, the historic component was also considered potentially significant (Kearney and Bailey 1993b).

In 1995, Ed Smith and Steve Mocas of Glenn A. Black Laboratory of Archaeology conducted a series of archaeological investigations at Louisville Gas & Electric's Paddy's West substation. The investigations included deep subsurface reconnaissance, Phase II site evaluation, and Phase III data recovery (Smith and Mocas 1995). The Paddy's West Archaeological Complex consists of four sites (12FL46, 12FL47, 12FL48, and 12FL52). Three of the sites were discovered during borrowing activity; the fourth was found during a Phase I archaeological reconnaissance. The complex lies between Ohio River miles 612 and 613 in the floodplains of the Ohio River and Middle Creek. Site 12FL46 is a multicomponent site containing deeply buried Early Archaic features, a shell midden dating to the Middle and Late Archaic periods, and a historic component containing at least one intact feature--a cistern. Site 12FL47 had been seriously impacted during construction. Several features of unknown temporal/cultural affiliation were observed. Site 12FL48 was found to be a multicomponent site dating to the Terminal Archaic-Early Woodland transition period. The site contained numerous features within a midden up to 1 m thick. Site 12FL52 contains undetermined prehistoric deposits buried beneath 0.9 m of alluvial overburden. This archaeological project yielded significant information on a number of temporal occupations along Middle Creek in this part of the Ohio River Valley, specifically relative to the Early Archaic component, as well as the Middle-Late Archaic periods. The Terminal/Early Woodland specialized occupation of site 12FL48 was considered to be a site type that was not well represented in the area. Following the investigation, intact portions of each site remained, and careful management of these resources in the future was recommended (Smith and Mocas 1995).

3D/International Inc. Environmental Group conducted emergency archaeological excavation at site 12FL1, the Reid Site, in 1995 (Benz and Stone 1996). A portion of this highly significant site was inadvertently impacted during a permitted sand and gravel quarry operation by Silver Creek Sand & Gravel Company. Emergency excavations began by placing 50-x-50-centimeter (cm) shovel tests and auger probes in predetermined locations. Following this, 2-x-2-m hand-excavated test units were placed along the edge of the gravel pit.

The Reid Site had been studied at several times in the past. In 1972, Janzen reported the site to consist of multiple cultural strata with deposits of shell up to 14 ft thick (Janzen 1972 (Janzen 1977). A Phase I survey conducted by Duerksen surveyed 50 acres, including the Reid Site, and found that highest concentration of artifacts was directly north and northeast of the shell mound (Duerksen and Bergman 1995). This corresponds with the area inadvertently impacted. The emergency archaeological project concluded that there were significant intact buried deposits present beyond the limits of the shell mound proper, and the investigators recommended avoidance or additional archaeological investigation (Benz and Stone 1996).

Archaeological Resources Management Service of Ball State University conducted additional archaeological data recovery at the Reid Site (12FL1) in 1998 (Angst 1998). The project included the excavation of 15 2-x-2-m blocks along the damaged edge of the shell mound. A series of prehistoric and historic occupations were documented, ranging from the Late Paleoindian period through historic times. The major occupation, however, dated to the Middle and Late Archaic periods. Middle Woodland materials were represented by Falls Plain ceramics, as well as another related unnamed type. The cultural deposits in the area investigated were mixed, and only two small shell features were encountered. Nonetheless, the investigation yielded some important information regarding the time depth represented at the site and its potential for significantly contributing to future research (Angst 1998).

The projects just described demonstrate the unique richness of the Floyd County along the Ohio River.

Primary Document Research

Maps and historic aerials of the region were examined for evidence of historic landowners and/or possible buildings within the APE. The following maps and aerials are held at the New Albany Floyd County Public Library, Floyd County Courthouse, and Clark County Courthouse in Indiana (**Table 5** and **Table 6**). Some may also be found online at the websites of the Kentucky Geological Survey and Indiana University Libraries.

In addition to historic maps, CIA reviewed other primary documents related to the project area to determine historic ownership and possible uses of the property. Property records for Parcel 008-54400-21 (**Figure 9**) were researched online at the website of the Floyd County assessor and at the New Albany, Indiana offices of the assessor and recorder. Caron's city directories, vital statistics, and census records were reviewed on the website of Ancestry.com. Combining information found from the offices of the assessor and recorder as well as map research, the chain-of-title was determined (**Table 7**). The researched deeds go back to the early to mid-twentieth century, which is as far as the approximate date of artifacts and is the only period in which a building is depicted in the area (USGS 1951).

Table 5. Floyd County, Indiana Maps Reviewed

Date	Title	Cartographer
1786a	Plat of Grant 28, Illinois Grant	William Clark, P.S.
1786b	Plat of Grant 29, Illinois Grant	William Clark, P.S.
1854	Map of the City of New Albany	Horace B. Wilson
1859	Map of Floyd County, Indiana	P. O'Beirne & Co.
1875	Map of Clark County, Indiana	George W. Davis
1886	City of New Albany	The Sanborn Map Co.
1891	City of New Albany	The Sanborn Map Co.
1898	Map of Floyd County, Indiana	E.B. Coolman
1905	City of New Albany	The Sanborn Map Co.
1935	Land Use Map of New Albany, Indiana, Real Property Inventory	Shirley N. Duer
1939	7.5' *New Albany Indiana-Kentucky* topographic quadrangle	USGS
1946	7.5' *New Albany Indiana-Kentucky* topographic quadrangle	USGS
1951	City of New Albany (revised from 1905)	The Sanborn Map Co.
1951	7.5' *New Albany Indiana-Kentucky* topographic quadrangle	USGS
1955	7.5' *New Albany Indiana-Kentucky* topographic quadrangle	USGS
1964	McAlpine Pool Reach Kentucky and Indiana	USACE
1965	7.5' *New Albany Indiana-Kentucky* topographic quadrangle	USGS
1971	7.5' *New Albany Indiana-Kentucky* topographic quadrangle	USGS
1982	7.5' *New Albany Indiana-Kentucky* topographic quadrangle	USGS
1992	7.5' New Albany *Indiana-Kentucky* topographic quadrangle	USGS

Table 6. Floyd County, Indiana Photographs Reviewed

Date	Description	Source
1928	aerial view of loop, black and white	A. W. Goodman
1937	flooding of industrial area	A. W. Goodman
1946	aerial view of loop, black and white	A. W. Goodman
1963	aerial view of loop, black and white	A. W. Goodman
1988	aerial view of loop, black and white	A. W. Goodman
2003	Moser Co. and Loop, color	A. W. Goodman
2003	aerial view of loop, black and white	A. W. Goodman
2004	aerial view of loop, color	A. W. Goodman

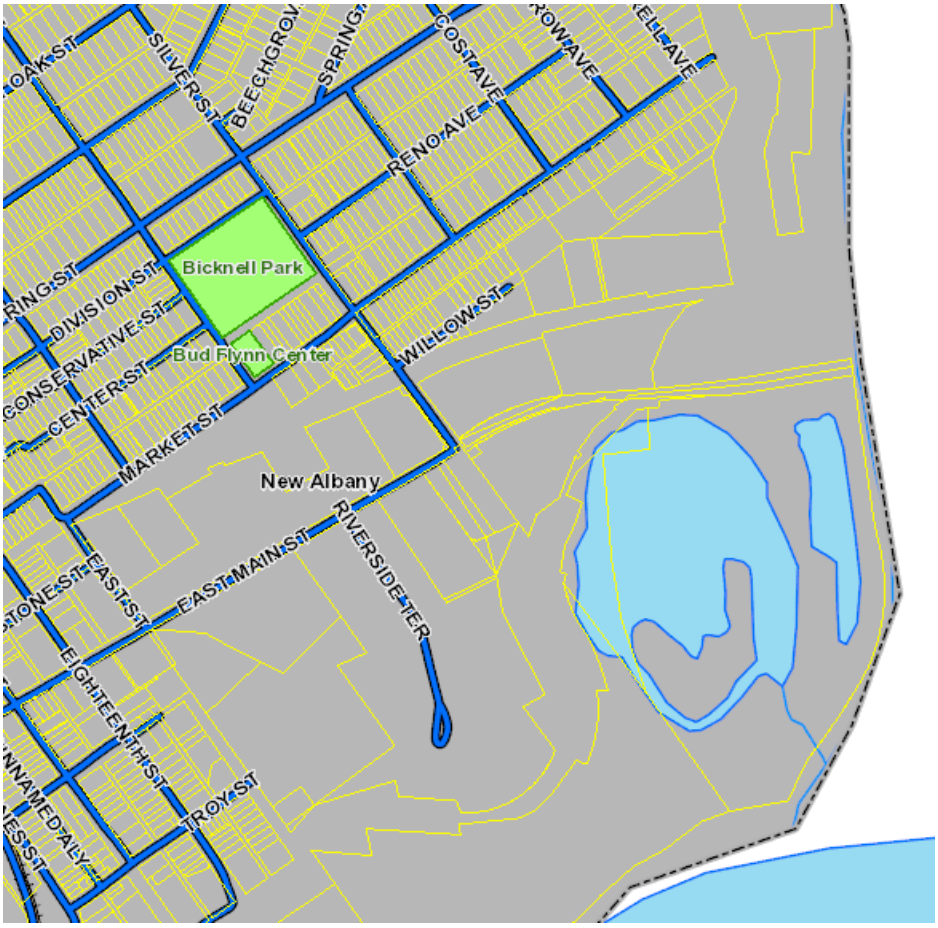


Figure 9. Loop Island project site, parcel 008-54400-21, part of 29 Illinois Grant. Floyd County, Indiana property assessor.

Table 7. Ownership History of Parcel 008-54400-21 Containing Loop Island and Archaeological Sites.

Owner	Description	Date	Source / Note
Levi Todd	29 Illinois Grant	1786	Clark Plat
John Knepfley	41.94 acres of 29 Illinois Grant	1854	Wilson Map
J.K & T.C.	"Loop Island" and surrounding land	1859	O'Beirne Map
Yeresse Adeline	Only Loop Island mapped as "12" as part of Clarksville	1873	Davis Map
Val Kelley	45.72 acres of 29 Illinois Grant	1898	Coolman Map
Indiana Leather Co. (aka Geo. Moser Leather Co.)	East of Silver Street (Adjacent to Loop Island)	1915	Caron's City Directory
Conrad-Kammerer Glue Co. Inc.	$1 lease for outlet from Moser's Leather Co.	10/4/1916	Deed Bk 3 P 257
Conrad-Kammerer Glue Co. Inc.	West of Silver Street (Adjacent to Loop Island)	1917	Caron's City Directory
Julius C. Moser and Irma T. Moser, his wife, and Edward C. Ruoff [then treasurer / later president of Glue Co.] and Anna G. [Buzby] Ruoff, his wife	44.22 acres of 29 Illinois Grant	?	1914 Julius, George Jr., and Karl Moser assumed ownership of Tannery after father's death.
New Albany Trust Co.	44.22 acres of 29 Illinois Grant	3/2/1938	Deed Bk 85 P 529
Union National Bank, Trustee for Geo. Moser Leather Co. and Conrad-Kammerer Glue Co. Inc.	44.22 ac. of 29 Illinois Grant "next to Kelley's farm…"	11/21/1938	Deed Bk 101 P 575
Geo. Moser Leather Co.	All of interest of Conrad-Kammerer Glue Co. Inc. in 44.22 acres of 29 Illinois Grant	7/29/1968	Deed Bk 188 P 576
Geo. Moser Leather Co., W. Eugene Clayton, President	44.22 acres of 29 Illinois Grant	10/8/1969	Deed Bk 194 P 337

Owner	Description	Date	Source / Note
Moser Leather Co. Inc.	44.22 acres of 29 Illinois Grant	12/29/1984	Mortgage Bk 11 P 395
Caldwell/Moser Leather Co. Inc.	45.32 acres of 29 Illinois Grant	8/28/1987	Deed Bk 14 P 8670
United States Leather, Inc.	45.32 acres of 29 Illinois Grant	11/13/2000	Online Record
Caldwell & Moser Leather Co. Inc.	45.32 acres of 29 Illinois Grant	1/22/2001	Online Record
Shield Acquisition, LLC	45.32 acres of 29 Illinois Grant	10/8/2002	Online Record
A.W. Goodman & Associates, Inc.	45.32 acres of 29 Illinois Grant		

The land that includes Loop Island was first surveyed in 1786 by William Clark as Grant 28E (the grant was divided A through E) and Grant 29 of the Illinois Grant. Grant 28E was surveyed for Col. M. Adams and includes Silver Creek (**Figure 10**). Surveyed for Levi Todd and filed at the Clark County surveyor's office, Grant 29 shows Silver Creek and reads (**Figure 11**):

> Surveyed for Levi Todd 500 acres of land in the Illinois Grant N. 29 being part of the quota allowed him by the Board of Commissioners. Beginning at En a maple and two white ash trees on Cane Run and in a line of the town land running thence north 40° west 384 poles crossing Silver Creek to Eq two beeches and an elm, thence south 50° west 222 poles to Er three beeches and a dogwood, thence south 40° east 366 poles to Silver Creek at Ex thence down the creek with its meander 64 poles to Ey three hickories on the lower side of the creek near its mouth, and in a line at the town land, thence with said line north 16 poles crossing Silver Creek twice to Eo a sweet gum, beech and sugar tree, thence east crossing the creek again 122 poles to the beginning.
>
> W. Clark
> 1 March 1786

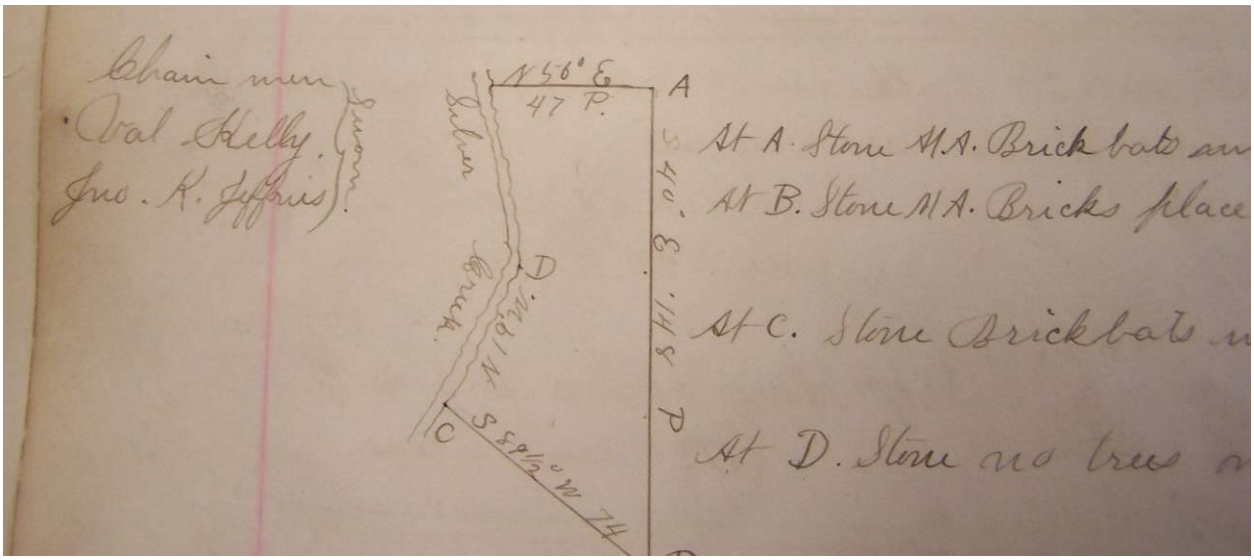


Figure 10. Plat of Grant 28E, Illinois Grant, surveyed for Col. M. Adams by William Clark, showing Silver Creek next to future site of Clarksville (Clark 1786).

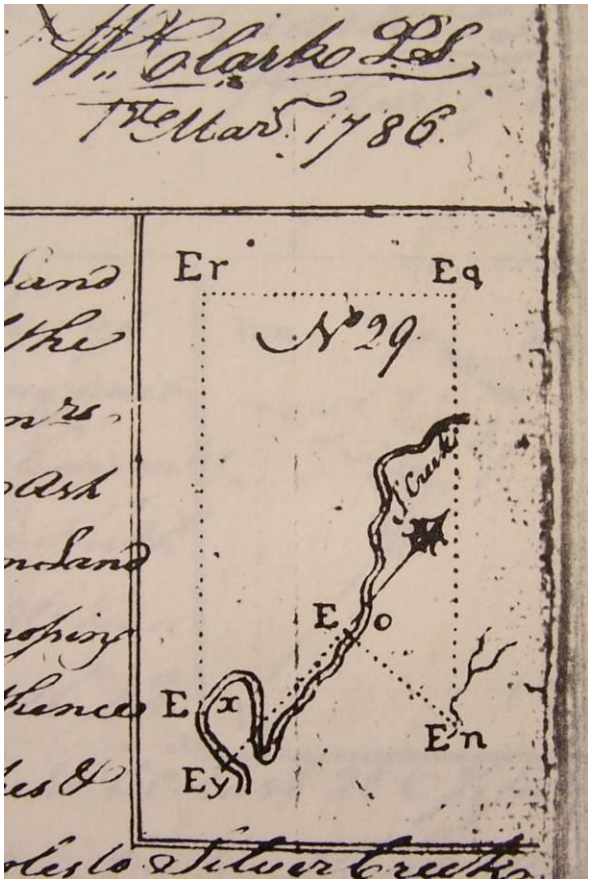


Figure 11. Plat of Grant 29, Illinois Grant, surveyed for Levi Todd by William Clark, showing Silver Creek next to future site of Clarksville (Clark 1786).

The Maine 1854 and O'Beirne 1859 maps of New Albany show only waterways, roads, property boundaries, and in the case of large parcels, property owners (**Figure 12 and Figure 13**). It does not show the location of buildings. The name John Knepfley appears as the owner of parts of Grant 28 and 29, including Loop Island. According to city directories (1848-1874), he was a jeweler with a shop downtown and owned land all over the county. The maps also show E. R. Day as owner of part of Grant 28 within the project area. In the 1859 map, Knepfley co-owns the land, which is labeled with the initials "J.K. & T.C." (**Figure 13**).

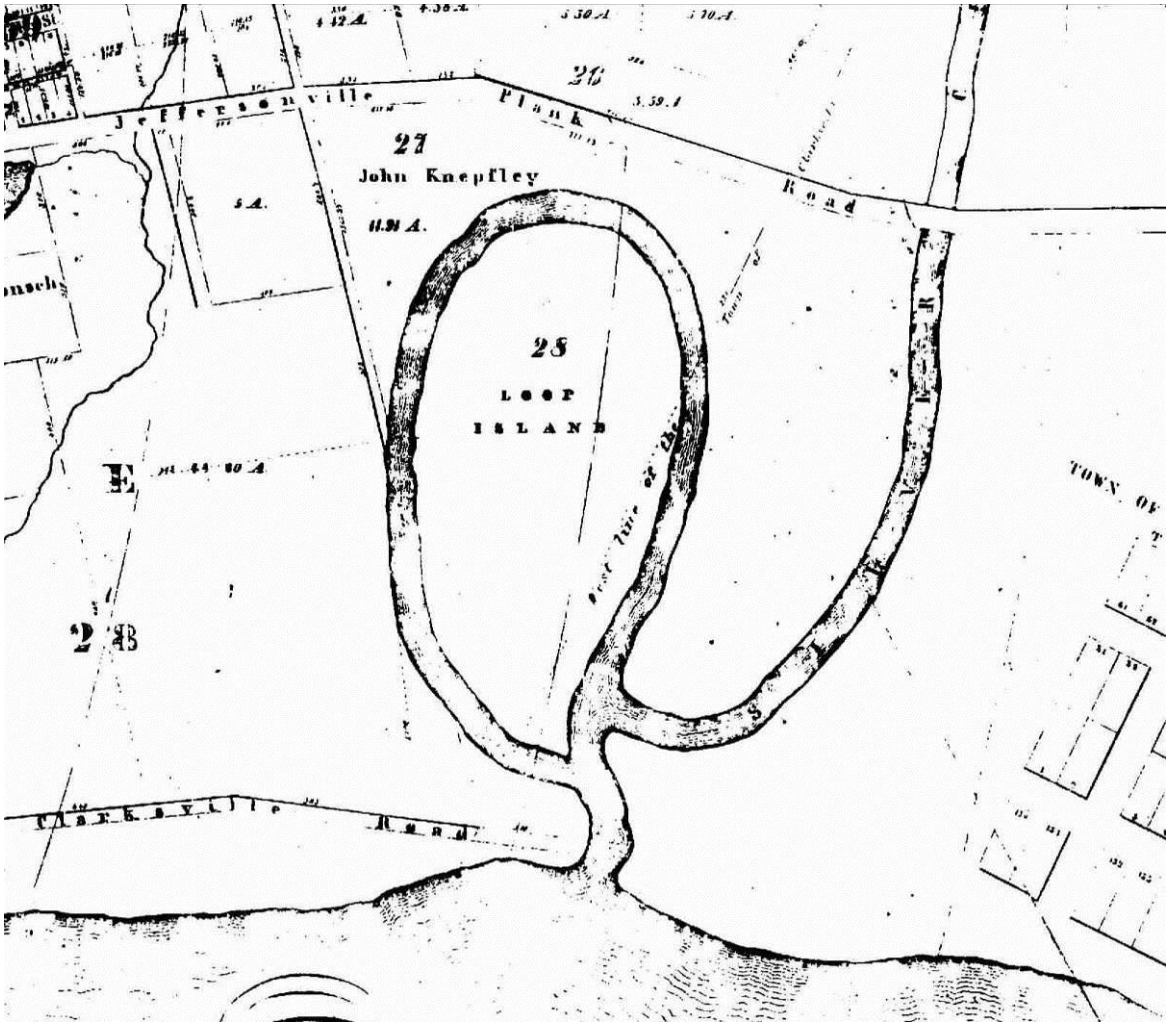


Figure 12. Map of the City of New Albany, showing John Knepfley as the owner of parts of Grants 28 and 29 (Wilson 1854).



Figure 13. Map of Floyd County, Indiana, showing J.K & T.C. as the owners of parts of Grants 28 and 29 (O'Beirne and Company 1859).

Although part of New Albany, an 1873 map of neighboring Clark County includes Loop Island as part of Clarksville with the name Yeresse Adeline. This name does not appear in census records or directories.

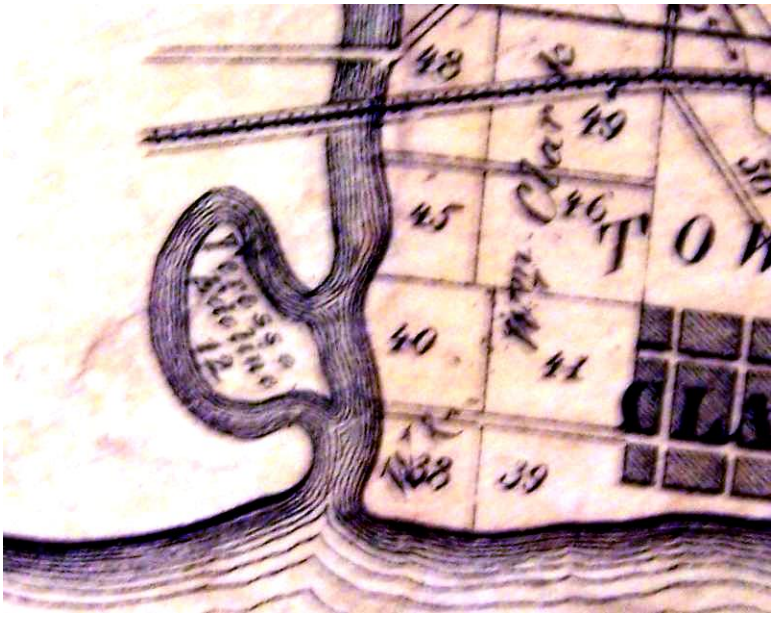


Figure 14. Map of Clark County, Indiana, labeling Loop Island "Yeresse Adeline" and "12" as part of Clarksville (Davis 1875).

Beginning in 1886, the Sanborn Fire Insurance Co. began mapping the City of New Albany. The first two editions did not include the project area, indicating that there was no major industrial development at the time (**Figure 15 and Figure 16**). Businesses that would later occupy the area and neighboring lots appear in the Sanborn index and Caron City directories as located in other parts of the city. A countywide map in 1898 (Buford) shows Val (Valentine) Kelley as owning 45.22 acres including Loop Island (**Figure 17**). This map depicts boundaries but not buildings. His immediate neighbor to the west is E. R. Day who appeared on earlier maps. Kelley does not appear in the city directories or census but later deeds refer to Kelley's farm, indicating he used the area for agriculture.

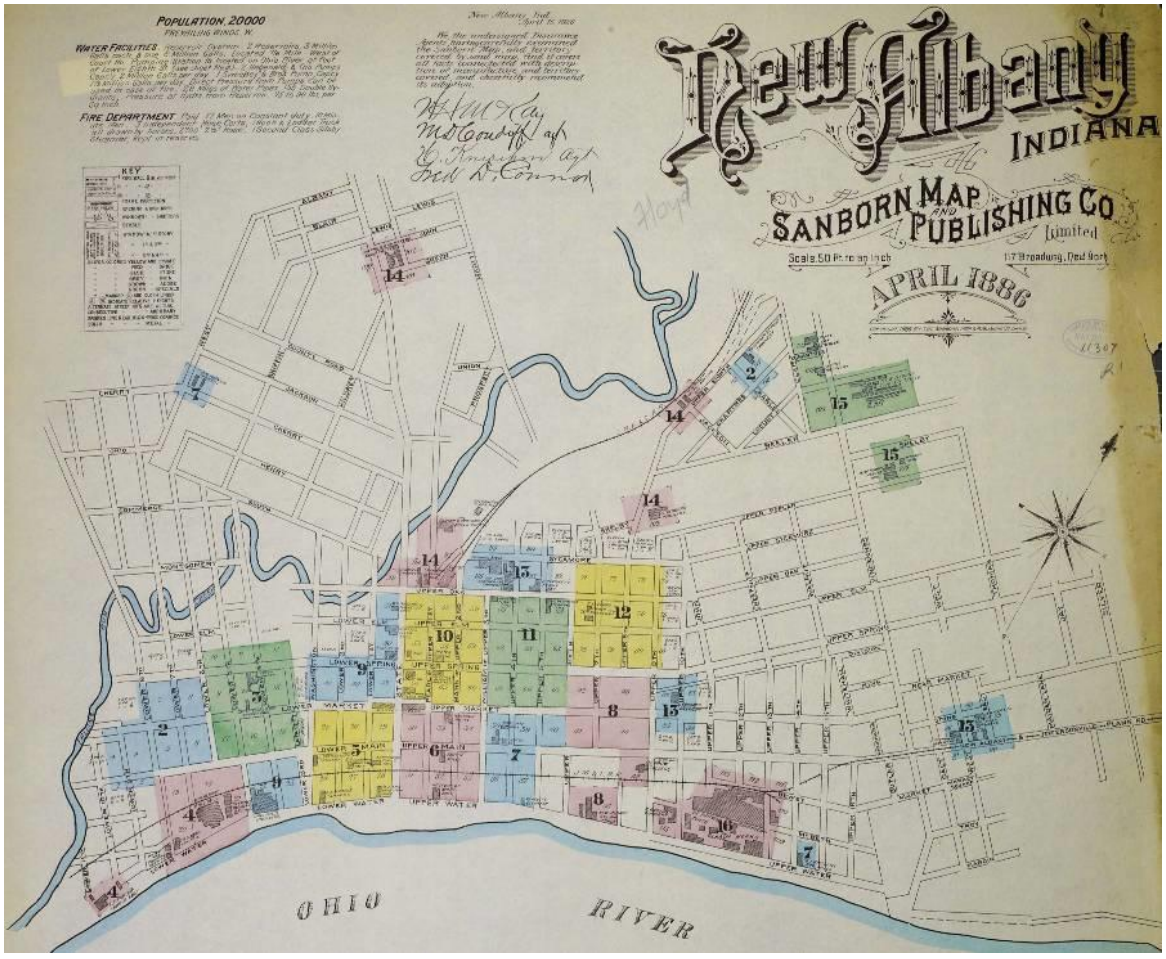


Figure 15. Index of Map of City of New Albany, Indiana, showing industrial development has not yet occurred in Grant 29 (Sanborn Map Co. 1886).

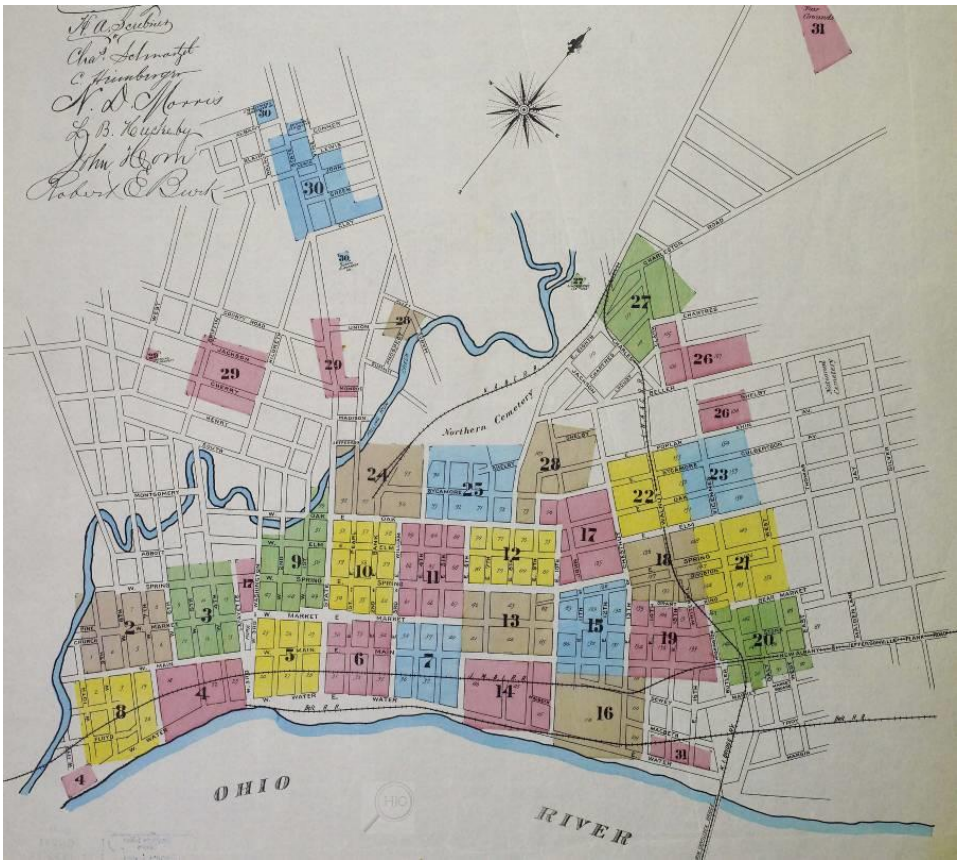


Figure 16. Index of Map of City of New Albany, Indiana, showing industrial development has not yet occurred in Grant 29 (Sanborn Map Co. 1891).



Figure 17. Map of Floyd County, Indiana, showing Val Kelley as owner of undeveloped 45.22 acres, including Loop Island (Coolman 1898).

In 1905, the Sanborn Co. documented future owners of the project area and the area north of Loop Island as still operating in other parts of the city. Specifically Geo. Moser Leather Co. operated at 8th and Culbertson streets (Caron 1888-1913) and the Conrad-Kammerer Glue Co. on Green between State and Vine (Caron 1888-1915). Page 26 of the 1905 map did not include the project area, but did include the businesses east of Silver Street north of the track. They were the Todd Manufacturing Co., which made hames, chains, single trees and saddlery hardware, and the Indiana Veneer and Panel Company, which made table tops. Moser's future site on land immediately northwest of Loop Island remained mostly undeveloped with only a smaller boiler house at the site.

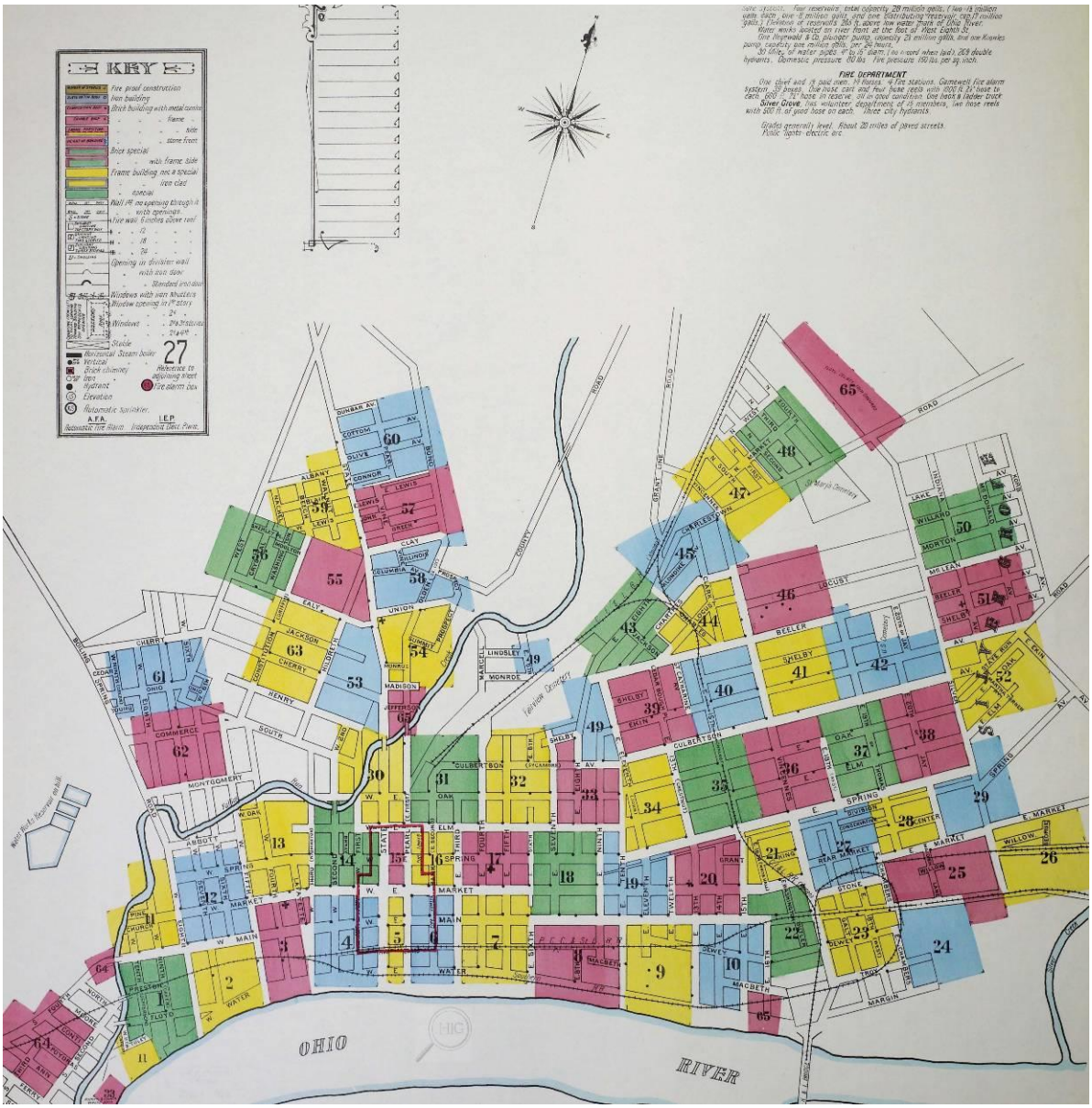


Figure 18. Index of Map of City of New Albany, Indiana, showing first development near Grant 29 (Sanborn 1891).

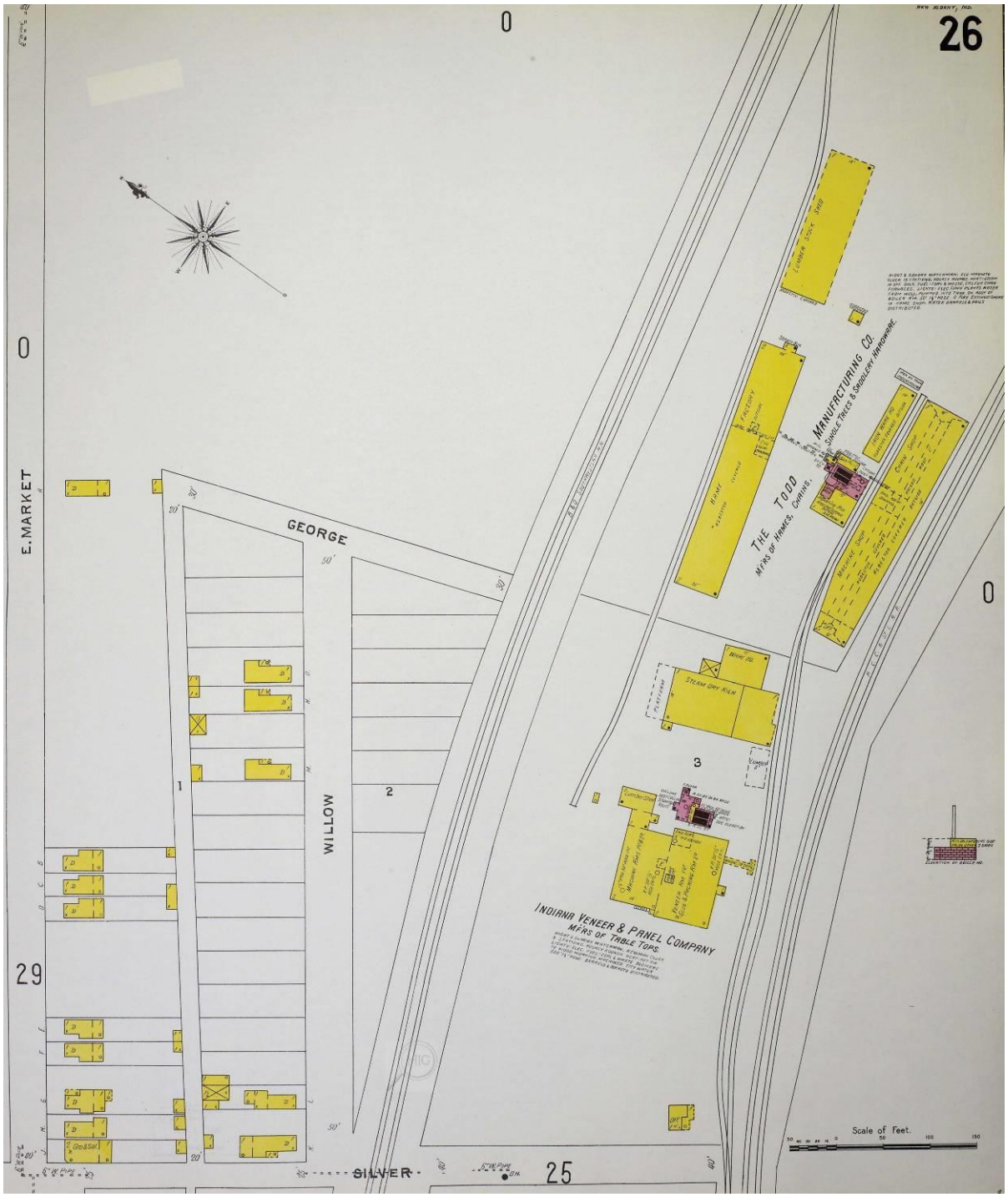


Figure 19. Page 26 of Map of City of New Albany, Indiana, showing first industrial occupants, Todd Manufacturing Co. and the Indiana Veneer and Panel Company near Grant 29 (Sanborn 1891).

The Sanborn Co. continued to revise the 1905 map of the city by overlaying sheets on the original until 1951, making it difficult to determine when exactly particular buildings were built (**Figure 20**). According to Caron's City Directories, the Moser Family moved their tannery to the east side of Silver Street between 1913 and 1915 and briefly renamed it the Indiana Tannery Co., and the Conrad-Kammerer Glue Co. Inc. moved to the neighboring lot on the west side of Silver Street. The Indiana Historical Society's history of the Moser Co. states (http://www.indianahistory.org/our-services/books-publications/hbr/caldwell-moser-leather.pdf):

> George Moser immigrated to the United States from Germany as a teenager in the late 1860s. He settled in New Albany, where his elder brother ran a tailoring business, and learned the tanner's trade under August Barth, who had established Barth's Tannery on East Tenth Street in 1864. After ten years with Barth, Moser purchased the Lockwood Brothers tannery at 272–278 East Eighth Street in 1878. He enlarged and improved it and went into business for himself. In July 1891 Moser brought his nephew John M. Moser into the firm as a partner and changed the name of the tannery to George Moser & Company. By 1892 the company employed thirty to thirty-five men, sold its products to jobbers across the country, and was handling about 15,000 medium-weight hides per year.
>
> Moser specialized in high-grade leather for harness and collar makers; the company marketed its product as Hemlock Collar Leather. In 1900 Charles E. Moser assumed his brother John's interest in George Moser & Company. In 1905 [the date is actually 1915 according to the city directory and evidence in deeds] George opened an additional leather plant, which he named the Indiana Leather Company, on Silver Street, south of the Pennsylvania Railroad. Fire destroyed the East Eighth Street tannery in 1914. George died the same year, and his heirs renamed the remaining Indiana Leather Company the George Moser Leather Company. Eventually George Moser's sons George Jr., Julius, and Karl joined the company, but it was George's partner (and nephew), Charles Moser, who assumed the presidency. By 1936 the George Moser Leather Company covered nearly eight acres and employed approximately one hundred workers. The company was a wholesale leather manufacturer, tanning hides purchased by the carload and converting them into leather for shoes, belts, or saddles. In the 1980s the company became the Caldwell/Moser Leather Company.
>
> In the 1990s the company continued to tan leather in an old-fashioned manner, with a four-week treatment in a solution of water and tree bark from South America. While the traditional way costs more, the leather lasts longer, and the process does not harm the environment as does the chromium-salt process used by most tanneries. In 1998 the company employed seventy and forecast sales of $12 million. Jim Head held the position of general manager. Leather from the tannery was used in Klein tools, G. H. Bass shoes, and Harley-Davidson motorcycle saddlebags.

The Conrad-Kammerer Glue Co. operated from 1880s to 1950s. On November 9, 1953, a Louisville paper reported, "Glue Company Quits... the old Conrad Kammerer Glue Co., Inc., producers of animal glues, which goes back about three generations, is in receivership and has been advertised for sale..." (Unknown 1953)

In 1880 (USBC) in New Albany, Nannie Ruoff Kammerer was a 25-year-old widow keeping house and living with her three young children (2, 6, and 8), her mother, and a bookkeeper, 32-year-old Philip Conrad. In the 1888 Caron's City Directory, she was the president of the Conrad-Kammerer Glue Co. then located on Green Street between State and Vine. By the 1917

publication of Caron's directory, the company expanded and moved to the west side of Silver Street near Moser's. The previous year, it leased an outlet from the Moser Leather Co. (**Table 7**). Kammerer's nephew, Edward C. Ruoff, worked for her and eventually became president of the company after her death.

As producers of animal glue, it is likely that they moved to this location to work more closely with Moser's tannery which would have used animal glue in the production of its products. At some point, the two purchased the project area together. This date has not been identified, but in 1938, the two created a trust that held the land (**Table 7**). The trust held the land that includes the archaeological site for 30 years from 1938 to 1968, when Moser purchased the Glue Co.'s remaining interest. This was 15 years after the Glue Co. reportedly closed. Moser's and its successive companies owned it until 2001.

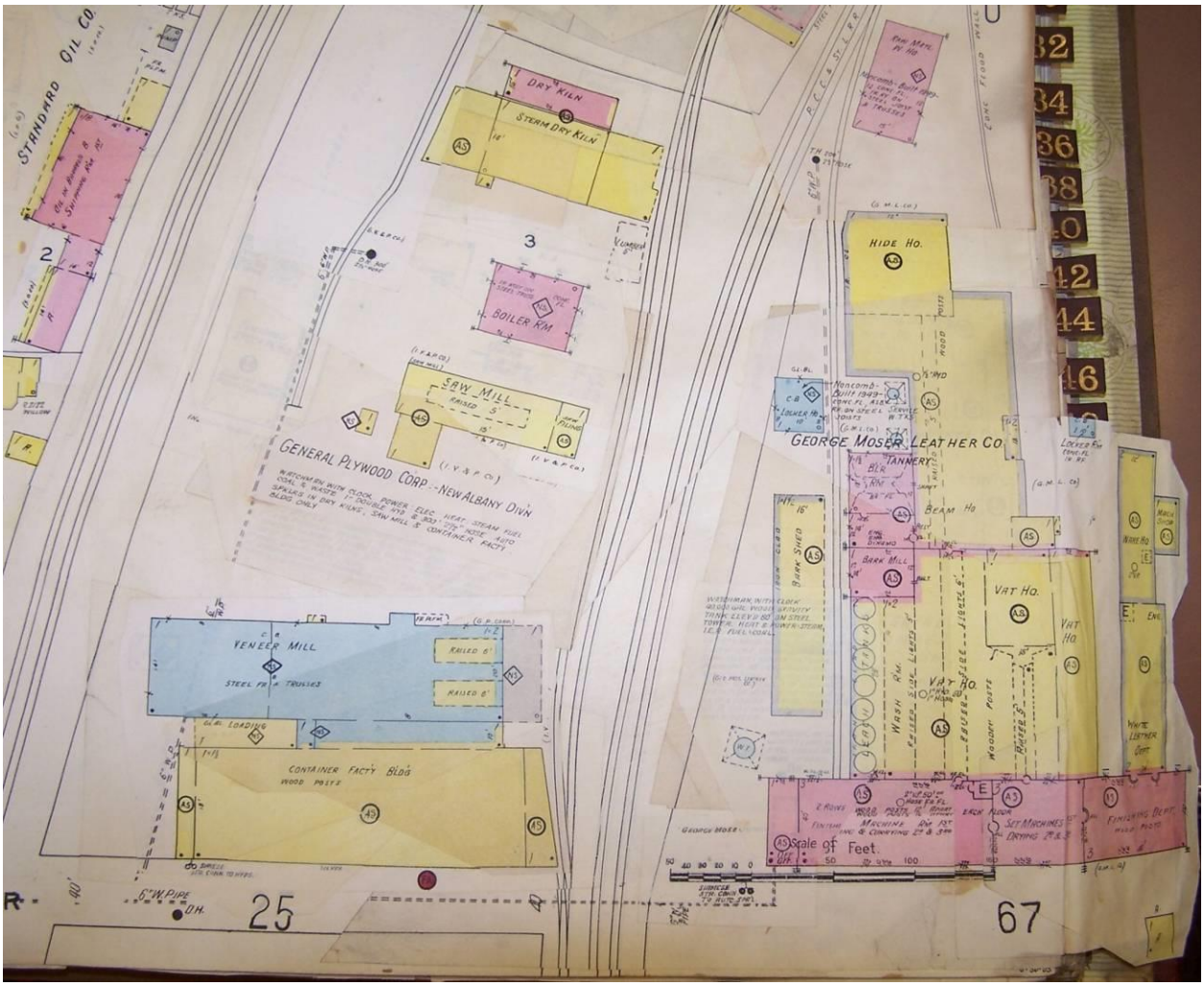


Figure 20. Page 67 of Map of City of New Albany, Indiana, showing George Moser Leather Co. which moved east of Silver Street and immediately northwest of Loop Island around 1914 (Sanborn Map Co. 1951).

From the 1920s onward, aerial photographs of the project area were periodically taken. The earliest reviewed was from 1928, which shows a road crossing the southern railroad track from the Todd Manufacturing Co. to the parcel including the archaeological site (



Figure 21).



Figure 21. 1928 aerial photograph. Photograph courtesy of Mr. Al Goodman.

Several maps between 1934 and the 1950s depict transportation routes but no buildings. These were reviewed but not extremely useful. **Figure 22** is one such example from 1935.

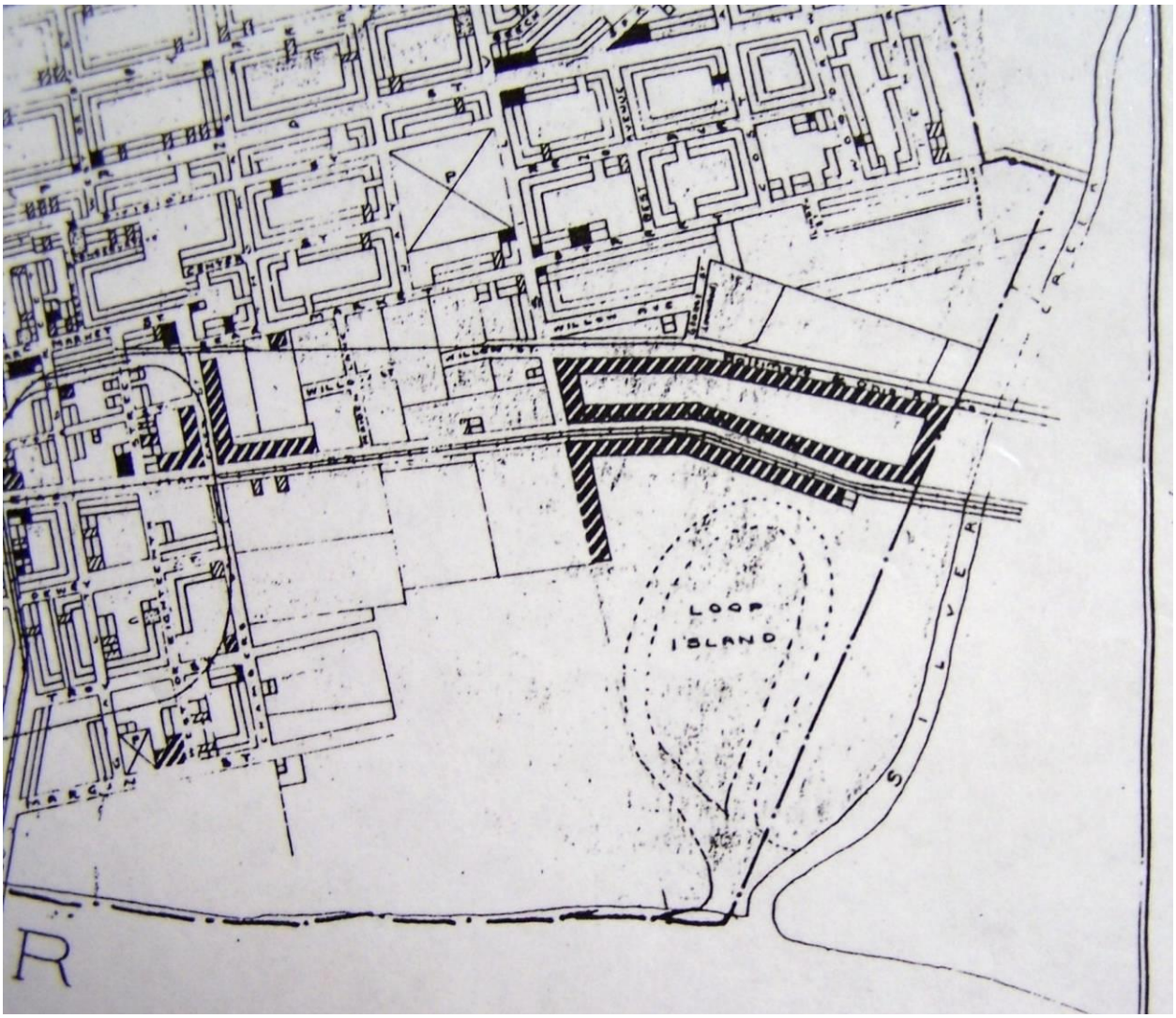


Figure 22. Landuse map of New Albany, Indiana (Duer 1935).

When major flooding occurred in 1937, the project area was submerged and photographed (**Figure 23**). Shortly after, USGS began mapping the area every few years while aerial photography continued (**Figure 24** through **Figure 37**). The only figures that show buildings in the project area date to 1951 (**Figure 27**), 1963 (**Figure 29**), and 1964 (**Figure 30**). Significant changes in landuse are evident in these photos.



Figure 23. Aerial view of industrial section affected by the 1937 flood.

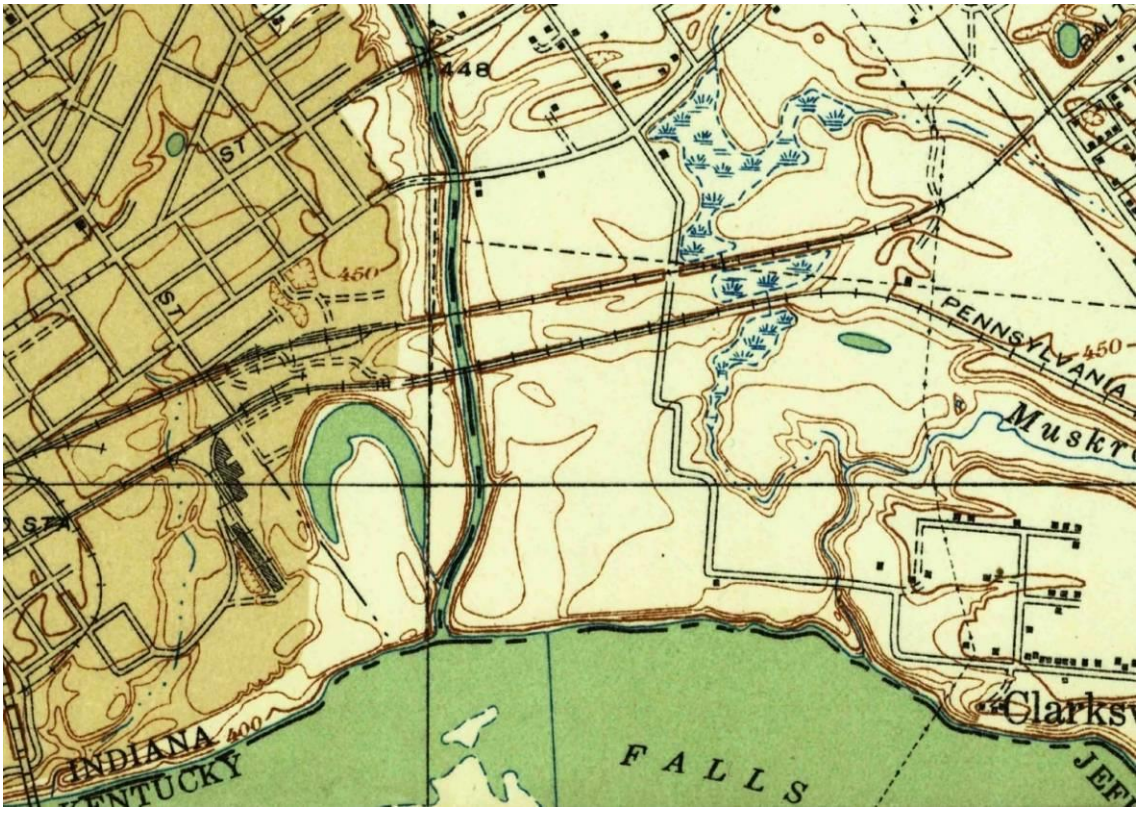


Figure 24. 1939 USGS *New Albany, Indiana-Kentucky* topographic quadrangle (USGS 1939).

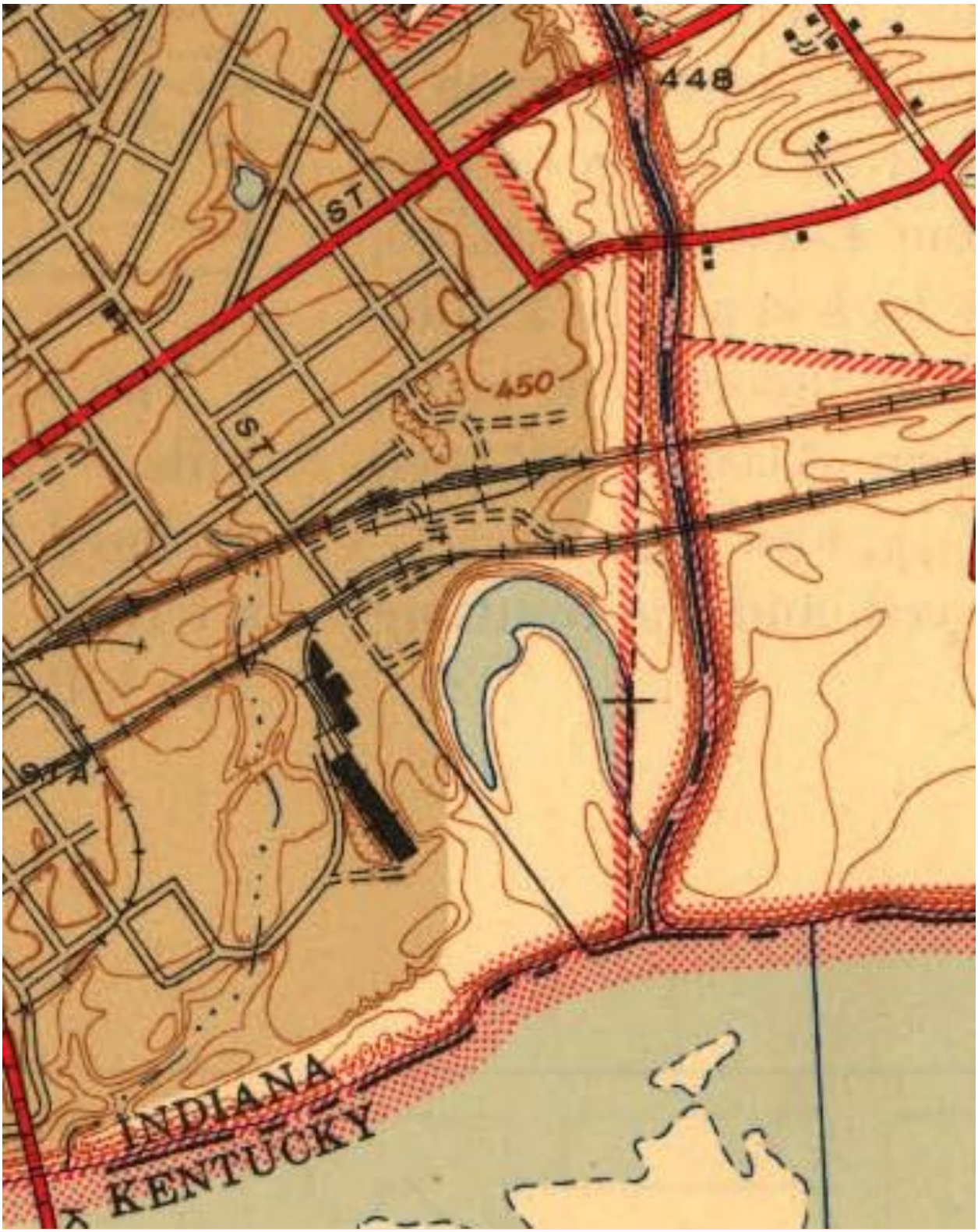


Figure 25. 1946 USGS *New Albany, Indiana-Kentucky* topographic quadrangle (USGS 1946).



Figure 26. 1946 aerial showing small lagoon before excavation and filling used as an agricultural field. Photograph courtesy of Mr. Al Goodman.

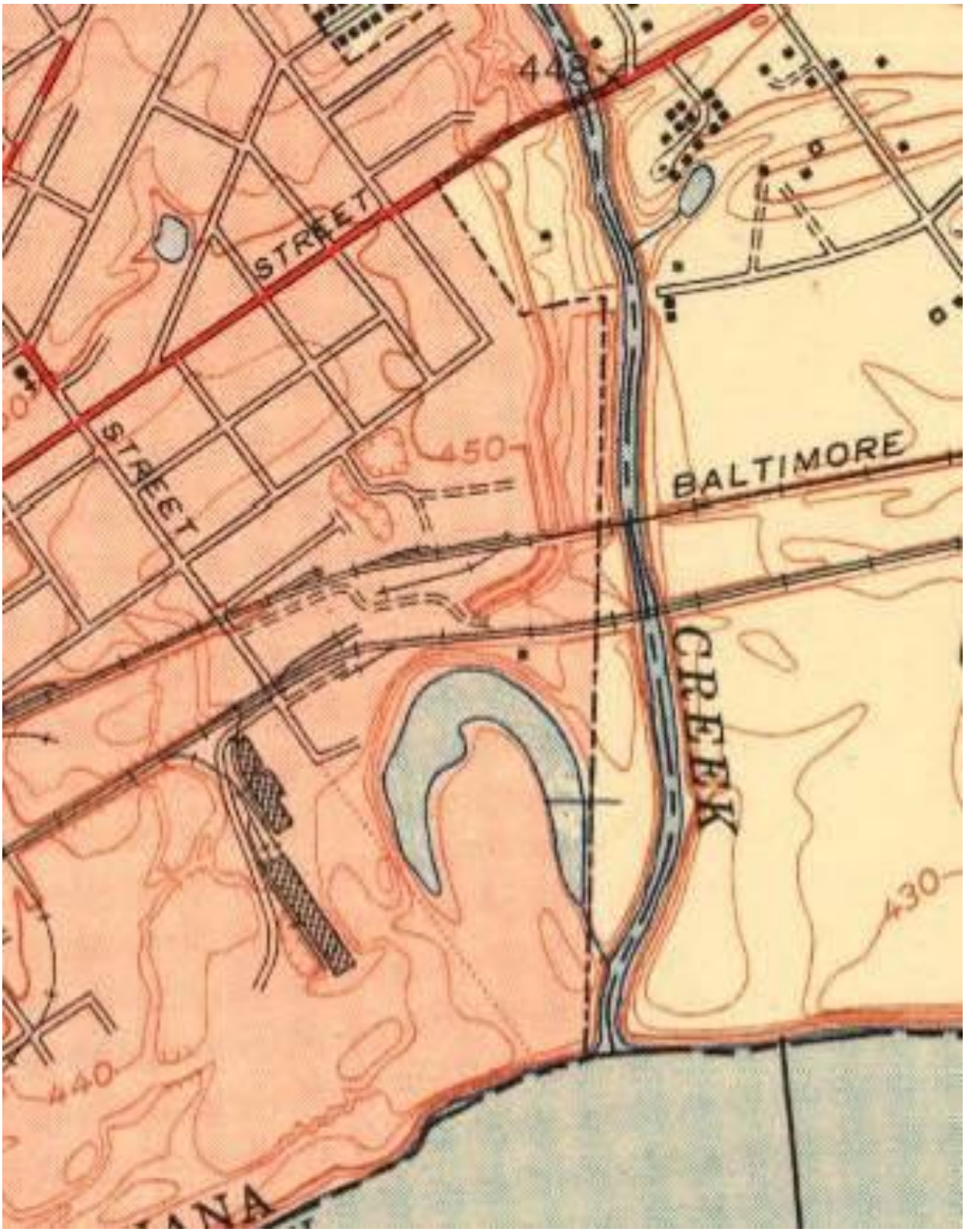


Figure 27. 1951 USGS *New Albany, Indiana-Kentucky* topographic quadrangle, first showing a building at the project site (USGS 1951).



Figure 28. 1955 USGS *New Albany, Indiana-Kentucky* topographic quadrangle, showing a new building at the project site (USGS 1955).



Figure 29. 1963 aerial. Photograph courtesy of Mr. Al Goodman.

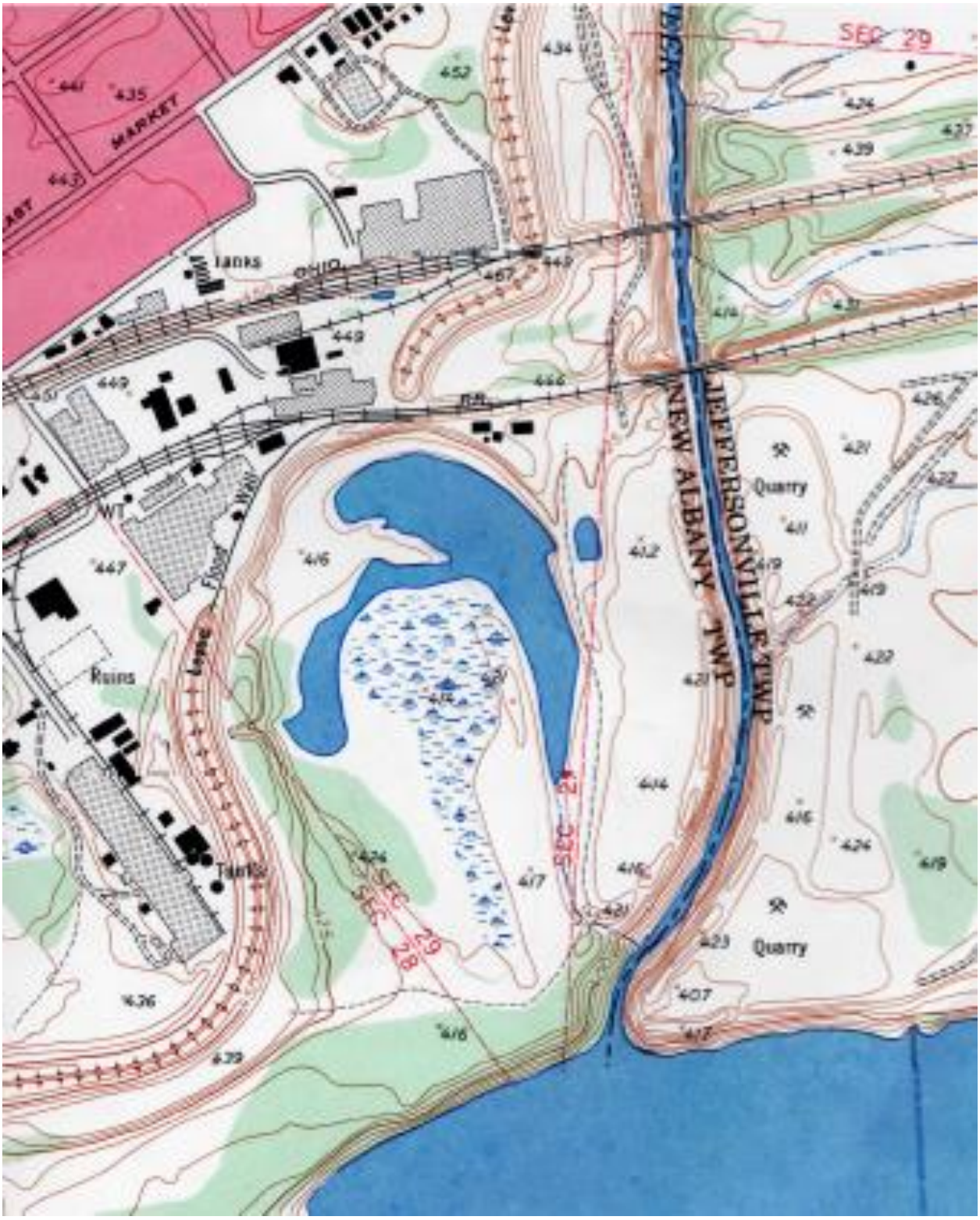


Figure 30. McAlpine pool reach, Kentucky and Indiana (USACE 1964).

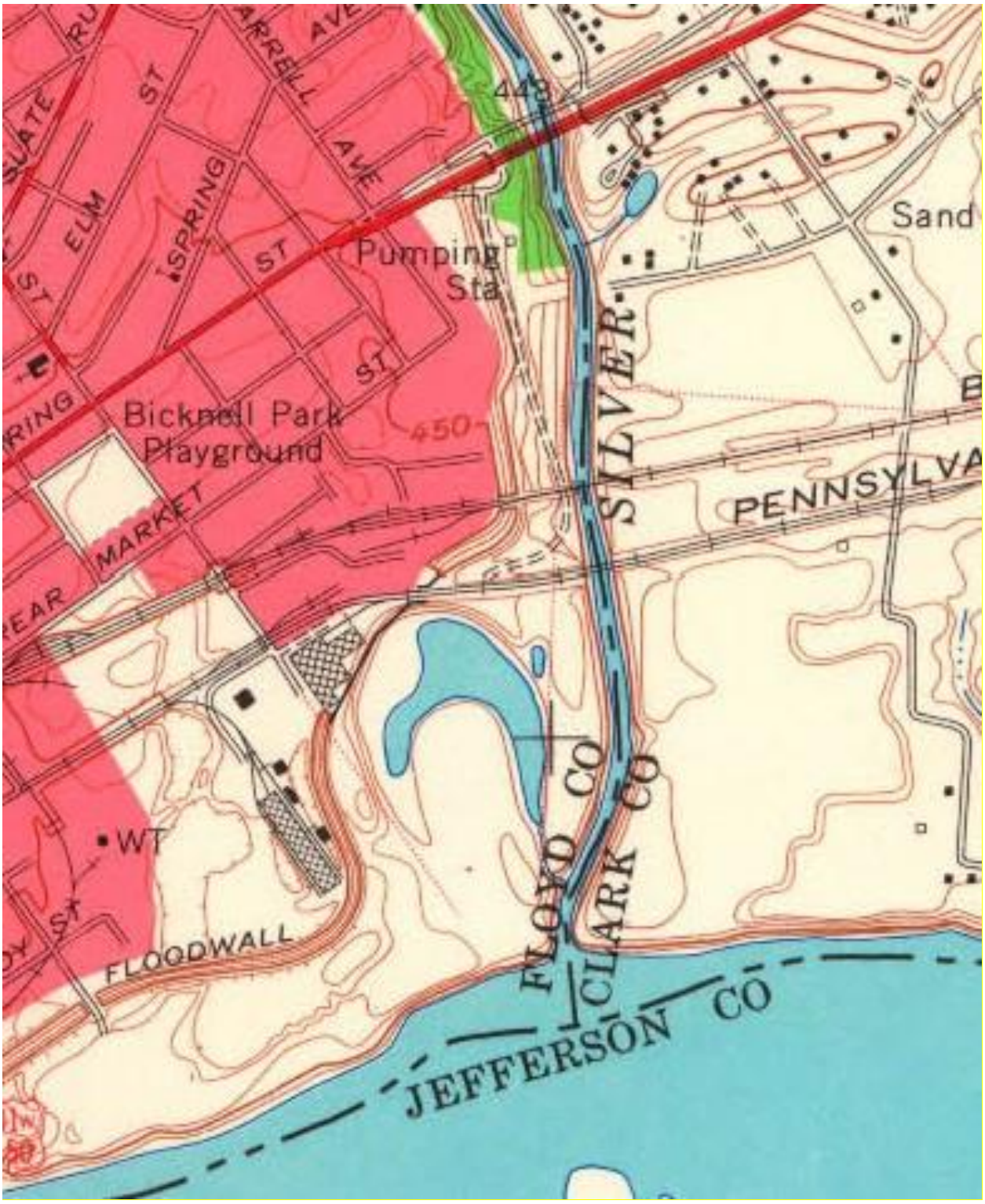


Figure 31. 1965 USGS *New Albany, Indiana-Kentucky* topographic quadrangle (USGS 1965).

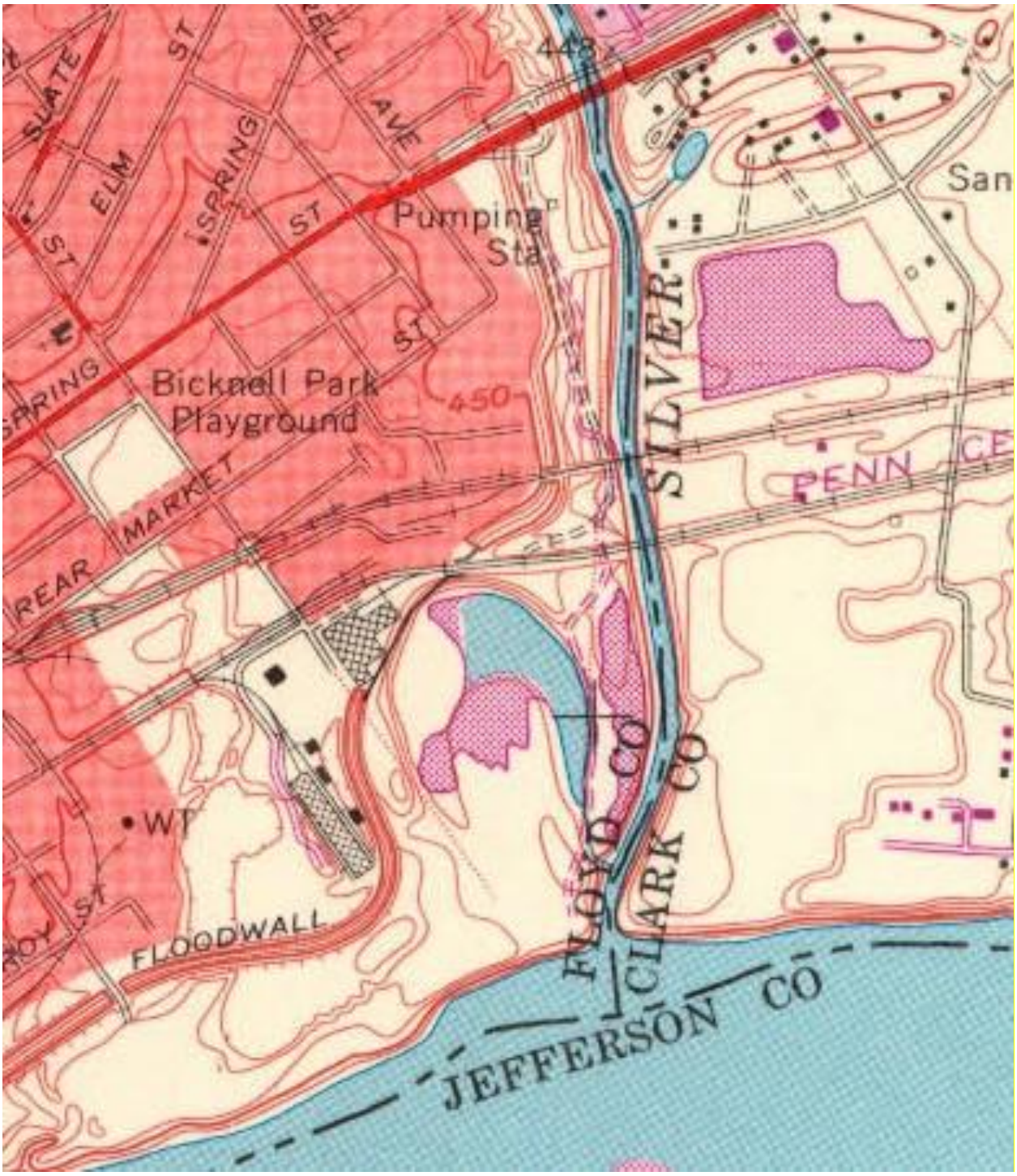


Figure 32. 1971 USGS *New Albany, Indiana-Kentucky* topographic quadrangle (USGS 1971).

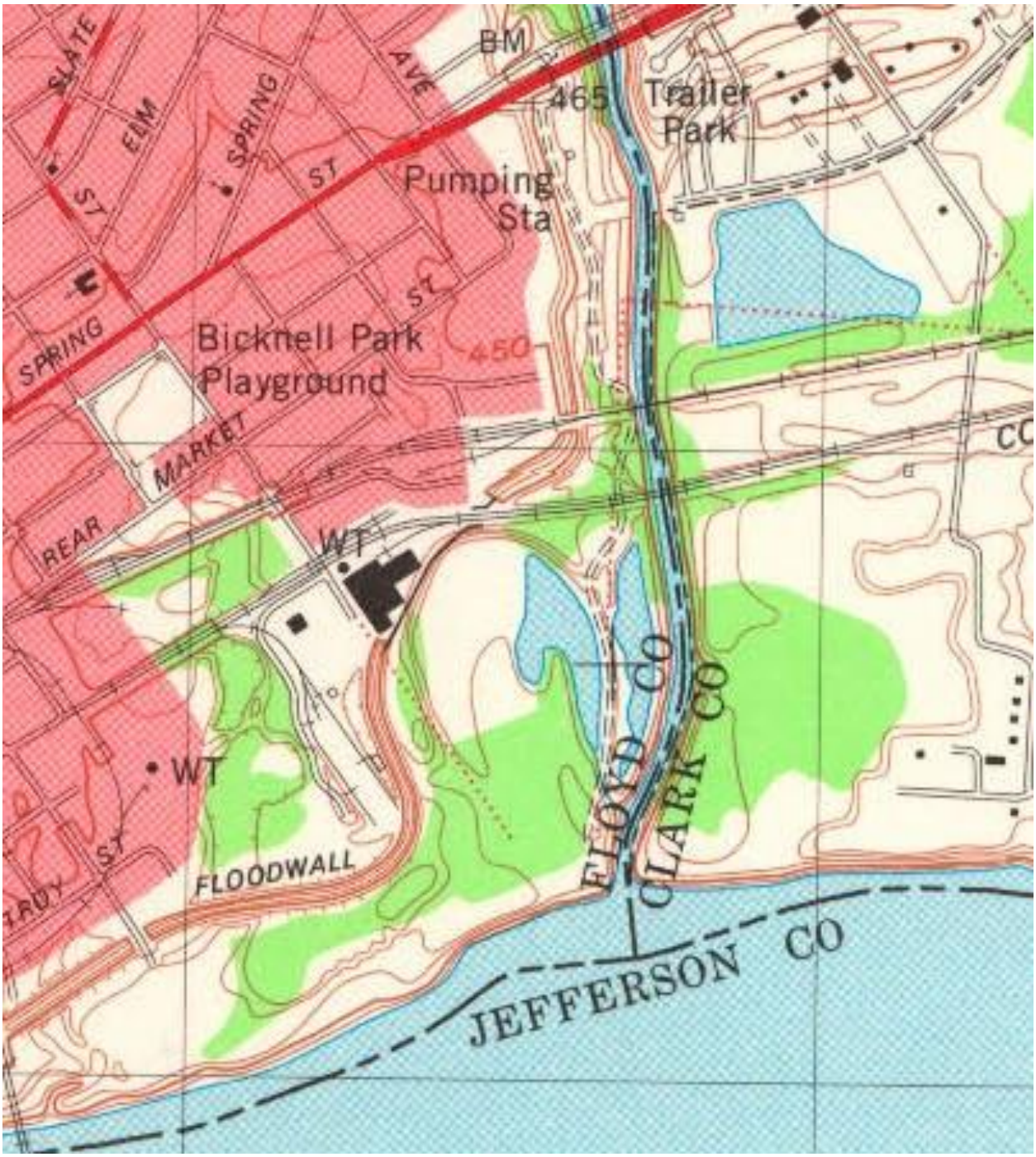


Figure 33. 1982 USGS *New Albany, Indiana-Kentucky* topographic quadrangle (USGS 1982).



Figure 34. 1998 aerial. Photograph courtesy of Mr. Al Goodman.



Figure 35. 1992 USGS *New Albany, Indiana-Kentucky* topographic quadrangle (USGS 1992).

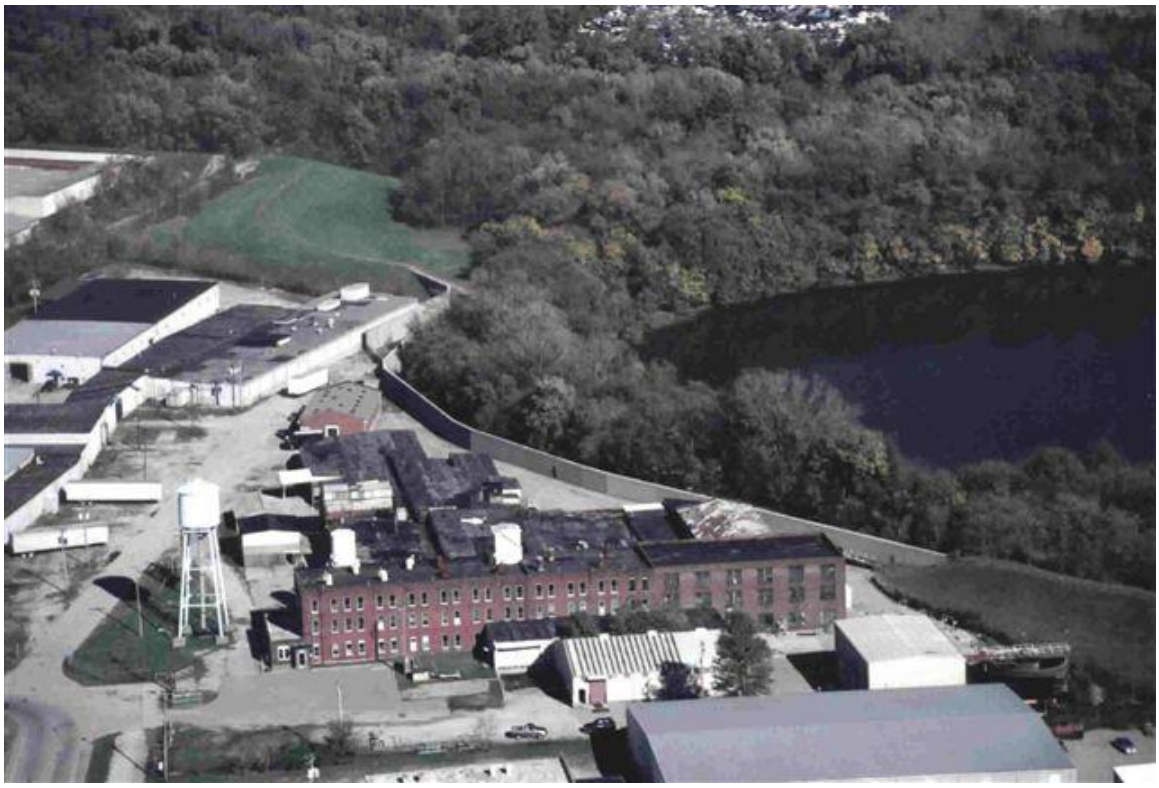


Figure 36. Aerial photograph of Moser Leather Co. and Loop Island (Goodman 2003).

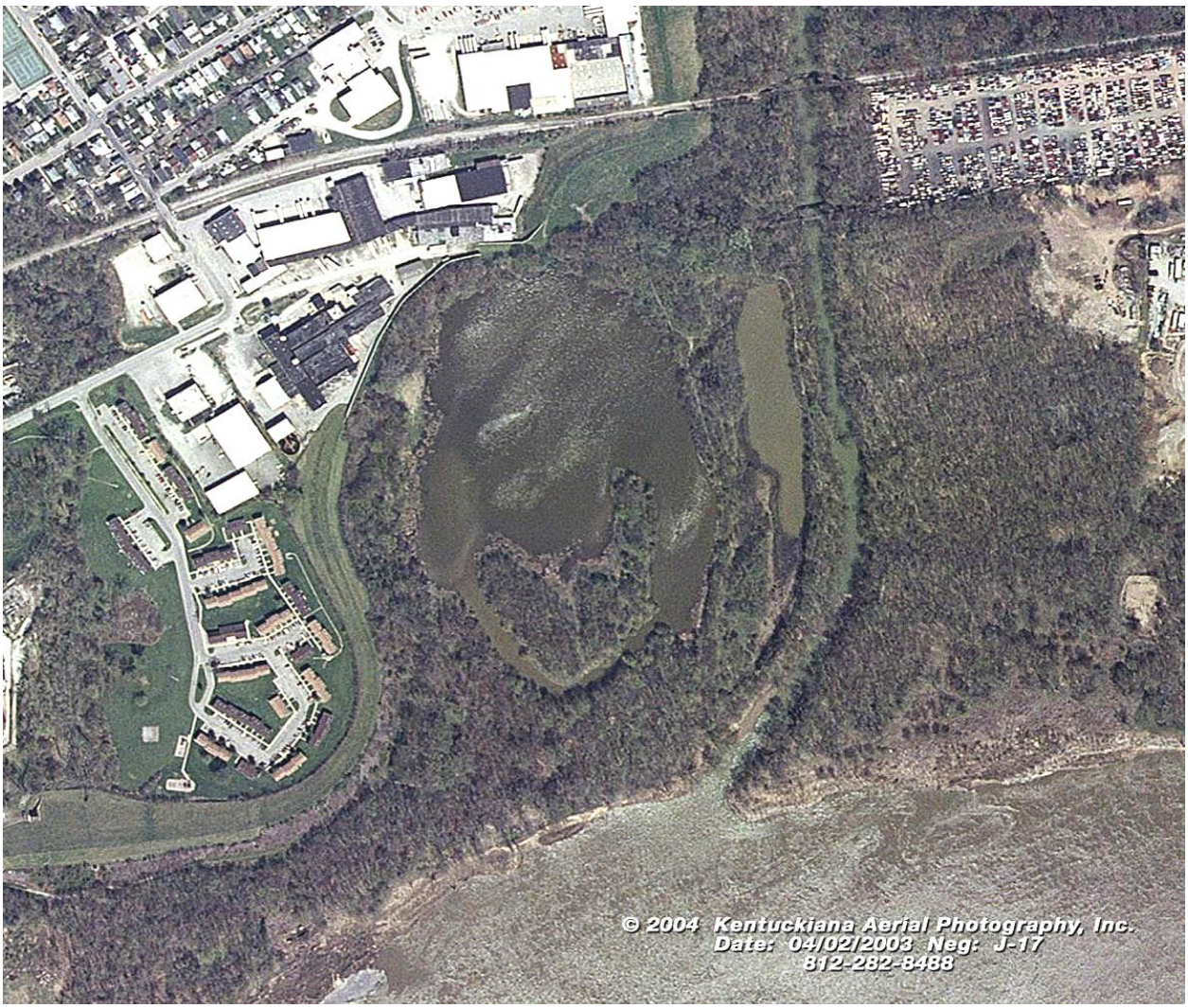


Figure 37. 2003 aerial. Photograph courtesy of Mr. Al Goodman.

5
FIELD METHODS AND TECHNIQUES

In accordance with IDNR-DHPA's *Guidebook for Indiana Historic Sites and Structures Inventory—Archaeological Sites* for conducting Phase I surveys, and in consultation with the IDNR-DHPA, a workplan was developed for the investigation of the available areas of Loop Island. The workplan (#2011051) was approved by a letter dated October 24, 2011, and was later amended (email correspondence with Cathy Draeger Williams) (**Appendix A**). The components of the workplan related to archaeological field methodology are discussed in this section of the report.

In addition to the archaeology, a qualified geomorphologist was retained to determine the depth of recent alluvium across the project area and to assess the potential for the project area to contain deeply buried cultural deposits. This assessment is presented in its entirety in **Appendix B** of this report.

Field Methods

The fieldwork approach proposed for the archaeological survey of Loop Island was multi-faceted and included the following methodologies:

1) Visual/pedestrian ground surface survey;
2) Shovel probing in accessible areas;
3) Hand-augering in selected areas (3-4 inch diameter);
4) Backhoe trenching, as indicated by soils and augering; and
5) Streambank profiling.

These are further explained below.

Visual/Pedestrian Ground Surface Survey

A simple visual ground surface inspection of the project area was performed to identify above-ground indicators of human activity such as structural foundations, depressions, refuse dumps, wells and cisterns, gravestones, quarry pits, and earthen and stone mounds. The field crew examined the ground surface along transects spaced no more than 5 to 10 m apart. When archaeological materials were noted on the ground surface, the transect interval was collapsed where possible to ensure better coverage and artifact detection. Erosional gullies, drainages, roadbeds, and exposed stream banks also will be examined for evidence of cultural activity. All such evidence was mapped and documented.

Due to the timing of the survey in mid-winter, vegetation was at a minimum and ground surface visibility was good throughout much of the area. Photos were taken to document conditions of the project area as well as the surrounding setting (**Figure 38**). The visual ground survey was conducted several times, at different times of the year to ensure coverage of the area in various stages of vegetation and ground cover. The cutbanks and beaches along Silver Creek and the Ohio River were carefully examined on multiple occasions (**Figure 39**).



Figure 38. Ground conditions within southern portion of the project area.



Figure 39. View of bench between cutbank along Ohio River in project area.

Shovel Probing

Near-surface examination through shovel test pit excavation occurred in undisturbed areas with slopes less than 30 percent (**Figure 40**). Where practical, shovel test pits (STPs) were excavated at a 15-m interval or less as stipulated by the IDNR-DHPA *Guidebook.* Based on 33 available acres and an average of 16 STPS per acre, it was originally estimated that as many as 528 shovel test pits would be required to examine the area available for shovel probe survey. This number dramatically decreased however, as it became clear that much of the area was either disturbed or covered deep alluvium. Only 30 shovel probes were excavated. Shovel probing targeted the undisturbed portions of the higher terrace north of the two lagoons. Close-interval shovel probing occurred at and around structural features identified through ground surface inspection. The purpose of the close-interval shovel probing was primarily to obtain artifacts that would enable a determination of function of the structures, but also to assess the integrity of the sites.

The soils and stratigraphy of each shovel test probe (STP) was examined to determine the presence of prior disturbances and the potential for intact sub-plowzone cultural deposits. The STPs averaged 30 to 50 centimeters (cm) in diameter, and were excavated where practical to sterile subsoil or to a minimum depth of 50 cm. STP excavation was terminated when the water table was accessed. The soil from each STP was screened through quarter-inch mesh hardware cloth. The vertical profile of each STP was examined for artifacts as well as soil color and texture changes that might indicate buried, intact cultural deposits. When the inspection was complete, the hole was filled and tamped.

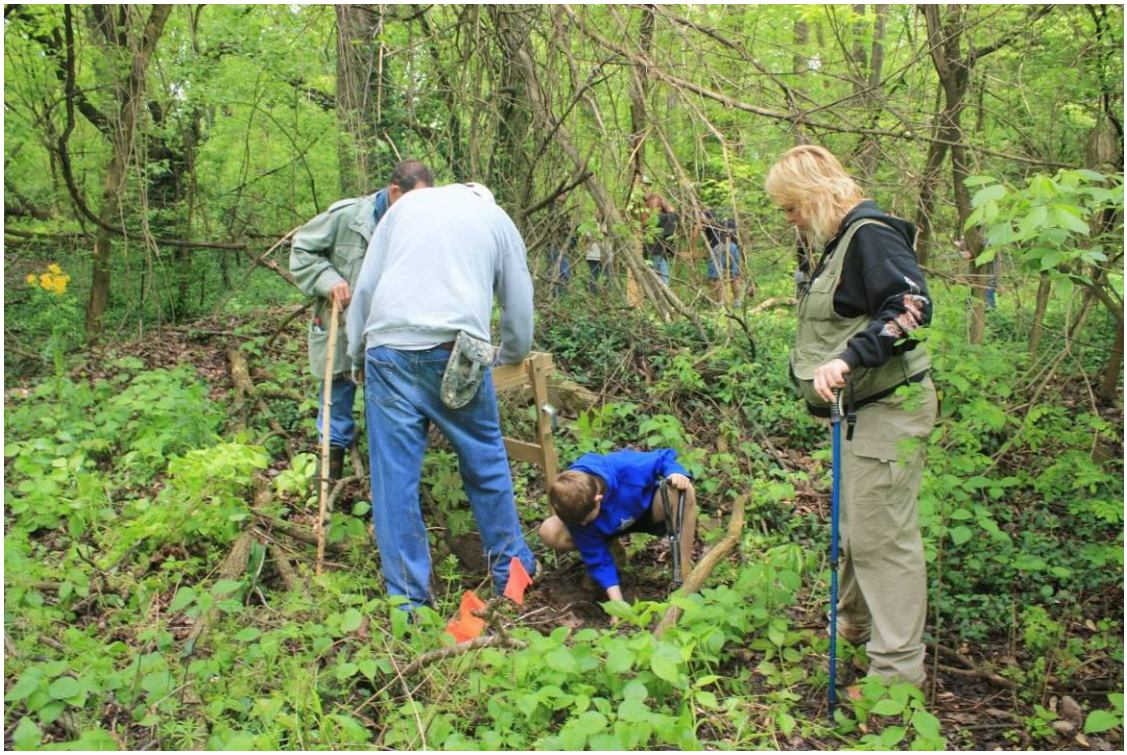


Figure 40. FOAS member Rhonda Huff, along with John and Conner Cherry, excavates a shovel probe.

Augering

Because the project area lies at the juncture of two major drainages, the potential for alluviation was high. Therefore, selected STPs were cored at the base with a hand-operated bucket auger to assess the potential for deeply buried archaeological materials (**Figure 41**). Additional core samples were taken as considered potentially fruitful for revealing relevant data. The auger measured 3 inches in diameter with a 1-foot (ft) long bucket. The hand-auger allowed penetration to a depth of 2 m or to the water table. Soil collected in the bucket was passed through a screen to detect and recover artifacts. The stratigraphy was recorded for each auger test. The locations of the augered STPs were then mapped.



Figure 41. FOAS members Randy Hollis and Paul Olliges taking an auger sample.

Backhoe Trenching

As deep deposits were expected within the project location, backhoe trenching was employed to explore the project area for sediments that could contain cultural horizons. The project workplan called for the excavation of ten trenches. However, the water table proved to be very high at the time the trenching occurred. Only five backhoe trenches were actually excavated, several of which were abandoned due to the intake of water.

A tracked backhoe excavator equipped with a smooth blade was used for the project. The blade was approximately 24 inches wide, so several passes were required to obtain the desired trench

width. The excavation was conducted using shallow passes and was carefully monitored by a professional archaeologist at all times (**Figure 42**). Whenever artifacts or a soil anomaly was encountered, the backhoe operator was directed to pause while an archaeologist examined the trench floor and walls, using a trowel to clean the surfaces as necessary. The entire length of the trench walls was trowel-scraped and examined. A 1-m-wide section of one wall was profiled. The relevant data was recorded on the soil types, stratigraphy, and observed disturbances and anomalies. Digital photographs were taken of the cleaned vertical profile, as well as all relevant features and anomalies.

Additional procedures included the following:

- The trenches were placed on landforms perpendicular to the nearest drainage.
- The backhoe trenches measured 5-10 m in length. The trenches were excavated to a depth of at least 1.6 m below surface or until the water table was reached. The excavation of the trenches was monitored at all times by the Principal Investigator or Field Director, as well as the Competent Person.
- The exposed stratigraphy was photographed and described. One face of the trench was cleaned and inspected to identify and define sediment units, soil horizons, and cultural deposits. Representative detailed profiles were drawn of a 1-m wide section of each trench.
- After documentation, excavations were backfilled for preservation and protection with either native soils or similar imported soils.
- All trenches were excavated following OSHA guidelines. Archaeologists monitoring the trench excavation were OSHA trained in trench excavation and a company-certified Competent Person. To ensure compliance with standards of the Occupational Safety and Health Administration (OSHA), no trenches exceeded 5 ft in depth allowing for entrance of personnel. If a trench had been determined to be unstable (i.e., excavated in sand), the excavation and profiling would have been terminated. Benching was considered an option as considered to necessary for safety.



Figure 42. Excavation of backhoe trench within drained small pond.

Stream Bank Examination

A visual inspection of the eroded cutbanks along Ohio River and Silver Creek (**Figure 43**) was undertaken. Sections of the bank were troweled to remove slump and then profiles were drawn.



Figure 43. View of cutbank along Silver Creek opposite project area.

Field Documentation

All artifacts were bagged in paper bags, which were labeled by provenience. Digital photographs of the project area were taken. Global Positioning System (GPS) technology was utilized to record the locations of significant features, excavations, and archaeological sites. A Magellan Explorist XL was used to collect the data. This unit has a 10 m or better accuracy.

6
MATERIALS RECOVERED

Cultural artifacts are the material remains of human activities. The study of artifacts is the primary means available to archaeologists to interpret past lifeways. Of themselves, they provide information on period(s) of occupation, technology, activities, and aesthetics such as art and ritualism. In association with other artifacts and features (hearths, storage pits, burials), information on the functions of artifacts may be inferred. Collectively, artifacts allow comparisons with the former occupants of other sites within the locality and the region. Along with observations of a site's cultural deposition and the presence or absence of cultural features and middens, artifacts provide important data in assessing the significance of a given site.

Artifacts recovered from prehistoric sites are not as easily recognized and interpreted because many do not have clearly identifiable modern correlates. Prehistoric artifacts principally consist of the waste from the manufacture of stone tools, along with exhausted and discarded (broken) stone tools such as projectile points and knives, scrapers, drills, groundstone axes, celts, and pestles, and more. Sherds from ceramic vessels and animal bone refuse from hunting and food preparation are also common finds at certain types of sites depending upon preservation conditions.

The following discussion presents the procedures and descriptive categories utilized to analyze the artifacts recovered during the survey. All artifacts were transported to the offices of Corn Island Archaeology LLC in Louisville, Kentucky. The artifacts were taken on occasion to the Falls of the Ohio State Park Interpretive Center for processing by FOAS members (**Figure 44**). All artifacts were washed in tap water and air-dried. Artifacts were stored in 2-mil polyethylene bags. In keeping with the project statement of work and following standard archaeological procedures, FOAS and CIA counted, identified, labeled, and analyzed all cultural materials recovered during the course of the investigation. Curation Numbers were comprised of a sequential Provenience Number, consecutive within each site number, which was hyphenated with a sequential Artifact Number, which was consecutive within each provenience. Artifacts were labeled with paper acid-free labels that identified the Site Number over the Curation Number.

Upon approval of the technical report, the artifacts and relevant documentation will be returned to the landowner. Copies of artifact documentation will be submitted to IDNR-DHPA. Additional documentation included the photographing of all artifacts within provenience sets.



Figure 44. FOAS processing artifacts at monthly meeting.

A total of 372 artifacts were collected from the project area (**Table 8**). The majority (n=352, 95 percent) were historic. Site 12FL117, the location of an industrial building, and site 12FL118, a predicted residential location, produced the greatest proportion of artifacts (59 and 43 percent, respectively) (**Table 9**). All four sites produced historic artifacts. Three of these are classified as historic sites, while the remaining one (12FL120) is classified as a prehistoric site.

Table 8. Artifacts Recovered During the Archaeological Investigation

Era	Group	Count
Prehistoric (n=20)	Biface	2
	Ceramic	1
	Core	2
	FCR	7
	Organic	1
	Use-Modified Tool	7
Historic (n=352)	Activities	81
	Architecture	115
	Clothing	1
	Furnishings	63
	Industrial	5
	Kitchen	76
	Miscellaneous	11
Total		**372**

Table 9. Site Totals

Site Number	Expected Site Function	Historic	Prehistoric	Site Totals
12FL117	industry	178	4	182
12FL118	residential	159		159
12FL119	tannery	10		10
12FL120	prehistoric open habitation	5	16	21
Totals		**352**	**20**	**372**

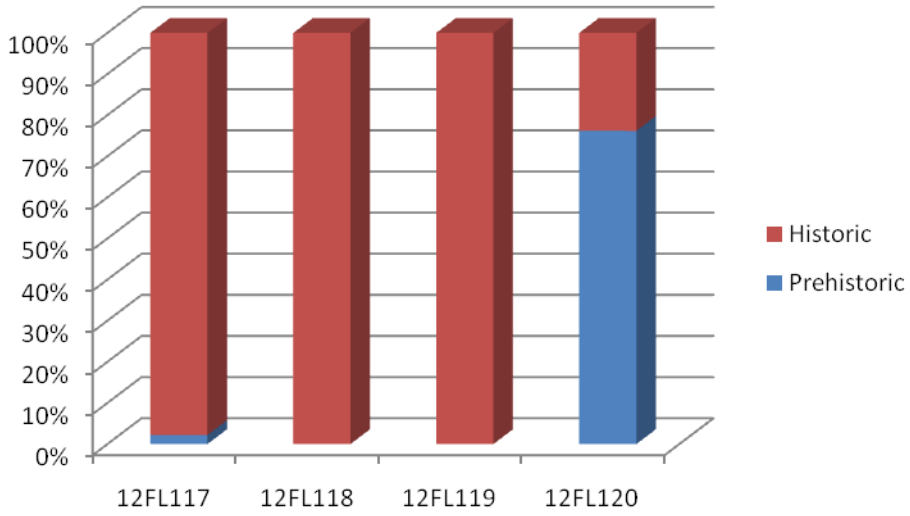


Figure 45. Proportion of prehistoric and historic artifacts per site.

The following discussion presents the procedures and descriptive categories that were use to analyze the artifacts recovered during the survey. A variety of functional types were recovered during this investigation, and only these will be discussed in this section. These groups included Activity, Architecture, Clothing, Furnishings, Industrial, Kitchen, and Miscellaneous. Prehistoric types consisted of ceramic and lithic types that consisted of biface, core, use-modified tool, and FCR.

Prehistoric Classification/Analytical Schemes and Definitions

Prehistoric Ceramics

Ceramics artifacts were formed from tempered clay that was shaped and/or molded and baked in fires at high temperatures. A number of attributes provide evidence for the cultural and temporal affiliations of site occupants. These include temper, paste, and surface treatment. *Temper* is a mineral or organic material added to the clay to enhance its' working, drying, and firing properties (Rice 1987:483). *Paste* refers to the mixture of clay and added materials from

which the pottery item was manufactured. *Surface treatment* varies across time and between groups. The most used treatments include plain, cordmarked, smoothed over cordmarked, and fabric impressed.

Potsherds are fragments of prehistoric pottery vessels including jars, bowls, plates, pans, and bottles. Pipes and figurines are less commonly found at archaeological sites.

Rim sherds refer to those fragments of a vessel from the finished edge or lip of the orifice. Morphology varies by temporal period and cultural group.

Prehistoric Lithics

Prehistoric assemblages are most often comprised of lithic material that may be classified as either chipped stone, groundstone, or use-modified. Chipped stone artifacts are pieces of lithic raw material that exhibit intentional modification by percussion flaking, pressure flaking, and/or use. They may be intentionally fashioned tools, such as projectile points, drill, and scrapers, or expediently made cutting, scraping, and perforating tools made on large flake blanks or waste flakes. Chipped stone artifacts are generally made from chert or flint, and more rarely obsidian. Occasionally, other types of stone are modified through percussion flaking.

The analyst first identified and assigned all artifacts to descriptive/functional categories. The artifacts were then divided into three gross categories, namely chipped stone, groundstone, and ceramics. Nearly all of the artifacts were chipped stone lithics. The goals of the following lithic analyses were as follows:

1. To determine the activities carried out at each site and to identify the site's function(s) by classifying tools into descriptive and functional categories;

2. To identify the site's temporal and cultural affiliations by assigning diagnostic artifacts to regional types;

3. To examine resource utilization patterns by identifying the raw material sources represented in the recovered assemblage; and

4. To determine which stage(s) of the lithic reduction continuum occurred within each component within the site.

Bifaces

Bifaces are chipped stone artifacts that exhibit two distinct sides or faces that both exhibit negative flake scars that meet along common or lateral "working" edges (Crabtee 1982). Bifaces can be either finished tools, unfinished blanks intended for future tool production, or failed and/or otherwise rejected production discards. The blanks may be examples of discrete production stages along the continuum of the biface manufacturing process. While biface production can cease at any time during the reduction process, it is generally assumed that the ultimate goal was a finished biface of some type. Although they are thick during the early stages of manufacture, in relative terms bifaces are generally thin and narrow when compared to their length and width. Bifaces that reflect later stages of production usually exhibit distinguishable proximal and distal ends.

For the purposes of this analysis, if unfinished, bifaces were simply classed as early stage (blanks), middle, or late stage (preforms) - reflecting early to late stage reduction - or indeterminate fragments. The reduction sequence types are defined below.

Early Stage Bifaces are those on which the lateral margins of the piece have not been completely worked. These unworked margins are easily recognized since they may still retain traces of cortex and/or patina. Blanks represent the earliest stage of the biface reduction sequence.

Late Stage Bifaces represent the last stage beyond blank manufacture in biface reduction. The lateral margins of these tools have been completely worked; the edges have been more straightened by fine percussion flaking, or pressure retouch. No haft element is present. Depending on the degree of completion of the preform, cortex may or may not be present on the artifact. Preforms are late stage bifaces.

Finished bifaces are found in multiple forms that vary by function, geographic region, and period. Finished bifaces may have characteristics of both early and late stage blanks. One distinguishing characteristics of a finished biface is that a haft element is present on the distal end of the artifact. These artifacts are commonly classified as projectile point/knives (ppks), drills, hafted endscrapers, and more. They represent the final stage in the biface reduction sequence. However, finished bifaces were often resharpened and/or recycled into other tool types when their use-lives as a projectile expired. Finished bifaces found within the project area include the following:

> **Projectile point/knives (ppks)** are finished bifaces presumed to have been “projected” on a spear, dart, or arrow shaft, and used to hunt game or serve as weapons. These artifacts may also have been used as hafted knives and saws for butchering. Projectile points have a high width-to-thickness ratio, are retouched along the blade edges, and have a well- defined haft element. They can often be assigned to distinctive types based on their morphology and therefore serve as chronological indicators for archaeologists. The proximal end of the artifact exhibits a hafting element that may consist of notching, a stem, or a fluted channel. Small triangular projectile points and a few other types have no obvious notching or stems. The basal portions of fragmented projectile points were commonly reworked into hafted scrapers. Drills have also been produced from exhausted projectiles.

Cores

Cores are the remnants of the raw material from which flakes have been struck. They are identified by one or more flake scars visible on their surfaces. Items within this category include *tested cobbles*, which are those from which only one or two flakes have been struck; *unidirectional cores*, which exhibit numerous flakes scars originating from the same platform; *multidirectional cores*, which exhibit flake scars from numerous platforms; *bipolar cores*, which exhibit substantial damage along two opposing margins; and *bifacial cores*, which exhibit flake scars originating from the same platform but on two faces. In addition to these types, a number of other cores might be recovered that reflect specialized manufacturing trajectories, including *bladelet cores* and *disc cores*.

Debitage

Debitage consists of the by-products or waste of chipped stone tool manufacturing. Debitage

usually refers to chert or flint artifacts, although waste is also created during the early stages of groundstone tool manufacture. Debitage consists of shatter and flakes. These and the recorded attributes are defined below.

Shatter describes angular or blocky pieces of raw material that have no distinct positive or negative flake scars or other attributes of flakes such as a bulb of percussion or feathered edge. It is presumed that these artifacts are the result of the uncontrollable fracture of raw material during the knapping process. Shatter may occur at any stage of the knapping process, but may be more frequent during the early stages of bifacial reduction.

Flakes are pieces of raw material that have been removed by the application of force. Unlike shatter, it is assumed the force was applied in a controlled manner using either a soft hammer that may have been antler, bone, or wood, or hard hammer such as a hammerstone. Flakes have definable upper and lower (dorsal and ventral) surfaces. They possess a flat or faceted striking platform and bulb of percussion on the proximal end; these may be absent on fragmented flakes. Distal terminations (edges) are usually classified as step (steep, angular), hinge (rounded), or feathered. As discussed below in more detail, flakes that occur as a result of percussion and pressure technology have characteristic morphologies that allow interpretations of their relative occurrence – or stage of reduction - within the overall manufacturing process. In general, flake types were not coded separately during analysis. Specialized flakes, such as notching flakes, have distinctive shapes that provide useful technological information. In this analysis, debitage interpreted to be biface margin flakes were identified to distinguish them from biface lateral margin fragments.

Cortex. This term refers to the weathering evident on an unmodified stone cobble or blocks of tabular chert. Reduction stages are commonly inferred from the presence and amount of cortex. The greater the percentage of cortex on the flake surface, the earlier in the reduction sequence the flake was removed from the core. Cortex can, however, be found on late stage flakes and even finished tools. Similarly, primary reduction flakes can lack cortex altogether. It is therefore true that the presence of cortex alone is insufficient to conclusively define initial reduction. Generally however, the presence of cortex indicates an early stage of core preparation and initial reduction. For the purposes of this analysis, the presence of cortex on a flake was noted as an indicator of its relative early position in the reduction process without reference to the percentage of cortical material evident on the flake. Cortex type also was recorded to provide data on possible sources of the raw material. Type options included cobble, chalky, and tabular.

Platform complexity. The morphology of the striking platform on a flake is considered to be one of the best indicators of reduction stage (Magne 1985; Magne and Pokotylo 1981; Pokotylo 1978). The process of core reduction typically produces high frequencies of flakes with zero to one platform scar. Platforms with two facets are less common, and those with three or more facets are practically nonexistent (Magne 1985; Odell 1988; Tomka 1989). The presence of multiple platform scars, on the other hand, is considered to be an indication of *late stage* aspects of bifacial tool production. In fact, the presence of “extensively faceted” platforms is one of the defining criteria for the *biface thinning* classification by Magne (1985:100).

Studies by Bradbury and Carr (Carr and Bradbury 2000) and Magne (1985), have demonstrated, however, that platform facet count, when examined in isolation of other attributes, cannot conclusively identify reduction stage for any single flake. They found that biface reduction also produces flakes with simple platforms. In fact, experimentation revealed late stage biface production can produce 30 percent or more flakes with zero to one scar on

their striking platforms (Carr and Bradbury 2000; Magne 1985:119; Tomka 1989:139). Overall, using flakes obtained from knapping experiments, Bradbury and Carr (Bradbury and Carr 1995) achieved a 70 percent correct classification rate using platform facet counts. As a note of caution, their experiments showed that 45 percent of the platform-bearing flakes derived from middle and late stage reduction produced zero to one platform scars were erroneously assigned to the early stage category (Bradbury and Carr 1995:108). Similar analyses by Mauldin and Amick (Maudlin and Amick 1989) and Odell (1988) came to the same conclusion.

Size. The size of flakes can provide a very general indication of the stage of reduction. Using an assemblage (or a sample of an assemblage) level of analysis, some researchers have attempted to demonstrate that the size of flakes can be used to determine the relative stage position because the average size of flakes should decrease as reduction progresses (Ahler 1989). In this technique, called *mass analysis*, flakes are passed through a series of size-graded screens to determine the frequencies of the various flake sizes. This method has been met with the criticism that flakes of all sizes can be produced at any stage of reduction (Flenniken, personal communication). In the analysis of the flakes from this project, five size classes were considered; 0.25 to 0.5 inch; 0.5 to 1 inch; 1 inch to 1.5 inches; 1.5 to 2 inches; and greater than 2 inches. The size class is named by the larger of the two limits.

Weight. Weight was used as a general indicator of the mass of the raw material within any provenience. Flakes were not weighed individually; rather, the debitage from each provenience was weighed collectively by raw material type and reduction traits as a general indicator of volume of raw material used at the site.

Use-modified Tools

Use-modified tools are items that have been used enough to show damage from that use but show no intentional modification for its manufacture. Items include anvils, hammerstones, manos and metates, and pitted stones.

> **Anvils** were identified by the presence of pitting in one area of at least one face. In contrast to mortars or metates that exhibit evidence of grinding or smoothing actions, the evidence on anvils appears to have resulted from impacts of hard materials, particularly during the bipolar reduction of chert cores.
>
> **Hammerstones** were identified by the pecking or crushing damage along margins. Generally, these were rounded quartzite cobbles exhibiting pecking damage along one end or along margins. Striking another object such as bone or rock causes pitting and flaking. Examples of activities in which hammerstones may have been used include knapping lithic material, breaking open bones to expose the marrow, and cracking open nuts. Hammerstones may be oblong, teardrop shaped, or round. Some have speculated the shape of the hammerstone correlates with various desired effects upon the material being worked. For instance, the more rounded the hammerstone, the broader and shallower are the resulting impacts to the contact surface. Stones selected for use as hammerstones may have been used unmodified or intentionally modified with finger grips (Adams 2002).

Fire-cracked rock (FCR)

FCR consisted of cobbles, generally of sandstone that were used for heating, cooking, or in other activities that required that they be heated to high temperatures. The reddened color and

crenated fractures of cobbles were evidence of their use in these thermal-related activities. During this investigation, all FCR were brought to the laboratory for analysis.

Lithic Material Types

Raw material sourcing studies can provide meaningful data in determining the geographic range of resources, patterns of resources extraction, and mobility of the prehistoric inhabitants of an area. The goal of raw materials identification is to examine resource utilization patterns by identifying the raw material sources and quantifying the types present in the assemblage. Changes in preferences over time may indicate significant shifts in strategies in the ways prehistoric peoples obtained their raw materials and foods. These changes may signal even more resonating changes in the overall culture.

Each lithic artifact was typically examined macroscopically or with a 15x-hand lens to identify the raw material from which the artifact was made. The identifications were derived from written descriptions and preferably from comparison to a type collection. There are shortcomings to this approach, and many researchers emphasize the need for microscopic and/or other forms of analyses. These are usually too expensive and time consuming, however, and visual examination of the materials by knowledgeable experts remains a common practice, particularly at the survey level of investigation. Types were described based on their crystalline morphology, luster, color, mottling, inclusions, and fracture properties.

Cobble Chert. In addition to these, unidentified chert types were present in minor amounts. Cobble/pebble chert was obtained from the river gravels and was widely utilized at sites along the Ohio River prehistorically. These cherts include a variety of exotic types transported from the upper Ohio River valley. Cobble cherts can be sometimes identified by their water-rolled condition and patination on those flakes or tested cobbles retaining cortex. For the most part, the cobble cherts were nonfossiliferous. They occur in a variety of colors, reflecting their diverse origins upriver.

Igneous rocks are present in the area within glacial outwash present in the Ohio River drainage. Composition of artifacts that were recovered during the project ranged from felsic to mafic with examples of probable granite and andesite present. These were identified as igneous based on their angular quartz, feldspar, and ferromagnesian crystals.

Jeffersonville chert is a tabular or bedded chert found within quarry locations and as angular or semi-rhomboidal alluvial cobbles. The chert ranges in color from white to light gray to bluish, and commonly has brown speckles or mottles. In addition, the chert is fossiliferous, with an assortment of visible crinoids, corals, and brachiopod fossils, leading to crystalline vugs between fossils. Even with the fossiliferous nature of the chert, it is well consolidated and ranges from fine to medium-grained (Cantin et al. 2005). The diagnostic tentaculitid were identified in many examples (Cantin 2008). Material with crystalline quartz replacement of fossils was identified as **Jeffersonville Bed IV.**

Sandstone was identified by its composition of distinct sand-sized grains. Primary sources of sandstone lie within the Mississippian West Baden Group within Floyd County (USGS 2012). All sandstone artifacts recovered during the project, however, exhibited cobble cortex, indicating procurement from secondary sources.

Wyandotte chert, widely known as Harrison County, Indiana flint or Indiana Hornstone, is present in the Fredonia Member of the Ste. Genevieve Limestone, Blue River Group. The name "Wyandotte" has historic precedence, however. Formerly, it was believed that this high quality material occurred in the St. Louis Limestone (Cantin et al. 2005:12). It occurs in both spherical nodules and tabular form. Wyandotte chert was widely traded throughout the east and Midwest during certain prehistoric periods, and is considered to be one of the best flaking cherts in the region. The chert is found primarily in Harrison, Crawford, and Orange counties of Indiana, as well as Meade, Breckinridge, and Hardin counties of Kentucky. Wyandotte chert is highly cryptocrystalline, with a fine-grained texture and a waxy luster. It is slightly translucent, as can be seen on thin edges (Cantin et al. 2005:13). Wyandotte chert has a well-developed cortex that may be as much as 1-2 cm thick. It is chalky and a buff-brown color. There are few, if any, macroscopic fossils present in this material (Cantin et al 2005:13). The chert occurs in a restricted range of colors; these are primarily grays and blue-grays. As described by Cantin et al. (2005:12), "typical" colors of Wyandotte have Munsell values of medium blue-gray (5B5/1) and medium light gray (N6) to grayish black (N2.5). However, the hues can vary from light to dark. Wyandotte chert patinates in shades of brown and tan (Cantin et al. 2005:12-13). Frequently, the chert is banded with shades of gray. When heated, it develops multiple and extremely fine fractures. Macroscopic fossils are rare (Cantin et al. 2005:13).

Organic Material

Although generally rare, organic material recovered from prehistoric sites most often includes shell, bone, antler, and charcoal. In better preservation environments, material such as hair or cordage might also be recovered. Due to their fragile nature, identification at the time of recovery is often essential for preservation.

Historic Classification/Analytical Schemes and Definitions

For each archaeological assemblage recovered during the project, the goals of the historic artifact analysis were threefold:

1) to identify the function(s) of the site through an examination of the activities that occurred there;
2) to ascertain and/or verify the date(s) of occupation at the site;
3) to recognize and characterize artifact patterning, *of regularity as well as variability, that might be used inductively to generate statements of theory* (Ewen 2003).

That is, in which activities were the people who utilized these locations engaged, and when? And how do these activity sets compare with other sites of the same time throughout the region? Artifact patterning recognition studies have been developed to demonstrate the basic nature of a site through examination of the relative frequencies of functional artifact groups (Ball 1984; Martin 1985; South 1978).

The historic artifacts were first sorted according to their presumed uses based on a classification scheme developed by South (South 1977). South's intent was to identify activities within a systemic context as reflected by the archaeological record (South 1977:93). For example, an abundance of domestic wares such as stonewares, refined earthenwares, tablewares, curved glass, as well as architectural artifacts such as flat glass and nails, is a good indicator of a domestic residence. Alternatively, a preponderance of artifacts from the Architectural and Activities functional groups--along with a lack of domestic wares--would indicate another function for the site, such as a barn, outbuilding, or industrial site.

Through South's classification system, artifacts were assigned to broad functional categories such as Activities (toys, writing implements, tools), Architecture (bricks, nails, window glass), Arms (weapons and ammunition), Clothing (buttons, shoe parts, garment fragments, clothing fasteners), Furnishings (furniture glass, doorknobs, furniture hardware), Kitchen (container glass, coarse and refined ceramics, faunal remains), Miscellaneous (unidentified plastic or metal), Personal (jewelry, mirrors, combs and brushes), and Tobacco (pipes and snuff boxes). Following this initial sorting, the groups were further divided based on material type.

Although South contended that his classification scheme was useful in characterizing broad cultural patterns, the concept was criticized by some as overly simplistic. In part, this related to the fact that an artifact may be used for multiple purposes or in association with varying activities throughout its use life. The emphasis on function is not without merit, however, and is useful in generally describing the range of activities that occurred at a given location. Furthermore, because South's scheme has been used so widely by archaeologists, it also facilitates inter-site comparison.

A second important goal of the artifact analysis focused on determining the date(s) of occupation of the historic components of each site. Once assigned to a functional category, each artifact was examined for temporally diagnostic features. Studies by Noël Hume (1970), South (1977), Miller (Miller 1980; Miller 1981), Majewski and O'Brien (1987), Jones and Sullivan (1985), and others have shown that ceramic and glass artifacts provide the most accurate data regarding temporal information. This is due to the fact that the decorative attributes of historic ceramics changed fairly rapidly over time largely due to changes in public taste. After the nineteenth century, advances in technology in glassmaking occurred rapidly. Because ceramic and glass objects are abundant at historic sites, this allows the analysis of a large assemblage or group of artifacts.

Other items that can provide temporal information include nails, plastics, and some machine parts. However, these items are not considered as useful for indicating a site's age as are ceramics and glass due to their broad range of manufacture dates. The manufacturing date range of an item often exceeds the time period during which it was in popular use. Cut nails, for instance, were in production since the late 1700s, but were not in common use until after 1830 or so. Therefore, the *effective date* for cut nails ranges from 1830 to 1880 (Loveday 1983). Most archaeologists tend to utilize the date when an item was in popular use rather than its production dates.

Thirdly, the analysis of artifacts by function facilitates the recognition of patterns across the site and between sites. Ball (1984) applied South's ideas to regional sites in Indiana and elsewhere in the Ohio River valley. As this process applies more to the recognition and interpretation of the collective assemblage than individual artifacts, the matter is discussed in greater detail in the final chapter of the report.

Activities Group

The Activities Group encompasses a broad range of artifacts related to work and play. Items associated with hand tools, machinery, agriculture, blacksmithing, carpentry, and manufacturing are examples of these activities. Related artifacts could include plow parts, saws, chisels, anvils, gears, and the like. Transportation-related items are often included in this category, although some researchers assign these to a unique group. Typical artifacts are horseshoes, harness parts, and other objects associated with mules and horses. Also, wheeled transport is represented by automobile, carriage, and wagon parts and accessories. Other items associated

with play are toys. Finally, reflecting what some may see as a "catch –all" category, the Activity group also encompasses fuel and fuel consumption, such as coal, clinker, ash, and cinders.

Coal, Clinker, Cinder, and Slag. Coal is a fossil fuel that was commonly used for heating. Clinker is a general name given to waste from industrial processes. As it relates to this project, it resulted from the burning of fossil fuels such as coal. Clinker often forms a loose, black deposit that consists of coke, coal, slag, charcoal, grit, and other waste materials. Slag is the byproduct of melted metal while cinder typically results from the burning of coal.

Architecture Group

Architectural artifacts include such items as wood, nails, bricks, window glass, shingles, and other materials used in the construction of buildings. Architectural artifacts that are useful in associating a date of construction include nails, window glass, and bricks.

Bricks. In early construction, bricks were used for features such as fireplaces and lining cisterns due to their high cost and labor-intensive production. The earliest form available, the hand-made, or hand struck brick, date from around 1830 to 1860, although they are still made today in very limited numbers (Gurcke 1987) (**Table 10**). Handmade bricks were often produced on or very near the construction site and were quite expensive due to the amount of labor involved. These bricks are identified by the linear striations left on one side as the excess clay was "struck" from the top of the mold prior to firing. Other diagnostic features that distinguish them from manufactured bricks include variable clay mixture, dimensions, and hardness (Wingfield et al. 2009).

Pressed brick became available after 1860. These bricks were manufactured by local kilns and produced by pressing the clay into a mold that resulted in six smooth sides. The over-all quality of pressed brick was higher than that of the hand-struck brick due to the more uniform and selective choice of clays and processing during manufacture. The firing process was also refined and produced a better quality, harder, more uniform red brick.

Table 10. Brick Manufacturing Techniques and Their Production Ranges

Brick	Production Range	Reference
Hand-struck	1830-1860	Gurcke 1987
Pressed	1860-present	Gurcke 1987

Limestone. Limestone was used for chinking, foundation stones, or piers. Small, angular pieces of limestone are assumed to be the former and are thought to have been used to fill gaps in log or stone construction. In the field, this material is often noted and discarded. Those fragments identified in the laboratory were retained. These were weathered, fossiliferous fragments.

Metal: Hardware. In contrast to hardware identified within the Activities group, some hardware could be attributed to doors or other structural elements. These often consist of hinges, latches, and locks.

Metal: Nails. Nails were washed and sorted by portion, manufacturing method, head type, pennyweight, and alteration. These are described individually below.

***Manufacturing Type*.** The earliest type of nail was the wrought iron nail. These nails exhibit a hammered surface texture, irregular heads, and rectangular, tapered shanks (Nelson 1968). Due to the amount of labor involved in their manufacture, these nails were expensive, although they were used throughout the nineteenth century until the introduction of the machine cut nail.

The machine cut nail was introduced between 1790 and 1830, and became widely available by about 1830 (Loveday 1983). The nails were cut from a sheet of iron, producing a nail with a rectangular shank and more uniform, square head. Cut nails are still produced today, though in very low quantities. By 1880, cut nails were replaced as the main supply of nails by the invention and introduction of the wire nail (Priess 1973). Wire nails have round shanks and round heads and are used on modern construction. **Table 11** summarizes nails and their production ranges.

Table 11. Types of Nails and their Production Ranges

Nail	Production Range	Reference
Wrought iron	Pre-1830	Nelson 1968
Machine cut iron nail	1830-1880	Loveday 1983
Wire nails	1880-present	Loveday 1983

Head Type. Nail heads included ***rosehead***, which had five facets spreading out and down from a central point; ***L-headed,*** which were primarily used for flooring and trim; and ***T-head*** having a flat disc head hammered over on both sides of the shaft. Cut nail heads were shaped individually until 1815 and then machine made. Another type of head was covered with a ***lead cap***. These were used as roofing nails on metal roofs. When struck, the lead cap flattened, creating a leak-proof joint when driven through a metal roof. These were commonly used on tin or corrugated iron roofs.

***Pennyweight*.** Early nails were classified by pence per hundred. Later nails were classified by the number of nails that could be purchased for a penny. The term penny weight is noted by a "d". There is disagreement concerning the origin of the symbol "d" that is used to describe nail weight, but the value of d relates to the length of the nail, for instance, 2d (1 inch), 3d (1.25 inch), 4d (1.5 inch), etc. (Noël Hume 1970). In current usage, a 2d nail is 1 inch long. Each 1d increase is a 0.25-inch increase in length up to 12d. A sixteen-penny nail is 0.25 inch longer than 12d. Thereafter, beginning with 20d, the remaining sizes are multiples of 10 with each 0.5 inch longer than the preceding size (Croft and Summers 1996). Studies have suggested that pennyweight might be used to infer the use of the nail and thence the activities occurring at the site. A produced by Walker (1971) and reprinted in Young and Carr (1993) is shown in **Table 12**.

Table 12. Inferred Functions from Pennyweight

Pennyweight	Function
2d and 3d	lathing
4d	shingle, shake
5d	shake, siding
6d	siding, ceiling
7d	ceiling, wall boarding
8d	flooring, siding
9d	flooring, siding
10d	flooring, siding
>10d	flooring, rafter

Alteration. Nails were examined for modification resulting from being clenched and/or pulled. Clenched would be interpreted if the tip had been bent over onto itself. Pulled was documented if the nail had a bent profile. If there was no evidence of alteration, the nail was identified as straight.

Plaster. The presence and relative frequencies of plaster, mortar, and concrete are often noted during excavation, but these artifacts are not typically collected. Rather, a representative sample of each is retained for future comparative purposes. The same is true for chinking; small angular pieces of limestone used to fill gaps in stone construction is often noted and discarded. Those fragments identified in the laboratory were retained.

Clothing Group

As the name implies, Clothing group artifacts included artifacts pertaining to items associated with or a component of clothes. These include fasteners used to secure the clothing such as buttons, snaps, hooks and eyes, grommets, safety pins, and zipper components. Decorative items attached to clothing are also assigned to this group; for example, beads and sequins are included. Leather shoe parts, belts, buckles, straps, stays, collar studs, garter snaps, and components of hats also belong to this category. In addition, sewing implements are included here, such as needles, straight pins, and the like.

Furnishings Group

Furnishings group artifacts include all furniture parts, decorative items used for adornment of the house, functional ceramics not associated with the kitchen, and tabletop flat glass. This encompasses decorative glass and ceramics, such as candy dishes, vases and flower pots, and ceramic statuary or figurines. Doorknobs, metal or ceramics hardware such as drawer pulls, doorknockers, mirrors, clock parts, etc. Lighting implements also are placed in this category, including items such as chimney lamp glass, chandelier crystals, light bulbs and sockets, candle holders and snuffers.

Industrial Group

The Industrial group includes artifacts, building remains, and remnants of raw or processed materials associated with industrial facilities. These facilities may be manufacturing-related, processing-related, warehouse, or other large-scale operation.

Kitchen Group

Kitchen group artifacts include all items used in the preparation, service, consumption, and storage of food items and beverages. Although pharmaceuticals are often included in this category as well (Ball 1984), these are placed within the Personal group within the current analytic system. The two most frequently occurring material types in the Kitchen group are generally ceramics and glass. These two classes are especially significant to interpretation because they can often be used in establishing dates of occupation. Eating utensils and tin cans are also included in this category. Bone is also included if it bears butchering marks. Other bone that cannot be confidently concluded to have been consumed, such as small rodent bones, would have been placed in the Miscellaneous category.

Ceramics. Historic ceramics are objects that are made from baked clay and are typically classified into two basic categories: refined earthenwares and coarse earthenwares. The basic production of ceramic wares involves mixing powdered clay, a tempering medium, and water to create a paste. The paste is then shaped into a desired form, dried, and a surface treatment is applied. The object is then fired to specific temperatures under controlled conditions to fuse the particles of clay, called vitrification. Surface treatments vary in relation to a wide variety of factors, including: availability of base material, technology, artistic skill, artistic expression, and popularity and can serve both utilitarian and aesthetic functions.

Coarse, or unrefined earthenwares are the least vitrified of the ceramic wares and are typically classified by paste type and glaze treatment. Pastes for stonewares are generally red or buff colored, with a lead or manganese glaze and minimal decoration. Unrefined earthenwares include redware, stoneware, and yellowware and were typically used for storage. Coarse earthenwares are relatively thick and were generally less expensive than the refined earthenwares. The thick walls were well suited to heavy, utilitarian objects such as jugs, crocks, churns, and pitchers. Some coarse ceramic vessel forms, such as jars, were used primarily for storage, but occasionally as tablewares. Redware storage vessels dominated this category of ceramics until the mid-nineteenth century when salt and alkaline glaze stonewares became available. Stonewares are relatively thick, usually with a gray salt glaze or brown clay slip. These ceramics were generally less expensive than the refined earthenwares with white glazes. Due to the abundance of domestic stoneware manufacturers and the difficulty in attributing vessels to a particular manufacturer, stoneware is considered a poor chronological indicator on nineteenth century archaeological sites (McCorvie 1992). Yellowware was mass-produced in regional factories beginning in the 1830s and continue to be produced today.

> **Stoneware** is so-named because of the dense and hard nature of the paste. The clays most suitable for use in stoneware manufacture can be fused by vitrification at very high temperatures without losing their form (Greer 1981). The color of the paste varies with the clay from which they were made; the color varies according to the iron content of the clay. Stoneware pastes may range from near white to deep red browns and grays; the lighter colored clays were preferred (Greer 1981:15). Unlike redware that is fired at lower temperatures and are permeable to liquids, stoneware does not require glazes to

prevent leaking. The interior of stoneware vessels were often left unglazed. Glazing, however, enhanced the appearance of the vessels and made them easier to clean. Because stoneware was durable, leak-proof, and acid-resistant; it became the preferred form of storage from acidic foods such as vinegar, wine, cider, sauerkraut, pickles, and more. However, numerous vessel forms were designed for use such as mugs, bowls, jars, jugs, pans, and bottles. Because it was easy to clean and did not retain odors, stoneware was also commonly used for chamber pots and milk pans (Greer 1981:16). Stoneware was used extensively during the latter half of the nineteenth century and well into the twentieth century. It was produced by numerous regional potters in both large-scale and small-scale operations.

Glazes. Lead glazes were achieved by use of lead oxide, red lead, white lead, or lead carbonate. Prior to 1750, lead glaze was applied by dusting vessel surfaces with a finely ground natural sulfide of lead, producing a yellowish or brownish glaze upon firing (Hughes and Hughes 1968). Fluid lead glazes were used in England by 1748, and by 1900, raw lead compounds were used almost exclusively as constituents of glazes, contributing to health problems. While safer salt and alkaline glazes became available in the mid-nineteenth century, the use of lead for glazing continued to be a problem, especially for imported wares. Governmental regulations on the use of soluble lead compounds in tableware glazes were enacted due to the increase in lead poisoning of consumers. A low solubility fritted lead glaze was developed and became the most commonly used glaze for tableware during the twentieth century (Majewski and O'Brien 1987).

Albany slip stoneware is a hard, dark brown glaze produced by mixing clay into a watery slurry, then dipping the vessel in this "slip" prior to firing. This type of finish was applied to the interior only, the exterior only, or to both surfaces. Initially, the clay was extracted from Albany, New York (hence the name), although it became widely produced in the Midwest during the latter part of the nineteenth century. It fell out of popularity sometime after 1910, with a suggested terminal date of 1940 (Zilmer 1987).

Bristol is the named applied to the last form of glaze to be popularly used on stonewares. A smooth white glaze was developed by potters in Bristol, England to cover the drab, earthen tones of stoneware pastes. This was in response to Victorian tastes and made possible by the technology that allowed the purchase of ceramic chemicals from suppliers (Greer 1981:210). The glaze quickly supplanted the previous method of salt glazing that resulted in dull gray and tan colors. The clean white look of Bristol glazes was appealing to a population obsessed with sanitation. Potters from Ohio realized the advantages of this glaze and introduced it on their wares at the New Orleans Exposition of 1884. It soon spread across the United States (Greer 1981:210).

Refined earthenwares are more vitrified than coarse earthenwares and include whiteware, pearlware, creamware, ironstone, and porcelain. These wares are typically associated with more expensive tablewares and were initially manufactured in England in an attempt to replicate Chinese porcelain. Refined earthenwares became popular by 1840 and remain popular today. Several different glazes were manufactured from the eighteenth through the nineteenth century including creamware, pearlware, and whiteware, each an attempt to achieve the whitest, most porcelain-like result. The most common decoration type is a clear glaze, although numerous decorative types were popular at different periods of time. The popularity of the differing decorations and styles are relatively good temporal indicators of historic assemblages (Jurney and Moir 1987; Majewski and O'Brien 1987; Miller 1981; Price 1979). Only those refined earthenwares that were recovered during the investigation are discussed below.

Ironstone is made up of clay, ironstone slag, flint, and blue oxide of cobalt. The paste is typically harder and whiter than whiteware, though softer than porcelain, and is generally referred to as Ironstone, Ironstone China, Royalstone China, Semiporcelain, Porcelain Opaque, Granite, Hotel China, and sundry (Majewski and O'Brien 1987). "Spode China", a fine-grained earthenware imitating porcelain, was first produced by Josiah Spode around 1805. In 1813, Charles Mason introduced what he called "Mason's Ironstone China" in Staffordshire, England in 1813, which quickly became quite popular (Collard 1967). A variation was introduced to the American market in 1842 by James Edwards. According to Majewski and O'Brien (1987), Henry and Garrow (1982) propose a date range of 1840 to 1885 for heavy-bodied ironstones. Towards the end of the nineteenth century, potters were producing larger quantities of lighter-weight ironstones, though the heavier wares remained on the market.

Surface treatments found on ironstone are generally the same as those found on pearlware or whiteware, and the dates of these treatments apply equally. However, the greatest stylistic expression of ironstone is generally plain, unmolded and plain, molded bodies and rims. The simple, durable, bright-white ware was extremely popular to the American consumer. The plain, unmolded forms are not very useful temporal indicators, due to their sustained popularity throughout the course of production of ironstone. Embossed plant motifs became popular after 1860, typically depicting oak leaves, maple leaves, grape leaves, ivy, corn, wheat, oats and hops or fruits such as gapes, peaches, plums, pears and berries. Embossed flowers such as clover, lilies of the valley, roses, daisies and tulips were also popular. A very popular ironstone pattern known as the "tea leaf" was popular during the 1860s and 1870s. This copper luster glaze included a tea leaf in the center of the plate with a brown band of luster surrounding the rim. Production of this design continued into the 1890s (Kovel and Kovel 1973).

Pearlware was introduced in 1799 by Josiah Wedgewood as an alternative to creamware (Majewski and O'Brien 1987:118). It has a cream or white colored paste with a clear lead or alkaline glaze. This glaze can appear to have a blue tint where it puddles or pools in crevices of the vessel such as the foot. Occasionally, blue specks are visible in the glaze (Frye 1991:54). Pearlware was popular from about 1790 to 1840. Two pearlware sherds were found during this project.

Porcelain ceramics are highly vitreous and have a high kaolin content. In its original, Chinese production, kaolin and feldspar were fired at temperatures between 1250 and 1400 degrees centigrade. European potters attempted to imitate the high quality of the Chinese porcelain and introduced a soft paste version around 1800. This was referred to as "bone china" due to its high content of calcium phosphate in the form of bone ash. The bone china was decorated in a variety of ways, including plain white, transfer-printing, decal, and gilding. Majewski and O'Brien state that few porcelain vessels were left undecorated (1987). Overglaze decoration was popular on European porcelain before 1880, while after 1880 they included decal motifs in combination with gilded or embossed designs (Majewski and O'Brien 1987). Underglaze decorations are typically only found in cobalt blue, since it is one of the only colors that can withstand the high firing temperatures used in the manufacture of porcelain (Majewski and O'Brien 1987). Porcelain was always a more expensive ware, and therefore, relatively uncommon. Due to its rarity, it is often an unreliable indicator of temporal occupation of a historic site. **Hard-paste** porcelain is a hard, translucent, white-bodied ware fired at very high

temperatures. This material does not weather in buried conditions and does not generally craze. It was first introduced by Chinese potters (Frye 1991:56).

Whiteware was developed in England around 1810 and by the 1830s it had become the most popular earthenware in America, remaining common to the present day. It consists primarily of a stark white paste covered with a colorless glaze. Surface decorations vary widely and many are used as relatively accurate temporal indicators of historic archaeological sites. Whiteware was left plain (undecorated), hand painted, transferprinted, decorated by sponging techniques (spongeware), annular painted, lustered and embossed, or decorated with decals (decal ware), among others. Types of decorated whiteware are discussed below.

Refined Earthenware Decorative Techniques. To make ceramic wares commercially competitive with the high-quality and highly desired Chinese porcelain, ceramic manufacturers employed a variety of decorative techniques to all their wares. These decorative techniques include hand painting, transfer printing, and gilding, among others.

Flow blue decoration was caused by the seeping of transferprinted designs over the adjacent areas during firing. This desired effect was manufactured from 1825 to the early twentieth century according to Snyder (1992). This source divides the production of flow blue into three periods: Early Victorian (1835-1860), which produced Oriental and Scenic patterns; Middle Victorian (1860s-1870s), which produced floral patterns; and Late Victorian (1880s-early 1900s), which produced Art Nouveau patterns) (Snyder 1992:24). Colors were predominantly a cobalt blue, but could also be puce, mulberry, and sepia during the later years.

According to references cited by Stelle (2001), the maximum popularity, production range, and median dates for scenic flow blue are 1840-1849, 1840-1860, and 1850, respectively. The same dates for flowery flow blue are 1870-1879, no date provided, and 1875

Gilding is the addition of gold-colored bands or designs to otherwise plain and molded whiteware. It was also used to add accent to flow blue patterns. While gilding can occur on mid-nineteenth century whiteware, it was most popular between 1880 to about 1913.

Plain, undecorated whiteware is common after 1820. It often featured a molded rim and was the cheapest form of tableware found in most households by 1840. It is typically recovered from archaeological sites that postdate 1930 (Esary 1982). Other decorative techniques applied to the wares include hand-painted designs, transferprinted designs, spongeware, annular, luster and embossing, decal ware, art ware, and fiesta ware. Plain and molded whiteware was often decorated with gold colored bands or designs.

Sponged decoration was also an underglaze decoration. This decoration was created by the touch of brush bristles, in which case it was called spatterware, by cut sponges, or by chamois (Majewski and O'Brien 1987). Colors were often blue or green, but red, yellow, purple, pink, brown, and black were also produced. Dates provided by Majewski and O'Brien were ranged from 1835 to 1885. Stelle (2001) notes 183 to 1860 with a median date of 1850 as being provided by Esary (1982).

Transferprint wares were produced and sold in high quantity with both pearlware (ca. 1795 to 1830) and whiteware (ca. 1830 to 1860). Originally intended for use on

porcelains, the process was not used on earthenwares until around 1780. The process involved engraving a pattern onto a copper plate, then a tissue-paper print or "proof" was taken from the design and pressed against a piece of undecorated ware, transferring the design to the vessel. Blue was by far the most common color of transferprinted wares before 1830. Brown and black prints appeared after 1825. By 1830, green, red, pink, mulberry, and light blue were produced. Multiple colors in one pattern occurred after 1840.

Maker's Marks are often placed on ceramic wares that provide information regarding date of manufacture, manufacturer, importing practices, or other information. These were typically impressed, transferprinted, or painted on the backs or undersides of the vessel. Few American wares were marked prior to 1850, and it is suggested that marks on nineteenth century American pottery tends to be of poorer quality than their English counterparts, often being blurred and difficult to read (Majewski and O'Brien 1987).

***Mean Ceramic Date*.** A general date documenting when a site was in use can be calculated by the mean ceramic dating formula devised by South (1978). This formula calculates a mean date by using the median manufacture date for the various historic ceramic sherd types recovered from the site. After identifying these median manufacture dates for each type, each date is multiplied by the total number of sherds of that type. The products of all types are added together, and then divided by the total number of sherds in the assemblage for which median manufacture dates were obtained. The product will be a date at which time the site was occupied.

Glass. Production of glass began in America at Jamestown in 1608. Since that time, glass production has undergone many technological shifts, making it a useful indicator of temporal occupation. The history of the evolving technology is the subject of an extensive, if frequently contradictory, literature. The major goal for archaeologists trying to classify glass has been to historically document the time frame for the technological attributes that are macroscopically available.

A variety of technological advancements and changes affected the glass industry in the nineteenth century, primarily in the production bottles, jars, and containers. Prior to the 1830s, bottles were blown freehand. These vessels are identified by distinctive marks such as pontil marks, hand-applied lips, and the presence of irregular and lopsided air bubbles. The vast majority of freehand-blown bottles display pontil marks where the blowpipe was attached to the bottom of the vessel while the lip was being finished. Handmade containers were manufactured until around 1870.

Molding. Molding represents a major technological breakthrough in terms of labor efficiency and the uniformity of the product. An early glass molding method was called dip molding. To manufacture a round bottle, the glass blower would blow the bubble of glass into a round cylinder, open at one end. This method allowed for embossing such things as product names and logos. Glass blowing technology then progressed to use of multiple molds, leaving tell-tale ridges in the final glass product. The number of molds and their configuration determined the location of these lines. Each of these methods required further hand work to complete the rim of the vessel. In 1903 a fully automated bottling machine was invented by Michael Owens, which quickly came to dominate the industry. With it, the entire bottle was rendered in a mold. Mold marks extended completely up the side of the body and neck and onto the lip. The machine left a circular mark on the base of the vessel referred to as an Owens scar.

Finish. The *finish* of a vessel refers to how the mouth of the vessel is completed. Prior to the introduction of the automatic bottling machine, this was done in one or more production steps. At least seven different techniques are identified in the archaeological record and include fire polished, laid on ring, simple shaped, applied-tooled, ground rim, improved-tooled, and machine made.

Fire-polished finish simply involved reheating the mouth of the bottle and smoothing the lip. The *laid-on ring* was a technique wherein a "string" of glass was wrapped around the mouth of the bottle. The simple shaped finish required reheating the orifice and then creating either a fold or a *flange* for the lip. The *applied-tooled method* involved reheating the orifice and applying an additional glob (or two) of glass. The glob was shaped by the tool and was annealed to the neck of the bottle. An examination of the throat of the vessel will, typically, reveal a seam where the two pieces of glass were joined or annealed. The *ground-rim procedure* consisted of taking the cooled vessel and mechanically grinding the lip area to achieve the desired profile and resulting in a matte texture. The *improved-tooled process* eliminated the separate step of adding and annealing the glob of glass. The lip and body of the vessel are all of one piece and the finish tool is used for a final trim of the lip area. *Machine-made* vessels eliminated the need for any additional steps in the production process. The finish is achieved in the molding process itself and the mold mark lines extend up and over the lip of the vessel. Beaded jars, used for canning, are those in which the jar is sealed at the lip and on the bead which is located below the screw threads (Frye 1991:92). **Table 13** summarizes rim manufacturing techniques and their production ranges (Deiss 1981).

Table 13. Technological Rim Techniques and Their Production Ranges

Technology	Production Range	Reference
Fire-polished	To 1855	Deiss (1981)
Laid-on ring	1825-1910	
Flanged rim	To 1875	
Ground rim	1820-1915	
Applied rim	1825-1910	
Improved-tooled rim	1875-1920	
Machine-made	1903-present	

Color. Most bottles produced in the first half of the nineteenth century were of colored glass with the color resulting from the natural impurities found in the sand from which the glass was made. The "black" or deep olive and brown colors resulted from the presence of iron oxide. However, clear glass became increasingly desirable as the century progressed and consumers preferred to have the contents of bottles visible (Baugher-Perlin 1982).

Aqua colored glass is a natural color resulting from the presence of iron in the sand used in the manufacturing process (McCorvie 1992). It was commonly used for vessels such as beer bottles, food containers, medicine bottles, and inkwells and was manufactured from before the 1800s to the present (Baugher-Perlin 1982). However, aqua bottles became uncommon after the 1920s when colorless glass became more popular, although many aqua fruit jars were made well into the 1930s. Ball fruit jars were made in a distinct “Ball blue” color from around 1909 until the late 1930s (Creswick

(Creswick 1987; Toulouse 1969), and Mason jars employed this color for many years as well. **Aqua blue** and **pale aqua** are additional terms used during the analysis to identify variation within the hues.

Brown glass is much darker in appearance than amber glass and is relatively common in historic artifact assemblages. Production of brown glass began in 1860 (Fike 1987) and continues today. The color results from the presence of iron and sulfur in the manufacturing process and was primarily produced for beverage containers such as beer (Baugher-Perlin 1982).

Clear glass was initially manufactured using lead or flint as a clarifying agent. However, this method was expensive and clear glass during the 1800s was rare. In 1860, glass manufacturers began adding bicarbonate of soda (or soda-lime) as a clarifying agent during the manufacturing process. Lead, or flint glass, can be distinguished from soda-lime glass by use of an ultraviolet light. Leaded glass will appear bluish purple while soda-lime glass will appear greenish yellow. In 1880, manganese replaced soda lime as the clarifying agent of choice in the manufacture of clear glass. However, manganese proved to be unstable in ultraviolet light and turned a purplish hue over time. The resulting lavender color is often referred to as **sun-colored amethyst (SCA) glass**, or **solarized glass**. By 1915, selenium replaced manganese in the production of clear glass (**Table 14**).

Cobalt glass is a dark blue glass produced from the addition of cobalt or copper to the sand, soda and lime used to produce aqua glass. This process incurred additional costs in manufacture and is therefore less common in historic artifact assemblages. The color has been used for medicines and cosmetics, as well as food products with the most popular usage between 1840 and the present (Lindsey 2012).

Milk glass, an opaque white glass, was typically manufactured by the addition of tin or zinc oxide, fluorides, and phosphates to the silica mix (Kendrick 1968). It was used in a wide variety of bottles, such as cosmetic and toiletry bottles from about the 1870s to around 1920, as well as ointment and cream jars from the 1890s to the mid twentieth century. Milk glass was commonly used for the seals of Mason-type jars in the 1870s and can be a useful temporal marker if found within historic archaeological assemblages**.**

Olive and **forest green** glass was produced from the seventeenth century to the mid-nineteenth century. The color results from iron impurities in the sand used during that time of glass manufacturing, giving it a distinctive olive-green color (McCorvie 1992). This type of glass was most commonly used in early (ca. 1800-1850) American-made bottles, wine bottles, and flasks (Lindsey 2012).

Table 14. Glass Colors and Their Production Ranges

Glass Color	Production Range	Reference
Aqua, pale aqua, aqua blue or Ball blue	pre ca. 1800-present	Baugher-Perlin 1982
Brown	1860-present	Fike 1987
Clear, lead glass	1770 to present	
Clear, soda-lime glass	1860-c.a.1880	
Cobalt	1840 to present	Lindsey 2012
Solarized or Sun-Colored Amethyst	1880-1915	Kendrick 1968
Milk or opal glass	ca. 1870 to present	Lindsey 2012
Olive green and forest green	1800-1850	Lindsey 2012

Embossing typically occurs on glass vessels that were produced using molds. The embossing primarily labeled the vessel with its contents and often, the manufacturer, for example, the Mason jar. However, decorative embossing was also popular, with designs featuring eagles, stars, swirls, architectural elements, and geometric patterns. Embossed panels on proprietary bottles became easy to manufacture with the introduction of the plate mold in 1850 (Newman 1970). To protect commercial manufacturers, the embossed message “Federal Law Prohibits Sale or Reuse of this Bottle” was required on bottles between 1932 and 1964. **Table 15** summarizes some embossing techniques and their production ranges. Embossing is still applied to glass wares today, although it became less popular when paper labels became common by the middle of the nineteenth century.

Table 15. Embossed Glass Production Ranges

Embossing	Production Range	Reference
Panel embossing	1850-1915	Newman 1970
Mason Jars	1858 to present	Toulouse 1971
“Federal Law prohibits…”	1932-1964	

Miscellaneous Group

This broad category encompasses everything that could not be placed within the other functional groups. Unidentifiable metal and melted glass are two examples. Bone that does not exhibit cutmarks and cannot therefore be attributed to Kitchen is also placed within the Miscellaneous Group.

Prehistoric Analyses Results

A total of 20 prehistoric artifacts were recovered during the project (**Table 16**). The majority of these were recovered from site 12FL120 and consisted mainly of FCR (n=5) and Use-modified Tools (n=5).

Table 16. Assemblage Recovered During Project

Site Number	Group	Count
12FL117	FCR	2
	Use-Modified Tool	2
12FL120	Biface	2
	Ceramic	1
	Core	2
	FCR	5
	Organic	1
	Use-Modified Tool	5
Total		**20**

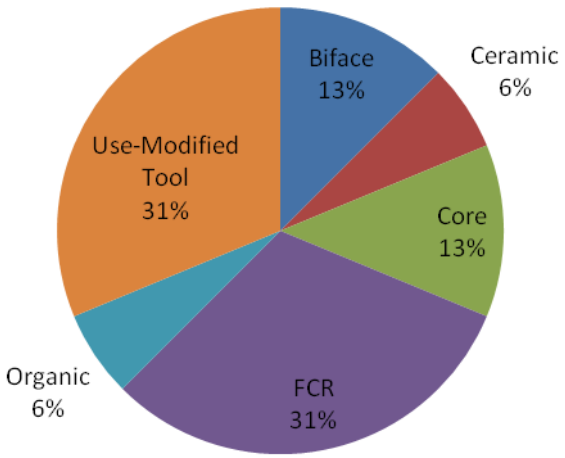


Figure 46. Proportion of prehistoric artifact groups within site 12FL120.

Ceramic Artifacts

One ceramic artifact was recovered during the project (**Table 17**). This artifact reflected late Woodland landuse. Temper was very coarse, rounded ferromagnesian material that attracted a magnet. The decoration was smoothed over cordmarking; exceptionally deep imprints appeared to be S-twist (**Figure 47**). A few lines appeared to be incised.

Table 17. Ceramic Artifact Recovered During Project

Site Number	Excavation Unit	Group	Temper Type	Artifact Type	Count	Weight	Bag Number	Artifact Number
12FL120	Surface	Ceramic	ferromagnesian	vessel	1		12	1

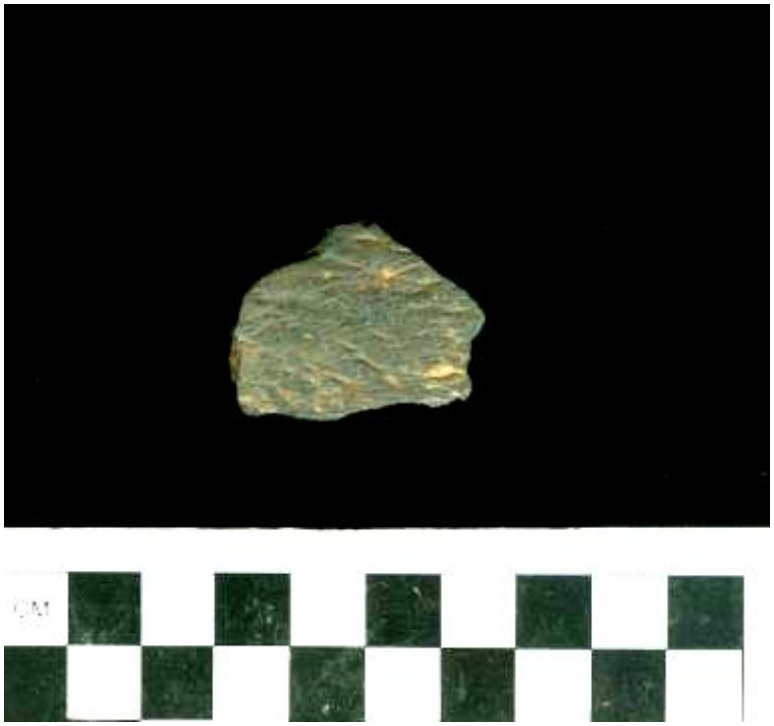


Figure 47. Ceramic recovered from site 12FL120, Artifact 12-1.

In addition to this ceramic, one ceramic was identified within the landowner's collection. This ceramic is depicted below in **Figure 48**, **Figure 49**, **Figure 50**, and **Figure 51**. It contained a siltstone or mudstone temper, and dates to the late middle or late Woodland periods.

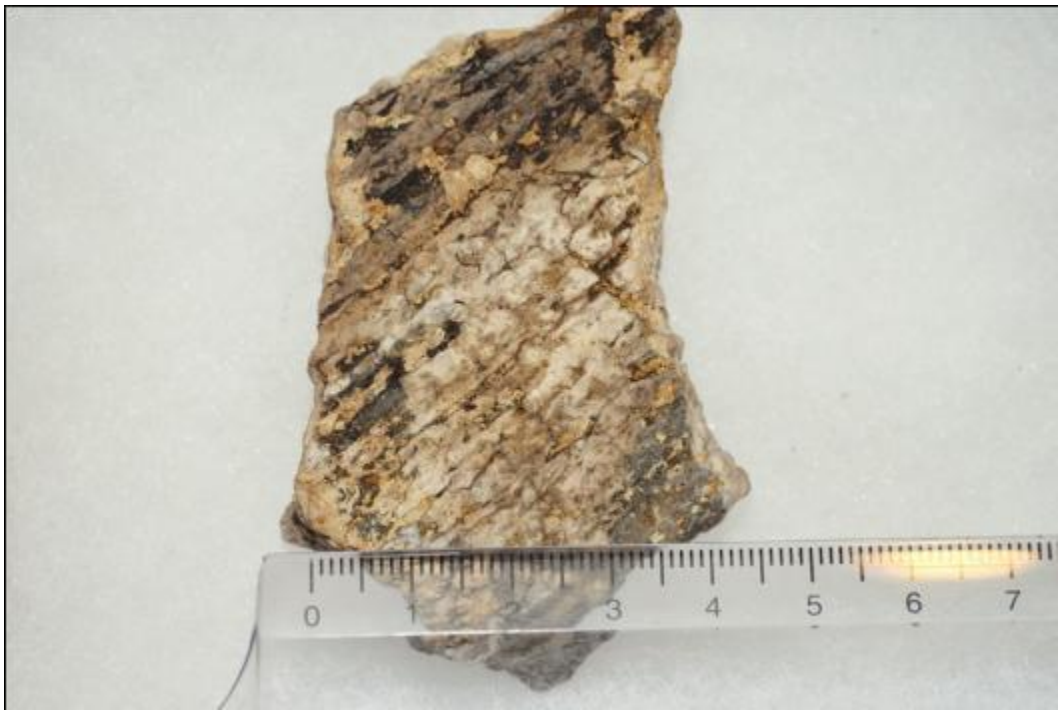


Figure 48. Sherd in landowners' collection, with scale.
Photo courtesy of Al Goodman.



Figure 49. Sherd in landowner's collection, one face.
Photo courtesy of Al Goodman.



Figure 50. Sherd in landowner's collection, other face.
Photo courtesy of Al Goodman.



Figure 51. Sherd, close-up of temper.
Photo courtesy of Al Goodman.

Bifaces

The two bifaces that were recovered represent two varying extremes of the reduction sequence (**Table 18** and **Figure 52**). Both were recovered from site 12FL120. One was a finished Wyandotte ppk distal fragment. This fragment measured 28.96 mm by 29.45 mm. It was heat damaged. Retouch and scraper use were visible along one margin. The other item was comprised of Jeffersonville Bed IV chert. The item appeared to be waterworn and may be an intrusive element.

Table 18. Bifaces

Site Number	Excavation Unit	Material Type	Artifact Type	Portion	Count	Wt	L	W	Th	Bag Number	Catalog Number
12FL120	Surface	Wyandotte	ppk	distal	1		28.48	29.42	8	16	1
	Surface	Jeffersonville	early stage	whole	1		66.93	47.28	27.27	17	5
Total					**2**						



Figure 52. Bifaces recovered during the project. Site 12FL120, Artifact 17-5 and 16-1, left to right.

Cores

Two cores were recovered (**Table 19**). One large cobble appeared to be granite. The item was reddened; large flake scars extended across two faces. The other core was composed of cobble chert (**Figure 53**). In this instance, material was saccharoid yellow chert with quartz-filled vugs. Both cores appeared to be approximately 50 percent reduced. Both were recovered from site 12FL120.

Table 19. Cores

Site Number	Bag Number	Catalog Number	Excavation Unit	Depth	Group	Material Type	Artifact Type	Subtype	Class	Subclass	Portion	Count
12FL120	12	8	Surface		Core	igneous		50 %				1
	12	7	Surface		Core	cobble chert	multidirectional	50 %	cobble cortex			1
Total												**2**



Figure 53. One of two cores recovered during the project. Site 12FL120, Artifact 12-7.

Fire-cracked Rock

Seven FCR were recovered during the project (**Table 20**). These were recovered from surface contexts of sites 12FL117 and 12FL120. The number was almost equally split between these two sites. Material types consisted of sandstone (n=5), igneous (n=1), and indeterminate (n=1). All exhibited cobble cortex, indicating a gravel bed source for the material.

Table 20. FCR

Site Number	Excavation Unit	Material Type	Class	Count	Weight	Bag Number	Catalog Number
12FL117	Surface	sandstone	cobble cortex	1		13	8
		indeterminate	cobble cortex	1		13	6
12FL120	Surface	igneous	cobble cortex	1		12	6
		sandstone	cobble cortex	4		12	2
Total				**7**			

Organics

One charcoal sample was retained (**Table 21**). This sample consisted of much red staining and dirt within the sample. This will be retained with the collection for possible future analysis or dating.

Table 21. Organics

Site Number	Excavation Unit	Group	Material Type	Count	Bag Number	Catalog Number
12FL120	Surface	Organic	charcoal	1	12	10
Total				**1**		

Use-Modified Tools

The seven Use-Modified tools were recovered from sites 12FL117 and 12FL120 (**Table 22**). Material types included sandstone and igneous cobbles. Most likely, these were recovered from the local gravel beds Two of these items exhibited interesting wear patterns. Artifact 13-7, recovered from site 12FL117 exhibited extensive grinding or burnishing in addition to impact damage (**Figure 54**). The artifact was a large, heavy cobble that measured 98.3 mm by 77.25 mm by 48.7 mm. Artifact 12-9, recovered from site 12FL120, was a cobble of low sphericity that exhibited pecking around the margins and a hole that may have been intentionally drilled (**Figure 55**). This artifact measured 87.71 mm by 68.29 mm by 18.64 mm. Two anvils also were recovered (**Figure 56** and **Figure 57**).

Table 22. Use-Modified Tools

Site Number	Material Type	Artifact Type	Class	Count	Bag Number	Catalog Number
12FL117	sandstone	anvil	cobble cortex	1	13	5
		hammerstone and grinding stone	cobble cortex	1	13	7
12FL120	igneous	hammerstone	cobble cortex	1	12	5
	sandstone	anvil	cobble cortex	1	12	3
		hammerstone	cobble cortex	2	12	4
				1	12	9
Total				**7**		



Figure 54. Stone exhibiting impact damage and ground area. Site 12FL117, Artifact 13-7.



Figure 55. Stone with hole and pecked margins. Site 12FL120, Artifact 12-9.



Figure 56. Anvil recovered from site 12CL117, Artifact 9-5.



Figure 57. Anvil recovered from site 12CL120, Artifact 1-3.

In addition to these lithic artifacts within the recovered collection, one lithic within the landowner's collection was examined (**Figure 58**).



Figure 58. Lithic artifact within landowner's collection.
Photo courtesy of Al Goodman.

Historic Analyses Results

A total of 352 historic artifacts were recovered during the project (**Table 16**). The proportion of functional groups represented within this collection is depicted in **Figure 59**. The majority overall was Architecture (33 percent, n=115), while Activities, Kitchen, and Furnishings were represented in comparable proportions.

Table 23. Historic Functional Groups Recovered During Project

Group	Count
Activities	81
Architecture	115
Clothing	1
Furnishings	63
Industrial	5
Kitchen	76
Miscellaneous	11
Total	**352**

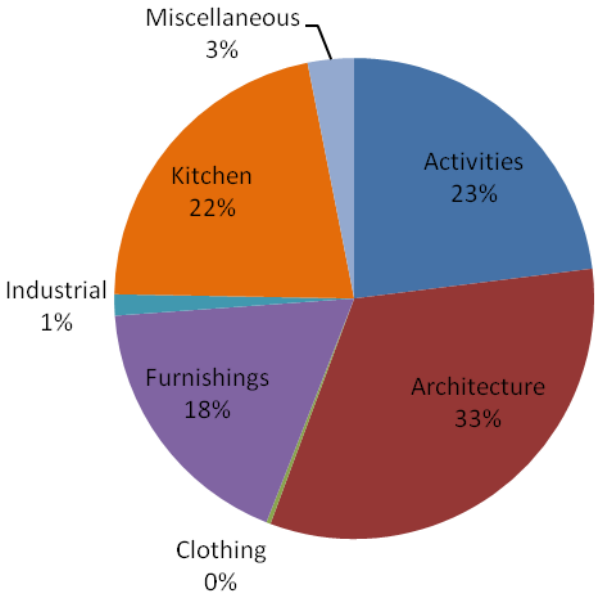


Figure 59. Proportion of functional groups represented by all artifacts recovered during project.

Proportions of functional groups for the three historic sites—12FL117, 12FL118, and 12FL119—are shown in **Figure 60**, **Figure 61**, and **Figure 62**, respectively. The proportion for the latter site—12FL119—was selectively collected. Therefore, the representation is skewed. With regard to the other two sites, the high proportion of Activities artifacts combined with the presence of the Industrial artifacts indicate a non-residential site function for site 12FL117 (**Figure 60**). In contrast, the proportions of Architecture, Kitchen, and Furnishings artifacts recovered from site 12FL118 indicate a residential site (**Figure 61**).

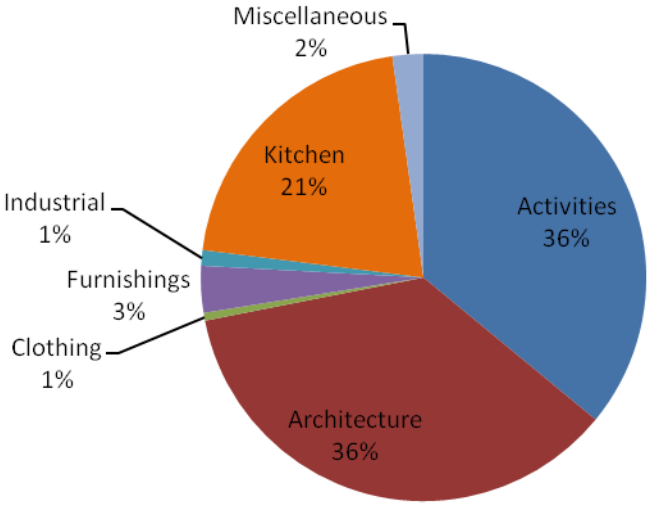


Figure 60. Proportion of functional groups represented by artifacts recovered from site 12FL117.

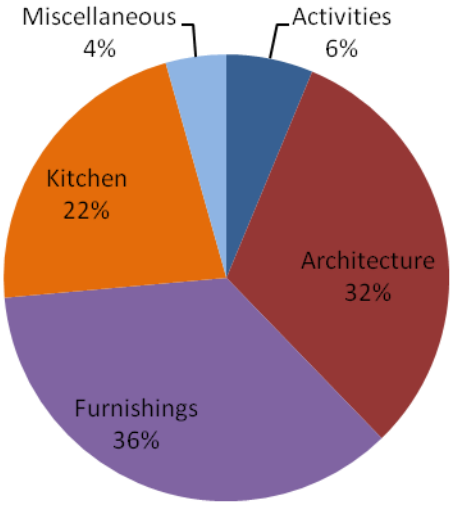


Figure 61. Proportion of functional groups represented by artifacts recovered from site 12FL118.

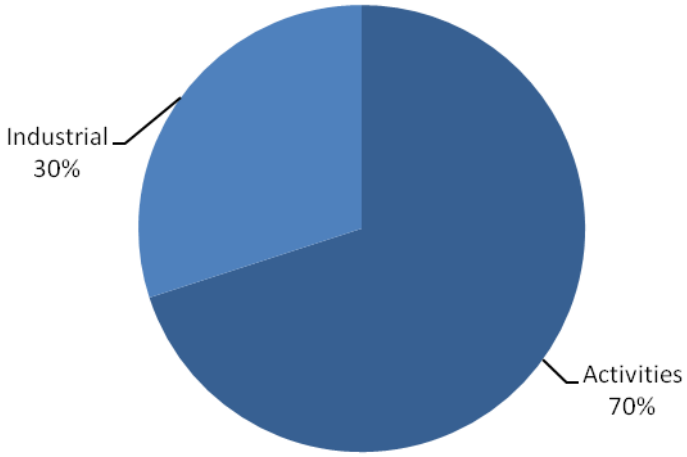


Figure 62. Proportion of functional groups represented by artifacts recovered from site 12FL119, influenced by collection strategy.

Activities Artifacts

Eighty-one artifacts were placed in the Activities group (**Table 24**). These were recovered from sites 12FL117 (n=64), 12FL118 (n=10), and 12FL119 (n=7). Material types were highly variable and included the following: 3 charcoal, 6 cinder fragments, 48 coal fragments, 1 coal slag fragment, 1 composite item, 1 safety glass fragment, and 15 metal fragments. The metal fragments consisted of 5 bolts, 2 flywheels, 2 screws, and one each of the following: wire, washer, staple, iron slag, fitting, and flat fragment.

Table 24. Activities Artifacts

Site Number	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count	Comments	Bag Number	Catalog Number
12FL117	asbestos or paper		flat				fragment	1		19	15
	asphalt							1		19	12
	charcoal							2		19	11
							fragment	1	burned fragment of wood	7	1
	cinder							4		19	13
							fragment	2		21	2
	coal							11		18	3
								36		19	17
	coal slag						fragment	1		19	10
	composite		spark plug with tube				whole	1	13.55 mm (0.5 inch) diameter porcelain spark plug, large knob of corrosion, then copper tube or similar diameter	19	9
	metal	iron	flat				fragment	1	knob on one face, may be rivet	19	14
			staple					1		19	16
			washer				whole	1	32.70 mm (approx 1.25 inch) diameter; 4.801 mm thickness; tab on the surface of one face	13	3
			wire					1	large concretion, part appears to be wire	19	24
12FL118	ceramic	porcelain-hard paste	doll		clear glaze	plain	leg	1	no painting for sock or shoe; flattening	15	1

Site Number	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count	Comments	Bag Number	Catalog Number
	coal							1		24	3
	glass	aqua blue	flat	safety glass			fragment	3		23	5
	metal	iron	bolt				whole	1		5	7
				90d	square head	straight	whole	1		9	1
			fitting				whole	1		5	8
			slag				fragment	1		24	2
	plastic		spoon				proximal	1		5	9
12FL119	metal	iron	bolt	16d	hexagonal		whole	1	includes washer; threads are fragmenting	26	3
				9d	hexagonal		whole	2	both have washer; one extremely worn	26	2
			flywheel					2		26	4
		iron	screw	6d	slotted		whole	2	one worn down to a point; metal within slot appears to be different than rest	26	1
Total								**81**			

Ceramic. One porcelain doll's leg was recovered from site 12FL118 (**Figure 63**). On the basis of one flattened face that is assumed to be the interior, the leg appears to be the right leg.



Figure 63. Doll leg recovered from site 12FL118, Artifact 15-1.

Composite. One spark plug and tube, comprised of porcelain and copper alloy, was recovered (**Figure 64**). This was recovered from site 12FL117. It exhibited a large area of corrosion.

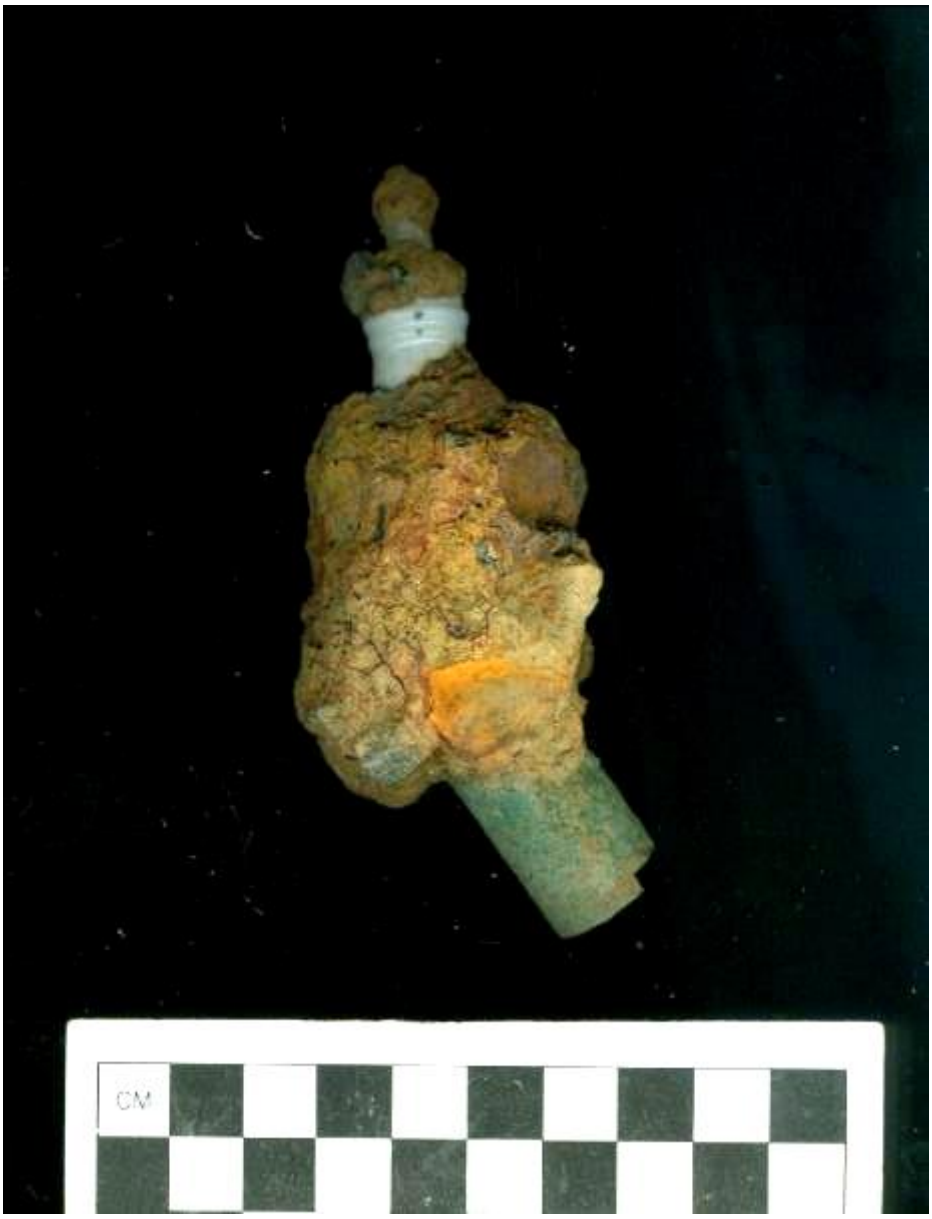


Figure 64. Spark plug recovered from site 12FL117, Artifact 19-9.

The screws, bolts, and flywheels recovered from site 12FL119 were interesting in that one within a provenience was extremely worn, while another example was not. The two flywheels were recovered from the tannery—12FL119 (**Figure 65**). Both were 3 inches in diameter with central holes through which the accompanying bolts fit. One wheel was in poor condition. The other had legible impressed marks on exterior: "314" at the top of the circle, "MALLEABLE" below the circle, and a faint "69" to the right of the central hole. Two notches were on opposite margins. Angular indentations were on exterior face.



Figure 65. Flywheels recovered from site 12FL119. Artifact 26-4

Figure 66 depicts additional large bolts and a fitting. These were recovered from site 12FL118. The fitting measured 70.41 mm (2.77 inch) in diameter and 22.04 mm (0.87 inch) in width; threading could not be identified through corrosion. The larger bolt measured 7.5 inches in

length and approximately 1 inch in diameter. The head was 1.5 by 1.3 by 0.76 inch. The smaller bolt measured 58.06 mm (22.85 inch) in length and 37.31 mm (1.47 inch) in diameter.



Figure 66. Large and small bolts and fitting. Recovered from site 12FL118, Artifacts 5-8, 901, and 5-7, left to right.

Architecture Artifacts

The collection contained 115 artifacts placed in the Architecture group (**Table 25**). This number included 2 handmade brick fragments (**Figure 67**), 2 machine-made brick fragments, 18 limestone fragments, metal nails, and 1 plaster fragment. The plaster, handmade brick fragments, and most of the limestone fragments were recovered from site 12FL118.

Table 25. Architecture Artifacts

Site Number	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Count
12FL117	brick	machine made					2
	glass	aqua	flat				13
		clear	flat				17
	limestone						2
	metal	iron	nail, indeterminate				1
			nail, screw, or bolt	indeterminate	indeterminate	indeterminate	14
			nail, wire				1
				10d	round head	clenched	1
				16d	round head	straight	2
				20d	round head	clenched	1
						pulled	1
				6d	round head	pulled	1
				9d	round head	straight	3
						pulled	1
				indeterminate	round head	indeterminate	1
						straight	1
					indeterminate	indeterminate	1
			tack				1
12FL118	brick	handmade					2
	glass	aqua	flat				13
		clear	flat				12
	limestone						16
	metal	iron	nail, indeterminate				1
					indeterminate	indeterminate	1
				12d	round head	straight	1
				indeterminate	indeterminate	indeterminate	1
						straight	1
			nail, wire	9d	round head	straight	1
	plaster						1
12FL120	metal	iron	nail, handwrought	indeterminate	indeterminate	indeterminate	1
Total							**115**



Figure 67. Brick fragments recovered from site 12FL118, Artifact 15-11.

The Moir dates derived for aqua and clear Architecture flat glass are presented in **Table 26**. The dates for both types of glass are comparable for each of the two sites from which Architecture flat glass was obtained. Comparison between the two sites, however, shows a slight temporal lag for site 12FL118. Moir dates for this site were approximately 1930, while dates derived for site 12FL117 were approximately 1914. As the numbers of artifacts within these data sets were small, the sites may have been inhabited contemporaneously.

Table 26. Moir Dates for Clear and Aqua Glass By Site

Site Number	Group	Material Type	Material Subtype	Count	Moir Date
12FL117	Architecture	glass	aqua	13	1913
	Architecture	glass	clear	17	1914
12FL118	Architecture	glass	aqua	13	1931
	Architecture	glass	clear	12	1928

Clothing Artifacts

One artifact, recovered from site 12FL117, was placed in the Clothing group (**Table 27**). This artifact was a plastic button (**Figure 68**).

Table 27. Clothing Artifacts

Site Number	Artifact Type	Material Type	Subtype	Class	Subclass	Portion	Count	Bag Number	Catalog Number
12FL117	button	plastic	4 hole	sunken center	18 French ligne	whole	1	20	3

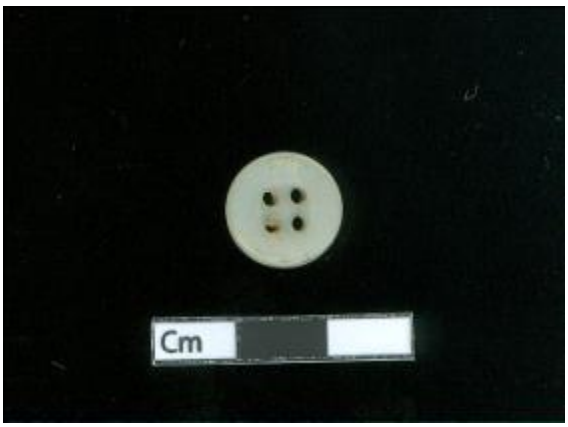


Figure 68. Button recovered from site 12FL117, Artifact 20-3.

Furnishings Artifacts

Sixty-three artifacts were Furnishings (**Table 28**). The majority of these (n=48, 76 percent) were clear flat glass fragments that were greater than 3 mm in thickness. The greatest number of Furnishings artifacts were recovered from site 12FL118 (n=57, 90 percent).

Table 28. Furnishings Artifacts

Site Number	Artifact Type	Material Type	Material Subtype	Portion	Count	Bag Number	Catalog Number
12FL117	chimney lamp	glass	clear	fragment	1	19	3
	flat	glass	aqua	fragment	1	18	1
					2	21	1
	indeterminate	glass	leaded	fragment	2	21	2
12FL118	chimney lamp	glass	clear	fragment	2	3	4
					1	23	7
	flat	glass	aqua	fragment	1	8	1
					1	11	2
					2	23	3
			aqua blue	finish	1	14	2
				fragment	1	14	2
			clear	finish	48	23	4
Total					**63**		

Industrial Artifacts

Five artifacts were placed within the Industrial group (**Table 29**). Artifacts recovered from the industrial site (12FL117) consisted of two artifacts. An amorphous remnant of lead material measured 68.7 mm by 20.32 mm (**Figure 69**). A stove burner grill exhibited holes for two burners (**Figure 70**). The fragment included most of a complete burner except for one broken corner. The broken fragment was also present. Most of the other burner was absent. The grill measured approximately 350 mm by 225 mm; the hole measured 200 mm by 185 mm. The protrusions into the center angled upward; the top surface at the end of the projection was flattened.

Table 29. Industrial Artifacts

Site Number	Artifact Type	Material Type	Material Subtype	Portion	Count	Bag Number	Catalog Number
12FL117	raw material	metal	lead	fragment	1	13	4
	stove burner grill	metal	iron	fragment	1	22	4
12FL119	strap	composite	rubber covered in textile	fragment	1	25	3
	strap track	wood		whole	1	25	2
	peg	wood		whole	1	25	1
Total					**5**		



Figure 69. Lead remnant recovered from site 12FL117, Artifact 13-4.



Figure 70. Stove burner grill recovered from site 12FL117, Artifact 22-4.

Three other Industrial artifacts were recovered from site 12FL119—the tannery. These included the strap fragment and its wooden track (**Figure 71**). The strap was pliable rubber that had been sheathed in a textile (**Figure 72**). The track was of wood and exhibited 4 channels that were approximately 27.90 mm (1.1 inch) in width. The track exhibited 4 nail holes; 2 nails were still present. The wood appeared to be in good condition.



Figure 71. Strap (Artifact 25-3) and track (Artifact 25-2), recovered from Site 12FL119.

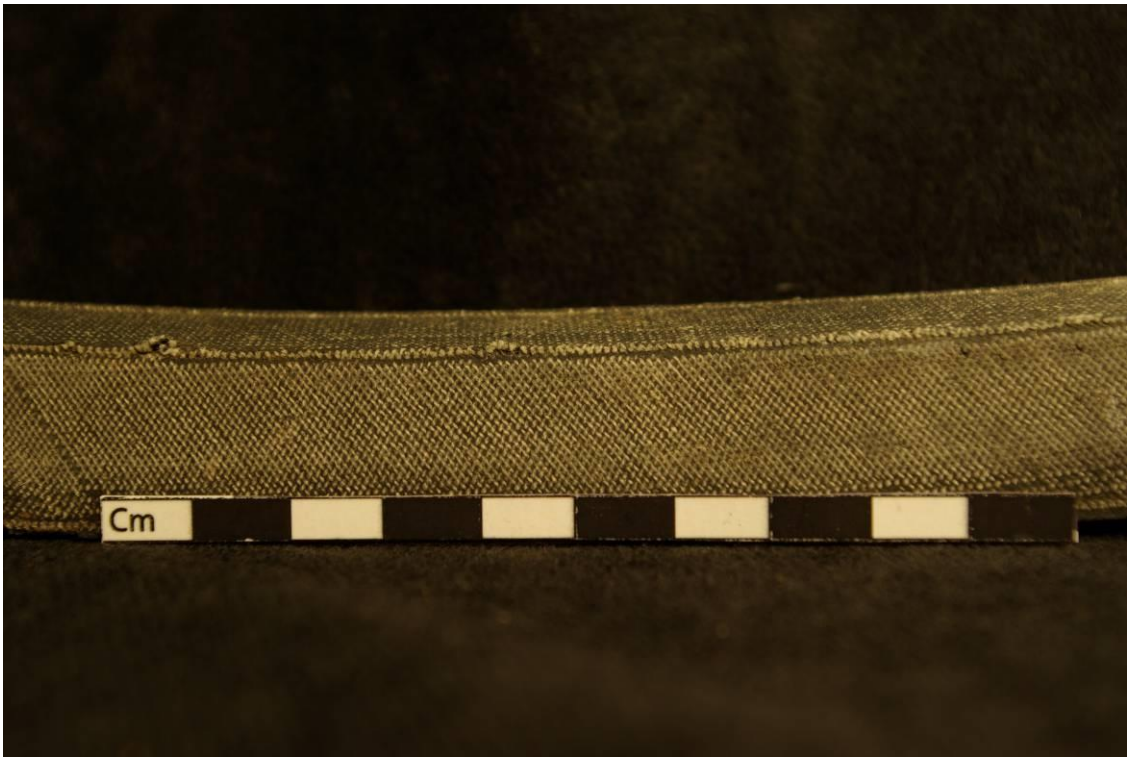


Figure 72. Close-up of strap, Artifact 25-3, recovered from site 12FL119.

A wooden peg was recovered from the tannery site as well (**Figure 73**). A number of these pegs would be installed along the walls of a spherical vat into which the hides would be put, rotated, and cleaned. It is not known what liquid or abrasive would have been used within the vat.

The recovered peg exhibited an inner and outer wooden portion. The inner peg measured 61.25 mm (2.44 inch) in diameter and was composed of darker wood than the outer portion. The inner peg was in poor condition. The wood was soft, felt hollow, and exhibited insect damage on one face (**Figure 74**). This portion had a hole with extending slots drilled down its core (**Figure 75**). A metal rod would be inserted into the peg to hold the peg to the walls of the spherical vat. The exterior wooden peg was lighter in color, possibly indicative of its use in liming vats. This portion was 101.55 mm (4 inch) in diameter near the bottom and 78.51 mm (3.1 inch) in diameter near its blunt tip (**Figure 76**). Large cracks extended through the peg. These may continue, depending on the stability of the wood, fluctuations in relative humidity, and, if present, recrystallization of soluble salts.



Figure 73. Peg used in cleaning vats at the tannery, site 12FL119, Artifact 25-1.



Figure 74. Poor condition of inner peg.



Figure 75. End of inner peg, site 12FL119, Artifact 25-1.

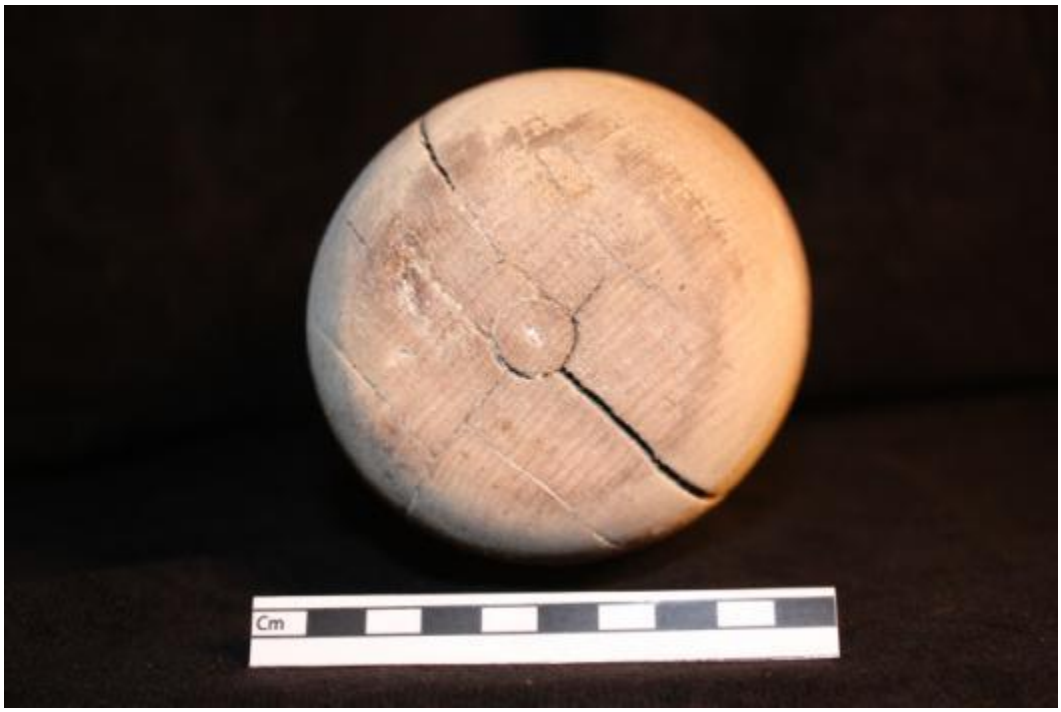


Figure 76. End of outer peg, site 12FL119, Artifact 25-1.

Kitchen Artifacts

Seventy-six artifacts reflected the Kitchen functional group. Of this number, 27 were ceramic and 49 were glass.

Ceramic. The 27 Kitchen ceramics included 10 ironstone fragments, 7 stoneware fragments, 6 whiteware fragments, 2 porcelain fragments, 1 pearlware fragment, and 1 undetermined whiteware/ironstone fragment (**Table 30**). Eleven of these fragments were recovered from 12FL117, 12 were recovered from site 12FL118, none were recovered from 12FL119, and only 4 were recovered from 12FL120. Comparison between the proportion of ceramic types recovered for sites 12FL117 and 12FL118 are presented in **Figure 77** and **Figure 78**. The charts vary greatly. In contrast to site 12FL117, site 12FL118 produced greater percentages of ceramics that indicate an earlier date—a greater percentage of whiteware and pearlware. Porcelain is depicted in **Figure 79,** and representative whiteware and ironstone sherds are depicted in **Figure 80**. This may reflect variation in curative behavior at a residential site rather than an industrial site, however. Stoneware was recovered in similar amounts from sites 12FL117 and 12FL118. Stoneware recovered from the former site included a fragment that exhibited Albany and Bristol slips (**Figure 81**), salt glaze, and one that exhibited a more decorative glaze (**Figure 82**).

Table 30. Kitchen Ceramic Artifacts

Site Number	Material Subtype	Artifact Type	Class	Subclass	Ct	Comments	Manufacturers Marks	Bag No.	Cat No.
12FL117	ironstone	indeterminate	clear glaze	plain	2			21	9
		tableware	clear glaze	transferprint-brown	1			2	1
				plain	1			2	2
			pale yellow glaze	gilt	1			18	2
	stoneware	crock	exterior: clear at base, reddish brown band near rim, dark reddish brown at rim; interior: dark reddish brown	plain	1			22	3
		indeterminate	salt glaze	sponged, blue	1			2	4
		tableware	clear glaze	sponged, blue	1	may be same vessel as Bag 17, Artifact 1		2	3
	whiteware	indeterminate	clear glaze	plain	1			19	6
		tableware	clear glaze	plain	1			19	5
	ww/ironstone	indeterminate	clear glaze	plain	1	burnt		21	10
12FL118	ironstone	indeterminate	clear glaze	plain	1			23	11
		teacup	clear glaze	plain	1			23	10
	pearlware	indeterminate	clear glaze	flow blue	1			23	12
	porcelain, hard	indeterminate	clear glaze	plain	1			8	4
	porcelain, soft	tableware	indeterminate	plain	1			11	11
	stoneware	crock	manganese glaze	plain	1	lid ridge		11	9
		indeterminate	Albany/Bristol	plain	2			11	10
	whiteware	indeterminate	clear glaze	plain	1			5	6
					1			3	5
		tableware	clear glaze	transferprint-brown	1			5	5
		teacup	clear glaze	plain	1			15	2
12FL120	ironstone	indeterminate	clear glaze	plain	1			17	2
					1			17	3
					1			17	4
	stoneware	tableware	clear glaze	sponged, blue	1	may be same vessel as Bag 2 Artifact 3		17	1
Total					**27**				

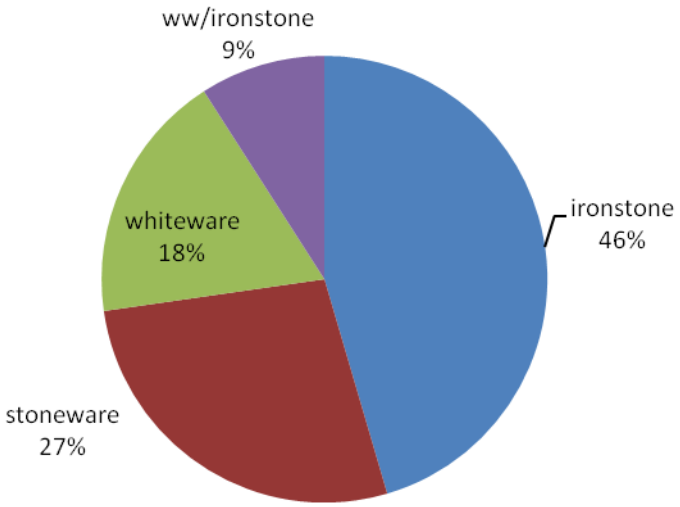


Figure 77. Proportion of Kitchen ceramic types recovered from site 12FL117.

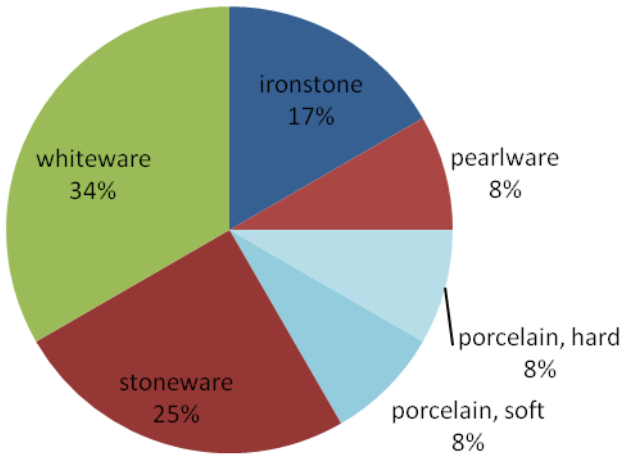


Figure 78. Proportion of Kitchen ceramic types recovered from site 12FL118.

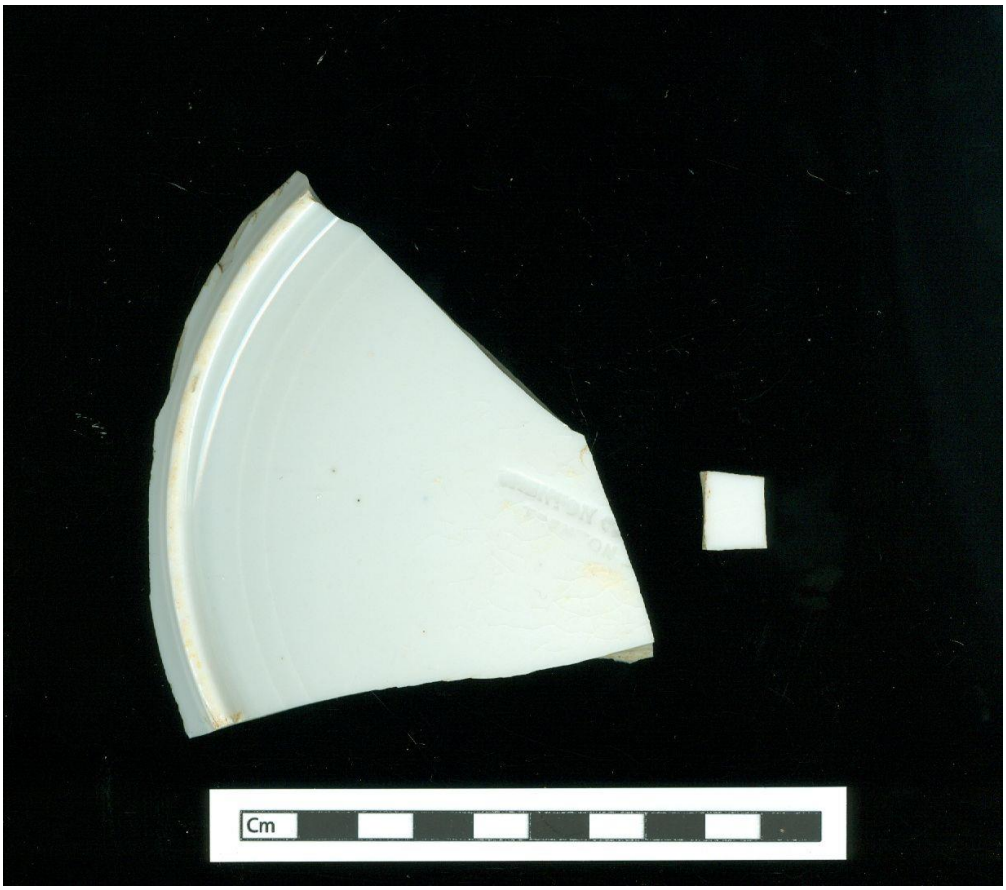


Figure 79. Porcelain ceramics. Site 12CL118, Artifacts 2-4 and 7-11, left to right.



Figure 80. Ceramics recovered from site 12CL117.



Figure 81. Stoneware recovered from site 12CL118, Artifact 7-10.



Figure 82. Stoneware with decorative glazing recovered from site 12FL117, Artifact 22-3.

Decoration. Seven Kitchen ceramics were decorated. These included 1 flow blue fragment, 1 gilded fragment, 3 sponged fragments (**Figure 84**), and 2 brown transferprinted fragments (**Figure 85**).

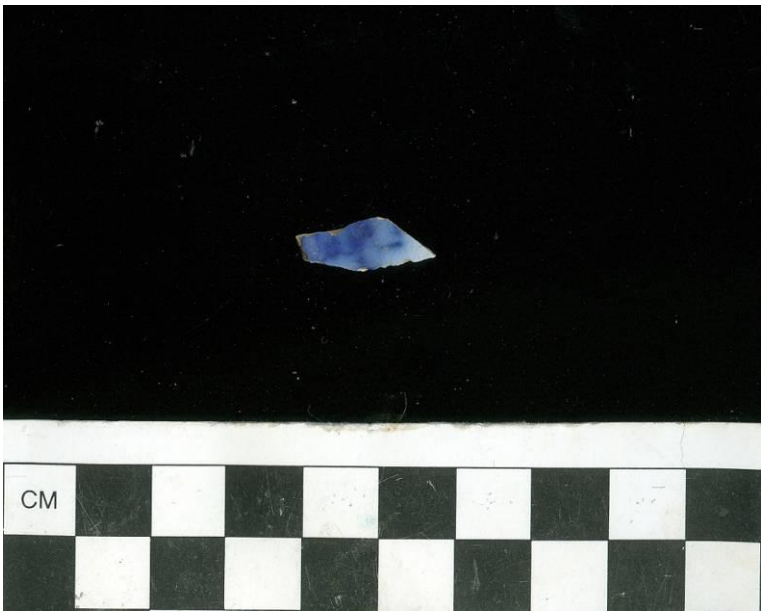


Figure 83. Flow blue decoration. Site 12FL118, Artifact 23-12.

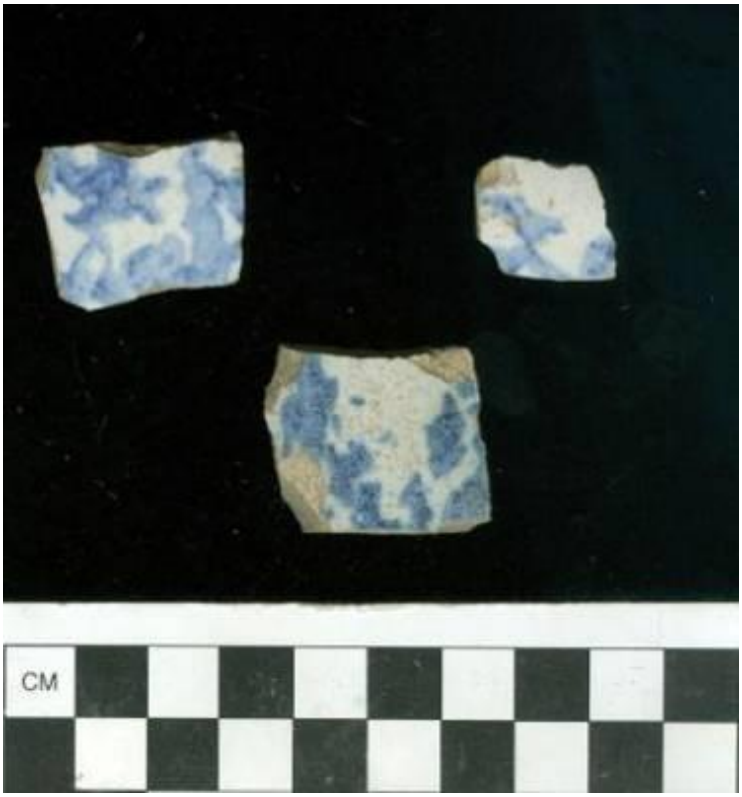


Figure 84. Sponged decoration on stoneware. Site 12FL117, Artifact 2-3 upper left; site 12FL120, Artifact 17-1, upper right; site 12FL117, Artifact 2-4 below.

Two items exhibited brown transferprint (**Figure 85**). Motif on one included a frame with a vine toward the interior and dots along the exterior adjacent to a box within which were branches and circles that were divided into three parts: dark separated by white division lines.



Figure 85. Brown transferprint. Site 12FL118, Artifact 5-5 on the left; 12FL117, Artifact 2-1 on the right.

Manufacturers' Marks. Only one ceramic Kitchen item exhibited a manufacturing mark. This mark was an impressed stamp on porcelain (**Figure 86**). The mark appeared to be: "_MNTON/TRENTON"…



Figure 86. Impressed mark on base of porcelain artifact. Site 12FL118, Artifact 8-4.

Glass. Kitchen glass was recovered from sites 12FL117 and 12FL118 (**Table 31**). Comparison between the proportion of glass colors for each of these sites is presented in **Figure 87** and **Figure 88**. These charts document a much higher percentage of clear bottle glass was recovered from site 12FL117 than from 12FL118. Brown and cobalt glass were recovered from the former, while aqua blue and forest green glass were recovered from 12FL118 (**Figure 89**). The latter site had a higher proportion of milk glass (**Figure 90**) and solarized glass (**Figure 91**). Embossing was evident on the solarized base as well as an embossed container glass that depicted wheat (**Figure 92**).

Table 31. Kitchen Glass Artifacts

Site Number	Material Subtype	Artifact Type	Class	Subclass	Count	Comments	Manufacturers' Marks	Bag Number	Catalog Number
12FL117	aqua	container	machine made	molded	1		painted "ONE/PINT" on neck in two places; "COKE" on one face; script "Coca-Co"… on opposite	22	1
	brown	container	machine made	embossed	1	band of stippling around shoulder and near heel	"I" on left, "4" on right, and three short lines over underscore on top; stippling surrounding base at heel	22	1
	clear	container	indeterminate	plain	7			19	7
					4			21	7
				embossed	1			21	3
				impressed	1	parallel oblique lines on body near heel; mold seam surrounding heel on body		7	8
				plain	1			19	8
					2			7	6
				impressed	1	ring around rim, not screw thread; oblique impressed line indicating same container as Artifact 8		7	7
		indeterminate	machine made	embossed	1	curved pc with ridges along two sides		20	5
	cobalt	container	indeterminate	plain	1			19	4
					1			13	1
	milk	canning jar lid liner		embossed	1		"MASON J"….	19	4
		container	molded	plain	1			20	4
	solarized	container	indeterminate	plain	1			21	8
			machine made	plain	1	brandy finish with double groove surrounding ring; seam to lip		13	2
12FL118	aqua	container	indeterminate	plain	1			15	6
					1			5	1
	aqua blue	container	indeterminate	plain	2			3	2
	clear	container	indeterminate	plain	1			8	3
					1			3	1
					1			14	1
					1			15	7
					1			23	6
					1			24	1
					1			5	2
					1			11	6

Site Number	Material Subtype	Artifact Type	Class	Subclass	Count	Comments	Manufacturers' Marks	Bag Number	Catalog Number
		indeterminate	indeterminate	embossed	1	curved pc with branching pattern of raised line across exterior with two wheat stalks		15	5
	forest green	container	indeterminate	plain	1			5	3
	milk	canning jar lid liner		embossed	1			11	7
			molded	embossed	1		…."S" space then diamond such as Owens Corning	15	3
				embossed	1		…"ALL M"…	15	4
		container	indeterminate	embossed	1	embossed swirl, may be neck of swan		3	3
				plain	2			1	1
	solarized	container	molded	embossed	1			23	8
			indeterminate	plain	1	slightly solarized, unlike Artifact 4		11	5
				embossed	1	rectangular bottle with rounded corners; base with sunken circle		11	4
Total					**49**				

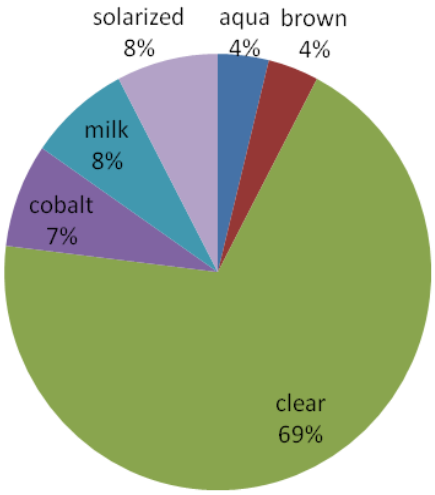


Figure 87. Proportion of Kitchen glass colors recovered from site 12FL117.

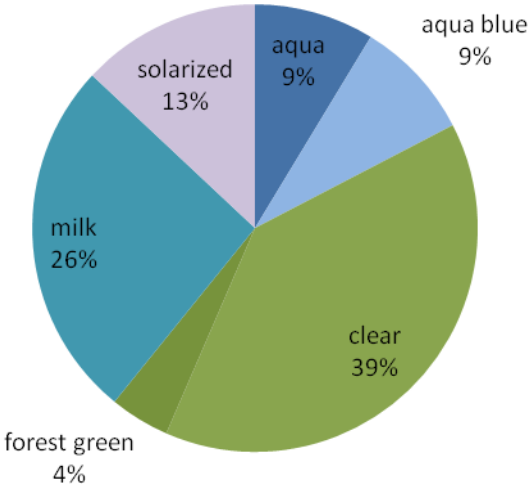


Figure 88. Proportion of Kitchen glass colors recovered from site 12FL118.



Figure 89. Representative glass colors. Milk, cobalt, forest green, left to right in upper row; milk, aqua blue, and aqua left to right in lower row.



Figure 90. Milk glass artifacts. All site 12FL118 except upper right. Left to right top row to bottom row: Artifact 15-4, 15-3, 11-7, 19-4, 1-1, 3-3.



Figure 91. Solarized base with embossed mark. Site 12FL118, Artifact 11-4.



Figure 92. Embossed fragment recovered from site 12FL118, Artifact 15-5.

Miscellaneous Artifacts

Eleven items were placed in the Miscellaneous group (**Table 32**). These appear to consist of modern debris.

Table 32. Miscellaneous Artifacts

Site Number	Group	Material Type	Material Subtype	Artifact Type	Count	Comments	Bag Number	Catalog Number
12FL117	Miscellaneous	metal	aluminum	foil	1	appears to be a small ball of foil; silver on one side and reddish pink on other	21	17
			iron	amorphous	2		19	23
		plastic		flat	1	flat, thin, olive color	19	25
12FL118	Miscellaneous	metal	iron	flat	5		4	2
		plastic		bottom of a plastic cup	1	"SCOTTPAPER" "7A" "U.S.A."	4	3
				indeterminate	1	thin, melted fragments	23	9
Total					**11**			

In addition to artifacts documented within the recovered collection, another item within the landowner's collection was also documented, although its function remains a mystery. This item was a rough elongated conical prism that measured approximately 200 mm in height (**Figure 93**). The top was rough and may have been broken (**Figure 94**). Diameter at the base was approximately 142.5 mm by 100 mm. The base was unnaturally flat, indicating the item had been sawn along this axis (**Figure 95**). Other surfaces exhibited marks indicating the item had been chiseled into this rough shape. The heft of the object suggested an iron material, but on closer inspection, the material was sedimentary rock composed of a fossiliferous breccia consisting of brachiopods (**Figure 96** and **Figure 97**). Its density appeared to be much heavier than limestone, which indicated the material had not been weathered. Possible functions included an anchor, a counterweight, or remnant from a drilled core.



Figure 93. Dense lithic artifact of unknown function, side view.



Figure 94. Dense lithic artifact of unknown function, top view.



Figure 95. Dense lithic artifact of unknown function, bottom view.

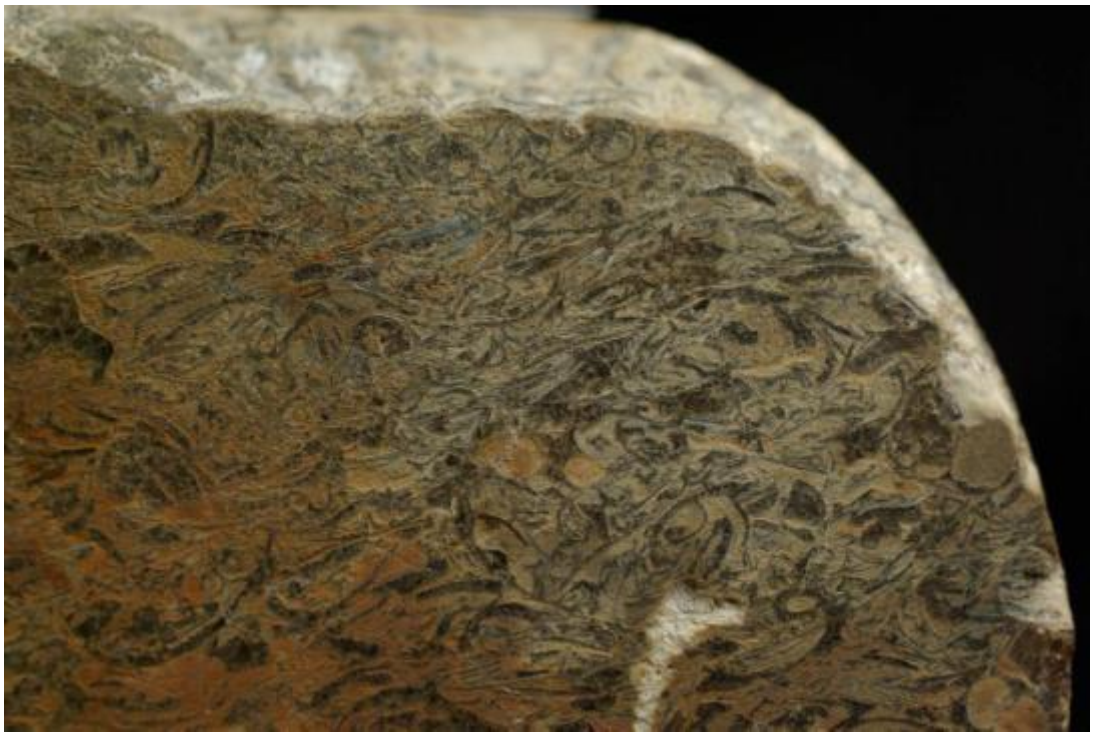


Figure 96. Dense lithic artifact of unknown function, close-up of material.

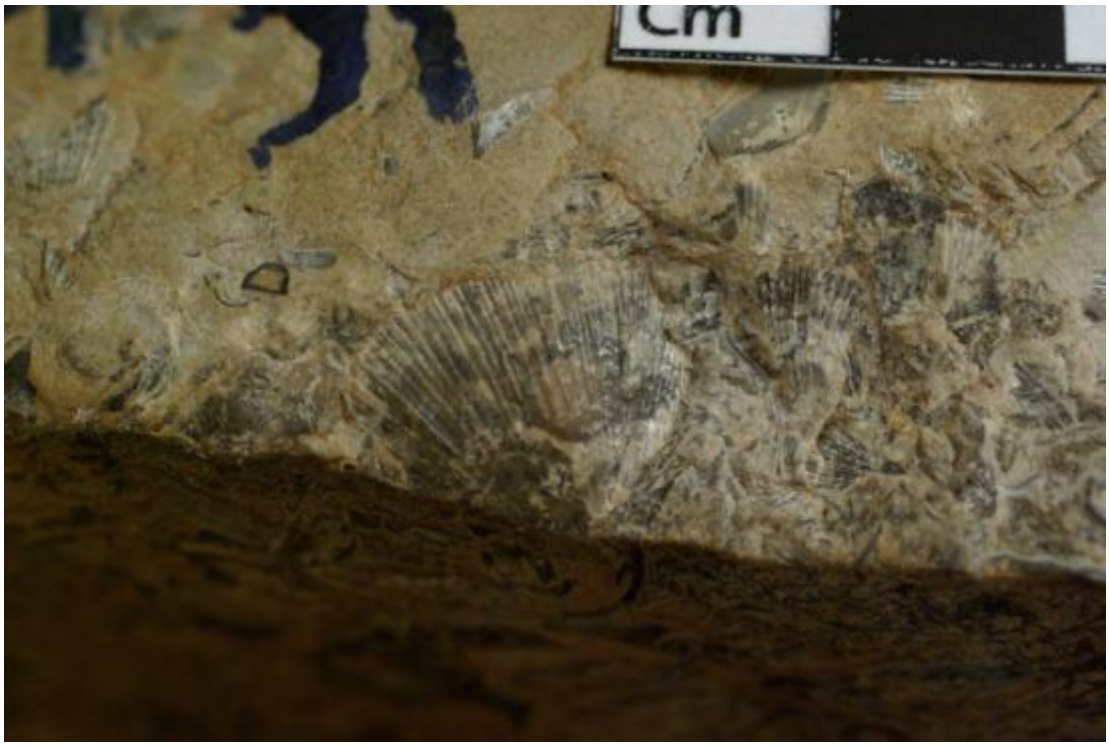


Figure 97. Dense lithic artifact of unknown function, close-up of fossiliferous composition.

7
FINDINGS

The property was divided into three general areas for the purpose of the survey (**Figure 98**). The first of these was the ***upper terrace*** which lay directly south of the former railroad bed (now the Ohio Greenway Trail) in the northernmost portion of the project area. In this location, the ground was not heavily alluviated (although it was known to hold water in extreme flooding events such as 1937). The second area, the ***floodplain***, consisted of the largest portion of the project area available for field survey. It was found to be covered in variable but overall thick deposits of alluvium, rendering shovel probing an ineffective method for site discovery. The third and final area was the ***stream banks*** along Silver Creek and the Ohio River. In these areas, the ground surface was exposed, revealing vertical stratigraphy and heavily eroding, slumped cutbanks.

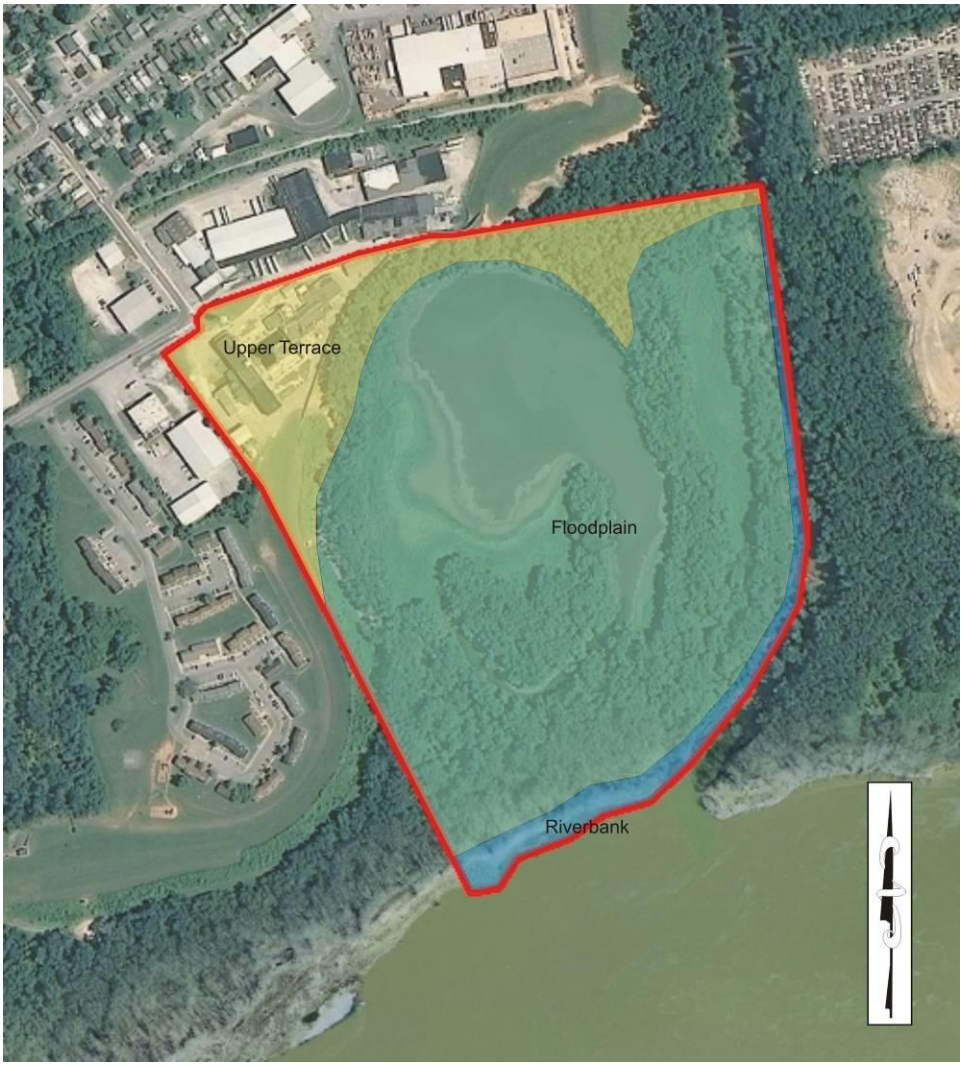


Figure 98. Survey areas within project.

As discussed above in **Section 4** of this report, the survey at Loop Island involved diverse methodologies for site discovery. The effectiveness of each was directly associated with the nature of the ground conditions within the three survey areas described above. This section of the report relates the comparative successes and constraints of each of these methods relative to site discovery with each of the three areas.

As a result of the fieldwork, four archaeological sites, 12FL117 through 12FL120, were identified and documented. This section also presents a summary statement for each of the archaeological sites discovered as a result of the overall field effort.

Survey Areas

Upper Terrace

The upper terrace reflects a relatively small portion of the total area examined, less than 10%. It consists of a flat or level built environment around an existing building complex that housed the historic Moser Leather Company and an adjacent sloping, wooded area. This section of the project area has been flooded in the past in extreme conditions, but generally it is not flooded frequently, and alluvial deposits are thin. The terrace drops off sharply to the floodplain below.

The pedestrian visual surface survey of the sloping wooded area was delayed until the winter months to facilitate ground surface visibility (**Figure 99** and **Figure 100**). At the time the grant was awarded, the property was heavily vegetated and ground surface visibility was very low. As the vegetation died back in late fall with the frost and cold temperatures, conditions were improved for discovering above-ground evidence of past cultural activity. While it remained difficult to identify individual artifacts on the ground surface, depressions, push piles, and structural debris were more readily apparent during the winter. It was furthermore easier to move through the wooded areas during the colder months when the vegetation was less of a hindrance. In general, the vegetation was denser at the northern end of the project area on the higher terrace. In this upper area, the undergrowth was thick. In some areas, however, the presence of vinca was noted. Vinca, also known as *Creeping Myrtle*, is a low ground cover that thrives in moist shady conditions. It is commonly found in cemeteries and other areas as a ground cover. Research was undertaken to ascertain if a cemetery was every located at this location. No evidence was found to suggest that a cemetery was present, and no field indications were found to support that conclusion. No stones, fieldstones, fences, or small grave-sized depressions were identified. Rather, patches of vinca appeared to be association with Larger depressions in the ground where structural debris was noted. Poison ivy was thick.

The upper terrace was traversed by two cleared paths which are commonly used by bird watchers, cyclists, and others. Artifacts were found on the surface of these paths in several locations; the origin of these artifacts can only be speculated due to their current disturbed provenience, however, they were found in the area of two archaeological sites (see more below).

In addition to the trails, other widespread ground disturbance was apparent on the upper terrace. Numerous push piles of mounded earth attest to the former movement of earth in the area by mechanical equipment. Depressions were also encountered, several of which had a generally squared outline. Large limestone blocks, some of which appeared to have been field dressed, were found, along with large chucks of concrete, concrete pillars, cinder cloaks, brick, and other structural debris.



Figure 99. Ground surface conditions on the upper terrace in March, 2012.



Figure 100. Ground surface conditions on upper terrace in April, 2012.

Among the first signs of cultural activity to be noticed on the upper terrace was a series of seven fence posts (**Figure 101** and **Figure 102**). It was noted that the posts were unusually large and square, and upon further examination it became apparent that they were recycled railroad ties that had been called into service as fence posts. One of these, shown in **Figure 103**, had a coupling plate and railroad spike embedded in the post. Two of the posts were located parallel to and adjacent to the former rail line. Three of the posts formed a straight line at the base of the railroad bed berm. A sixth was located along an intersecting perpendicular fence row. The seventh was located further to south. Four of the posts lie along existing paths on the property.

The posts are likely discarded ties from the adjacent railroad, enclosing property associated with known industrial and residential use of the immediate area, as discussed below.

Aerial imagery from 1963 provides blurry but generally visible tree lines that appear to be consistent with the fencerow. At that time, the area was not wooded, but open.



Figure 101. Railroad tie used as fence post.



Figure 102. Additional fence post on upper terrace.



Figure 103. Railroad tie used as fence post with coupling plate attached.

Shovel probing was confined to locations on the upper terrace that were not steeply sloped, were not obviously disturbed by prior earthmoving, and which were in proximity to the noted structural remains and depressions. Because the upper terrace area is not frequently flooded, shovel probing was a sufficient means to access the cultural deposits which were not deeply buried by silt.

Seventeen STPS were excavated in the wooded portion of the upper terrace (**Figure 104**). Of these, fifteen were positive for cultural materials that were historic in nature. The shovel probing focused on two distinct areas in proximity to two sets of structural debris. The two areas were separated by a cleared walking path. One of the two, on the western side of the path, was nestled against the sloping hillside just south of a former railroad berm. This was designated Field Site (FS 1). The more southerly located set of structural remains, which lay on the eastern side of the path was called FS 2. The second field site was also situated on sloped ground, but the grade was more gentle and terminated in a flat or level expanse before dropping off to the wetlands of the floodplain below. The fence posts that were described above appear to be associated with the second set of structural remains.

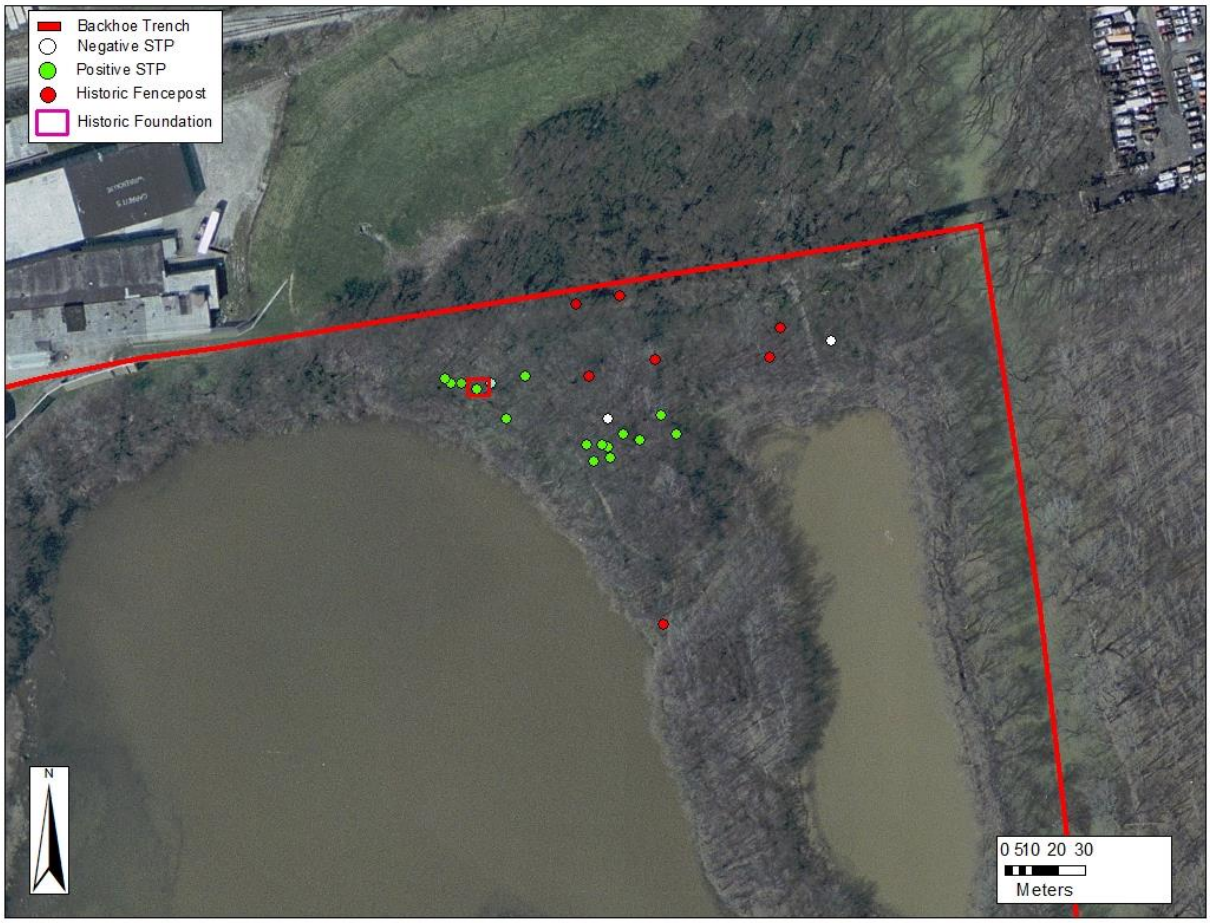


Figure 104. Location of shovel probes on the upper terrace. Fence posts shown in red.

Historic artifacts including ceramics, window glass, and container glass were found on the ground surface of the path that lay between the two field sites. These cannot be confidently associated with either of the sites, although they lay closer to FS 1.

The shovel probing revealed a typical stratigraphy as follows. From the ground surface to a depth of 70 cmbs, the soil was a consistent dark yellowish brown (Munsell 10YR 4.4) silt loam. From 70 to 90 cmbs, the soil lightened in color to a yellowish brown (Munsell 10YR 5/6) silty clay loam. In the vicinity of the field sites, the soil conditions varied from these overall conditions in that they included a historic midden from 0 to 17 cmbs above mottled soils, as described more fully below in the section on site descriptions.

Another portion of the upper terrace that was examined lay in the northwestern corner of the project area. This was the portion of the property that was developed and contained an extant built environment that lay immediately adjacent and south of a former railroad bed. The area now lies at the southeastern terminus of Main Street in New Albany. The multiple buildings associated with this section of the upper terrace were those of the old Moser Leather Company complex. The history of this facility is provided elsewhere in this document.

The ground surfaces surrounding the extant buildings were examined for surface artifacts. Broken window glass, metal screws, miscellaneous metal, brick fragments, and modern debris were observed on the ground near the building walls. Most of these were not collected as they appeared to be related to the buildings, for which good data was available regarding the years of construction and use. Several wooden artifacts, as described below, were collected as they were directly associated with the tannery operation as opposed to architectural related artifacts.

Very few areas were available for shovel probe survey. Several small grassy patches were identified, and shovel probing was attempted. Five shovel probes were emplaced in these areas (**Figure 105**). In each case, the grassy lawn was underlain by a thick bed of gravel that could not be penetrated. Augering was attempted, as was coring with an Oakfield core tool, but the gravel proved to be too thick. It is therefore unclear if there are intact underlying deposits surrounding the building complex. It is possible that beneath the layer of gravel, artifact-bearing cultural deposits associated with the Moser Leather Company could be found.

The Moser Leather Company complex was designated FS 4. In consultation with the IDNR-DHPA, the complex was assigned an archaeological site number (12FL119), and the site is described in more detail below.

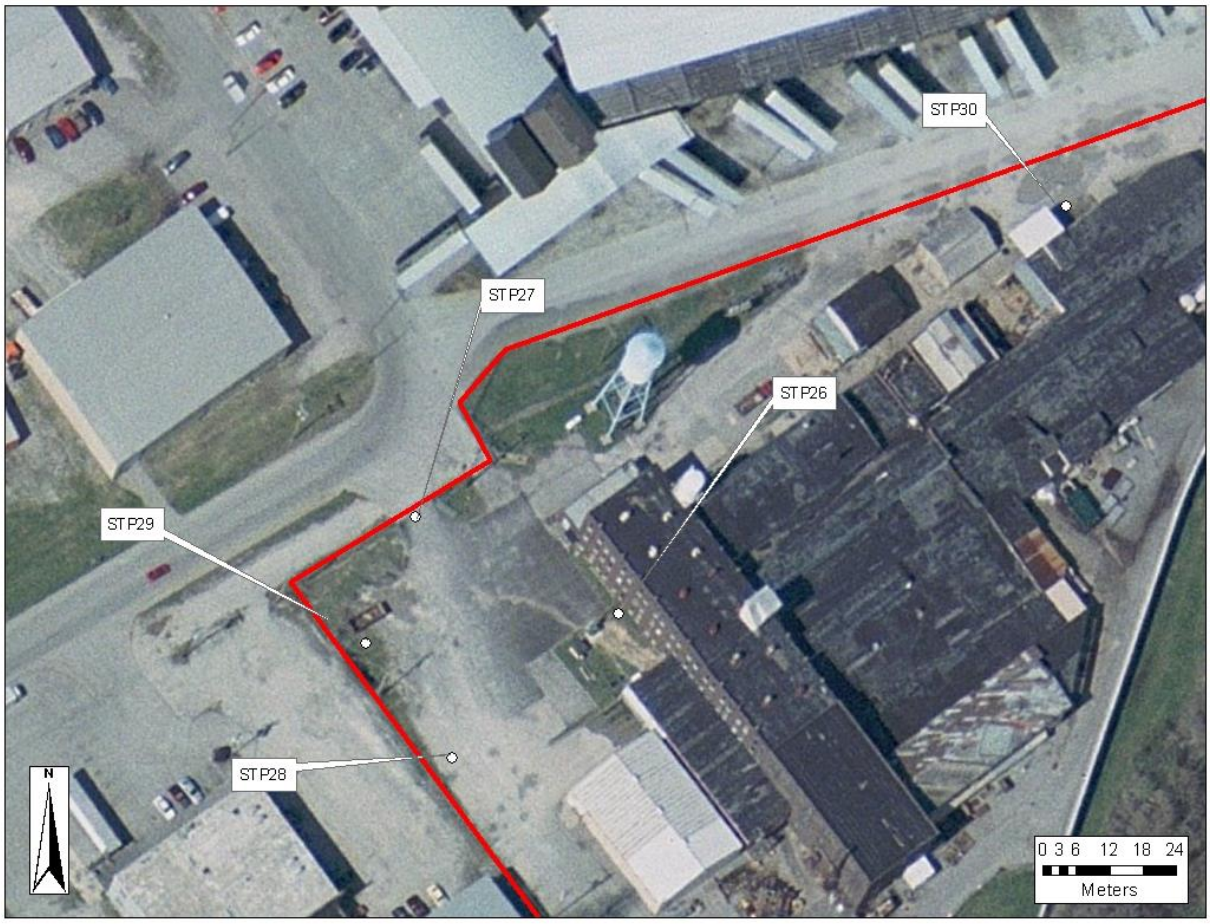


Figure 105. Location of shovel probes on the upper terrace near the extant buildings.

Floodplain

South of the upper terrace lies a broad floodplain. The floodplain is low and wet, frequently flooded, and found to be covered with thick alluvium. Overall, the woodland was more open and the vegetation was less dense during the winter months than the upper terrace, possibly because the area is wetter, being often subjected to flooding (**Figure 106**). By late spring, the vegetation had become dense (**Figure 107**). **Figure 107** also shows the uneven disturbed nature of the ground conditions, in which push piles and small earthen mounds were present.

This area includes two ponds or lagoons. Documentation from the landowner suggests the larger of the two ponds is naturally created feature within an oxbow of Silver Creek (See **Section 4** of this document that discusses historic mapping). The smaller pond, however, dates from 1963 at which time up to 7 ft of soil were taken for fill. Prior to that time, the area of the pond was in agriculture. The excavated area was dammed and filled with water. However, a recent breach in the earthen containing wall for the smaller pond has resulted in the draining of the pond. Within the larger pond is a small island that is accessible today only by means of a narrow causeway (**Figure 108**).



Figure 106. Ground conditions on floodplain in March, 2012.



Figure 107. Ground conditions in April, 2012, showing uneven disturbed nature of the surface.



Figure 108. Causeway leading to the island in the large pond.

The surface survey of the floodplain was generally non-productive. Aside from recent litter and trash, nothing remarkable was identified in terms of archaeological materials. No structural remains were identified. Due to the depth of recent alluvium deposited over the area, this is not surprising.

Evidence of ground disturbance was found in many locations. The largest area of disturbance was that of the small pond, which is currently drained. This pond was formerly agricultural fields, as shown in a 1946 aerial view provided in **Figure 109**. The pond was excavated during the early 1960s with the soil to be used as fill for the construction of Spring Street/Brown Station Road located to the north of the project area (**Figure 109**). The pond was excavated to a depth of nearly 6 ft. Therefore, any near-surface archaeological remains would have been destroyed. For this reason, shovel probing was not conducted in a systematic manner across the pond. However, it was considered possible that buried prehistoric materials could be present beneath alluvium. Therefore, subsurface investigation was attempted in the pond, as discussed below.



Figure 109. Small lagoon before and during excavation. Image on left dates to 1946; image on right dates to 1963. Photographs courtesy of Mr. Al Goodman.

Seven STPs were excavated in the floodplain area, mainly to test for conditions that would suggest the feasibility of continuing shovel probing on a broader scale across the area (**Figure 111**). STPs were emplaced on the highest ground identified, namely the path that lay between the small lagoon and Silver Creek, within the small lagoon, and on the island within the larger lagoon which had also at one time been used for cultivation.

The first of these shovel probes, STP 1, was emplaced along the east side of the small lagoon on what was thought to be undisturbed ground surface. The high ground currently serves as a berm separating the small pond from Silver Creek. The soil profile for this excavation is presented in **Figure 112**. The landowner suggested that the ground surface in this location along the path was undisturbed and natural ground. The shovel probe revealed a consistent soil column to a depth of 60 cmbs. This upper layer of soil consisted of a dark grayish brown (Munsell 10YR 4/2) silt loam. An auger was used to extend this excavation to a depth of 120 cmbs, revealing three underlying soil zones. Stratum II consisted of an approximate 16 cm-thick layer of brown (Munsell 10YR 5/3) silty clay loam. Beneath this, Stratum III was roughly 20 cm thick, extending to a depth of 100 cmbs. It was a pale brown (10YR 6/3) mottled silty clay loam. The final layer, Stratum IV, was the same as Stratum I, a dark grayish brown (Munsell 10YR 4/2) silty clay loam. No artifacts were recovered from this STP.

While the shovel/auger probe did not reveal any obvious disturbance, the geomorphological assessment of an exposed cutbank of this high ground or berm suggested that it was artificially created, likely at the time the pond was excavated (See **Appendix B**). As stated in Appendix B of this report:

> The soil profile examined in the cut bank exposure south of the breech in the berm indicates that the built-up portion of the berm is about 1.1 m (3.6 ft) thick. It consists primarily of clay loam that is capped by a thin layer of silty clay loam. The berm, which is visible on the 1963 aerial photograph, was probably built at the same time the pond was created. Adding credence to the likelihood of the berm being artificial is the presence of several large angular boulders over 40 cm (15.7 in.) in length on the pond side at the base of the berm about 20 m (65.6 ft.) north of where the cut bank exposure was described. Underlying the berm is the original deposits of A and B horizons of clay loam and silty clay loam and a C horizon also of silty clay loam. There are no indications of a buried soil to a depth of 270 cm (8.9 ft.) below the top of the berm [Haywood 2012].

Shovel probes were also attempted within the small pond. In each instance, excavation intersected the water table and was terminated at between 40 and 60 cmbs. The upper layer of soil was consistent to the base of the excavation, consisting of brown (10YR 4/3) to dark yellowish brown (Munsell 10YR 4/4) silty loam. Several additional shovel tests in addition to those depicted in Figure 54 were attempted. The soil was excavated but not screened. This was primarily an attempt to identify areas within the pond that might be practical to excavate to depth without intersecting the water table.

No artifacts were found during the shovel probing within the pond.

Similar conditions were encountered on the island within the larger pond. The upper 40 cm of soil was a brown (Munsell 4/3) silty clay loam. At this point, water began to fill each of the four shovel probes attempted on the island. No artifacts were recovered from the island. Shovel probing was ultimately abandoned as a means of investigating this area and the emphasis shifted to deep trenching.

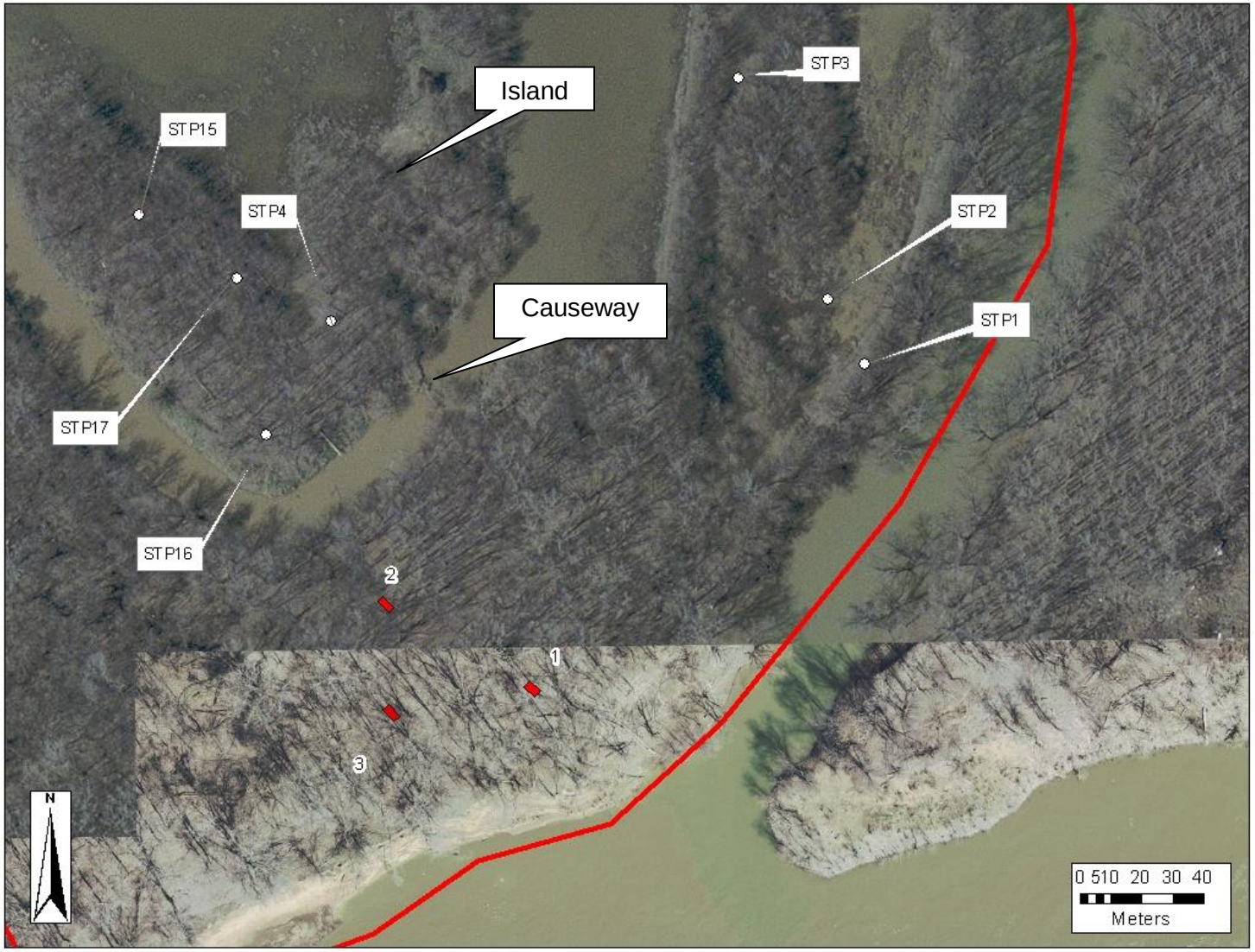


Figure 110. Location of shovel probes on the floodplain.

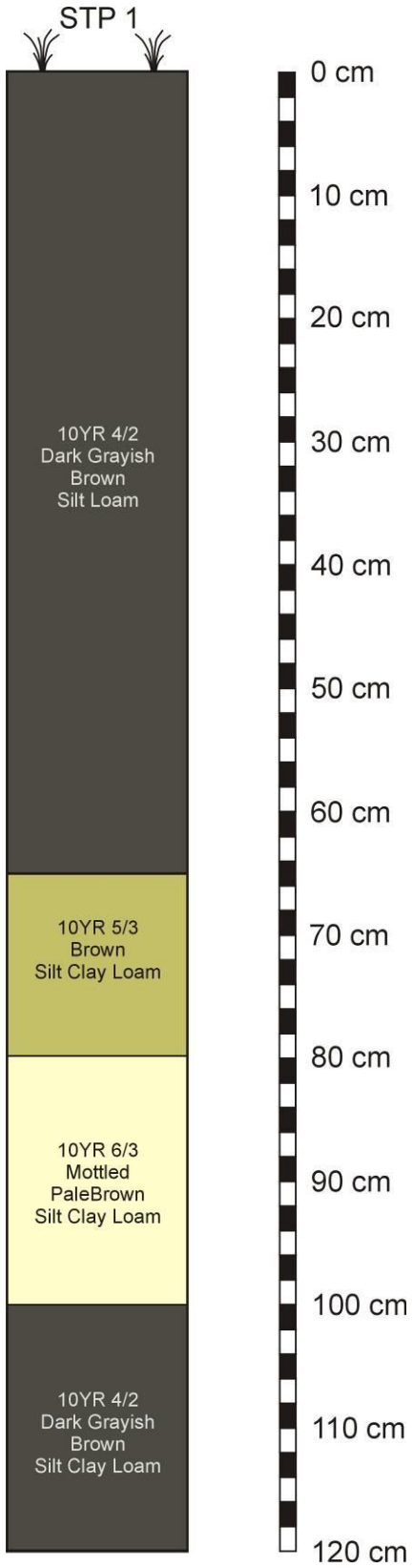


Figure 111. Profile of STP 1 with auger probe.

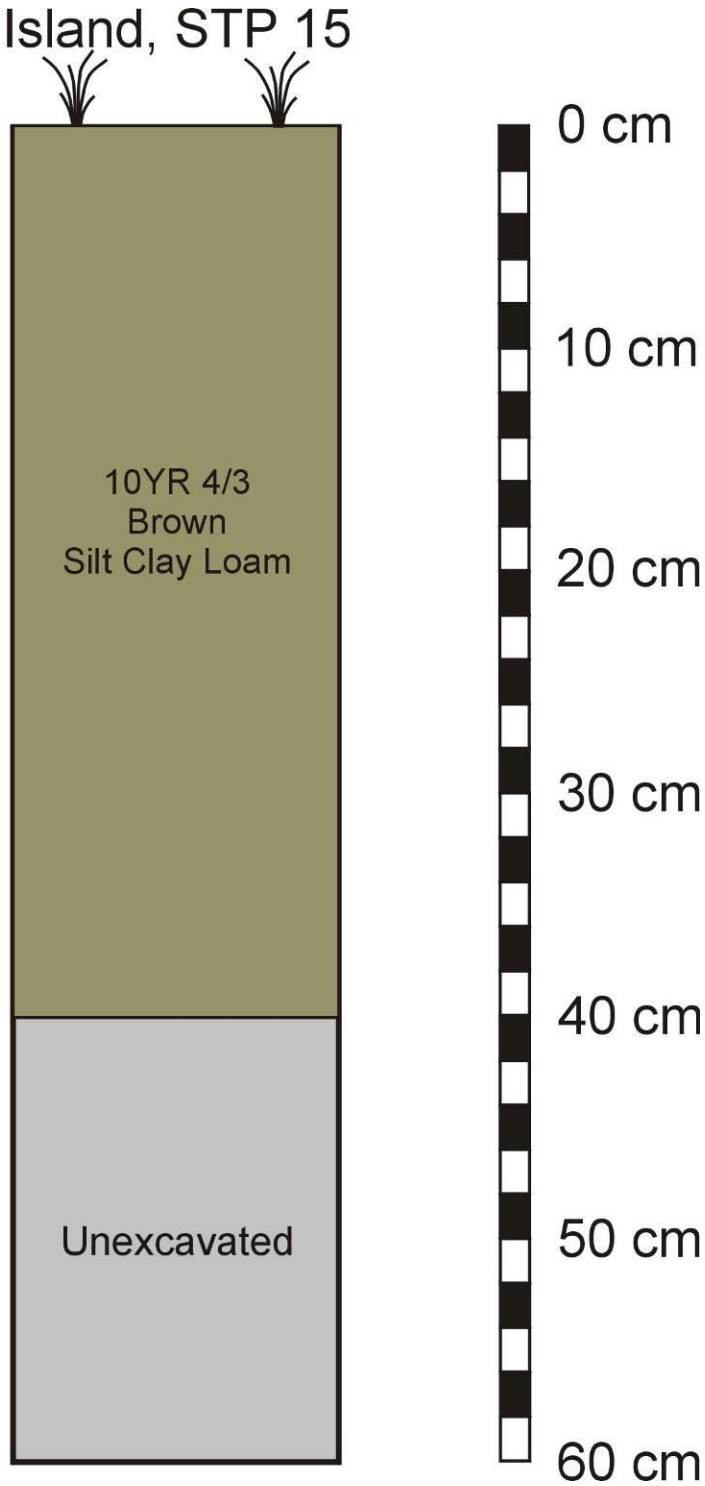


Figure 112. Profile of STP 15, on island.

Five backhoe trenches were also excavated within the project area (**Figure 113**). The excavation of ten trenches was originally scoped, but it became clear that trenching would likewise prove to be ineffectual to investigate the area, as described below. Three of the five backhoe trenches (BHT 1 through BHT 3) were placed in the southernmost portion of the project area, near and perpendicular to the Ohio River. The purpose of these trenches was to access the buried prehistoric deposits suspected to be present based on the discovery of artifacts along the cutbank of the river (see below). The remaining two were emplaced within the small pond. The rational here was that there would be a greater potential to reach deeply buried materials in this location because 6 ft (ca 2 m) of soil had been long ago excavated to create the pond, and therefore the backhoe could achieve greater depths than from the original ground surface. The stratigraphy revealed during the excavation of the backhoe trenches is described below, with photographs; profile drawings and provided in **Appendix B** of this report.

BHT 1 was the easternmost of the excavated trenches, and the deepest. Five cultural strata were documented **Figure 114** and **Figure 115**; also see **Appendix B**). The first of these, from 0 to 25 cmbs, was the A horizon. This was a dark grayish brown (Munsell 10YR 4/2) silty clay loam with moderate, fine to medium granular and sub-angular blocky structure. The soil was friable, and the interface to the underlying soil was clear with a wavy boundary. Stratum II was seen between 25 and 130 cmbs. This was the Btw horizon. It consisted of a dark grayish brown (Munsell 10YR 4/2) silty clay loam with a weak, medium to coarse subangular blocky structure. The soil was friable, and at the base there was a clear, wavy boundary. Stratum III lay between 130 and 135 cmbs. This was designated the C horizon. It was a dark yellowish brown (Munsell 10YR 4/4) silty clay loam that was massive and friable. At this depth, no crew was permitted to enter the trench. The excavation continued deeper, but measurements were taken from the surface and the soil examined from the backdirt piles. From about 135 to 150 cmbs was a dark yellowish brown (Munsell 10YR 4/4) silty clay loam; this was designated Stratum IV. Stratum V extended from 150 to 170 cmbs and consisted of a yellowish brown (Munsell 10YR 5/4) clay loam. No artifacts of any kind were recovered during the excavation of BHT 1.

BHT 2 was emplaced further inland from the Ohio River, northwest of BHT 1. The soils in this trench were remarkably consistent (**Figure 116**). The trenched was excavated to a depth of 120 cmbs. Water began seeping in rapidly at 110 cmbs, and the excavation was terminated shortly thereafter. From 0 to 20 cmbs was the A horizon, or Stratum I. This was a dark grayish brown (Munsell 10YR 4/2) silty clay loam that was similar to the soils seen in the shovel probing. The soils had a moderate, fine to medium granular and sub-angular blocky structure; they were friable, with a clear but wavy boundary. From 20 to 120 cmbs was Stratum II or the Btw horizon. This was a dark grayish brown (Munsell 10YR 4/2) silty clay loam with weak, medium to coarse, sub-angular blocky structure. The soils were friable. No artifacts or cultural features were noted in BHT 2.

BHT 3 was the third trench located along the Ohio River. It was placed almost due west of BHT 1, downriver of that location. This trench was excavated only to 90 cmbs due to the rapid intake of water. The stratigraphy was identical to that seen in BHT 2 (**Figure 117**). No artifacts were observed during the excavation of BHT 3.



Figure 113. Locations of backhoe trenches within project area.

BHT 4 was emplaced in a wooded area adjacent to the excavated, smaller pond. This area was at least partially excavated when the pond was created since it is about 1 m (3.3 ft.) lower than the ground surface to the west. The water table was reached at 55 cmbs, at which point the excavation was terminated. Three soil strata were documented. From 0 – 15 cmbs was the A horizon (**Figure 118**). This was the same dark grayish brown (Munsell 10YR 4/2) silty clay loam that was apparent throughout the floodplain. The soils had a moderate, fine to medium granular and sub-angular blocky structure. The soils were friable with a clear, wavy boundary. Stratum II,

the Btw horizon, lay from 15 to 35 cmbs. This layer contains soils that were a dark grayish brown (Munsell 10YR 4/2) silty clay loam with a weak, medium to coarse sub-angular blocky structure. The soils were friable with a clear, wavy boundary. Stratum III, from 35 – 55 cmbs, comprised the 2Btwb horizon – brown (10YR 4/3) clay loam. These soils were also friable and had a weak, medium to coarse sub-angular blocky structure. No artifacts were observed during the excavation of BHT 4.

BHT 5, also located within the small pond, was terminated after the excavation of only 50 cm due to the rapid intake of water into the excavation. Water began seeping in at a depth of 15 cmbs (**Figure 119**). No artifacts were observed during the excavation of BHT 5.



Figure 114. BHT 1, west wall profile.



Figure 115. Cleaned south wall profile of BHT 1.



Figure 116. BHT 2, west profile.



Figure 117. BHT 3 west wall.



Figure 118. BHT 4, east wall.



Figure 119. BHT 5 began to take on water shortly after excavation began.

Stream Banks

The final survey area to be examined was the exposed stream banks and beaches. The stream banks intersect the previous two survey areas. Silver Creek cuts through the upper terrace along the eastern edge of the project area and flows through the floodplain, emptying into the Ohio River at the southeastern corner of the project area. The Ohio River extends along only the southern boundary of the property; a few narrow beaches were present in this location (**Figure 120**). This survey area encompassed only a small portion of the project area.

The banks along Silver Creek and the Ohio River were steep and, at the time of the survey, slick (**Figure 121**). Slumping of the bank was severe (**Figure 122**). The level of the water in the Ohio River was high, and the few small areas of beach were inundated. Several examinations of the banks were done over the period of this grant in an effort to access more of the exposed banks and beaches (**Figure 123**).



Figure 120. Aerial view showing shoreline and beaches.



Figure 121. Badly eroding banks along the Ohio River.



Figure 122. Severe slumping along river banks.



Figure 123. Small area of exposed beach along the Ohio River.

In previous years, large looters pits were visible along the Ohio River portion of the project area. These were no longer visible. A visit to the shoreline by landowner Al Goodman was made, and he indicated that perhaps as much as 50 ft of the banks had been lost since the spring/summer of 2011. Trees that were standing last year were now toppled and their roots systems exposed.

Much of the erosion is due to the release of water from the lower gates of the McAlpine Locks and Dam which directs the current towards the Indiana shoreline, where it meets with existing current and is directed downstream (**Figure 124**). Over the past 40 years, perhaps as much as 300 ft of Indiana shoreline have been lost due to the erosion caused by this situation.

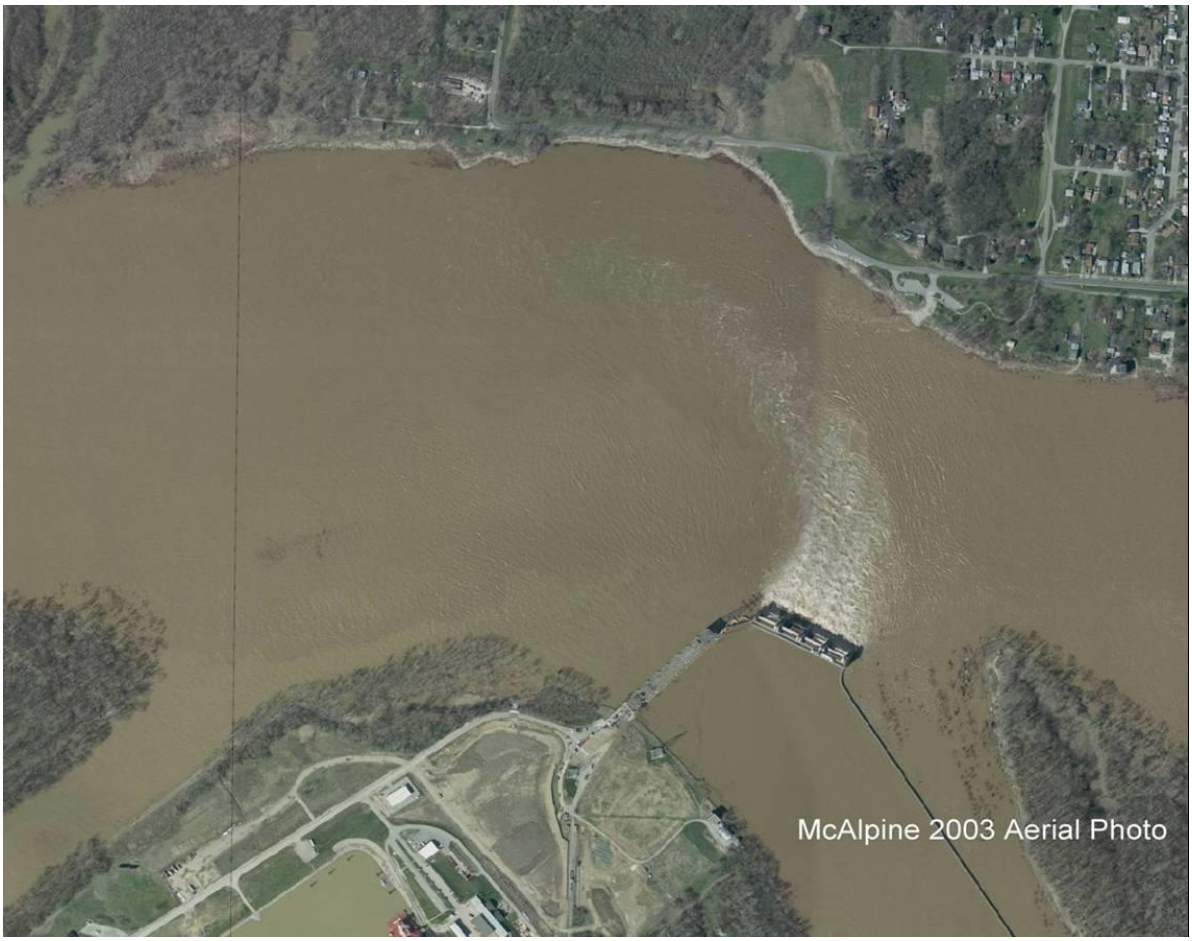


Figure 124. Aerial view showing flow of water from the lower gates of the McAlpine Locks and Dam (USACE).

The banks were examined for surface artifacts, artifacts within slumped walls, and items that might have been revealed *in situ* within the intact banks. A small scatter of historic artifacts was found along the Ohio River beach. The origin of these items is not known, as they may have washed in from the town of Old Clarksville upriver. Within the banks and slumped areas, several prehistoric items were also found. This consisted mainly of FCR, chert fragments, and a piece of prehistoric ceramics. While the origin of the prehistoric materials could not be absolutely pinpointed within the exposed cutbank, a line of slightly darker soils containing FCR was

estimated to lie approximately 2 m below the ground surface. This areas was therefore designated FS 3.

The Ohio River cutbank was examined by the project geomorphologist who provides the following:

> A buried soil was observed at a depth of about 1 m (3.3 ft.). Although there are reported findings of artifacts along this exposure, the only item recovered from the bank by this writer was a piece of plastic wrap imbedded in the deposits at a depth of 95 cm (3.1 ft.) below the surface. This would suggest that the upper 1 m (3.3 ft.) of deposits is historic alluvium. While it cannot be stated with certainty, the fact that prehistoric artifacts are reported to have been found along this exposure suggests that the underlying deposits probably are where these items were originally deposited. That deposit extends from a depth of about 1 m (3.3 ft.) to 2 m (6.6 ft.) below the surface. Underlying that is a massive bed of brown silty clay, as recorded slightly upstream from where the cut bank exposure was described. Since no artifacts were recovered from this deposit nor were any organic material recovered that could produce a radiocarbon age, it is difficult to estimate an age for this horizon. There is a possibility that the brown silty clay could represent deposits within the original channel of Silver Creek which, when it was abandoned, became in-filled with fine-grained sediments [Haywood, **Appendix B**, this document].

Along Silver Creek, the banks were also very steep, with very little beach front. Numerous small drainages emptied into the creek from the Loop Island property, which allowed additional visibility of the exposed stratigraphy. All areas were examined at several different instances throughout the grant period of performance.

No artifacts were identified along the banks of Silver Creek. Modern trash and debris were observed but not collected.

A portion of the cutbank along Silver Creek was examined by the project geomorphologist. This examination revealed that the berm containing the smaller lagoon had been artificially created. More importantly, it showed that despite the intersection with original soil deposits of the A and B horizons beneath the 1.1 m thick berm, there were no buried soils identified to a depth of 270 cmbs (Haywood, **Appendix B**, this document).

An examination of a second portion of the Silver Creek stream bank was conducted by the project geomorphologist. This occurred in the location where the earthen berm containing the small pond had breeched, allowing water to flow freely into Silver Creek. In this area, the erosion was extreme, and the stratigraphy for nearly 2 m was well exposed (**Figure 125** and **Figure 126**). As discussed in **Appendix B** of this document:

> Similar fill up to 110 cm (3.6 ft.) thick consisting of intermixed brown (10YR 5/3) and light gray (10YR 7/1) clay loam capped by 10 cm (3.9 in.) of brown silty clay loam overlies possible natural deposits that are 40 cm (15.7 in.) thick and consist of brown (10YR 4/3) clay loam underlain to a depth of 190 cm (6.2 ft.) below the top of the berm by dark yellowish brown (10YR 4/4) clay loam [Haywood, **Appendix B**, this document].



Figure 125. Severe erosion at breeched berm for the small pond.



Figure 126. Exposed recent stratigraphy revealed in the breeched berm.

Discovered Sites

As a result of the field investigations, four archaeological sites, 12FL117 through 12FL120, were documented. Three of these date to the historic period, and one, 12FL120, to the prehistoric. Site 12FL117 appears to be industrial in nature. Site 12FL118, which lies nearby, appears to have been largely residential, and may be a bit later, dating to mid twentieth century (**Figure 127**). Site 12FL119 is the Moser Leather Company Complex (**Figure 128**). Site 12FL120 refers to the prehistoric remains identified along the shoreline of the Ohio River (**Figure 129**). Each of these sites is discussed below.

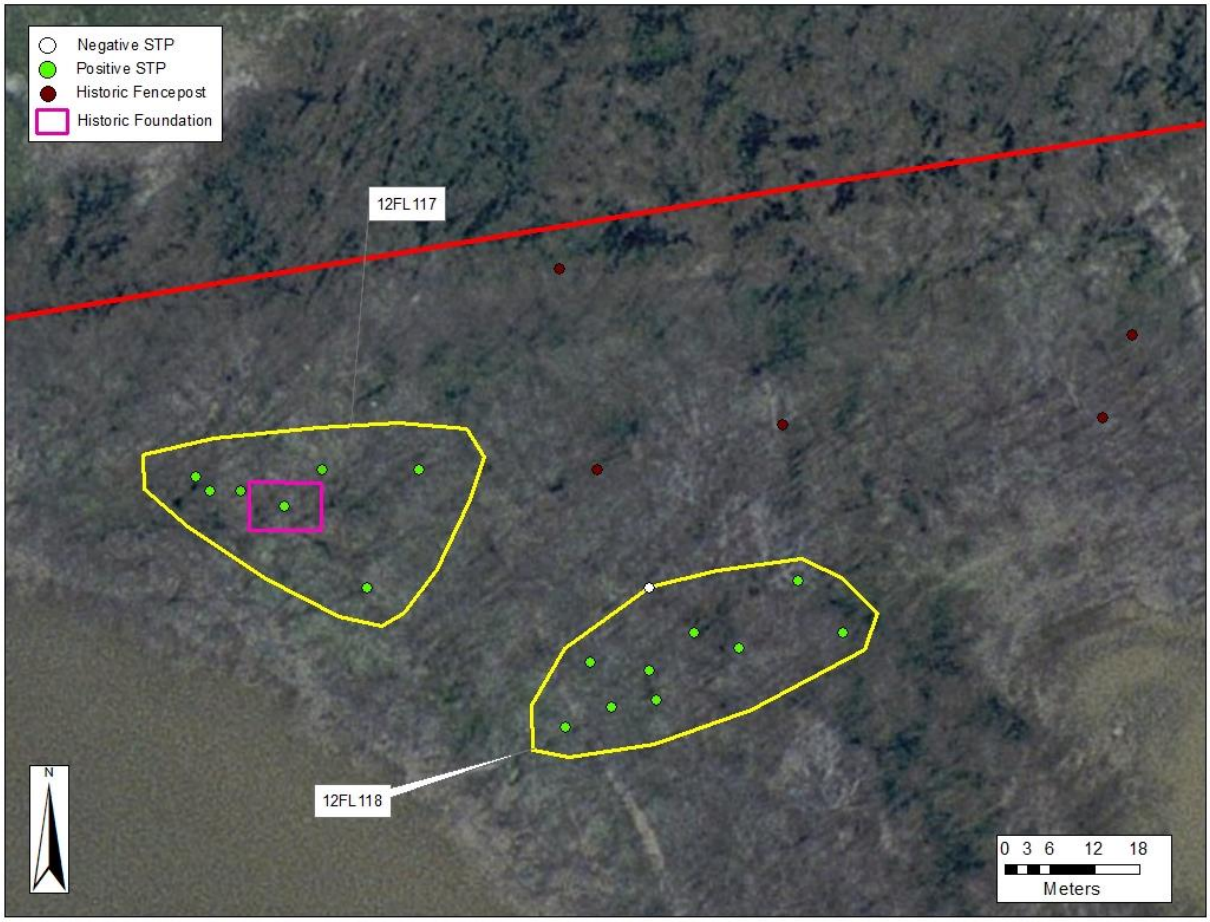


Figure 127. Location of sites 12FL117 and 12FL118 on upper terrace.

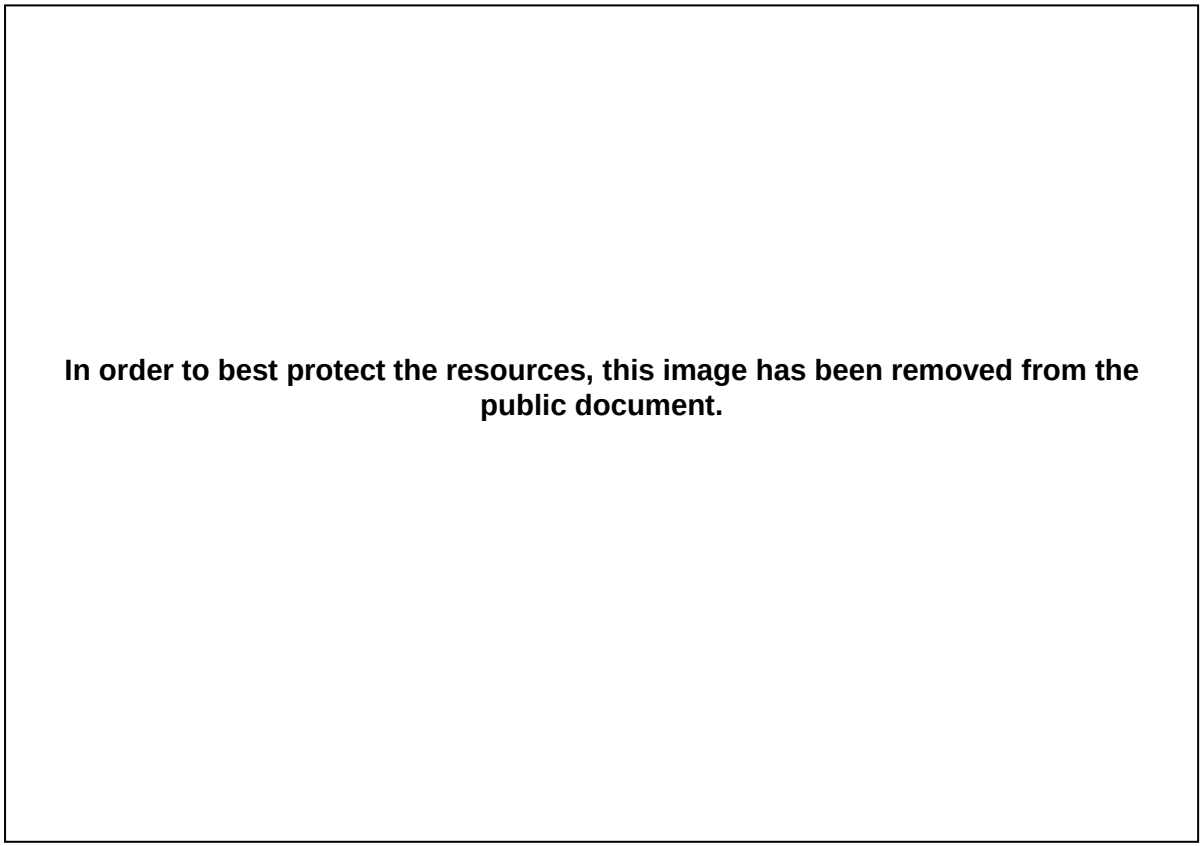


Figure 128. Sites 12FL117 and 12FL118 on upper terrace.

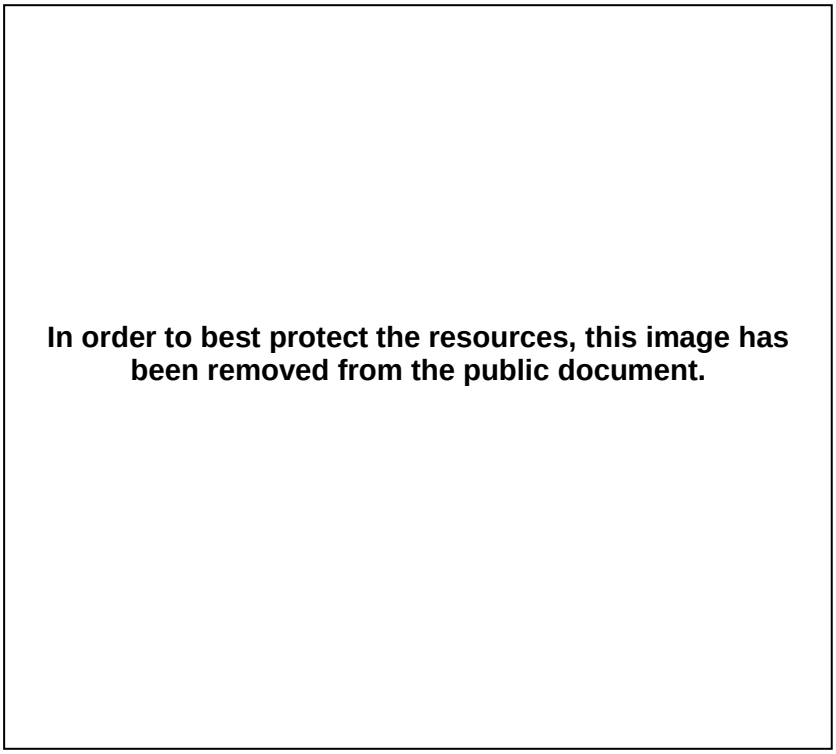


Figure 129. Location of site 12FL119 on upper terrace.

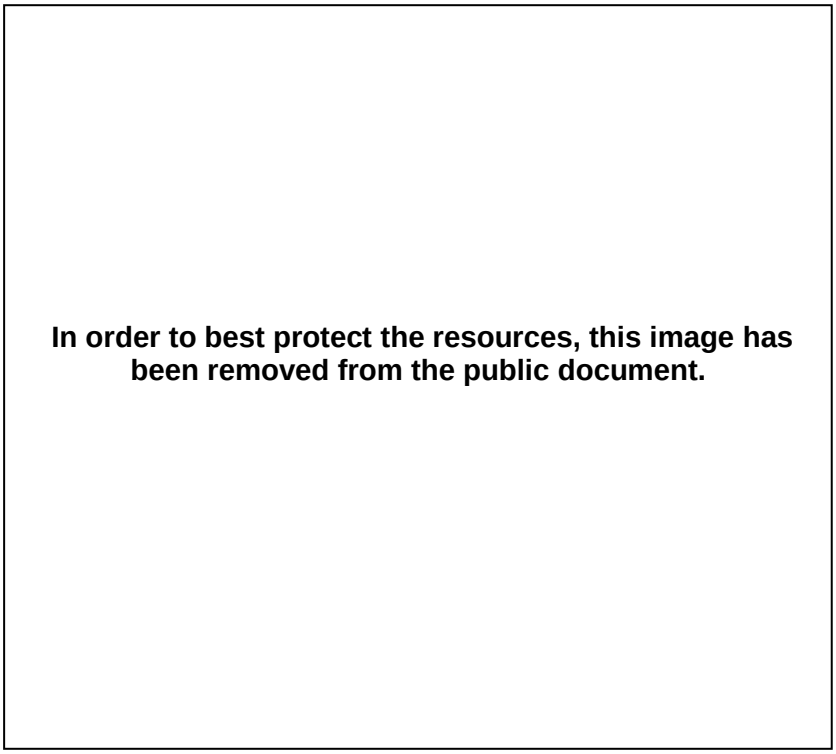


Figure 130. Location of site 12FL120 along Ohio River.

Field Site 1 (12CL117)—Industrial Site

Field Site 1 was identified through the ground surface walkover in which an area of structural remains were found. These remains consisted primarily of large concrete pillars or posts surrounding a large roughly rectangular depression that could be a cellar or floor. At first, the concrete posts were thought to have been horizontal footers for the former building. These were lying prone on the ground in what appeared to be a rectangular fashion adjacent to the depression (**Figure 131** and **Figure 132**). However, at least two of the posts were still upright (**Figure 133** and **Figure 134**). Furthermore, an examination of the posts indicated that the concrete had indeed stood vertically. Differences were noted in the lower 6 inches of the post that indicated that portion of the post had been buried or otherwise covered. In addition to difference in coloring, there appeared to be larger pebble inclusions at the base, suggesting that perhaps the heavier pieces of rock contained within the concrete had settled (**Figure 135**). Finally, at the top of the posts extended iron rebar that indicated a means of connection to another component of the structure, perhaps a wooden or cinder block frame (**Figure 136**).



Figure 131. Concrete foundation posts.



Figure 132. Additional concrete foundation footers, opposite wall.



Figure 133. Cellar depression showing upright concrete post in corner.



Figure 134. Upright concrete post.



Figure 135. Base of concrete post showing differences in coloration and inclusions.



Figure 136. Top of concrete post showing rebar.

Other structural remains identified at the site included a small square brick chimney that had fallen but lay otherwise intact (**Figure 137**). Also observed were concrete cinder blocks (**Figure 138)** a large pile of cinder and clinker (**Figure 139**). A second, smaller but deep depression was noted east of the structural remains (**Figure 140**). The distribution of these remains is presented in **Figure 141**.



Figure 137. Brick chimney flues.



Figure 138. Cinder blocks strewn across site.



Figure 139. Cinder pile adjacent to south end of structure.



Figure 140. Second depression at site 12FL117.

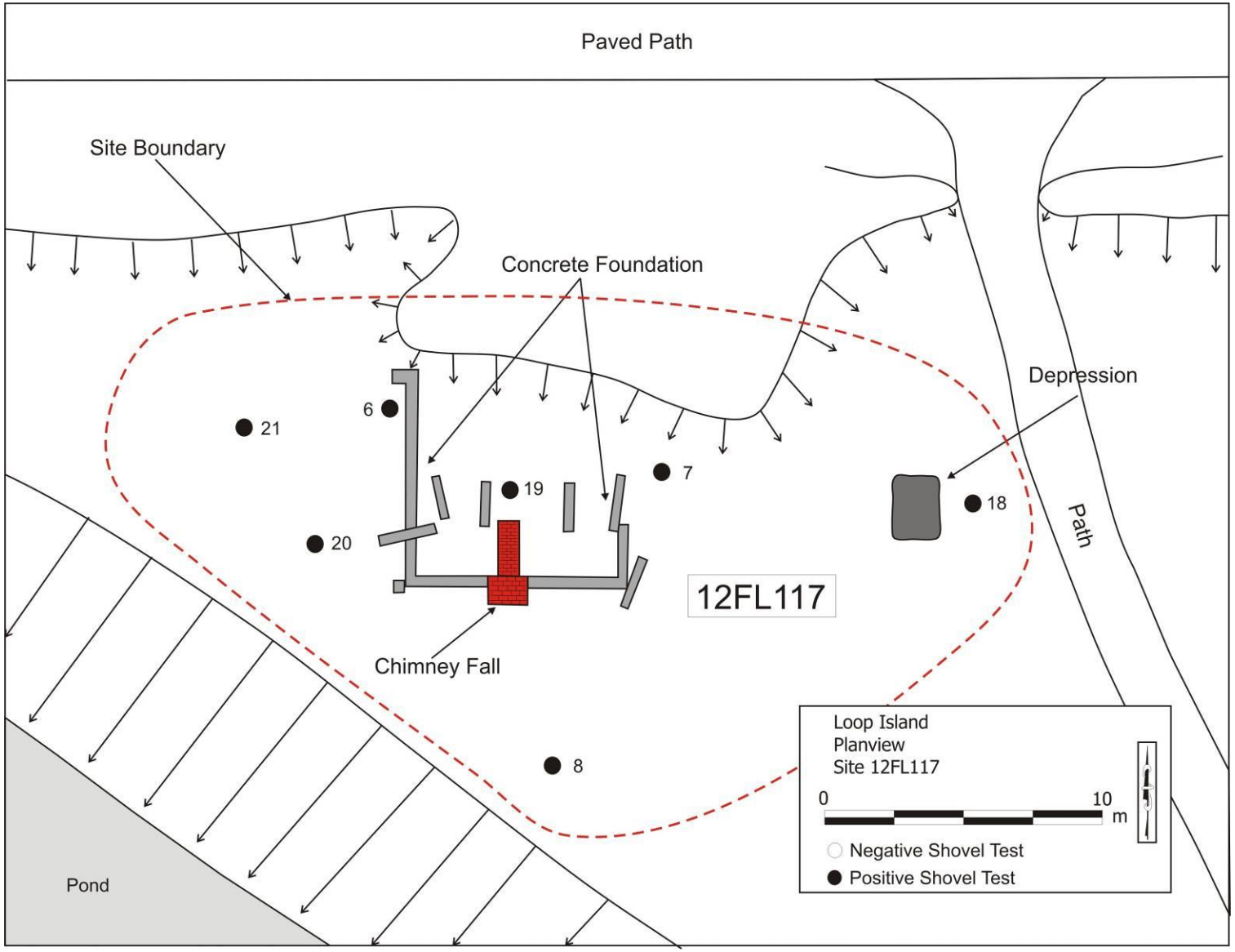


Figure 141. Detail of remains at site 12FL117.

From these materials, it was concluded that this was not a typical residential building, but perhaps one with a specific function. A series of shovel probes was therefore undertaken to recover artifacts that might indicate the function of the structure and provide information on the integrity of the site.

The site appeared to extend 45 m by 30 m and encompass 0.25 acres (0.10 hectares). Seven STPs were excavated at the site (**Figure 141**). The profiles from two of these, STP 6 and STP 8, reflected the conditions at the site (**Figure 142**). The soils profile in the area of the field sites revealed a historic midden from 0 to 17 cmbs that was black (10 YR 2/1) silt loam. From 17 to 40 cmbs (and continuing to at least 70 cmbs in some cases), the soil became somewhat mottled with brown (10YR 4/3) silt to very pale brown (10YR 7/4) mottles.

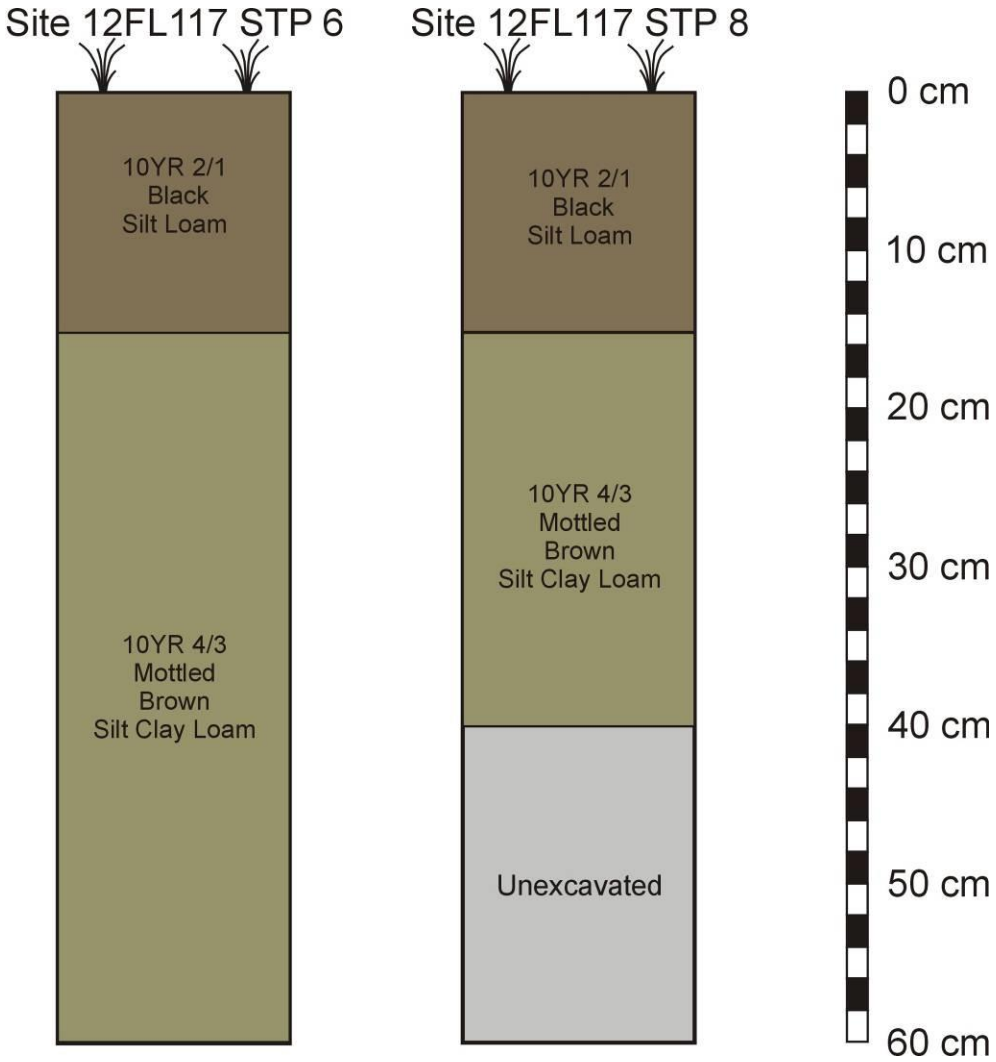


Figure 142. Profiles of STPs at site 12FL117.

Each of the seven STPs were positive for cultural remains. In addition, artifacts were observed in the ground surface surrounding the two depressions. One shovel probe (STP 18) was emplaced by a small rectangular depression located east of the main building site. This probe had to be terminated at a depth of 40 cmbs due to roots. It produced a nail, glass, and undecorated whiteware. The depression was located near and adjacent to an earthen trail along which scattered surface artifacts were found. The depression was roughly 1-x-2 m in size and of an unknown depth. The function of this small depression was not determined in the field.

In all, 182 artifacts were collected from this site (**Table 14**).

Table 33. Site 12FL117 Assemblage

Excavation Unit	Depth	Group	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count
STP 06	0-16 cmbs	Activities	charcoal						fragment	1
		Architecture	glass	aqua	flat				fragment	4
				clear	flat				fragment	3
			metal	iron	nail, wire	indeterminate	round head	indeterminate	fragment	1
		Kitchen	glass	clear	container		indeterminate	impressed	base	1
									rim	1
								plain	fragment	2
STP 07	0-10 cmbs	Architecture	limestone						finish	1
			metal	iron	nail, wire	9d	round head	straight	whole	3
STP 08	0-16 cmbs	Architecture	metal	iron	nail, wire	16d	round head	straight	whole	1
						20d	round head	clenched	whole	1
						indeterminate	indeterminate	indeterminate	fragment	1
STP 18	0-40 cmbs	Activities	coal							11
		Furnishings	glass	aqua	flat				fragment	1
		Kitchen	ceramic	ironstone	tableware		pale yellow glaze	gilt		1
STP 19	0-32 cmbs	Activities	asbestos or paper		flat				fragment	1
			asphalt							1
			charcoal							2
			cinder							4
			coal							36
			coal slag						fragment	1
			composite		spark plug with tube				whole	1
			metal	iron	flat				fragment	1
					staple					1

Excavation Unit	Depth	Group	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count
					wire					1
		Architecture	brick	machine made					fragment	2
			glass	clear	flat				fragment	1
			metal	iron	nail, screw, or bolt	indeterminate	indeterminate	indeterminate	fragment	14
					nail, wire	16d	round head	straight	whole	1
						20d	round head	pulled	whole	1
						6d	round head	pulled	whole	1
						9d	round head	pulled	whole	1
		Furnishings	glass	clear	chimney lamp				fragment	1
		Kitchen	ceramic	whiteware	indeterminate		clear glaze	plain	body	1
					tableware		clear glaze	plain	base	1
			glass	clear	container		indeterminate	plain	base	1
									fragment	7
				cobalt	container		indeterminate	plain	fragment	1
				milk	canning jar lid liner			embossed	rim	1
		Miscellaneous	metal	iron	amorphous					2
			plastic		flat				fragment	1
STP 20		Architecture	glass	aqua	flat				fragment	1
			metal	iron	nail, wire				fragment	1
		Clothing	plastic		button	4 hole	sunken center	18 French ligne	whole	1
		Kitchen	glass	clear	indeterminate		machine made	embossed	fragment	1
				milk	container		molded	plain	fragment	1
STP 21	0-40 cmbs	Activities	cinder						fragment	2
		Architecture	glass	aqua	flat				fragment	8
				clear	flat				fragment	13
			limestone						fragment	1

Excavation Unit	Depth	Group	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count
			metal	iron	nail, indeterminate				fragment	1
					nail, wire	10d	round head	clenched	whole	1
						indeterminate	round head	straight	fragment	1
					tack				whole	1
		Furnishings	glass	aqua	flat				fragment	2
				leaded	indeterminate				fragment	2
		Kitchen	ceramic	ironstone	indeterminate		clear glaze	plain	fragment	2
				ww/ironstone	indeterminate		clear glaze	plain	fragment	1
			glass	clear	container		indeterminate	embossed	fragment	1
					container		indeterminate	plain	fragment	4
				solarized	container		indeterminate	plain	fragment	1
		Miscellaneous	metal	aluminum	foil					1
Surface		Activities	metal	iron	washer				whole	1
		Industrial	metal	iron	stove burner grill				fragment	1
				lead	raw material					1
		Kitchen	ceramic	ironstone	tableware		clear glaze	plain	rim	1
								transferprint-brown	body	1
				stoneware	crock		exterior: clear at base, reddish brown band near rim, dark reddish brown at rim; interior: dark reddish brown	plain		1
					indeterminate		salt glaze	sponged, blue	body	1
					tableware		clear glaze	sponged, blue	body	1

Excavation Unit	Depth	Group	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count
			glass	aqua	container	Coke bottle	machine made	molded	rim to body	1
				brown	container	beer bottle	machine made	embossed	whole	1
				cobalt	container		indeterminate	plain	fragment	1
				solarized	container	beverage bottle	machine made	plain	finish	1
		FCR	indeterminate				cobble cortex			1
			sandstone				cobble cortex			1
		Use-Modified Tool	sandstone		anvil		cobble cortex		fragment	1
					hammerstone and grinding stone		cobble cortex		whole	1
Total										**182**

Comparison of Structures at Site 12FL117. Dates derived for diagnostic artifacts recovered from structures at site 12FL117 are presented in **Table 34**. Overall, they indicate a late nineteenth century to early twentieth century occupation. The early MCD for Structure 1 appears to be influenced by the early brown transferprint ironstone date (1829 to 1839 maximum popularity range) (Stelle 2001). Although some patterns were made through the late nineteenth century, without knowing the pattern or manufacturer, the maximum popularity range appears to most appropriate. This vessel may have been a curated heirloom item. The early twentieth century dates derived for the other data sets appears to be most appropriate for the structures.

Table 34. Comparison of Dates Derived for Structures at Site 12FL117

Structure	MCD	MAD	Moir	
			aqua	clear
1	1869 (n=6)	1908 (n=31)	1913 (n=13)	1914 (n=17)
2	1920 (n=1)	1920 (n=1)		

The proportions of functional groups represented by artifacts recovered from these two structures are depicted in **Figure 143** and **Figure 144** and summarized in **Table 35**. They indicate the majority of the occupation occurred at Structure 1. Structure 2, which is a small depression, may reflect a small outbuilding or specialized activity area.

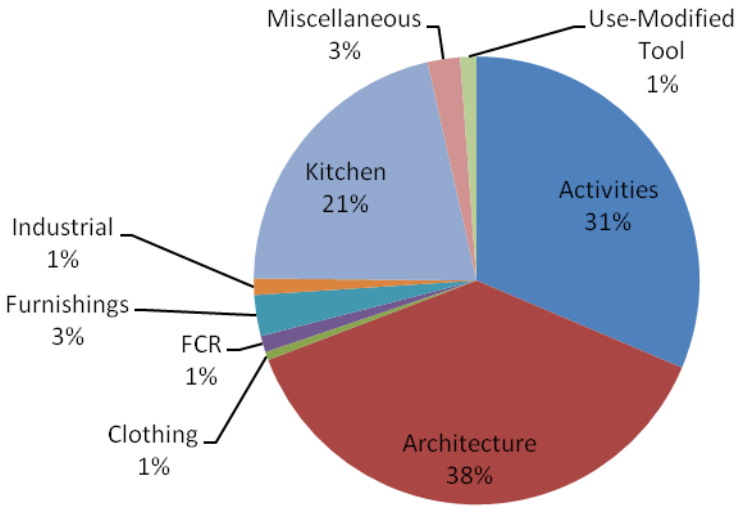


Figure 143. Proportion of functional groups recovered from Structure 1 at site 12FL117.

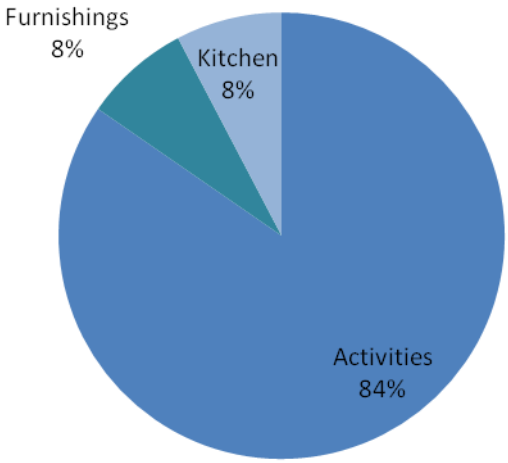


Figure 144. Proportion of functional groups recovered from Structure 2 at site 12FL117.

Table 35. Artifact Sub-assemblages for Structures within 12FL117

Group	Material Type	Artifact Type	Count
Structure 1			
Activities	asbestos or paper	flat	1
	asphalt		1
	charcoal		3
	cinder		6
	coal		36
	coal slag		1
	composite	spark plug with tube	1
	metal	flat	1
		staple	1
		washer	1
		wire	1
Architecture	brick		2
	glass	flat	30
	limestone		2
	metal	nail, indeterminate	1
		nail, screw, or bolt	14
		nail, wire	14
		tack	1
Clothing	plastic	button	1
FCR	indeterminate		1
	sandstone		1
Furnishings	glass	chimney lamp	1
		indeterminate	2
Industrial	metal	raw material	1
		stove burner grill	1
Kitchen	ceramic	crock	1
		indeterminate	5
		tableware	4
	glass	canning jar lid liner	1
		container	24
		indeterminate	1
Miscellaneous	metal	amorphous	2
		foil	1
	plastic	flat	1
Use-Modified Tool	sandstone	anvil	1
		hammerstone and grinding stone	1
Structure 2			
Activities	coal		11
Furnishings	glass	flat	1
Kitchen	ceramic	tableware	1
Total			**182**

Field Site 2 (12CL118) - Historic Residence(s)

Site 12FL118 was located south and east of site 12FL117, on the opposite side of the dirt path. This site was slightly downhill of site 12FL117. The site was identified as two concentrations of concrete slabs (**Figure 145**), dressed limestone blocks, fence posts (**Figure 146**), depressions, push piles, and artifact scatters. At least two possible structures were apparent. The first, Structure 1, was situated on a slight rise or terrace (**Figure 147**), while Structure 2, located to the east, was on a lower landform at the base of the terrace. Just south of Structure 2, the ground dropped dramatically into the wetlands of the floodplain below. Large push piles present at Structure 2 are likely associated with its demolition (**Figure 148**). The large concrete slabs associated with this structure have been pushed downhill toward the dirt path (**Figure 149**). Overall, considerable ground disturbance was noted in the area of the two structures (**Figure 150**). The site appeared to extend 50 m by 30 m and encompass 0.25 acres (0.10 ha).



Figure 145. Concrete and limestone structural debris around the base of tree at structure.



Figure 146. Post at Structure 1.



Figure 147. View of the remains of Structure 1, facing west.



Figure 148. Push piles at Structure 2.



Figure 149. Concrete debris at Structure 2.

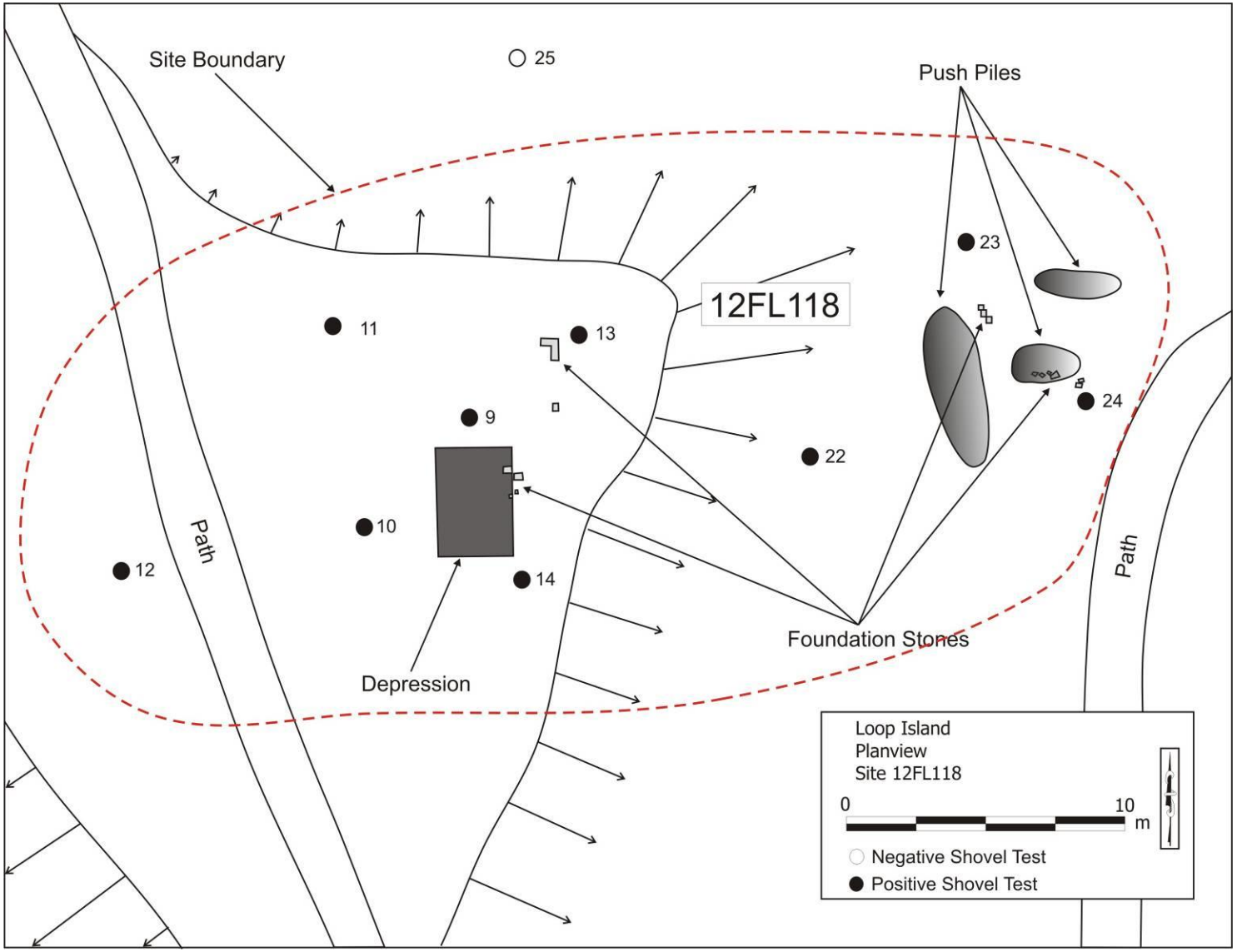


Figure 150. Detail of remains at site 12FL118.

The evidence at Structure 1 consisted of a depression, concrete slabs, dressed limestone blocks, a wooden post, and a light artifact scatter (**Figure 150**). Several large trees were present in the immediate area, and the concrete and limestone were concentrated around the trunks of these trees. Structure 2, located to the east and down a small rise, was situated in an area that had been disturbed to some degree by the grading or demolition. Large push piles were present in this location (**Figure 148**, above). Large concrete slabs were present as well, suggesting a concrete slab or floor for the structure (**Figure 149**, above).

Shovel probing was undertaken to recover artifacts that would provide information on the functions of the two structures, to determine if the demolition had disturbed the underlying soil deposits surrounding the physical remains, and especially to ascertain if Structure 2 indeed reflected a separate building or was instead debris from Structure 1 that was pushed over the hillside. The shovel probing revealed at both locations a dark midden that was shallow, overlaying a brighter orange subsoil (**Figure 151** and **Figure 152**). The ground in the area of the area investigated, away from the push piles, appeared to be undisturbed.



Figure 151. STP 11.

Seven shovel probes were excavated at Structure 1 (**Figure 150**). All but one of these, STP 25, were positive for artifacts. The artifacts included architectural, kitchen, and other functional types (**Table 36**). In all, 159 artifacts were recovered.

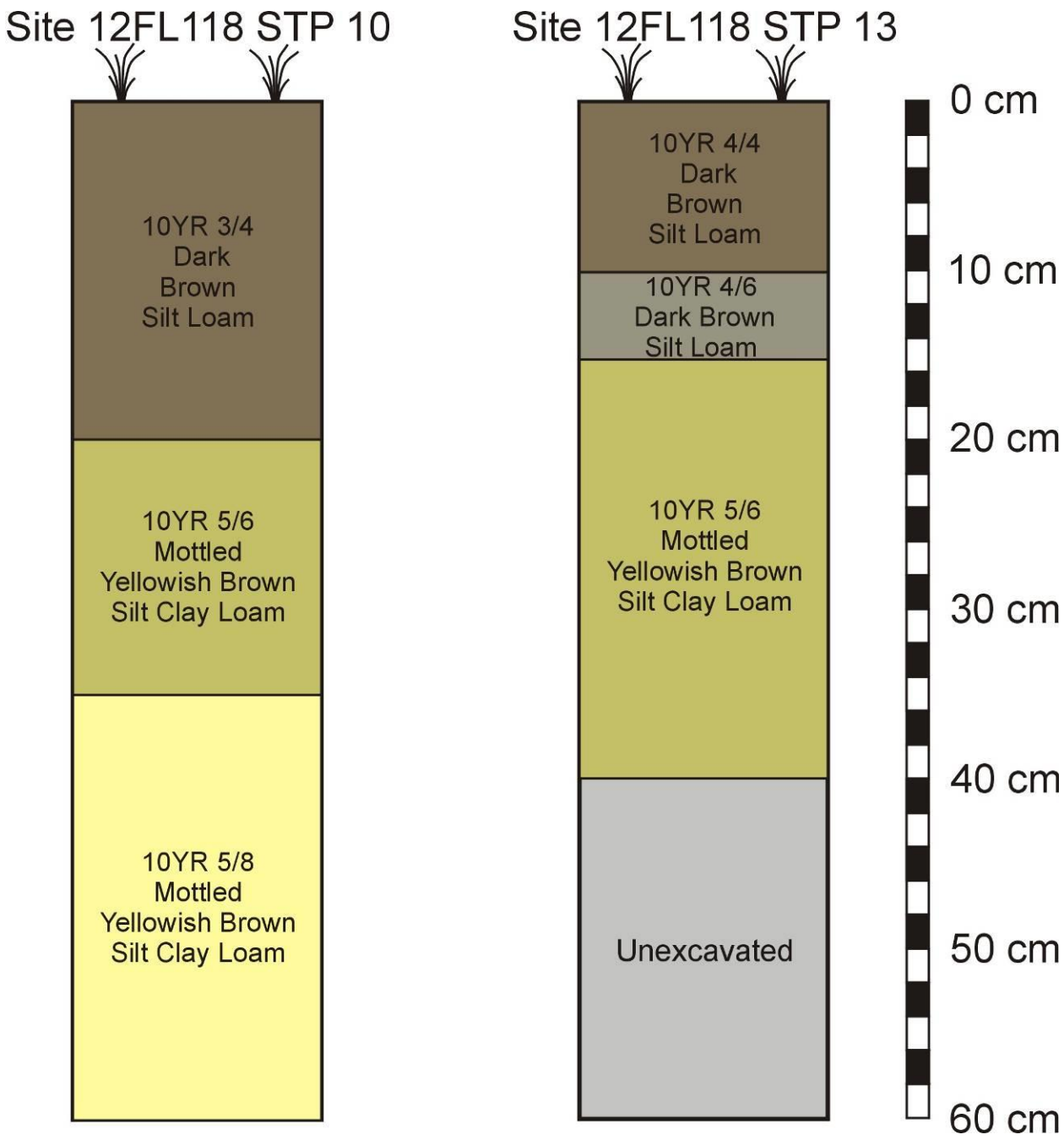


Figure 152. Profiles of shovel probes at site 12FL118.

Table 36. Site 12FL118 Assemblage

Excavation Unit	Depth	Group	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count
STP 09	15-20 cmbs	Activities	ceramic	porcelain-hard paste	doll		clear glaze	plain	leg	1
		Architecture	brick	handmade						2
			glass	aqua	flat				fragment	6
				clear	flat				finish	1
									fragment	1
			metal	iron	nail, indeterminate				fragment	1
					nail, indeterminate	12d	round head	straight	whole	1
			plaster						fragment	1
		Kitchen	ceramic	whiteware	teacup		clear glaze	plain	rim	1
			glass	aqua	container		indeterminate	plain	fragment	1
				clear	container		indeterminate	plain	fragment	1
					indeterminate			embossed	fragment	1
				milk	canning jar lid liner		molded	embossed	rim	2
STP 10	0-35 cmbs	Architecture	metal	iron	nail, wire	9d	round head	straight	whole	1
		Furnishings	glass	aqua	flat				fragment	1
		Kitchen	ceramic	porcelain, hard	indeterminate		clear glaze	plain	base	1
			glass	clear	container		indeterminate	plain	fragment	1
STP 11	0-15 cmbs	Kitchen	glass	milk	container		indeterminate	plain	base	2
STP 12	0-23 cmbs	Activities	metal	iron	bolt	90d	square head	straight	whole	1
	0-50 cmbs	Activities	metal	iron	bolt				whole	1
					fitting				whole	1
			plastic		spoon				proximal	1
		Architecture	glass	clear	flat				fragment	1
		Kitchen	ceramic	whiteware	indeterminate		clear glaze	plain	body	1

Excavation Unit	Depth	Group	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count
				whiteware	tableware		clear glaze	transferprint-brown	body	1
			glass	aqua	container		indeterminate	plain	fragment	1
				clear	container		indeterminate	plain	fragment	1
				forest green	container		indeterminate	plain	fragment	1
STP 13	0-13 cmbs	Architecture	metal	iron	nail, indeterminate	indeterminate	indeterminate	indeterminate	fragment	1
		Miscellaneous	metal	iron	flat				fragment	5
			plastic		bottom of a plastic cup				fragment	1
STP 14	0-18 cmbs	Architecture	glass	aqua	flat				fragment	1
			metal	iron	nail, indeterminate	indeterminate	indeterminate	straight	fragment	1
		Furnishings	glass	clear	chimney lamp				fragment	2
		Kitchen	ceramic	whiteware	indeterminate		clear glaze	plain	glaze fragment	1
			glass	aqua blue	container	indeterminate	indeterminate	plain	fragment	2
				clear	container		indeterminate	plain	fragment	1
				milk	container		indeterminate	embossed	fragment	1
STP 22	0-20 cmbs	Architecture	glass	aqua	flat				fragment	2
				clear	flat				fragment	5
		Furnishings	glass	aqua blue	flat				finish	1
				aqua blue	flat				fragment	1
		Kitchen	glass	clear	container		indeterminate	plain	fragment	1
STP 23	0-32 cmbs	Activities	glass	aqua blue	flat	safety glass			fragment	3
		Architecture	glass	aqua	flat				fragment	3
				clear	flat				fragment	2
			metal	iron	nail, indeterminate		indeterminate	indeterminate	fragment	1
		Furnishings	glass	aqua	flat				fragment	2
				clear	chimney lamp				fragment	1
				clear	flat				finish	48

Excavation Unit	Depth	Group	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count
		Kitchen	ceramic	ironstone	indeterminate		clear glaze	plain	glaze fragment	1
				ironstone	teacup		clear glaze	plain	rim	1
				pearlware	indeterminate		clear glaze	flow blue	glaze fragment	1
			glass	clear	container		indeterminate	plain	fragment	1
				solarized	container		molded	embossed	base	1
		Miscellaneous	plastic		indeterminate				fragment	1
STP 24	0-25 cmbs	Activities	coal							1
			metal	iron	slag				fragment	1
		Architecture	limestone							16
		Kitchen	glass	clear	container		indeterminate	plain	fragment	1
Surface		Architecture	glass	aqua	flat				fragment	1
				clear	flat				fragment	2
		Furnishings	glass	aqua	flat				fragment	1
		Kitchen	ceramic	porcelain, soft	tableware		indeterminate	plain	fragment	1
				stoneware	crock		manganese glaze	plain	rim	1
					indeterminate		manganese glaze	plain	body	2
			glass	clear	container	indeterminate	indeterminate	plain	fragment	1
				milk	canning jar lid liner			embossed	rim	1
				solarized	container	indeterminate	indeterminate	embossed	base	1
					container	indeterminate	indeterminate	plain	fragment	1
Total										**159**

Comparison of Structures at Site 12FL118. Dates derived for diagnostic artifacts are presented in **Table 37**. Overall, the dates indicate the site was occupied from the late nineteenth century to the early half of the twentieth century. Mean Artifact Dates extend between 1891 for Structure 1 to 1906 for Structure 2. Although sample size is good for Structure 1, it is much smaller for Structure 2. The ceramic sample size is also small for both structure data sets. While the MCD of Structure 1 is comparable to the MAD derived for the structure, the MCD of Structure 2 is much earlier, mainly due to a fragment of pearlware. As all other dates are later, this is assumed to be a curated fragment of an heirloom and the late nineteenth century dates appear to be most accurate. The Moir dates, derived for window glass, reflect early twentieth century occupation of the site—perhaps replacement windows. Dates extended between 1910 and 1941 with Structure 1 producing slightly earlier dates than Structure 2.

Table 37. Comparison of Dates Derived for Structures at Site 12FL118

Structure	MAD	MCD	Moir	
			aqua	clear
1	1891 (n=32)	1880 (n=6)	1930 (n=8)	1910 (n=5)
2	1906 (n=7)	1863 (n=3)	1932 (n=5)	1941 (n=7)

The proportions of functional groups represented by artifacts recovered from these two structures are depicted in **Figure 153** and **Figure 154** and summarized in **Table 38**. They appear very different with Structure 1 containing more domestic-related items such as plaster, brick, Kitchen ceramics and container glass and Activities such as a doll fragment. Large bolts and fittings also came from this structure. In contrast, Structure 2 produced Miscellaneous items such as plastic fragments and a large number (n=52) of flat glass fragments with thicknesses over 3 mm. Although routinely classed in Furnishings, these may also be associated with industrial sites. Based on the artifact sub-assemblages obtained from the two structures, it appears Structure 1 is a primary residential structure and Structure 2 may be an outbuilding or subsidiary industrial location.

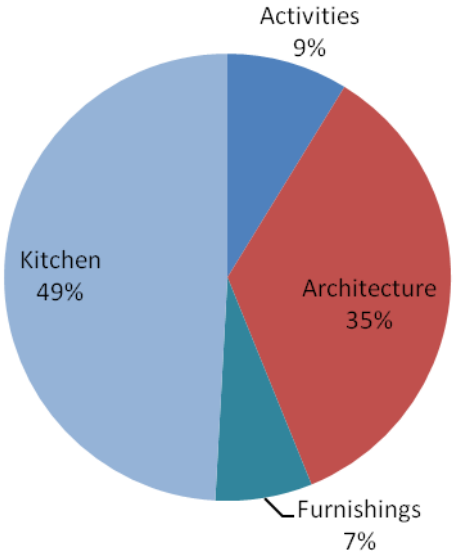


Figure 153. Proportion of functional groups recovered from Structure 1 at site 12FL118.

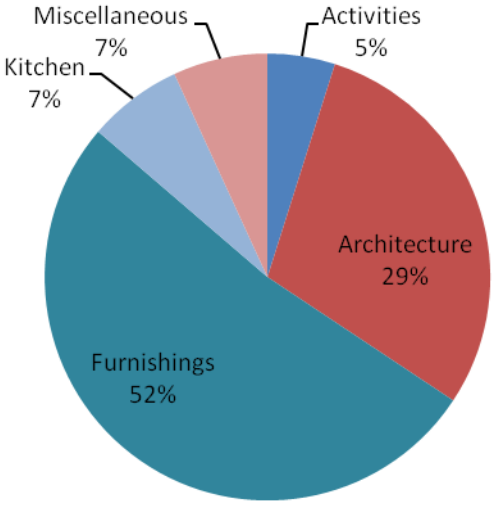


Figure 154. Proportion of functional groups recovered from Structure 2 at site 12FL118.

Table 38. Artifact Sub-assemblages for Structures within 12FL118

Group	Material Type	Artifact Type	Count
Structure 1			
Activities	ceramic	doll	1
	metal	bolt	2
		fitting	1
	plastic	spoon	1
Architecture	brick		2
	glass	flat	13
	metal	nail, indeterminate	3
		nail, wire	1
	plaster		1
Furnishings	glass	chimney lamp	2
		flat	2
Kitchen	ceramic	crock	1
		indeterminate	5
		tableware	2
		teacup	1
	glass	canning jar lid liner	3
		container	15
		indeterminate	1
Structure 2			
Activities	coal		1
	glass	flat	3
	metal	slag	1
Architecture	glass	flat	12
	limestone		16
	metal	nail, indeterminate	2
Furnishings	glass	chimney lamp	1
		flat	52
Kitchen	ceramic	indeterminate	2
		teacup	1
	glass	container	4
Miscellaneous	metal	flat	5
	plastic	bottom of a plastic cup	1
		indeterminate	1
Total			**159**

Summary of Sites 12FL117 and 12FL118

Site 12FL117 contained evidence of two buildings, neither of which were residential in nature. Site 12FL118 also contained the remains of two buildings, tone of which was residential and the other which was likely a garage or shed. Unfortunately, the archaeological survey did not result in the recovery of sufficient data to allow a confident interpretation of sites 12FL117 and 12FL118. It appears clear, however, that the two sites are related. Two possibilities were worthy of further consideration.

Information provided by Al Goodman suggested that this area could have been the location of an early 1900s stove foundry known as the Gohmann Brothers and Kahler Company. Research by the county historian suggested the small foundry was located south of the railroad in the area now known as the Loop Island Wetlands. The small building shown in a 1913 advertisement (**Figure 155** and **Figure 156**) appears consistent with a small building in the Loop Island area seen on a 1937 aerial view of the severe flooding of that year (**Figure 157**).



Figure 155. 1913 Advertisement of Gohmann Bros. & Kahler Co. Courtesy of Al Goodman.



Figure 156. 1937 image showing building within project area during flood event. Photograph courtesy of Al Goodman.



Figure 157. Gohmann & Kahler Stove Foundry. Image courtesy of Al Goodman.

The artifact assemblage appeared at first to bear this interpretation out, as portion of a stove were found at the site, and evidence of firing was present. Subsequent deed and archival research, however, revealed that the small foundry was located north of both railroads, in an area that is likely now beneath the Ohio River floodwall. The foundry was located south of E. Market Street, between Beharrel and George Streets (**Figure 158**). This effectively ended consideration of this industry as the source of the remains identified during the survey.

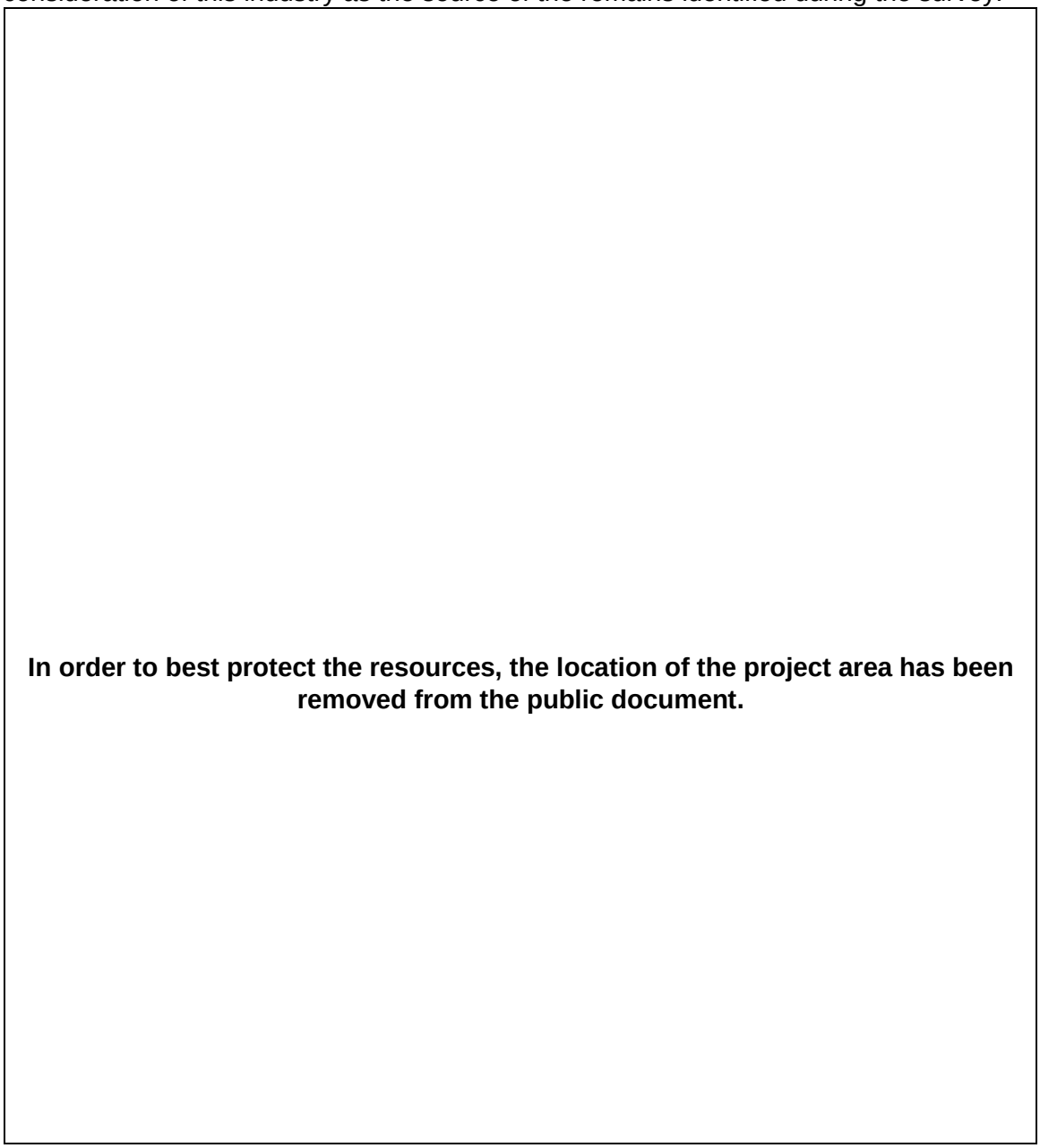


Figure 158. Buildings shown on U.S. Army Corps of Engineers 1964 mapping of the McAlpine Pool.

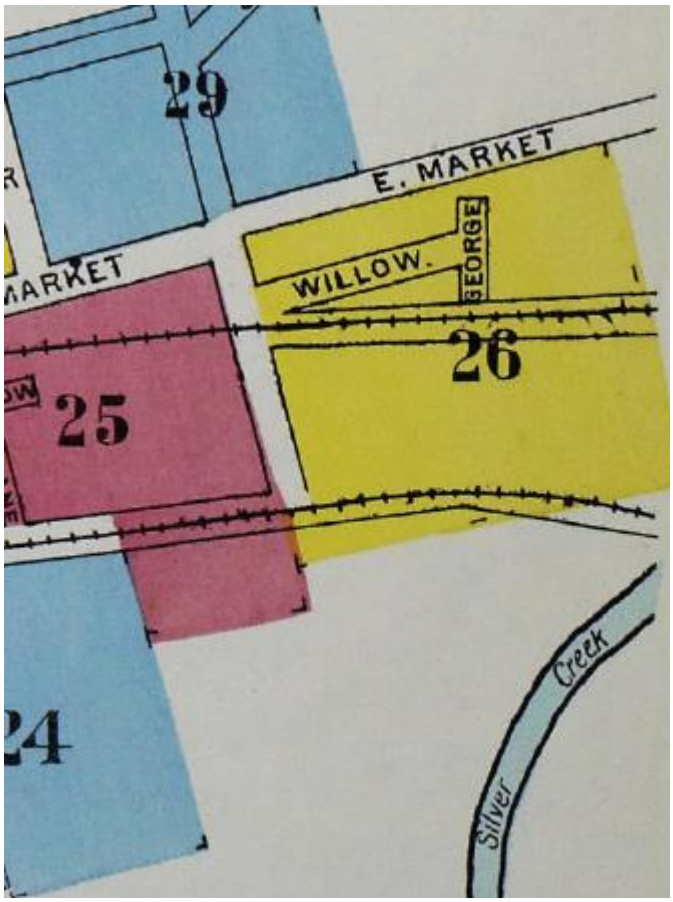


Figure 159. Segment of 1905 Sanborn Insurance map showing remnant of George Street.

Other industrial options have not been identified. Sanborn Insurance maps do not show the project area, as it was located outside of the city of New Albany for some time. Aerial imagery provided by Mr. Goodman shows what may be buildings associated with sites 12FL117 and 12FL118. The area investigated in this project was once a busy place. As can be seen in the 1939, 1946, and 1951 topographic maps (see above in **Section 3** of this report) and the 1928 and 1946 aerial images in **Figure 160** and **Figure 161**, a heavily traveled access road ran from the northwest, crossing the railroad tracks, into the project area. The vicinity of sites 12FL117 and 12FL118 is open and clear of vegetation. Access roads appear to extend along the railroad track eastward to Silver Creek. The small building seen in the 1937 flood appears to be present adjacent to the railroad and would have been accessed by these driveways.

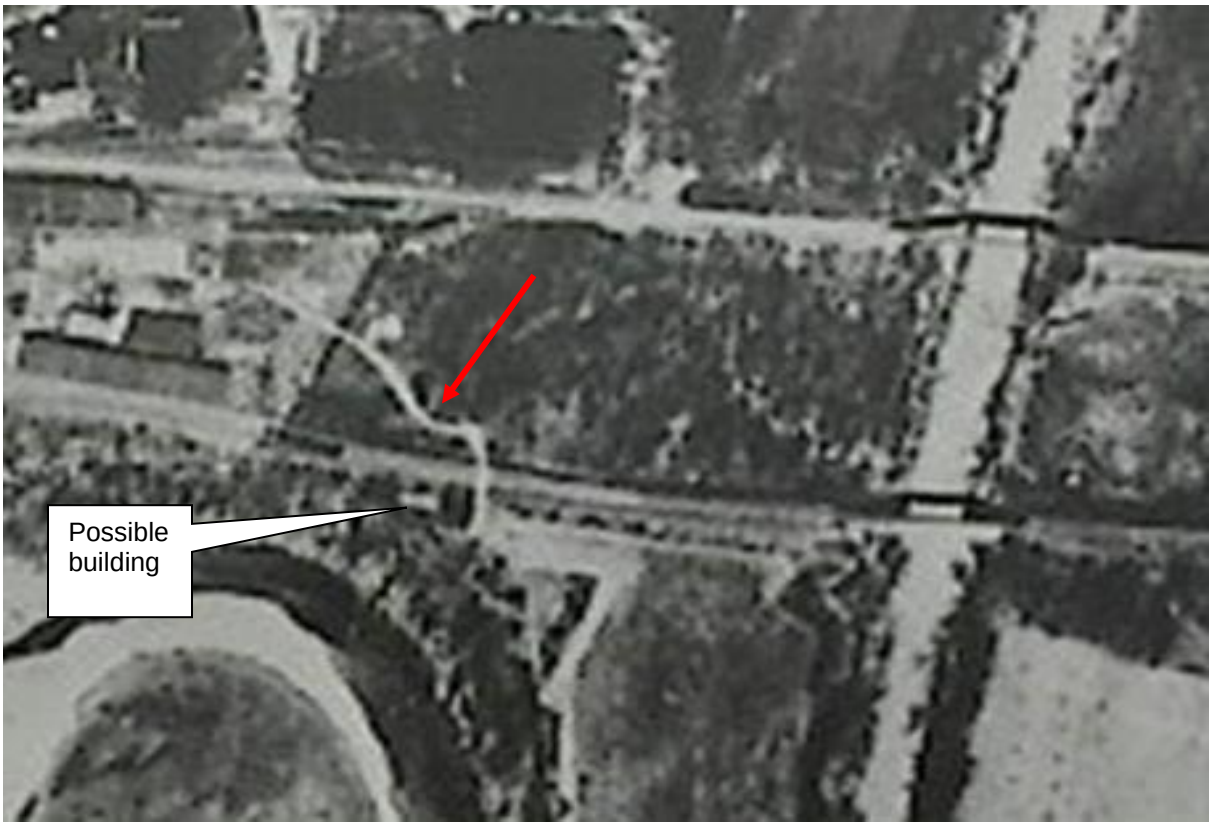


Figure 160. 1928 aerial view showing activity in area investigated. Photograph courtesy of Al Goodman.

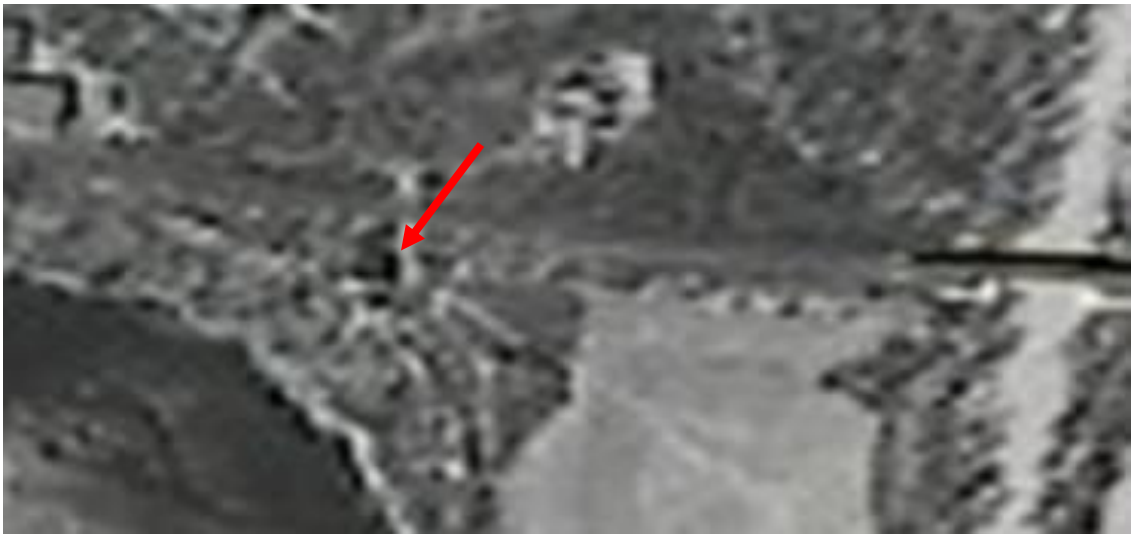


Figure 161. Blurry image of buildings and driveways on site south of railroad line in 1946. Photograph courtesy of Al Goodman.

This road system was disrupted in 1955 as seen from the topographic map of that year. USGS topographic mapping indicates only one structure on the property in 1951, and by 1955 a new access road entered the project area from the northeast, along Silver Creek. This driveway is visible on topographic maps through 1992, although no buildings are indicated past 1967. In 1963, the buildings complex is clearly visible (**Figure 162**). The 1965 USGS map does not indicate any structures in the project area, but a 1964 map from the U.S. Army Corps of Engineers shows four buildings on a map of the McAlpine Pool reach (**Figure 158** above). These are almost certainly the buildings identified in the field.

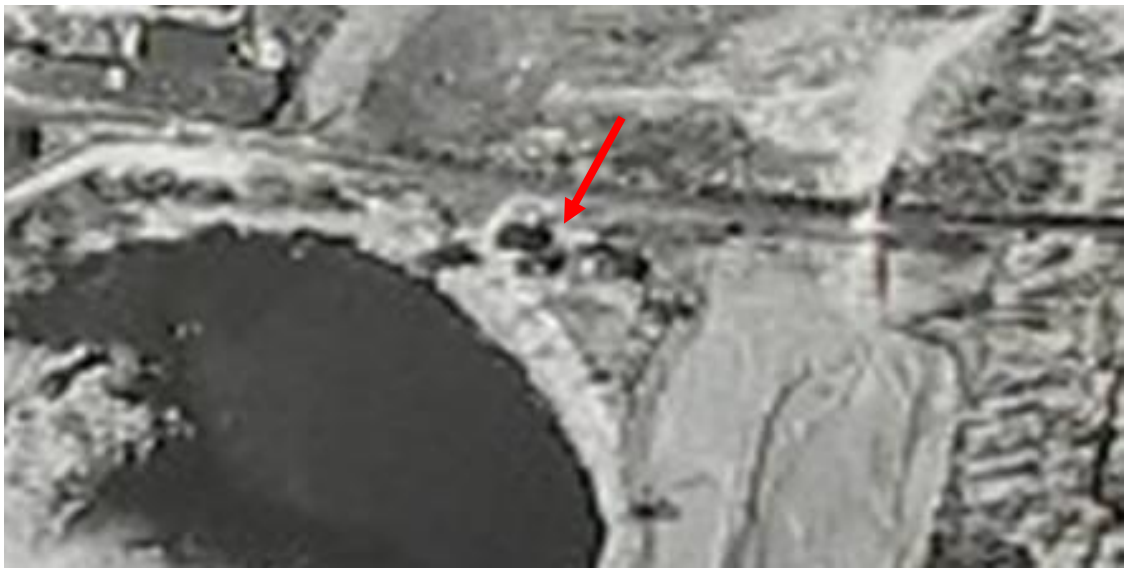


Figure 162. 1963 aerial image showing buildings and access roads south of railroad tracks within project area. Poor resolution is due to increased magnification. Photograph courtesy of Al Goodman.

While the USGS maps earlier than 1950 do not show any buildings, the artifacts and structural debris suggest an early to mid-twentieth century utilization of the landscape. It increasingly appears that a second possible interpretation of these buildings is that they were associated with the railroad. They are situated along the south side of the railroad, down a slight slope. The railroad is indicated on maps as early as 1873, and it was likely there before that date. In addition to connecting long-distance transportation, it was important to the industry of the area. The tracks ran immediately between several industrial concerns, including the Moser Leather Company (see below). The convenience of the railroad facilitated the shipping of goods and supplies to and from these industries.

The Pennsylvania Railroad crossed into Floyd County over Silver Creek on a bridge that is still standing and it part of the Loop Island Wetlands property (**Figure 163**). This bridge formerly carried two tracks, but one was dismantled. Debris associated with the tracks, including concrete and railroad ties, was noted within the project area.



Figure 163. Railroad bridge over Silver Creek.

The abandoned PRR bridge associated with Loop Island Wetlands has an 1867 stone substructure and a circa 1900 metal truss superstructure. The substructure consists of two rectangular piers with truss bearing seats on the east and west side of Silver Creek and is built of quarry-faced, square-cut, native stone laid in regular courses. The piers do not have wingwalls or decorative elements. The superstructure is a Warren deck truss with verticals. It spans 82 ft and has a total length of 218 ft with a ten-ft wide deck according to Bridgehunters.com (Baughn and Contributers 2012). A parallel deck has been removed. The Warren deck truss is described as follows:

> The most common truss type used in the twentieth century was the Warren truss. This truss, patented in 1848 by two British engineers, eliminated verticals found in most other truss forms, using diagonals to withstand both tensile and compressive forces. Warren trusses can include verticals, but they serve more as bracing units than load-bearing systems. The span of this truss configuration generally ranged from 50 to 400 ft. Warren trusses were popular in the early twentieth century and were frequently used in Indiana once bolts and rivets

> supplanted pins as the preferred connection for structural members. In Indiana, the Warren truss was frequently used in a pony configuration; Warren through and deck trusses are rare (M&H Architecture 2007):75)

Two railroad lines run across Silver Creek near Loop Island, identified on mid-century USGS maps as the Baltimore and Ohio (B&O) to the north and the Pennsylvania Railroad (PRR or Pennsy) to the south in the project area. The lines themselves had their origins in smaller companies which eventually merged and were bought out by much larger ones. The 1867 PRR bridge associated with the site fell under the purview of the following railroad companies:

1866-1890	Jeffersonville, Madison and Indianapolis Railroad (JM&I RR)
1890-1921	Pittsburgh, Cincinnati, Chicago and St. Louis Railroad (PCC&STL RR or Pan Handle Route of Pennsylvania Railroad)
1921-1968	Pennsylvania Railroad (PRR or Pennsy)
1968-1970	Penn Central
1970-	Conrail

The state of Indiana first chartered railroads in 1830. The Ohio and Indianapolis Railroad (later the Jeffersonville Railroad) was chartered in 1832 to build a line from the capitol to the Ohio River, but nothing came of it. In 1836, Governor Noah Noble signed the Internal Improvements bill with provisions for canals, turnpikes, and the Madison and Lafayette Railroad Company, and by 1847, the Madison & Indianapolis Railroad Company (M&I) completed it. Due to intense competition between the cities of Madison and Jeffersonville, the latter made haste to incorporate the Jeffersonville Railroad in 1849 and complete it in 1852 to Columbus, where it shared a track with the M&I to Indianapolis. Maps from this decade still illustrate the New Albany and Jeffersonville Plank Road where the PRR bridge stands today (Coverdale and Colpitts 1947; M&H Architecture 2007; O'Beirne and Company 1859; Sulzer 1970; Wilson 1854).

In 1866, the two rivals, the Jeffersonville Railroad and M&I merged to form the Jeffersonville, Madison and Indianapolis Railroad (JM&I) and began a series of improvements and expansion. In 1867, the company completed a commuter line on the bed of the New Albany and Jeffersonville Plank Road and called it the "Dinky" because it used a small engine. Also in this decade, the JM&I and the Louisville and Nashville (L&N) became primary stockholders in an ongoing effort to build a bridge to Louisville. In 1870, the Louisville Bridge was completed as the longest iron bridge in America with the Dinky becoming a spur which connected commuters to Louisville (Kramer 2007).

In 1873, JM&I leased their line to the Pittsburgh, Cincinnati and St. Louis (PC&STL), owned by the PRR. By 1890, JM&I, PC&STL, Cincinnati and Richmond Railroad merged to form the PCC&STL RR or the Pan Handle Route of the PRR. In 1921, the PRR Company leased PCC&STL and eventually bought it out entirely in 1956. PRR continued its operation in one form or another until 1968 when it merged with the New York Central Railroad to form Penn Central. Penn Central declared bankruptcy within two years, leaving the line to Conrail's management (Coverdale and Colpitts 1947; Kramer 2007; Meints 2011; Schotter 1927).

A number of buildings and structures of various functions are (were) located along rail lines. These included watchman towers and shanties, section houses (tool houses and handcar houses), signal towers, ash pits and sand houses, oil storage and oil mixing houses, water and coaling stations, engine and freight houses, platforms and platform sheds, and depots (Bergmann 1858). Of potential relevance to this study, there were also dwelling houses, and sleeping quarters and club houses for employees. While several of these options may be ruled

out by the archaeological remains identified at these two sites, others of this list could be potential matches. Several of the building types stressed the importance of fire-resistant construction materials and the use of poured concrete in the foundations and lower floors. Several others are located along sloping hillsides adjacent to the tracks, similar to the remains found at site 12FL117. The large coal/ash/cinder pit located on the hillside north of site 12FL117 is suggestive of a coaling station as described by Berg (Berg 1893). Blacksmith shops and small foundries were also common (McVarish 2008). Very detailed floorplans and construction techniques and materials are provided in several essential reference books (Berg 1893), (McVarish 2008). Equipped with these references, it may be possible to potentially identify the functions of these buildings with additional archaeological fieldwork.

A second rationale for associating sites 12FL117 and 12FL118 with the railroad – aside from proximity – relates to the dates of the artifacts. The mean artifact dates from site 12FL117 range from 1869 through 1920, while the mean average dates for site 12FL118 lie between 1891 and 1941. No buildings or structures are indicated on historic maps at these time periods. The railroad was the only feature present that can be confidently shown to be present in the area at those times. Buildings appear on aerials as early as 1928 and 1946, but not on topographic maps until 1951 and are gone by 1964 (although a USACE maps shows four buildings in 1965). It would appear that the buildings at the site were used in some capacity beyond the latest mean artifact dates of 1920 and 1941. Considering the small size of the assemblages, some bias in the dating is likely to have occurred. For this reason, the acquisition of additional artifacts through more extensive archaeology would be valuable.

Based on all the evidence, it appears likely that the buildings identified at sites 12FL117 and 12FL118 may have been related to the railroad and were used in the early to mid-twentieth centuries.

Field Site 4 (12FL119)--Moser Leather Company Complex

The Moser Leather Company Complex occupied a significant portion of the upper terrace within a built environment. A site visit to the tannery documented a number of vacant buildings (**Figure 164**, **Figure 165**, **Figure 166**), water-filled structural features, (**Figure 167**), and associated structures and objects (**Figure 168**) still existing at the location. Several of the buildings present at the site have been demolished, leaving ghosts of their profiles on adjacent buildings. One of these, at least, burned in recent years and was subsequently torn down.

The history of the Moser Leather Company has been well researched by landowner Mr. Al Goodman (http://www.loopislandwetlands.com/history.pdf), and as some of that history has been provided previously in this report (**Section 3**), it will not be repeated here. Rather, this section discusses the site in terms of its archaeological potential.

The overwhelming majority of the tannery property has been developed, leaving very little open ground on which to conduct shovel probing or excavation. Several grassy areas surrounded the buildings. Shovel probes were attempted in these areas, but met with resistance in the form of dense gravel or pavement. It is possible that undisturbed archaeological deposits are present beneath this gravel layer. A railroad bed once ran across the front of the complex. While the railroad is now gone, the former bed, which is now a roadway and trail, constitutes an area of considerable disturbance along the front of the buildings. The historic photograph presented as **Figure 169** provides evidence that the front, at least, of the complex was disturbed from an early date; the unpaved areas in front of the buildings were apparently used for driving and parking, in additional to being adjacent to the rail line. It is unlikely that artifacts related to the process of tanning would be found in these locations.

Southeast of and behind the building complex is a large pile comprised of leather compost. Along the outside of the current floodwall is a small steel door that was installed to allow the tannery to dispose of scrap leather over the hillside. Large piles of leather are still composting there (Goodman, http://www.loopislandwetlands.com/walking_guide.pdf). The pile of leather scraps over 60 ft in thickness overlooks the large lagoon.

The ground surface around the buildings was examined for surface artifacts. Broken window glass, brick fragments, along with nuts, bolts and miscellaneous metal items were found around the buildings. Wooden artifacts were also found, as described below. Most of this material was not collected, since the age of the buildings was well documented. In addition, modern trash was also observed which was not collected.

One large piece of equipment, described below, is an exception in that it was located outside of any building, however, historic photographs show that this piece of equipment was normally located inside.

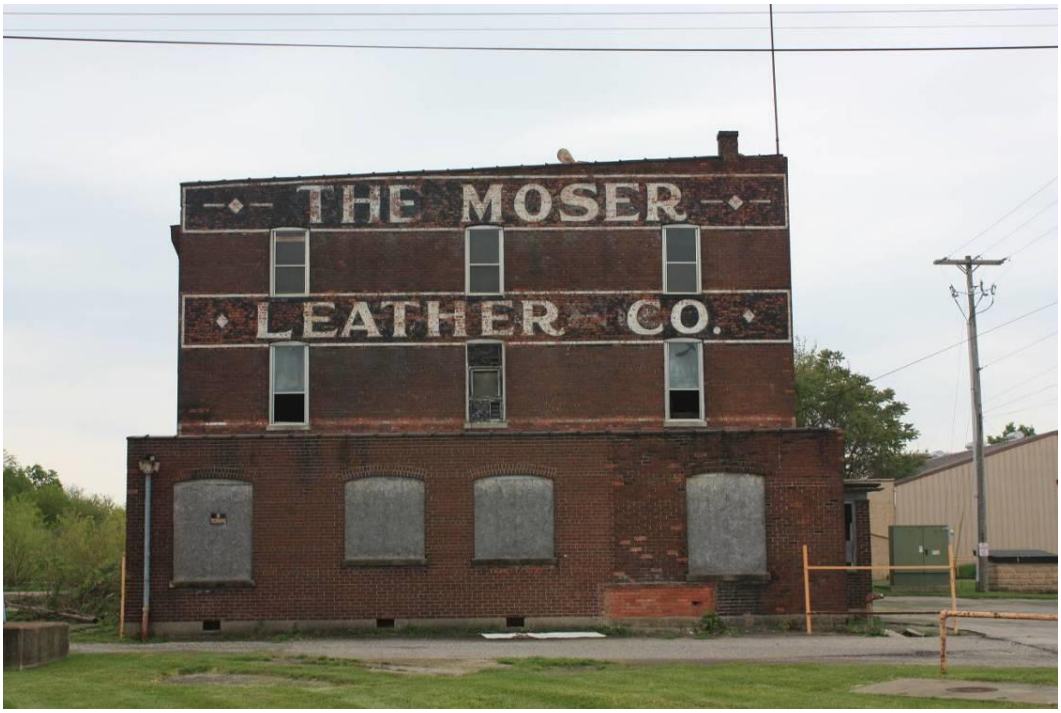


Figure 164. Westernmost tannery building with "THE MOSER LEATHER CO.", facing southeast.



Figure 165. Vacant tannery buildings near water tower, facing southwest.



Figure 166. Additional vacant buildings at the tannery, facing southeast.



Figure 167. Water filled structural remains.



Figure 168. FOAS member Randy Hollis examining a structure and objects associated with the tannery.



Figure 169. Historic photograph of George Moser Leather Company. Courtesy James Cox (http://www.moserleatherco.com/).

A large wooden rotary drum vat was located outside of the buildings (**Figure 170**). Vats of this sort rotated on an axle (**Figure 171**). As the rotating wet hides exerted much stress on the wood vat, straps encircled the vat that were held in place along wooden tracks on the exterior (**Figure 173**). Within the vat, hides were cleaned of soluble material by the addition of cleansers such as metal salts. Wooden pegs were placed in alignments along the interior walls of the vat, presumably to keep the hides in motion (**Figure 174**). Debris from these vats was strewn about the location (**Figure 175**). Samples were retained.

According to the *Dictionary of Occupation Titles*, these vats would have been tended by workers such as the tanning-drum operator, drum attendant, or continuous rotary drum tanner (U.S.Department of Labor et al. 1991). Other names for these positions include quebracho tanner, tawer, temperer, wet-milling-wheel operator, and breaker-wheel operator. Metal salts, sodium formate, liming agents, deliming agents, pickling, or tanning agents may have been used in the vats. These personnel would have been responsible for the transfer of hides into the vat, addition of the appropriate mixtures, addition of the appropriate amount of steam, timing of the application, replacement of the vat door with a grate, and emptying of the liquid and the hides.



Figure 170. FOAS member Randy Hollis examining rotary drum vat.



Figure 171. Side view of rotary drum vat showing axle.



Figure 172. Drum vats in position. Courtesy of James Cox (http://www.moserleatherco.com/Pretanningwetend.html).



Figure 173. Series of tracks on the exterior of the rotary drum vat, which held straps in place.



Figure 174. Wooden pegs on the interior of the rotary drum vat.



Figure 175. Debris from vats lying on ground.

Six STPS were attempted at the site (**Figure 129** above). As stated above, no artifacts were recovered from the process. All of the artifacts recovered were collected from the ground surface. The selection of artifacts focused on those artifacts related to the tannery operation. Window glass (which appeared modern) and bricks were not collected as the objective was not to document the age of the site. The assemblage collected from the site was therefore low and not very diverse (**Table 39**).

Table 39. Site 12FL119 Assemblage

Excavation Unit	Group	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count
Surface	Activities	metal	iron	bolt	16d	hexagonal		whole	1
					9d	hexagonal		whole	2
				flywheel					2
				screw	6d	slotted		whole	2
	Industrial	composite		strap				fragment	1
		wood		track				whole	1
				peg				whole	1
Total									**10**

It is possible that, beneath the pavement and gravel, there may lay buried artifacts and midden. It would seem logical to expect, however, that most of the activities at this complex occurred within the buildings themselves. There appears to be little potential for meaningful data to be gathered through archaeological excavation. Rather, any future effort should continue to focus on archival research and an examination of the extant buildings and their contents (**Figure 176**).

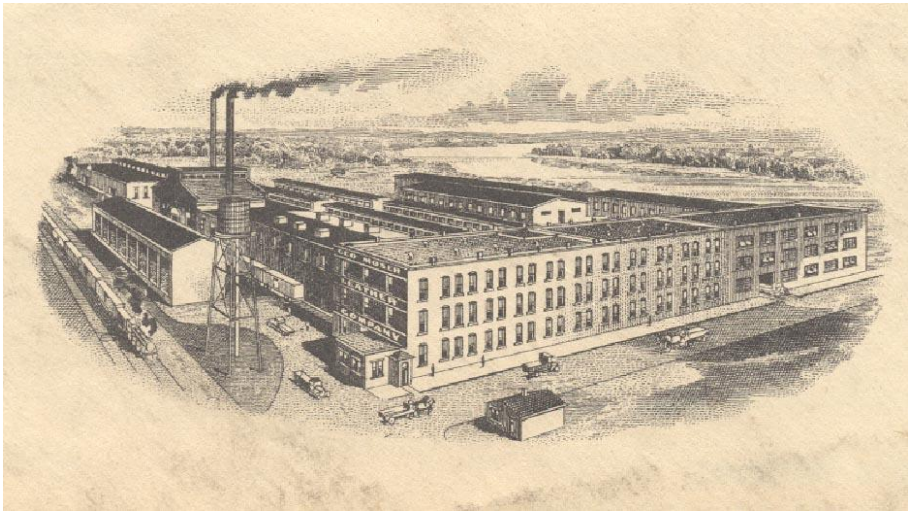


Figure 176. From letterhead of early 1900s. Courtesy of Al Goodman.

Summary

As noted in 1998 by Palmer and Neaverson (1998:3) and mentioned above:

> the data of industrial archaeology is generally limited to the physical remains of sites and structures, plus map, documentary, and photographic evidence; what is nearly always lacking is normal artefactual material for analysis.

This is certainly the case with the Moser Leather Tannery. Although aspects of the tanning process itself has been documented by the current landowner and others (the tannery was operational until recent years), no comprehensive inventory of associated artifacts, machinery, equipments, tools, etc. has been identified so far with the industry once located at what is now the Loop Island Wetlands. The landowner has some artifacts stored at his offices at the Wetlands, but it is not extensive.

This raises the question of archaeological expectations. It is likely that few artifacts related to this industry would be located in the yard areas as most of the processing occurred indoors. The actual products were organic, and while they may be preserved for some time, it is not likely they would have sustained archaeological longevity. Some artifacts (machinery, equipment, tools) may remain inside the buildings, but it is more likely that these have been removed. A few artifacts that have been recovered were outside the building, and made of wood and vinyl or rubber. These artifacts appear to have been associated with equipment that was once located inside the buildings, however. Most of the artifacts expected to be outside would relate to the architecture of the buildings rather than the industry itself.

At the Moser Leather Company Site (12FL119), additional archaeological research and potentially fieldwork is required to corroborate these conclusions and to explore beneath the gravel lots and yards. However, based on the current project, it would appear that – in keeping with many industrial studies much more could be learned from oral histories, architectural studies, industrial records, landscape studies, and comparison to other tanneries.

Field Site 3 (12FL120)-Prehistoric Site

A small scattering of prehistoric artifacts were discovered along the eroding cutbank of the Ohio River near the mouth of Silver Creek. The boundaries of this site were not determined during the current survey. The site was identified as a light scatter of artifacts along the beach and slumping cutbank along the Ohio River. Although looter's pits were noted in 2011 at this location, it is estimated that as much as 50 ft of bank has been lost over the past year, eliminating all evidence of looting as well as the location at which it occurred. The boundaries of this site are therefore very tentative, and the site size cannot be determined. It is very likely that much of the site has eroded into the river.

Backhoe trenching was conducted along the Ohio River, inland of the banks. Three backhoe trenches, BHT 1-3, were described above in **Section 4** of this report. These excavations did not intersect cultural materials. This could be interpreted in several ways. First, it is possible that the site did not extend as far inland as the trench locations. Alternatively, the trenches may not have been excavated deeply enough to access the prehistoric materials.

The cutbank of the Ohio River was generally steep and badly eroding (**Figure 177**). Where possible, it was examined for midden and exposed artifacts. A barely visible line of darker, organic soil was noted at an approximate depth of 2 m below the ground surface (height of bank), but this cannot conclusively be identified as the source of the artifacts. Fire-cracked rock was however observed within this band. A near vertical wall was trowel-cleaned and examined both by archaeologists and the project geomorphologist for evidence of prehistoric activity (**Figure 178**). Regarding the stratigraphy, the geomorphologist reported the following:

> The cut bank exposure along the Ohio River revealed a soil profile somewhat similar to what was observed in Trenches 1 through 3. Here, the 20-cm (7.9-in.) thick A horizon of dark grayish brown (10YR 4/2) silty clay loam is underlain by a weakly developed B horizon of dark grayish brown (10YR 4/2) silty clay loam to a depth of 95 cm (3.1 ft). Within this B horizon are small pockets of yellowish brown (10YR 5/4) loamy sand predominantly 20 to 35 cm (7.9 to 13.8 in.) below the surface with occasional small pockets of the loamy sand to a depth of 50 cm (19.7 in.). A 5-cm (2.0-in.) thick C horizon of yellowish brown (10YR 5/4) loamy sand underlies the B horizon. A 15-cm (5.9-in.) thick A horizon of a buried soil (paleosol), which consists of very dark grayish brown (10YR 3/2) silty clay loam, is present below the C horizon. It is underlain to a depth of 155 cm (5.1 ft.) by a weakly developed B horizon of very dark grayish brown (10YR 3/2) silty clay loam. Underlying this is the C horizon of dark yellowish brown (10YR 4/4) fine sandy clay loam. Although a large slump block impeded further soil analysis, the boundary between the C horizon and underlying deposits was observed in an exposure about 10 m (32.8 ft.) upstream from where the initial soil profile was analyzed. At the base of the C horizon is 25 cm (9.8 in.) of thin horizontal beds of brown (10YR 4/3) loamy sand, dark grayish brown (10YR 4/2) silty clay loam, and, at the bottom of these deposits, yellowish brown (10YR 5/4) fine sandy clay loam. Below this is a massive deposit of brown (10YR 4/3) silty clay (Haywood, **Appendix B**, this document).



Figure 177. Badly eroding banks of the Ohio River near mouth of Silver Creek.

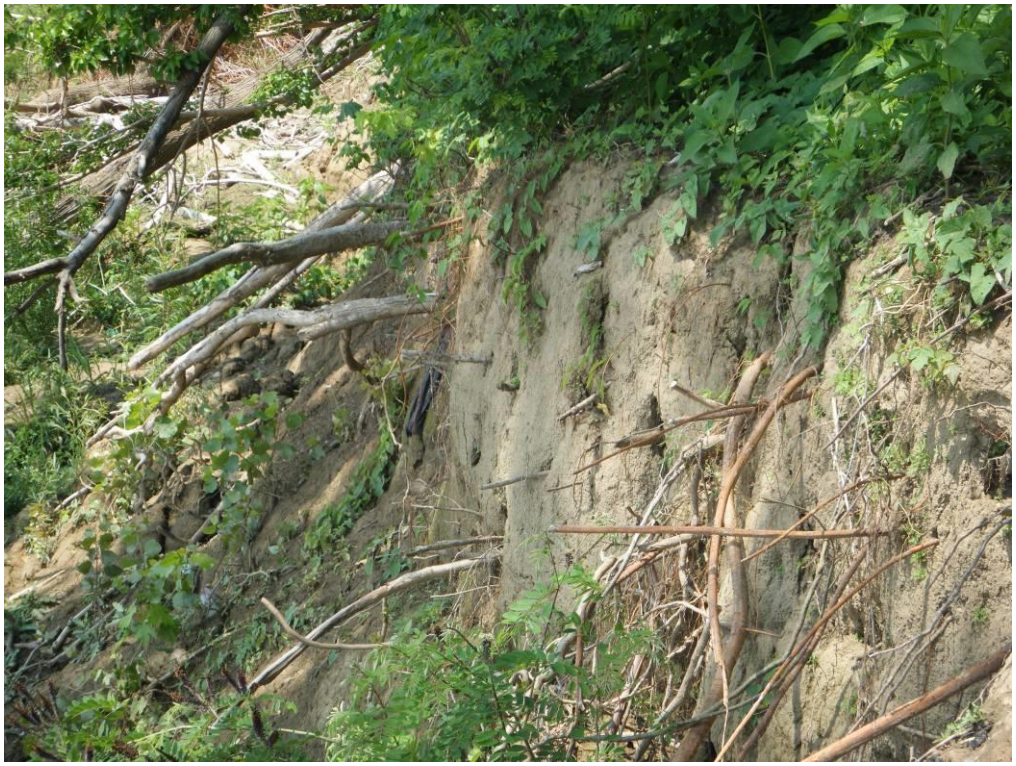


Figure 178. Vertical profile of bank along Ohio River.

Twenty-one artifacts were recovered from this site (**Table 40**). Five of these were historic (one hand-wrought nail and four ceramics). These were recovered from the beach, and the origin of these artifacts cannot be determined with any confidence. They may have washed in from upriver at a location at the site of Old Clarksville. A fifth artifact was also recovered by a member of FOAS from this general area. This is a large lithic artifact of unknown function that is certainly historic.

Sixteen prehistoric artifacts were recovered during the survey. The collection was comprised of two bifaces, two cores, five use-modified cobbles, one organic item (charcoal), five FCR, and one ceramic sherd. Prehistoric artifacts were primarily non-diagnostic. The single finished biface was snapped midsection and only the tip was recovered. The artifact was made from Wyandotte chert, however. This material was popular during the Woodland period, as well as the Early Archaic period. Several ceramic sherds were also found at this site, lending support to a Woodland occupation of the area.

One ceramic artifact was recovered during the project, and a second had been collected earlier before the grant period of performance by a FOAS member and given to the landowner. The artifact collected from the banks had a coarse temper consisting of rounded ferromagnesian material that attracted a magnet. The surface treatment was smoothed over cordmarking; exceptionally deep imprints appeared to be S-twist (see **Figure 47** above). Sherds of this type have been associated with Late Woodland occupation in the immediate project area. The sherd found previous to the grant performance period had a coarse siltstone or mudstone temper. This was also a cordmarked sherd, and there is the possibility that it was also cordmarked on the interior (Personal communication, Stephen Mocas, April 2012). This sherd also has been tentatively associated with a middle to late Woodland occupation.

Summary

The investigation of prehistoric materials eroding along the Ohio River bank was one of the primary driving factors behind the survey of the Loop Island Wetlands. The presence of looters pits observed the previous year and the collection of a small number of prehistoric artifacts made it appear that this site was a likely location for finding significant prehistoric remains. However, as discussed above, the investigation of the site yielded very little.

There could be several reasons for the paucity of recovered artifacts. Among the possible explanations is the fact that the area has undergone extensive erosion due to wave action from the river. As mentioned previously, nearly 50 ft of the bank has been lost to the river since the summer of 2011 when the survey was awarded. It is very likely that the site has eroded completely away.

It is also possible that only small portion of the site remains. While very low density “bands” of fire-cracked rock were observed in slumped areas, the depth of these materials could not be determined with any confidence and due to the severe erosion and undercutting of the bank, the upper portions of the exposed cutbank could not be easily accessed with safety. Regardless, no cultural deposits were encountered within the backhoe trenches excavated inland of the bank. It may be that the remnant of the site did not extend so far inland as the trench locations. Alternatively, the trenches may not have been excavated deeply enough to access the prehistoric materials. The most plausible explanation, however, is that this site has been lost over the years to the river.

Table 40. Site 12FL120 Assemblage

Excavation Unit	Group	Material Type	Material Subtype	Artifact Type	Subtype	Class	Subclass	Portion	Count
Surface	Architecture	metal	iron	nail, handwrought	indeterminate	indeterminate	indeterminate	fragment	1
	Kitchen	ceramic	ironstone	indeterminate		clear glaze	plain	base	1
								body	1
								rim	1
			stoneware	tableware		clear glaze	sponged, blue	body	1
	Biface	Jeffersonville		early stage				whole	1
		Wyandotte		ppk				distal	1
	Ceramic	ferromagnesian		vessel				body	1
	Core	cobble chert		multidirectional	50 %	cobble cortex			1
		igneous							1
	FCR	igneous				cobble cortex			1
		sandstone				cobble cortex			4
	Organic	charcoal							1
	Use-Modified Tool	igneous		hammerstone		cobble cortex		fragment	1
		sandstone		anvil		cobble cortex			1
				hammerstone		cobble cortex		fragment	2
								whole	1
Total									**21**

8
CONCLUSIONS AND RECOMMENDATIONS

From June 30, 2011 through June 20, 2012, the Falls of the Ohio Archaeological Society (FOAS), a professional/avocational archaeological group, conducted Phase I a and Phase 1c archaeological investigations of the property known as the Loop Island Wetlands in Floyd County, Indiana. FOAS, a not-for-profit 501 (c) 3 corporation was awarded a Historic Preservation Fund Archaeological Grant by IDNR-DHPA to do the study that was triggered by multiple compelling considerations, as detailed in **Section 1** of this report. Important among these, however, was the comparative dearth of information on archaeological resources for this area in comparison to nearby counties, the rapid loss of shoreline due to erosion, documented looting, and upcoming changes in property ownership. The project was undertaken with the permission and cooperation of the current landowner, Mr. Al Goodman, who has been an excellent steward of local resources for some years. In addition to the archaeological survey, the project included a geomorphological assessment, the research and preparation of prehistoric and historic contexts for the area, and development of public education materials, the latter in keeping with the mission statement of FOAS.

The project entailed a cooperative effort between the avocational and professional members of FOAS, other members of the general public, and professional archaeologists and historians form Corn Island Archaeology LLC of Louisville, Kentucky (of whose staff many are FOAS members). Corn Island Archaeology provided logistical support for the project in the areas of equipment, lab facilities, financial support, and in-kind labor. Haywood Archaeological Services of Ohio assisted with the geomorphological assessment of the property.

Cooperatively, FOAS with professional support from Corn Island Archaeology (also FOAS members) worked side-by-side in the field and in the processing of recovered artifacts. FOAS meetings (open to the public) were dedicated to presentations on the history of Loop Island Wetlands and to washing and sorting of artifacts. Additional presentations and a lay publication are planned in the near future.

The survey employed a series of methods to discover archaeological sites, including ground surface inspection, shovel probing, augering, backhoe trenching, and stream bank profiling. Expectations for site discovery changed when it was discovered that a greater percentage of the project area had been overlain with alluvium than originally thought, triggering a change in project methodology. The inability to access former land surfaces through ground surface inspection and shovel probing limited the project's potential to discover evidence of past activities.

Considering the archaeological richness of the Falls of the Ohio River region, especially in the immediate project vicinity, the findings of the Loop Island Wetlands survey did not meet original expectations. Overall, the current project area was found to be very much disturbed. Evidence of earth movement through construction and building demolition, as well as erosion were commonplace. The disturbance, however, while widespread horizontally across the project area, in much of the area was confined to the near surface. Exceptions include the small lagoon in which acres of soil had been excavated to a depth of five to six feet for borrow. Severe

erosion and scouring along the Ohio River have also resulted in loss of land. However, deep deposits of recent alluvium blanket the southern portion of the project area and may conceal buried archaeological sites which could not be accessed by the methodologies of this survey.

Yet among and possibly beneath the observed disturbances lie pockets of ground that contain archaeological sites. Four archaeological sites were discovered and recorded as a result of the study.

Summary

This project began with the expectations that prehistoric resources would be the focus of the investigation. One of the reasons underlying the survey was the presence of looting for artifacts along the banks of the Ohio River, presumably for prehistoric artifacts. Furthermore, a review of historic maps suggested that resources dating from the historic period would not be a major component of the project; no buildings were apparent on historic maps. As it turned out, historic resources comprised the major finds of the survey. However, these sites appear to be industrial in nature.

The project area lies within an area on the outskirts of New Albany that was set aside for industry. Among the industries known to have been conducted in the area was shipbuilding, as described above in this report. No evidence of this activity was found during the survey, although such evidence that occurred nearer the river may be buried beneath historic alluvium.

The railroad also played an important role in this area. Shipping of products and supplies, as well as passengers, is known to have been facilitated by the existence of the railroad. The Moser Tannery Complex (site 12FL119) documented in this report likely benefitted by the nearby rail line. In addition, sites 12FL117 and 12FL118 may be related to the rail road industry itself. Artifacts, photographic, and map data suggest an early to mid-twentieth century use of these site areas.

Previous archaeological investigations in the area have generally documented resources of one of three types:

- near-surface or buried prehistoric sites;
- rural nineteenth to early twentieth century farmsteads; and
- urban residences.

The investigation of industrial archaeological sites is less common. Palmer and Neaverson (1998) define industrial archaeology as:

> *the systematic study of structures and artifacts as a means of enlarging our understanding of the industrial past.*

The objective of industrial archaeologists is to derive an understanding of the remains of industrialization. This could include the technology, transport, and ***buildings*** that are associated with the manufacture or raw material production (Majewski and Gaimster 2009; Palmer and Neaverson 1998). Industrial archaeology often, though not always, deals with the recent past. Combined with archived documentation, it allows a more complete understanding of the industrial processes and operations.

In the immediate project area, archaeological documentation of industrial sites is rare. A notable exception is work that was conducted by Gray & Pape along the Utica Pike in which Charles Hockensmith investigated the historic lime industry near Utica in Clark County and examined multiple ruined groundhog kilns (Hockensmith 2009). More examples of industrial archaeology that have occurred locally have been largely across the river in Louisville, Kentucky and include primarily mills and potteries. David Wards Mill was excavated in Cherokee Park by Joseph Granger (Granger 1983). Several potteries, including the Lewis Pottery (Stradling and Stradling 2001), the Thomas Pottery (AMEC, in progress), and the Conrad Redware Pottery (Bader et al. 2011) have all been scientifically investigated and are in the process of being fully reported. An unusual case in Louisville occurred at the Muhammad Ali Center Parking Garage project site in which archaeologists uncovered and documented resources related to a mid-nineteenth century druggist laboratory (Bader 2003).

Of the four sites documented in this survey, site 12FL117 is comprised of the material remains of two industrial buildings. Based on its apparent age the buildings were present during Moser's ownership and occupation of the property, although they do not appear to have been directly involved in the tannery. The buildings may, perhaps, have been associated with the railroad. The precise nature of the work conducted at the site was not determined during the survey, yet the artifact patterning clearly suggests the building was not residential. The number of Kitchen-related artifacts was comparatively low, and the Activities artifacts were much higher than those typically found in a residence. Furthermore, the method of construction of the larger building was not one that suggests a residential building. Concrete pillars may have been piers to support a superstructure of the building which was situated on the hillside. The very large pile of cinders and clinkers also indicates the building was the site of some industrial process that involves burning or reduction of coal or other material. Additional field research is needed to learn more about this building.

Nearby, at site 12FL118, the pattern of artifact functional groups indicates a typical residential building. A residential structure was identified, along with another building of unknown function. While site 12FL118 may have been occupied by workers or care tender of the industrial site, it is suspected that the family of the worker/care tender may also have resided here, as evidenced by the broken ceramic doll. Of the two structures noted at this location, the upper structure (western) appears to have been the residence, while the structure on the lower may have been a supporting building, such as a shed or garage, although a specialty workshop cannot be ruled out.

Site 12FL119 is the Moser Leather Company Complex. This site, consisting of a series of standing buildings, also contains the locations where several buildings burned or were otherwise demolished. The area is surrounded by the built environment. Pavement and gravel lots precluded shovel probing, and artifact recovery was low. This site is well documented in regards to the industrial processes that occurred at the location, but an associated artifact inventory is not currently available.

Site 12FL120 is a prehistoric site located along the eroding Ohio River shoreline. This site was not well defined either horizontally or vertically. It is entirely probable that most of the site has been carried into the river through erosion. The site appears to have dated at least to the middle to late Woodland prehistoric period.

Recommendations

Since this project was not conducted in compliance with Section 106 of the NHPA, recommendations for the future management of these sites relevant to any planned or foreseen impacts or affects is not pertinent to this study. However, the sites can be discussed in terms of the NRHP eligibility and suggestions offered regarding their potential research potential and management.

Of the four sites, 12FL117 and 12FL118 offer perhaps the best opportunity to acquire significant information relative to the early to mid twentieth century use of the property. Both sites contain the remnants of former structures, largely undisturbed surrounding ground, and associated buried artifacts. The sites may be connected; the first appears to have been an industrial site associated with the tannery, railroad, or other industry, while workers for the site may have occupied the nearby residence at site 12FL118. Of the two structures at site 12FL118, the one located to the west on the higher ground appears to have more research potential than the lower building, which may have been a supporting structure, such as a garage or shed. The latter yielded few artifacts with little diversity. These sites warrant at least additional archival research and, as the opportunity presents, additional fieldwork. If possible, the sites should remain undisturbed and avoided by any planned future use of the property pending future studies.

Site 12FL119 is the Moser Leather Company Complex. Thanks to the landowner, Mr. Al Goodman, this site is well documented in terms of its history, operations, and products. There are plans to rehabilitate the buildings into a housing complex. It is difficult, however, to form expectations on the archaeological value of the site. There is very little available ground in which to conduct archaeology. Beneath the pavement and gravel there may lay buried artifacts and midden. However, it would seem logical to expect that most of the activities at this complex occurred within the buildings themselves, leaving little potential for meaningful data to be gathered through excavation. An examination of the interior of the buildings, coupled with the well-documented processes that occurred within until a fairly recent date, may provide additional data specifically related to the material culture (tools, machinery, etc.) used in the tanning process. Additional archaeological investigation, however, is not necessarily considered to be a productive means of studying this site.

Site 12FL120 is a prehistoric site located along the Ohio River. The site was not well defined. It is possible that the excavations associated with this study were not sufficiently deep to access any cultural deposits. It is more likely, however, that the major portion of the site has washed into the Ohio River through the years. Despite multiple examinations, in all types of weather and river levels, very few artifacts were observed and collected. Considering the high vertical wall that exposed meters of vertical profile, it seems probable that if any portions of the site remained, artifacts would have been revealed in greater numbers and midden deposits visible in the stratigraphy. The site is not recommended for avoidance or additional investigation. Considering the fact that the river is talking as much as 50 ft of shoreline annually, any portion of the site that is left will likely soon be gone. Perhaps the best that be offered in terms of recommendations at this location is occasional monitoring to collect additional artifacts that may provide more information on the age and function of the site.

9
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APPENDIX A: WORKPLAN CONCURRENCE LETTER

DNR Indiana Department of Natural Resources

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director

Division of Historic Preservation & Archaeology • 402 W. Washington Street, W274 • Indianapolis, IN 46204-2739
Phone 317-232-1646 • Fax 317-232-0693 • dhpa@dnr.IN.gov

October 24, 2011

Anne Bader
Corn Island Archaeology, LLC.
P.O. Box 991259
Louisville, Kentucky 40269

Re: Plan for scientific investigations for Phase Ia and Ic archaeological survey at Loop Island, Floyd County, Indiana

Dear Ms. Bader:

Pursuant to Indiana Code 14-21-1, the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology ("DHPA") has conducted a review of the materials dated received October 20, 2011 for the scientific investigations in Floyd County, Indiana. The plan is acceptable provided the following conditions:

1. All aspects of the archaeological investigation must be directly supervised in the field by an archaeologist meeting the supervisory criteria of 312 IAC 21.
2. Additional archaeological fieldwork may be necessary to fulfill grant expectations. Please consult with our office after these initial field investigations have taken place in regard to methodology.
3. Any proposed revisions to the archaeological plan must be submitted in writing to the Division of Historic Preservation and Archaeology prior to implementation in the field or laboratory.
4. If any human remains dating before December 31, 1939 are encountered, the discovery must be reported to the Indiana Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. The discovery must be treated in accordance with IC 14-21-1 and 312 IAC 22.
5. If the landowner requests to retain ownership of any of the artifacts which are recovered and not placed into permanent curation at a qualified curational facility, additional and more detailed analyses and documentation of the artifacts will be necessary. The archaeologist must consult with the Division of Historic Preservation and Archaeology regarding these additional analyses and documentation.
6. A complete report on the scientific investigations must be submitted to the DHPA for review and comment. Please enter any archaeological site forms in the SHAARD database.
7. This plan is non-transferable.

With these conditions, the proposed plan is acceptable, and the scientific investigations may proceed (#2011051). A copy of this letter, along with proper identification, should be carried by archaeologists in the field. This will ensure minimal confusion should they be requested to produce proper identification in the field by law enforcement personnel. If you have any questions regarding this matter, please contact Cathy Draeger-Williams at (317) 234-3791 or cdraeger-williams@dnr.IN.gov.

Very truly yours,

James A. Glass, Ph.D.
Director, Division of Historic Preservation & Archaeology

JAG:CDW:cdw

APPENDIX B: GEOMORPHOLOGICAL ASSESSMENT

GEOMORPHOLOGICAL INVESTIGATIONS OF THE LOOP ISLAND WETLANDS, FLOYD COUNTY, INDIANA

(Project HAS 12-3)

Norman A. Haywood, M.A., R.P.A
Haywood Archaeological Services
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March 2012

Prepared for:

Falls of the Ohio Archaeological Society
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Louisville, Kentucky 40269

Introduction

This geomorphological investigation involves the examination of sedimentary deposits associated with the Loop Island wetlands in Floyd County, Indiana, to assess the potential for the presence of deeply buried cultural resources within the project area. Bedrock in the area consists of shale which dates to the Mississippian and Devonian ages (Indiana Geological Survey 2011). The Quaternary geologic map of Indiana (Gray 1989) indicates that deposits within the project area consist of alluvium that dates to the Holocene. Although the area was not impacted by Wisconsinan glaciation, it is near the boundary of pre-Wisconsinan glaciation (Gray 1989). Soils within the project area are identified as Udifluvents, cut and filled-Urban land complex on 0 to 2% slopes that are occasionally flooded for brief durations (U.S. Department of Agriculture 2011). Udifluvents are a group within the Entisols which are recently formed soils (Buol et al. 1989; U.S. Department of Agriculture 2006) These soils formed on floodplains but are impacted by urban development.

Loop Island itself is a small parcel of land that exists because of an oxbow lake on the north, west, and east sides and an artificial channel along the southern perimeter. The oxbow lake was formed when the neck of Silver Creek was breeched in the 1800s. Disturbance to the area, which will be discussed in more detail below, includes excavation of the channel and a portion of land between Silver Creek and the oxbow lake. The removal of material between the creek and the oxbow lake resulted in the formation of an elongated pond that was recently drained when the eastern berm separating the pond from Silver Creek was breeched.

Field Methods

A series of backhoe trenches approximately 5 m (16.4 ft.) long and 1.2 m (4 ft.) wide were excavated by a backhoe using a bucket with a metal plate attached to the teeth. Three trenches,

Trenches 1 through 3, were excavated near the Ohio River, one in the wooded area adjacent to the excavated pond (Trench 4), and one within the excavated pond (Trench 5). Soils were described in terms of color, texture, structure, consistence, and boundary between soil horizons. Depths of the trenches varied depending on conditions. Trench 1 was excavated to a depth of 135 cm (4.4 ft.), the soil profile analyzed in situ, and then further excavated to a depth of 170 cm (5.6 ft.). Sediments below 135 cm (4.4 ft.) were examined in the backdirt pile. Trenches 2 and 3 were both excavated to depths of 120 cm (3.9 ft.). Trench 4 was excavated to a depth of 55 cm (21.7 in.) when water was encountered. Water was immediately encountered when excavation was begun on Trench 5. Trenches were backfilled following their examination.

Cut bank exposures along the Ohio River and Silver Creek were cleaned with a shovel and trowel to produce a vertical or near vertical profile. The soil profiles were exposed as much as possible. Along the Ohio River, the profile extended down to a large slump block. Along Silver Creek, slump material was shoveled off the slope until it became too thick to be removed in a practical manner. Soils were then described in terms similar to what was noted for the trench soil profiles.

Auger probes were done on the berm on the west side of the excavated pond, within the excavated pond, within the farmstead site which is located on a gentle rise on the northeast side of the oxbow lake, and on Loop Island. The probes were completed using a hand-operated bucket auger. When necessary, an extension was used. Augering at each location was halted after the watertable was encountered and sediments became too wet to adequately describe. Soils obtained in the auger probes were described in terms of texture, color, and approximate depths between horizons. Field investigations were conducted on February 20, 21, and 28, 2012.

Results

Complete soil profile descriptions are provided in section entitled “Soil Profiles.” Representative soil profiles are depicted in Figures 1 through 5.

Trenches 1 through 3 were all excavated near the bank of the Ohio River. All three displayed similar soil profiles. The 20- to 25-cm (7.9- to 9.8-in.) thick A horizon consists of dark grayish brown (10YR 4/2) silty clay loam which is underlain by a weakly developed B horizon also of dark grayish brown (10YR 4/2) silty clay loam (Figure 1). In Trench 1 this extended down to a depth of 130 cm (4.3 ft.). Trenches 2 and 3 were both excavated to 120 cm (3.9 ft.) at which depth the weakly developed B horizon was still present. In Trench 1, which was initially excavated to a depth of 135 cm (4.4 ft.), the B horizon is underlain by a massive C horizon of dark yellowish brown (10YR 4/4) silty clay loam. Further excavation of Trench 1 continued to a depth of 170 cm (5.6 ft.), although these deeper soils were only observed in the backdirt pile. At a depth of about 150 cm (4.9 ft.) the dark yellowish brown (10YR 5/4) silty clay loam is underlain by a deposit of yellowish brown clay loam.

Trench 4 was excavated in a wooded area adjacent to the excavated pond. It appears that the wooded area was at least partially excavated when the pond was created since it is about 1 m (3.3 ft.) lower than the berm on west side. At this location the 15-cm (5.9-in.) thick A horizon of dark grayish brown (10YR 4/2) silty clay loam is underlain by a 20-cm (7.9-in.) thick weakly developed B horizon also of dark grayish brown (10YR 4/2) silty clay loam (Figure 1). At a depth of 35 cm (13.8 in.) a second weakly developed B horizon was encountered, but of brown (10YR 4/3) clay loam. Excavation of the trench was halted at 55 cm (21.7 in.) when water began to

quickly fill the trench. A fifth trench was attempted within the excavated pond, but water was immediately encountered with the first scoop of the backhoe bucket.

The cut bank exposure along the Ohio River revealed a soil profile somewhat similar to what was observed in Trenches 1 through 3. Here, the 20-cm (7.9-in.) thick A horizon of dark grayish brown (10YR 4/2) silty clay loam is underlain by a weakly developed B horizon of dark grayish brown (10YR 4/2) silty clay loam to a depth of 95 cm (3.1 ft.) (Figure 2). Within this B horizon are small pockets of yellowish brown (10YR 5/4) loamy sand predominantly 20 to 35 cm (7.9 to 13.8 in.) below the surface with occasional small pockets of the loamy sand to a depth of 50 cm (19.7 in.). A 5-cm (2.0-in.) thick C horizon of yellowish brown (10YR 5/4) loamy sand underlies the B horizon. A 15-cm (5.9-in.) thick A horizon of a buried soil (paleosol), which consists of very dark grayish brown (10YR 3/2) silty clay loam, is present below the C horizon. It is underlain to a depth of 155 cm (5.1 ft.) by a weakly developed B horizon of very dark grayish brown (10YR 3/2) silty clay loam. Underlying this is the C horizon of dark yellowish brown (10YR 4/4) fine sandy clay loam. Although a large slump block impeded further soil analysis, the boundary between the C horizon and underlying deposits was observed in an exposure about 10 m (32.8 ft.) upstream from where the initial soil profile was analyzed. At the base of the C horizon is 25 cm (9.8 in.) of thin horizontal beds of brown (10YR 4/3) loamy sand, dark grayish brown (10YR 4/2) silty clay loam, and, at the bottom of these deposits, yellowish brown (10YR 5/4) fine sandy clay loam. Below this is a massive deposit of brown (10YR 4/3) silty clay.

The soil profile associated with the cut bank exposure along Silver Creek from the top of the berm on the east side of the excavated pond to a point at which removal of slump became impractical. At this location a 10-cm (3.9-in.) thick A horizon of brown (10YR 4/3) silty clay loam is underlain by a weakly developed 90-cm (3.0-ft.) thick B horizon of intermixed brown (10YR 5/3) and light gray (10YR 7/1) clay loam (Figure 3). A buried A horizon of dark grayish brown (10YR 4/2) clay loam occurs at a depth of 100 cm (3.3 ft.). This 35-cm (13.8-in.) thick A horizon is underlain by a moderately well-developed 30-cm (11.8-in.) thick B horizon of brown (10YR 4/3) clay loam and a weakly developed 30-cm (11.8-in.) thick B horizon of dark yellowish brown (10YR 4/4) silty clay loam. At a depth of 195 cm (6.4 ft.) below the surface of the berm is the massive C horizon of yellowish brown (10YR 5/4) silty clay loam which extends at least to a depth of 270 cm (8.9 ft.) below the surface of the berm. As at the cut bank exposure along the Ohio River, the removal of slump material below this depth became impractical.

The auger probe on the berm on the west side of the excavated pond revealed about 30 cm (11.8 in.) of dark brown (10YR 3/3) silty clay loam is underlain by 20 cm (7.9 in.) of brown (10YR 4/3) silty clay loam with gray (10YR 5/1) mottles, 20 cm (7.9 in.) of yellowish brown (10YR 5/4) clay loam with gray (10YR 5/1) and light brownish gray (10YR 6/2) mottles, and 50 cm of yellowish brown clay loam with a few gray (10YR 6/1) mottles (Figure 4). At that depth, 120 cm (3.9 ft.) below the surface of the berm, water was encountered. Augering continued to a depth of 240 cm (7.9 ft.). These basal deposits consisted of yellowish brown clay loam with more gray (10YR 6/1) mottles than were observed in the overlying horizon.

An auger probe was attempted within the excavated pond, but water was encountered within 20 cm (7.9 in.) of the surface. The soils at that location consist of at least 40 cm (15.7 in.) of mottled gray (10YR 5/1) and dark yellowish brown (10YR 4/6) clay loam.

Two auger probes were completed on Loop Island. The first, in the southern portion of the island, revealed a soil profile of about 50 cm (1.6 ft.) of dark grayish brown (10YR 4/2) silty clay loam underlain to a depth of at least 100 cm (3.3 ft.) of mottled dark gray (10YR 4/1) and brown (10YR 4/3) clay loam. Water was present at a depth of 80 cm (2.6 ft.). At the second auger

probe location, situated in the northern portion of the island, there is 30 cm (11.8 in.) of brown (10YR 4/3) silty clay loam underlain by 20 cm (7.9 in.) of brown (10YR 4/3) clay loam (Figure 5). At a depth of 50 cm (1.6 ft.), a buried soil was encountered. It consists of 35 cm (13.8 in.) of dark grayish brown (10YR 4/2) clay loam underlain by 15 cm (5.9 in.) of mottled brown (10YR 4/3) and dark gray (10YR 4/1) clay loam, and 35 cm (13.8 in.) of mottled dark yellowish brown (10YR 4/4) and gray (10YR 5/1) clay loam. At the base of this horizon at a depth of 135 cm (4.4 ft.), water was encountered. Augering continued through a deposit of mottled yellowish brown (10YR 5/4) and gray (10YR 6/1) silty clay to a depth of 160 cm (5.2 ft.).

One auger probe was done within the farmstead near where building foundations are present. Here, a thin A horizon of very dark gray (10YR 3/1) silty clay loam is underlain by 5 cm (2.0 in.) of intermixed dark yellowish brown (10YR 4/6) and dark grayish brown (10YR 4/2) clay loam, and 30 cm (11.8 in.) of dark yellowish brown (10YR 4/6) clay loam (Figure 5). At a depth of 55 cm (21.7 in.) there is a 20-cm (7.9-in.) thick horizon of dark yellowish brown (10YR 4/6) silty clay. Underlying this to a depth of at least 100 cm (3.3 ft.) is a deposit of dark yellowish brown (10YR 4/6) silty clay with strong brown (7.5YR 5/6) and gray (7.5YR 6/1) mottles. Water was encountered at a depth of 85 cm (2.8 ft.).

Discussion

Historic Maps and Aerial Photographs

Historic maps indicate that in the late 1700s Silver Creek still existed as a meander where Loop Island was to form as shown on a map dating to 1786. At some time in the late 1700s or early to mid 1800s, the neck of the meander was breeched and Loop Island was formed. This is clearly depicted in the 1859 map. Interestingly, on the 1898 map Loop Island does not exist. The former channel of Silver Creek is essentially depicted as an oxbow lake. However, the 1924 map indicates that Loop Island is once again in existence as an island. It is unlikely that the 1937 and 1948 maps, which are basically identical, provide a true representation of the drainage of the former channel directly into the Ohio River as shown to the west of Silver Creek. This appears unlikely since the original channel did not drain in that direction and this would represent an entirely new channel which is not evident in contemporary aerial photographs.

The earliest aerial photograph available, which dates to 1928, shows the former channel isolated as an oxbow lake with drainage of the oxbow lake reversed prior to the breeching of the neck of the meander. The land between Silver Creek and the oxbow lake that encompasses Loop Island was farmed, although it does not appear that Loop Island itself was farmed. On the 1946 aerial photograph, both the land between Silver Creek and the oxbow lake and Loop Island itself are being farmed. Only the northern portion of Loop Island is not farmed. Of particular interest on the 1946 aerial photograph is that the former channel of Silver Creek is clearly visible as a darkened area on the agricultural land west of the confluence of the Ohio River and Silver Creek. This drainage pattern contradicts the drainage depicted on the 1937 and 1948 historic maps. In the 1963 aerial photograph, it appears that the area is no longer farmed and that earth removal has begun in the area between Silver Creek and the oxbow lake. It is believed this was the borrow used for construction of the elevated bridge over Silver Creek to the north of the project area (Al Goodman, personal communication, e-mail dated March 8, 2012). The oxbow lake is also somewhat larger than in the 1946 photograph. By 1967 the excavated area is complete and a pond has formed between Silver Creek and the oxbow lake while the oxbow lake has become even more enlarged. The 1988 and 2003 aerial photographs show similar depictions of the area. In those photographs, the oxbow lake has enlarged to its

present dimensions and the excavated area remains filled as an elongated pond. An alteration to the landscape which is visible on these photographs is a channel on the south side of Loop Island. This channel was excavated in 1986 “to improve the wastewater flow and lagoon treatment from the tannery vegetable tanning process” (Al Goodman, personal communication, e-mail dated March 8, 2012).

Field Investigations

The three trenches that were excavated near the Ohio River all revealed similar soil profiles with a moderately well-developed A horizon 20 to 25 cm (7.9 to 9.8 in.) thick which is underlain by a weakly developed B horizon. Although historic debris consisting of plastic bottles, balls, and various other items area scattered throughout the wooded area where the trenches were excavated as a result of overbank flooding, the only historic material encountered within the trenches was a small piece of plastic at a depth of 20 cm (7.9 in.) in Trench 1. No prehistoric artifacts or features were observed in any of these trenches. Excavation of Trench 1 to a depth of 170 cm (5.6 ft.) revealed no indications of a buried soil.

The cut bank exposure along the Ohio River provided a somewhat different interpretation of the deposits in this portion of the project area. A buried soil was observed at a depth of about 1 m (3.3 ft.). Although there are reported findings of artifacts along this exposure, the only item recovered from the bank by this writer was a piece of plastic wrap imbedded in the deposits at a depth of 95 cm (3.1 ft.) below the surface. This would suggest that the upper 1 m (3.3 ft.) of deposits is historic alluvium. While it cannot be stated with certainty, the fact that prehistoric artifacts are reported to have been found along this exposure suggests that the underlying deposits probably are where these items were originally deposited. That deposit extends from a depth of about 1 m (3.3 ft.) to 2 m (6.6 ft.) below the surface. Underlying that is a massive bed of brown silty clay, as recorded slightly upstream from where the cut bank exposure was described. Since no artifacts were recovered from this deposit nor were any organic material recovered that could produce a radiocarbon age, it is difficult to estimate an age for this horizon. There is a possibility that the brown silty clay could represent deposits within the original channel of Silver Creek which, when it was abandoned, became infilled with fine-grained sediments. This would correspond with the darkened area on the 1946 aerial photograph west of the confluence of Silver Creek and the Ohio River mentioned in the above section.

Attempts were made to examine deposits within the former pond that was excavated in 1963 to determine if there was any potential for the presence of deeply buried cultural resources. Although the most recent aerial photographs that were examined, as well as satellite imagery available on Google Earth, revealed the pond was always filled with water, recently the east berm separating the pond from Silver Creek was breeched and the pond was drained. The one attempt at excavating a trench in the wooded area adjacent to the former pond resulted in encountering the watertable at a depth of 55 cm (21.7 in.), whereas water was encountered immediately upon the attempt of excavating a trench within the former pond. The use of a hand-operated bucket auger produced similar results.

However, a cut bank exposure along Silver Creek revealed that most likely the entire length of the berm separating the creek from the pond is artificial. The soil profile examined in the cut bank exposure south of the breech in the berm indicates that the built-up portion of the berm is about 1.1 m (3.6 ft.) thick. It consists primarily of clay loam that is capped by a thin layer of silty clay loam. The berm, which is visible on the 1963 aerial photograph, was probably built at the same time the pond was created. Adding credence to the likelihood of the berm being artificial is

the presence of several large angular boulders over 40 cm (15.7 in.) in length on the pond side at the base of the berm about 20 m (65.6 ft.) north of where the cut bank exposure was described. Underlying the berm is the original deposits of A and B horizons of clay loam and silty clay loam and a C horizon also of silty clay loam. There are no indications of a buried soil to a depth of 270 cm (8.9 ft.) below the top of the berm.

A cursory examination of the breech through the berm separating the former pond and Silver Creek was also done. Similar fill up to 110 cm (3.6 ft.) thick consisting of intermixed brown (10YR 5/3) and light gray (10YR 7/1) clay loam capped by 10 cm (3.9 in.) of brown silty clay loam overlies possible natural deposits that are 40 cm (15.7 in.) thick and consist of brown (10YR 4/3) clay loam underlain to a depth of 190 cm (6.2 ft.) below the top of the berm by dark yellowish brown (10YR 4/4) clay loam. Although not an exact match with the cut bank exposure, these deposits compare favorably with them.

A small flow of water, which originates from the oxbow lake, has eroded through the deposits at the breech and within the former pond. In the pond portion of this drainage there is a deposit about 50 cm (19.7 in.) thick of very dark grayish brown (10YR 3/2) clay and silty clay deposits displaying horizontal bedding. These were deposited by the calm waters associated with the former pond prior to it being breeched. These are capped by a massive deposit about 40 cm (15.7 in.) thick of silty clay loam. About 1.5 m (4.9 ft.) below the surface of the former pond deposits are chunks of concrete and at least two logs that were cut and appear to be debarked. This provides an indication of how deeply material was removed from this area, at least in the vicinity of the breech.

An auger probe was done on the west berm which separates the pond from the oxbow lake. No evidence of a buried soil was observed. It appears that this berm is not artificial and represents the original land surface.

Two auger probes were also done on Loop Island. The soil profile on the south side of the island revealed 50 cm (19.7 in.) of silty clay loam underlain by mottled clay loam. The soil profile on the north portion of the island indicates there is a buried soil 50 cm (19.7 in.) below the surface. The buried soil most likely corresponds with the surficial deposits observed in the auger probe on the south portion of the island. The material capping the buried soil is of historic alluvium.

A single auger probe was done on the gentle rise associated with the former farmstead. No indications of a buried soil were observed at that location. However, the 10-cm (3.9-in.) thick A horizon of very dark gray silty clay loam and intermixed soils dark yellowish brown and dark grayish brown clay loam at a depth of 20 to 25 cm (7.9 to 9.8 in.) below the surface reflect the amount of disturbance that has occurred at that location.

Although the historic alluvium across much of the project area can almost certainly be traced to overbank flooding of the Ohio River, it is less certain if deeper deposits can be assigned to the Ohio River, Silver Creek, or a combination of the two. The one exception to this is in the former pond where the horizontally bedded fine-grained materials were brought in from the oxbow lake around Loop Island. However, the massive deposit of dark grayish brown silty clay loam overlying the horizontally bedded material probably is associated with historic overbank flooding of the Ohio River.

Regional Studies

At site 15JF702 on nearby Shippingport Island, Jefferson County, Kentucky, Stafford (2005) presents a geomorphological/geoarchaeological analysis of the site. At that site, Stafford defined three stratigraphic units. Unit 1, which is historic alluvium and spoil, is 0.4 to 0.9 m (1.3 to3.0 ft.) thick. This deposit is a brown to grayish brown sandy deposit with bricks and other historic artifacts. This is underlain by Unit 2 which is late Holocene alluvium up to 8 m (26.2 ft.) thick. Stafford subdivides this unit into two facies. The upper facies consists of brown to dark yellowish brown silt/clay at the base of which a feature approximately 500 years old was excavated. Stafford associates the lower portion of the upper facies from about 2.4 to 2.7 m (7.9 to 8.9 ft.) below the surface with Late Archaic/Early Woodland occupation. The lower facies of Unit 2 is of brown to dark yellowish brown beds of fine sand to fine sandy loam. Unit 3 is glacial outwash consisting of coarse sand and gravel. In the summary, Stafford states that remains associated with prehistoric occupation could be expected at depths of over 3 m (9.8 ft.) below the surface. Such sites would be confined to the Late Holocene. In the same report, Stafford notes that Archaic deposits dating to about 7300 B.P. were found at depths of over 3 m (9.8 ft.) at the Caesars Project in Harrison County, Indiana.

Farther upstream near the confluence of the Great Miami River and the Ohio River, six stratigraphic units were identified within another study area (Stafford and Creasman 2002). Unit I, which consists of historic alluvium, is 0.9 to 1.8 m (3.0 to 5.9 ft.) thick. Unit II, identified as Ohio River vertical accretion alluvium, is 7 to 9 m (23.0 to 29.5 ft.) thick. Unit III consists of alluvium that was deposited in association with a Late Holocene meander belt of the Great Miami River. That unit is up to 9 m (29.5 ft.) thick. The other Holocene units are a thin veneer over a terrace and alluvial/colluvial deposits. Prehistoric remains were encountered throughout the upper 2 to 3 m (6.6 to 9.8 ft.) of alluvial deposits. None of the sites, which date from Terminal Late Archaic through Late Woodland, were contained within a buried soil. As the authors state, “low density remains and strong spatial patterning of debris and features suggests short-term residential camps and/or extractive camps exploiting resources found in wetlands associated the meander belt and channel distributary network in the floodplain” (Stafford and Creasman 2002:136).

The thickness of alluvium and glacial outwash deposits along the Ohio River valley is clearly evident from bores that were done for a geotechnical engineering project for the proposed East End Bridge which is several miles upriver of Loop Island and slightly upriver of Utica, Indiana (PB Americas, Inc. and FMSM Engineers, Inc. 2008). A series of bores on both the Kentucky and Indiana sides of the river were done, as well as several within the river, where piers will be built to support the bridge. At Pier 1, on the Kentucky side of the river where the floodplain is more extensive, the upper 25 ft. (7.6 m) of the core is defined as “lean clay.” This is underlain by 30 feet (9.1 m) of sand with silt followed by 45 ft. (13.7 m) of sand. Bedrock was encountered at 100 ft. (30.5 m) below the surface. Pier 2, which was closer to the river but still on the Kentucky side had 5 ft. (1.5 m) of “sandy lean clay” underlain by 14 ft. (4.3 m) of sand with silt, 30 ft. (9.1 m) of sand, and 45 ft. (13.7 m) of sand with gravel. Bedrock was encountered at a depth of 94 ft. (28.7 m) below the surface. On the Indiana side of the Ohio River the floodplain is limited to a relatively narrow strip before the land steeply rises. Only Pier 5 is on the Indiana floodplain. Here, 12.1 ft. (3.7 m) of “sandy lean clay” overlies bedrock.

Conclusions

It is evident that there has been a large amount of historic disturbance within the project area. Although agricultural practices can result in displacement of artifacts and destruction of features that are near the surface, this activity appears to have had minimal impact within the project area. However, activities associated with the farmstead itself, construction of the house, barn, a privy, cistern, etc. would affect any prehistoric archaeological sites that were on this low rise in the floodplain.

Far more disturbance resulted from the creation of the borrow area between Silver Creek and the oxbow lake which surrounds Loop Island. It appears that at least 1 m (3.3 ft.), and possibly more, of deposits were removed. This resulted in an elongated pond which was recently drained when the berm was breeched. Examination of the cut bank exposure along Silver Creek indicates that there does not appear to be any buried soils associated with this portion of the project area. The cut bank exposure did reveal that the berm separating the former pond from Silver Creek was artificially built up over the original land surface. An auger probe revealed that the west berm separating the former pond from the oxbow lake appears to be original land surface and not artificially constructed. The impact to prehistoric archaeological sites within the borrow area is evident. Obviously, if any sites existed within the upper 1 m (3.3 ft.) of the surface, they were obliterated. If any deeper sites exist within this portion of the project area, they would be less impacted and potentially still intact.

The other area of disturbance is the channel that was excavated around Loop Island to improve the wastewater flow. Spoil was deposited in large piles on either side of the channel. Again, if any sites were within the excavated area, they would be destroyed. Any sites adjacent to this channel would actually be somewhat more protected by the disposal of spoil on top of them.

Although it was not evident in the trenches that were excavated near the Ohio River, the cut bank exposure along the river revealed there is about 1 m (3.3 ft.) of historic alluvium. This compares favorably to what was observed at other locations along the Ohio River valley (e.g. Stafford 2005, Stafford and Creasman 2002). Prehistoric sites were identified at those locations as much as 3 m (9.8 ft.) below the surface. This suggests that similar sites could exist within the project area at similar depths even though no such sites were identified during a cursory examination of the cut bank exposures along the Ohio River and Silver Creek. If such sites do exist, they would most likely be similar to those described by Stafford and Creasman (2005:136) – low density sites suggestive of short-term occupation. The primary constraint to long-term occupation in the past was, and continues to be, the regular flooding of the project area.

The major problem that the project area is experiencing is erosion of the bank along the Ohio River. Although there has always been some erosion of the river banks in this area, the problem was aggravated with the creation of lower tainter gates at McAlpine Dam. The tainter gates, which were constructed in the early 1960s (U.S. Army Corps of Engineers, n.d.), have redirected the flow of water so that instead of the main current heading downstream, it is aimed at the river bank slightly upriver of the confluence with Silver Creek. It is not uncommon to see sections of bank about 15 m (50 ft.) by 9 m (30 ft.) lost to erosion with any one flood event (Al Goodman, personal communication, e-mail dated March 13, 2012). The amount of erosion to the river bank is evident in Plate 1. As Mr. Goodman notes “The original river bank prior to 1960’s when the dam was rebuilt, was approximately a straight line from the K&I railroad bridge (top of photo) to the Clarksville shore at the bottom of the photo” (Al Goodman, personal communication, e-mail dated March 13, 2012).

Many of the archaeological sites identified near the confluence of the Ohio River and Great Miami River were situated on natural levees (Stafford and Creasman 2002). In that same report, Stafford and Creasman note that there are numerous other sites along the Ohio River that are also located on natural levees. If there were sites located on a natural levee within the Loop Island wetlands, levee and any cultural resources associated with it have long since been eroded away. The continued rapid erosion happening along the Ohio River at the Loop Island wetlands is leading to the imminent loss of any remaining cultural resources.



Plate 1. Aerial view of Ohio River showing erosion along north side of river (photo courtesy of Al Goodman)

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Soil Profiles

Trench 1

0 – 25 cm A horizon – dark grayish brown (10YR 4/2) silty clay loam; moderate, fine to medium granular and subangular blocky structure; friable; clear, wavy boundary.

25 – 130 cm Btw horizon – dark grayish brown (10YR 4/2) silty clay loam; weak, medium to coarse subangular blocky structure; friable; clear, wavy boundary.

130 – 135 cm C horizon – dark yellowish brown (10YR 4/4) silty clay loam; massive; friable.

135 cm+ examined in backdirt pile

135 – 150 cm dark yellowish brown (10YR 4/4) silty clay loam.

150 – 170 cm yellowish brown (10YR 5/4) clay loam.

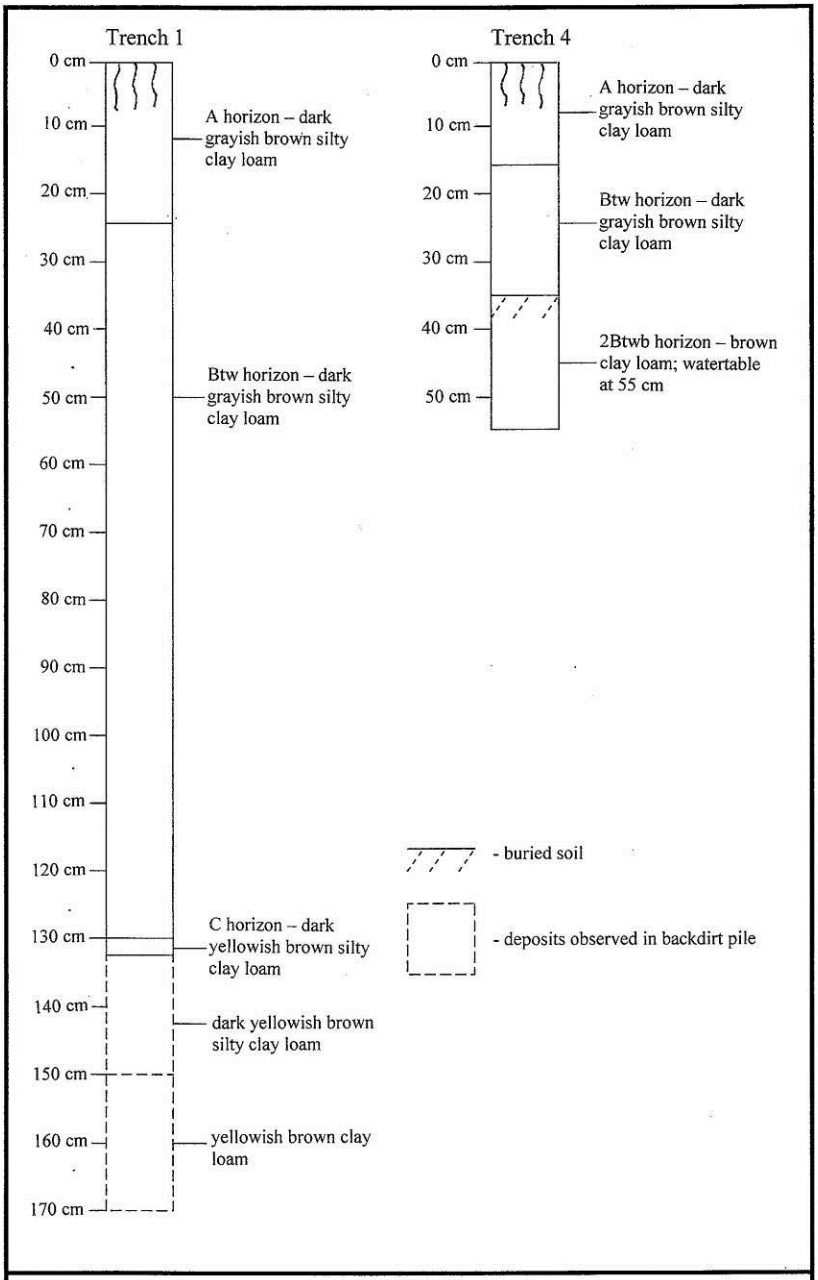


FIGURE 1
SOIL PROFILES OF TRENCHES 1 AND 4 NEAR OHIO RIVER AND SILVER CREEK CONFLUENCE, FLOYD COUNTY, INDIANA

Trench 2

0 – 20 cm A horizon – dark grayish brown (10YR 4/2) silty clay loam; moderate, fine to medium granular and subangular blocky structure; friable; clear, wavy boundary.

20 – 120 cm Btw horizon – dark grayish brown (10YR 4/2) silty clay loam; weak, medium to coarse subangular blocky structure; friable; watertable at 110 cm.

Trench 3

0 – 20 cm A horizon – dark grayish brown (10YR 4/2) silty clay loam; moderate, fine to medium granular and subangular blocky structure; friable; clear, wavy boundary.

20 – 120 cm Btw horizon – dark grayish brown (10YR 4/2) silty clay loam; weak, medium to coarse subangular blocky structure; friable; watertable at 90 cm.

Trench 4

0 – 15 cm A horizon – dark grayish brown (10YR 4/2) silty clay loam; moderate, fine to medium granular and subangular blocky structure; friable; clear, wavy boundary.

15 – 35 cm Btw horizon – dark grayish brown (10YR 4/2) silty clay loam; weak, medium to coarse subangular blocky structure; friable; clear, wavy boundary.

35 – 55 cm 2Btwb horizon – brown (10YR 4/3) clay loam; weak, medium to coarse subangular blocky structure; friable; watertable at 55 cm.

Trench 5

Watertable encountered at 15 cm.

Cut bank exposure on Ohio River

0 – 20 cm A horizon – dark grayish brown (10YR 4/2) silty clay loam; moderate, fine to medium granular and subangular blocky structure; friable; clear, wavy boundary.

20 – 95 cm Btw horizon – dark grayish brown (10YR 4/2) silty clay loam with small pockets of yellowish brown (10YR 5/4) loamy sand 20 to 35 cm below the surface and occasional pockets of similar loamy sand to a depth of 50 cm; weak, medium to coarse subangular blocky structure; friable; clear, wavy boundary.

95 – 100 cm C horizon – yellowish brown (10YR 5/4) loamy sand; massive; loose; clear, wavy boundary.

100 – 115 cm 2Ab horizon – very dark grayish brown (10YR 3/2) silty clay loam; moderate, fine to medium granular and subangular blocky structure; friable; clear, wavy boundary.

115 – 155 cm 2Btwb horizon – very dark grayish brown (10YR 3/2) silty clay loam; weak, medium to coarse subangular blocky structure; friable; clear, wavy boundary.

155 – 190 cm 2Cb horizon – dark yellowish brown (10YR 4/4) fine sandy clay loam; massive; friable.

190 cm + large slump block

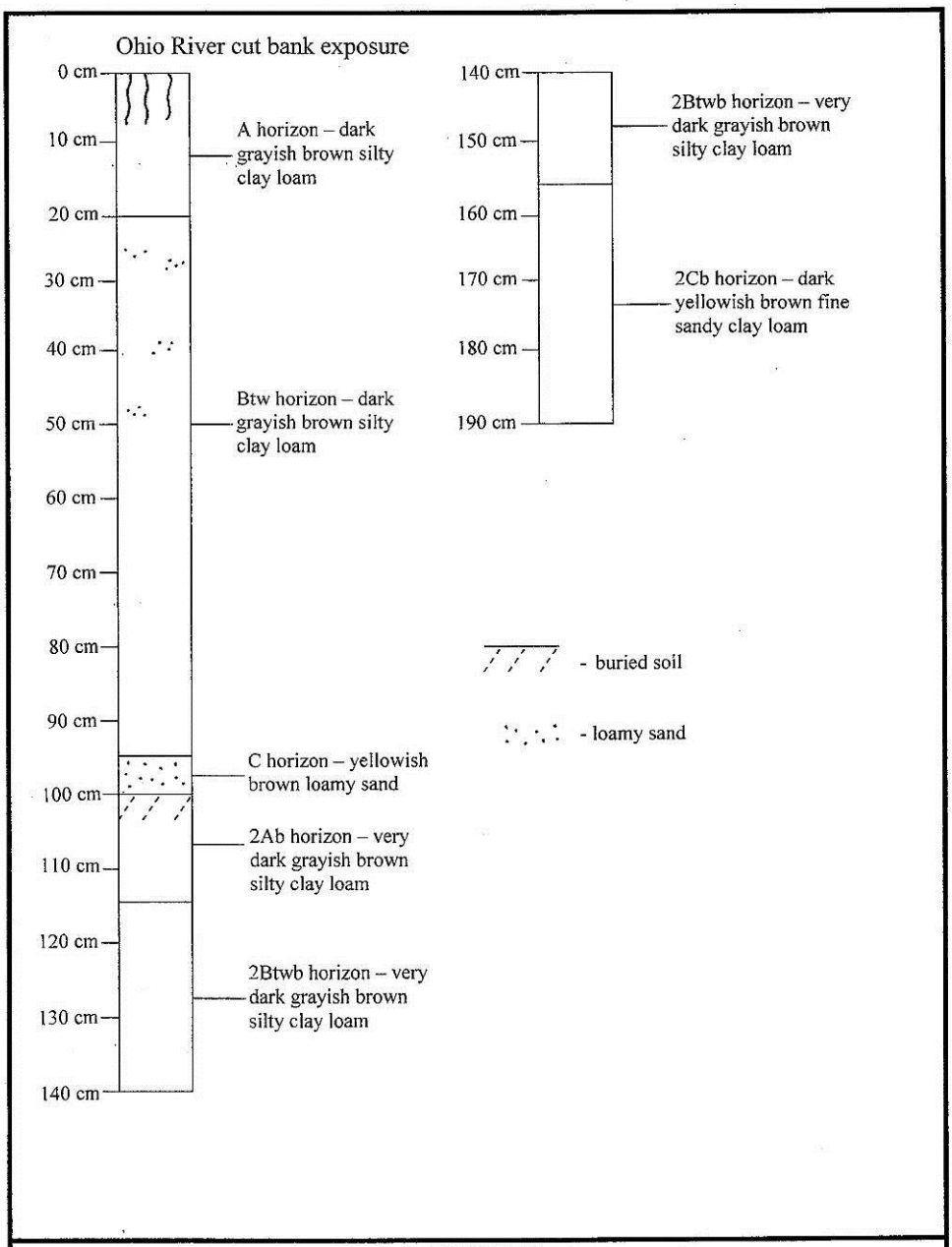


FIGURE 2
SOIL PROFILE OF CUT BANK EXPOSURE ALONG OHIO RIVER NEAR SILVER CREEK CONFLUENCE, FLOYD COUNTY, INDIANA

Cut bank exposure on Silver Creek

0 – 10 cm A horizon – brown (10YR 4/3) silty clay loam; moderate, fine to medium granular and subangular blocky structure; friable; clear, wavy boundary.

10 – 110 cm Btw horizon – intermixed brown (10YR 5/3) and light gray (10YR 7/1) clay loam; weak, medium to coarse subangular blocky structure; friable; abrupt, wavy boundary.

110 – 135 cm 2Ab horizon – dark grayish brown (10YR 4/2) clay loam; moderate, medium to coarse subangular blocky structure; friable; clear, wavy boundary.

135 – 165 cm 2Btb horizon – brown (10YR 4/3) clay loam; moderate, medium to coarse subangular blocky structure; friable; clear, wavy boundary.

165 – 195 c m 2Btwb horizon – dark yellowish brown (10YR 4/4) silty clay loam; weak, medium to coarse subangular blocky structure; friable; clear, wavy boundary.

195 – 270 cm 2Cb horizon – yellowish brown (10YR 5/4) silty clay loam; massive; friable.

270 cm + thick slump deposits covering exposure

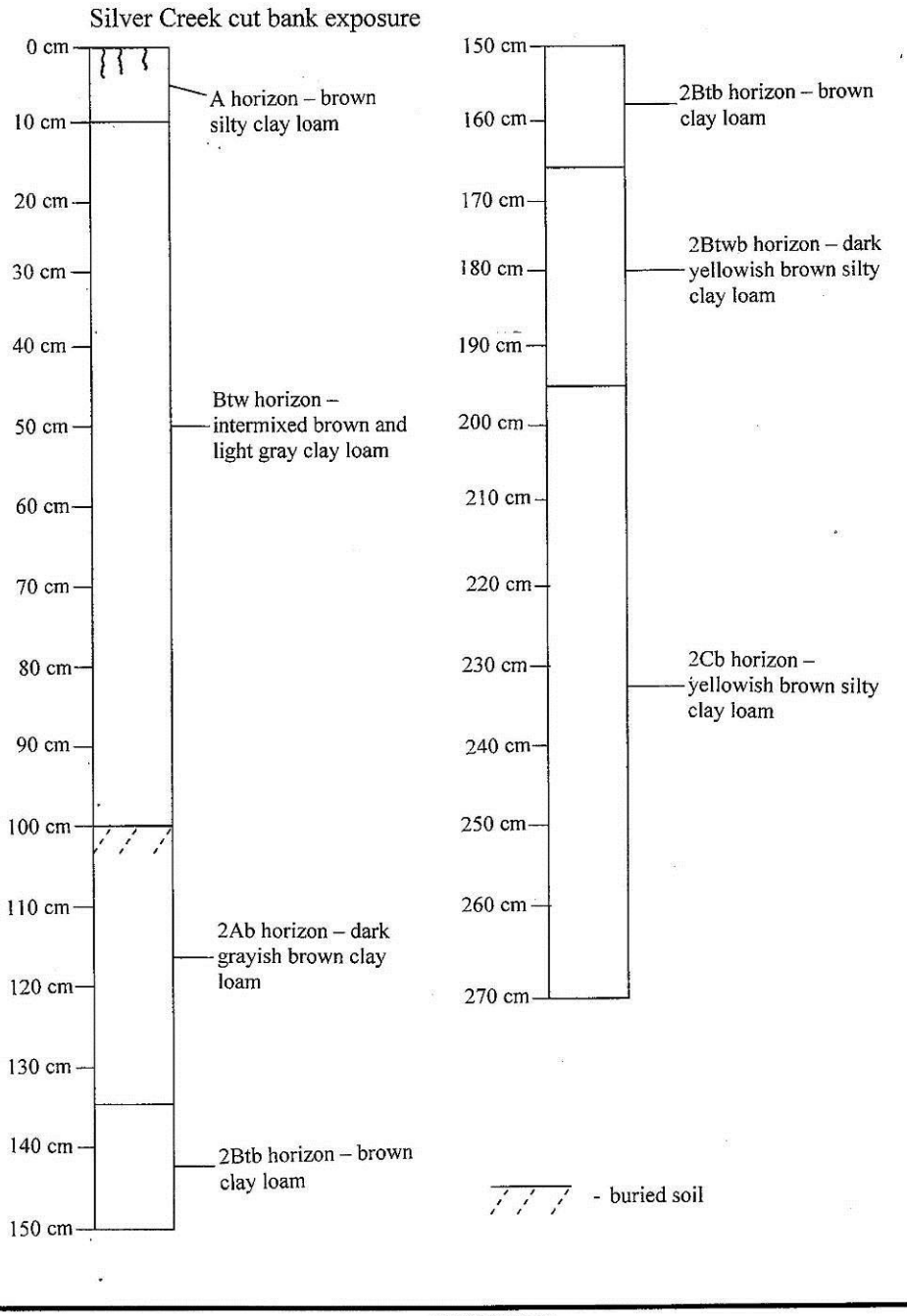


FIGURE 3
SOIL PROFILE OF CUT BANK EXPOSURE ALONG SILVER CREEK NEAR OHIO RIVER CONFLUENCE, FLOYD COUNTY, INDIANA

Auger probe on berm on west side of excavated pond

0 – 30 cm dark brown (10YR 3/3) silty clay loam

30 – 50 cm brown (10YR 4/3) silty clay loam with gray (10YR 5/1) mottles

50 – 70 cm yellowish brown (10YR 5/4) clay loam with gray (10YR 5/1) and light brownish gray (10YR 6/2) mottles

70 – 120 cm yellowish brown clay loam with a few gray (10YR 6/1) mottles; water at 120 cm

120 – 240 cm yellowish brown clay loam with many gray (10YR 6/1) mottles

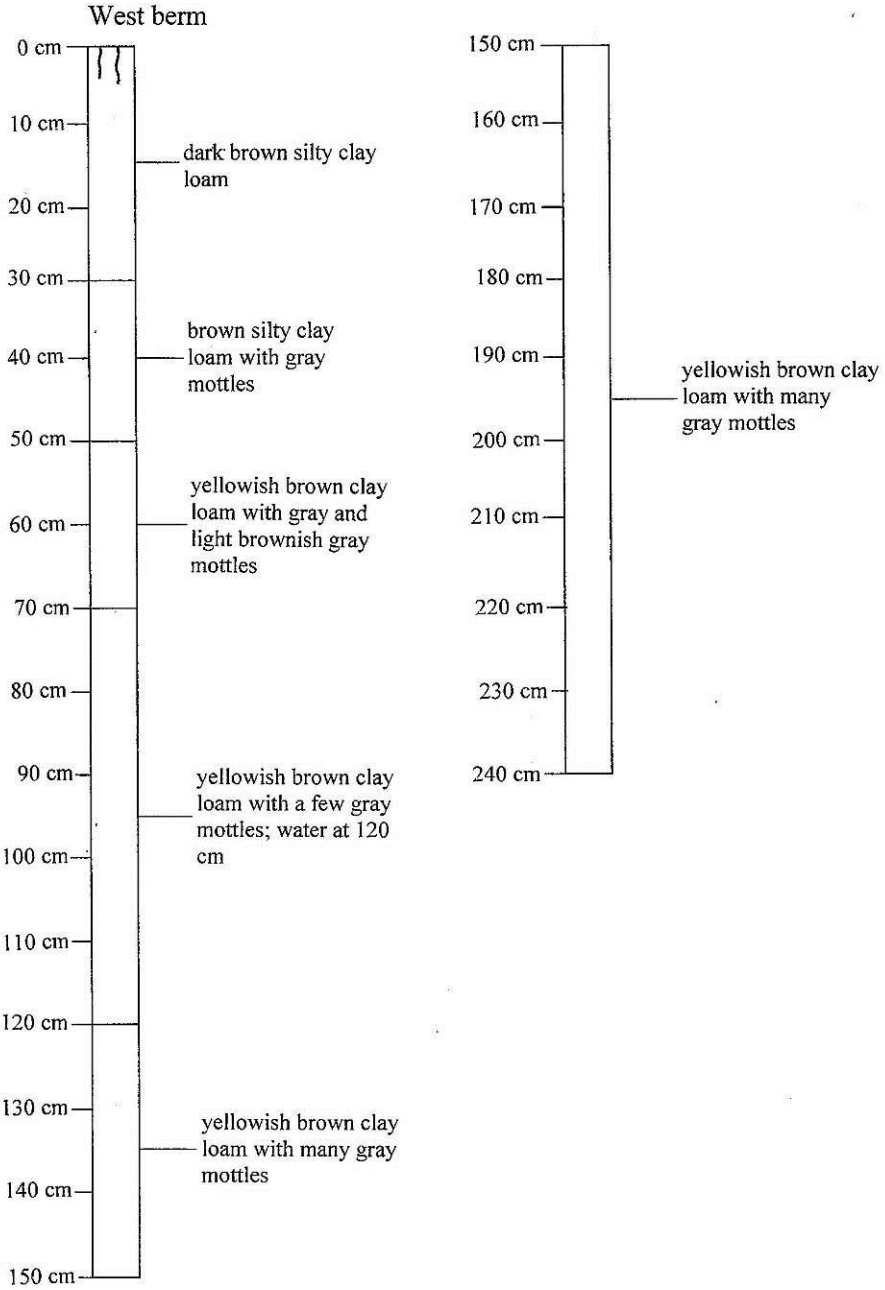


FIGURE 4
AUGER PROBE ON WEST BERM NEAR
LOOP ISLAND, FLOYD COUNTY, INDIANA

Auger probe within excavated pond

0 – 40 cm mottled gray (10YR 5/1) and dark yellowish brown (10YR 4/6) clay loam; water at 20 cm

Auger probe within farmstead

0 – 10 cm very dark gray (10YR 3/1) silty clay loam

10 – 20 cm dark grayish brown (10YR 4/2) clay loam

20 – 25 cm intermixed dark yellowish brown (10YR 4/6) and dark grayish brown (10YR 4/2) clay loam

25 – 55 cm dark yellowish brown (10YR 4/6) clay loam

55 – 75 cm dark yellowish brown (10YR 4/6) silty clay

75 – 100 cm dark yellowish brown (10YR 4/6) silty clay with strong brown (7.5YR 5/6) and gray (7.5YR 6/1) mottles; water at 85 cm

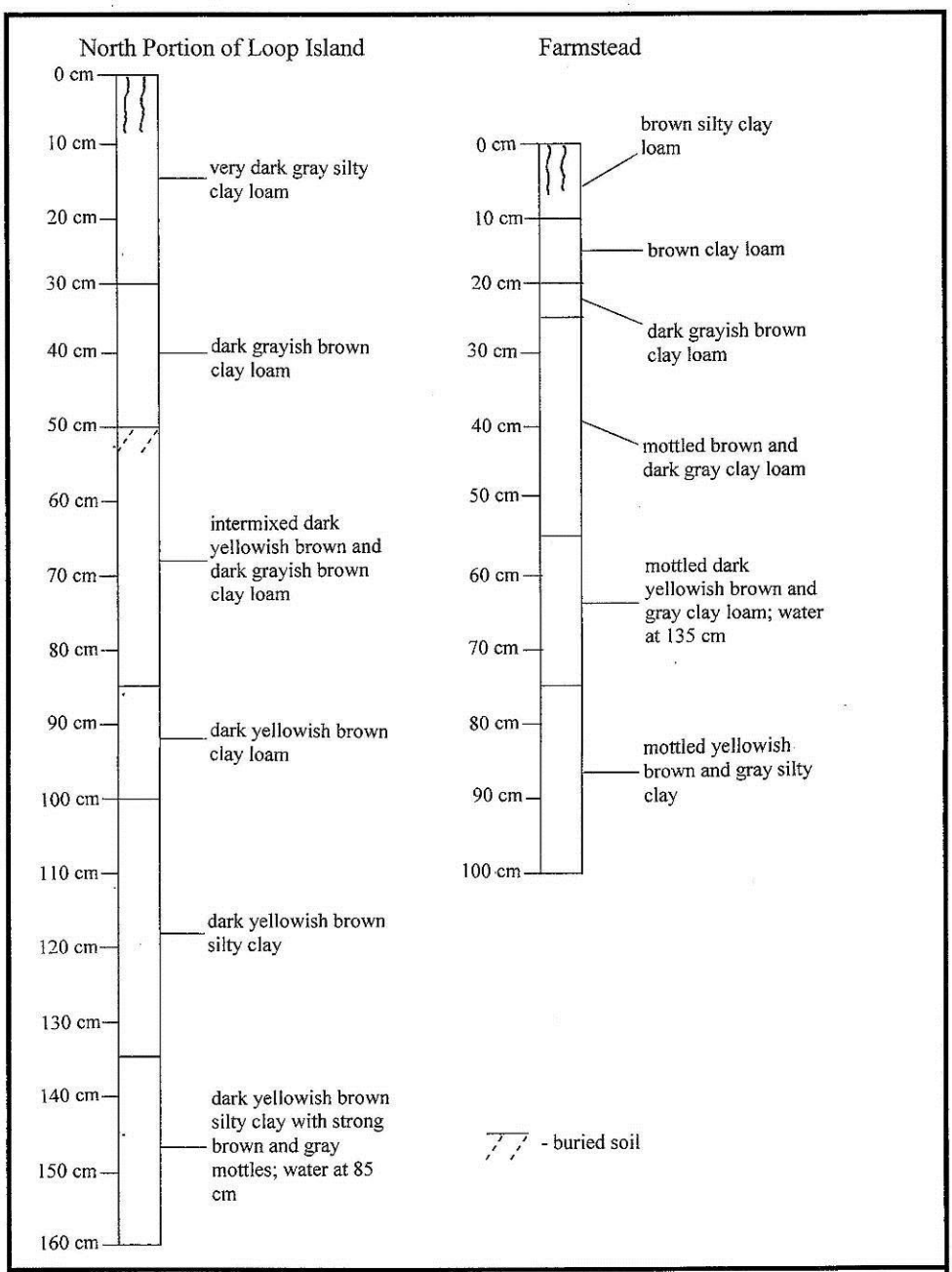


FIGURE 5
AUGER PROBE ON NORTH PORTION OF LOOP ISLAND AND ON FARMSTEAD, FLOYD COUNTY, INDIANA

Auger probe on south portion of Loop Island

0 – 50 cm dark grayish brown (10YR 4/2) silty clay loam

50 – 100 cm mottled dark gray (10YR 4/1) and brown (10YR 4/3) clay loam; water at 80 cm

Auger probe on north portion of Loop Island

0 – 30 cm brown (10YR 4/3) silty clay loam

30 – 50 cm brown (10YR 4/3) clay loam

50 – 85 cm dark grayish brown (10YR 4/2) clay loam

85 – 100 cm mottled brown (10YR 4/3) and dark gray (10YR 4/1) clay loam

100 – 135 cm mottled dark yellowish brown (10YR 4/4) and gray (10YR 5/1) clay loam; water at 135 cm

135 – 160 cm mottled yellowish brown (10YR 5/4) and gray (10YR 6/1) silty clay