



**DON'T JUDGE THE GROUND
BY ITS COVER
THE SHANNON SITE**

SPRINGFIELD TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA

PENNSYLVANIA DEPARTMENT OF
TRANSPORTATION



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DON'T JUDGE THE GROUND BY ITS COVER

THE SHANNON SITE

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INTRODUCTION

Today, travelers driving along Hellertown Road in Springfield Township, Bucks County, notice a stone monument commemorating the Walking Purchase of 1737. The monument, erected in 1925, is situated near a bridge crossing Cook Run, a tributary of Cook's Creek. It supposedly marks the spot where three "walkers" stopped for lunch during an infamous journey through the woods of eastern Pennsylvania that resulted in the acquisition of over 1,200,000 acres of land for the sons of William Penn.

While the monument draws the attention of passersby, what lies hidden belowground just a few yards from the spot tells a story from a different era. Buried in the front yard of a typical early-nineteenth-century Pennsylvania house is the Shannon Site, a small, short-term Native American encampment dating to ca. A.D. 1100.¹



"This stone marks the luncheon site of the infamous walking purchase by Edward Marshall and his associates in the year 1737."

In 2004, the Federal Highway Administration (FHWA) and the Pennsylvania Department of Transportation (PennDOT) initiated a study to replace the Hellertown Road (S.R. 0412)

¹ The Shannon Site was named after the Shannon family, who owned the property at the time of the 2004 archaeological study.

On September 19, 1737, three colonists and three members of the Delaware Indian tribe set off on a "walk" to measure out a land purchase that Thomas Penn, the son and heir of William Penn, claimed his father had acquired from the Delaware tribe 50 years earlier. Thomas Penn claimed that the purported deed in his

The Walking Purchase Historical Marker and Monument.

possession was signed by the Delaware chiefs who sold him the land north of Tohickon Creek on the Delaware River. The amount of land conveyed was to be measured by a day-and-a-half's walk from an agreed-upon starting point. Despite the Delaware's suspicions regarding the deed, Thomas Penn and James Logan (the Penn family's land agent) went ahead with plans and hired three trained runners to carry out the measurement of the land. The Penn family's agents found three Delaware members willing to witness the "walk," which resembled more of a marathon race. The runners set out from near Newtown, Bucks County, and stopped 18 hours later near Mauch Chunk, thus covering a distance of 65 miles.

Bridge in Springfield Township, Bucks County. PennDOT contracted with A.D. Marble & Company to complete archaeological investigations prior to project construction. During the course of these investigations, PennDOT discovered that the Shannon Site, located between the nineteenth-century house and Hellertown Road, contained important information about the Native American past in Pennsylvania and was eligible for listing in the **NATIONAL REGISTER OF HISTORIC PLACES (NATIONAL REGISTER)**.²

Due to project design requirements and safety concerns, PennDOT determined that the Shannon Site could not be avoided. Consequently, PennDOT and FHWA funded archaeological excavations at the site to recover some of the **ARTIFACTS** and important information contained within the narrow corridor. Ultimately, the combined results of the investigations of the Shannon Site generated a better understanding

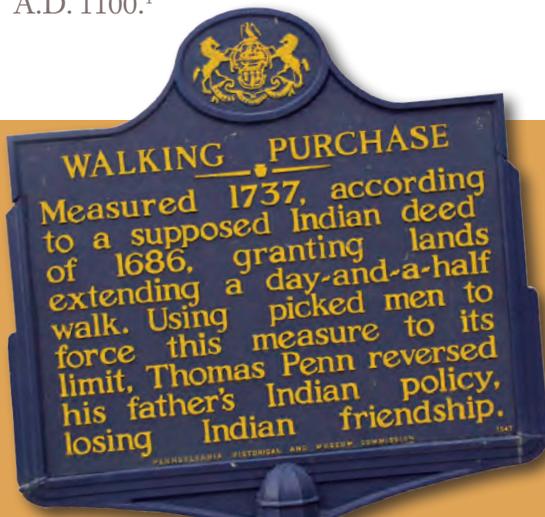
² Although efforts have been made to reduce the use of specialized technical terms throughout this booklet, those that cannot be avoided are highlighted and their definitions are found in the Glossary (Appendix A).

of Native American life in this region during the **LATE WOODLAND PERIOD** (A.D. 900-1600).

The Shannon Site, as well as the adjacent nineteenth-century Shannon house and the Walking Purchase Monument, all illustrate an important concept: every place has a past, even places like your own front yard. Facts that are evident above ground may literally only scratch the surface of a location's history. The Shannon Site demonstrates the importance of archaeology in the study of the past; without archaeology, the story of the Shannon Site and the Native Americans who occupied it would remain unknown.

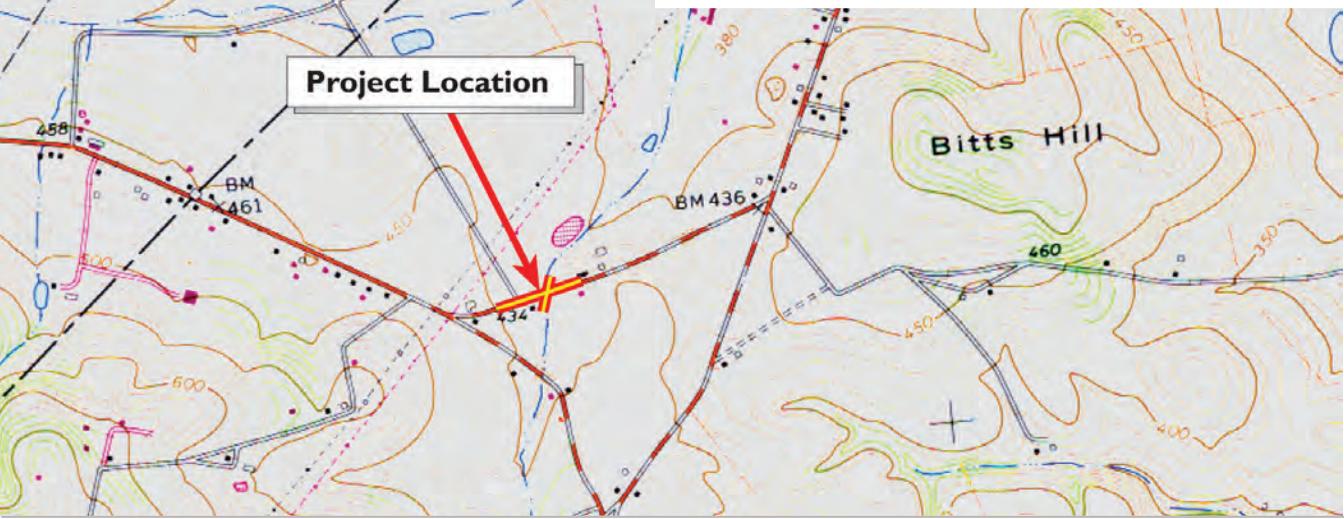


Hellertown Road Bridge over Cook Run.



1

Hellertown Road (S.R. 0412, Section 053M) Bridge over Cook Run, Bucks County, Pennsylvania (Source: U.S. Geological Survey 7.5' Hellertown, PA Quadrangle).



Each documented archaeological site in Pennsylvania is assigned a unique number by the Pennsylvania Historical and Museum Commission. The Shannon Site is cataloged as archaeological site 36BU359. The first number 36 notes Pennsylvania's alphabetical place with respect to other states before Alaska and Hawaii gained statehood. BU stands for Bucks County, and 359 indicates that the site is the 359th archaeological site recorded in that county.



The Shannon Site is uniquely positioned in a narrow strip of grass between a mid-nineteenth century dwelling (Shannon House) and a Native American footpath (Hellertown Road).



People throughout time have adapted to their environments; therefore, to understand how people lived, you have to understand the world in which they lived. Factors as simple as access to water and climate combine with more complex factors like geology and landscape to influence where and how people lived.

Long before colonial exploration and settlement, the land that includes the Shannon Site was originally occupied by Native Americans who worked and rested close to Cook's Creek. No visible signs above ground speak to their activities due to the impermanence of their technology and building techniques and the antiquity of their occupations; therefore, we rely on archaeology to reconstruct the past. Archaeology allows us to understand not only where and when people lived, but also how they lived. Whereas history primarily relies upon written records and documents, archaeology allows us to study the everyday lives of people through the objects they made and left behind. Archaeology can inform us about the lives of individuals and communities that might otherwise remain invisible and silent.

FIRE-CRACKED ROCK found at the Shannon Site.



WHO WERE THE NATIVE AMERICANS OF THE DELAWARE VALLEY?

Before we delve deeper into the Shannon Site, it is important to understand who the Native Americans of the Delaware Valley were. They were, of course, the original inhabitants of the western hemisphere, including what is now Pennsylvania. Their modern descendants, a few of whom still live in the Delaware Valley, maintain a rich oral tradition that stretches back centuries and chronicles their origins and traditional beliefs. While not specific, that

tradition certainly holds that they have lived here for a very long time.

Archaeologists currently believe the ancestors of these early inhabitants arrived on this continent primarily from Asia sometime during or near the end of the Ice Ages, roughly between 25,000 and 14,000 years ago. Archaeologists have termed the part of their history that predates the arrival of the Europeans the **PRECONTACT ERA**.



Source: *Nature* 1970, The Ron Yablon Graphics Archives



NATIVE AMERICAN HISTORY IN PENNSYLVANIA

The Precontact era is commonly divided into three broader periods characterized by the approaches to land use, social groupings, and other aspects of daily life: Paleoindian (13,000-8000 B.C.), Archaic (8000-1000 B.C.), and Woodland (1000 B.C.-A.D. 1600). The Archaic and Woodland periods are commonly subdivided further into early, middle, and late divisions. The Contact period typically begins after A.D. 1600 and marks the final period of Native American occupation of eastern North America.

Paleoindian Period (13,000-8000 B.C.)

The **PALEOINDIAN PERIOD** refers to the period of earliest occupation in southeastern Pennsylvania that occurred from more than 16,000 to 10,000 years ago. This period is characterized by a cold

climate, with patchy, primarily coniferous forest interspersed with bogs and open grassy areas. Families moved their camps periodically, hunting large animals (such as caribou, moose, and elk) as well as small animals (such as fox, squirrel, and wolf). Families also caught fish and gathered plant foods and nuts. These hunted resources provided sustenance, clothing, and shelter. People who support themselves entirely with wild resources are referred to as **HUNTER-GATHERERS**.

Due to the low population density and limited competition for food and other resources, families could move camps frequently and across large expanses in order to be close to the resources they needed. These resources included access to game, plants, and specific types of

Table 1. Summary of Time Periods in Southeastern Pennsylvania

Period	Dates	Characteristics
Paleoindian	13,000-8000 B.C.	Low population, hunter-gatherers, frequent movement of camps
Early Archaic	8000-6500 B.C.	Hunter-gatherers, frequent movement of camps, new variety of plants and animals
Middle Archaic	6500-3000 B.C.	
Late/Transitional Archaic	3000-1000 B.C.	Growth in population and size of camps, seasonal camps, emergence of new cooking technologies, regional trade and contact
Early Woodland	1000-400 B.C.	
Middle Woodland	400 B.C. - A.D. 900	
Late Woodland	A.D. 900-1600	Increased population growth, introduction of horticulture , more sedentary camps, reoccupation of camps
Contact	A.D. 1600-1750	European contact and trade

Source: (Fox Illustration) *Nature* 1970, The Ron Yablon Graphics Archives

high-quality stone used for tools and weapons. Paleoindian sites are the rarest type in Pennsylvania, as the technologies of this time were very simple, populations were very low, and many of the places they occupied have been destroyed by the intervening millennia.

Archaic Period (8000–1000 B.C.)

The climate steadily warmed during the **ARCHAIC PERIOD**, becoming more like our own climate. The hunter-gatherer way of life continued, although the means of survival were changing along with an increase in population and social complexity. As the climate grew warmer and plant and animal resources began to inhabit much wider areas, so did human occupation, and it spread into new settings. This period is further divided into Early Archaic (8000–6500 B.C.), Middle Archaic (6500–3000 B.C.), and Late Archaic/Transitional (3000–1000 B.C.).

The Early and Middle Archaic periods witnessed a new variety of available plants and

Source: (Bear Illustration) *Animals* 1979, Dover Publications
Source: (Wolf and Deer Illustrations) *Nature* 1970, The Ron Yablon Graphics Archives

animals, as well as changes in the distribution and abundance of food sources. Family groups lived in small camps and continued to move frequently, relocating closer to the river valleys during the spring, summer, and early fall seasons and to more interior locations to hunt larger game during the late fall, winter, and early spring seasons. Some large animals of the Paleoindian period, such as the mammoth and mastodon, were extinct by the Early Archaic period, and others like caribou had established ranges farther north. However, deer, elk, and bear became increasingly important, providing food as well as skins for shelter and clothing. Shad and sturgeon migrated into the Delaware River Drainage in late spring, with other fish species available throughout the year until early fall. Archaeological evidence from this period largely consists of stone fragments from the making of tools and weapons.



Source: *Nature* 1970, The Ron Yablon Graphics Archives



By the Late Archaic/Transitional period, family groups and their sites along the Delaware River and its tributaries grew larger in size and number. This is often attributed to greater population growth, larger group size, and longer stays at camps during the late spring through early fall. Families continued the previous hunter-gatherer way of life but left behind more cooking hearths and other **FEATURES**, which indicate that they spent longer periods of time at some locations. Interaction between regional groups increased dramatically during the Late Archaic period. Soapstone (also known as steatite) bowls, tools, and weapons made from stone only available in southeastern Pennsylvania were traded into the Upper Delaware River Valley and throughout the Susquehanna Valley. This period reflects an expanded use of a wide variety of chipped and ground stone tools and weapons, the appearance of soapstone vessels that led to increased cooking efficiency, and more advanced fishing implements such as stones known as netsinkers that were used to weight fishing nets.

SOAPSTONE (OR STEATITE, ALSO CALLED SOAP ROCK) IS THE SOURCE OF TALC.

Perhaps the most common artifact from the Late Archaic/Transitional period is **FIRE-CRACKED ROCK**, or rock that has been reddened or cracked from being heated in a fire. Heated rocks were

layered in roasting pits (similar to clam and lobster bakes of today). Heated rocks were also dropped into waterproofed baskets containing water, meat, and vegetables. As the rocks cooled, the water heated and the food was cooked. The rocks could then be returned to the fire for reuse. The abundance of fire-cracked rock found throughout Late Archaic/Transitional period sites in southeastern Pennsylvania further supports the idea that people were camping for longer periods of time, thereby allowing the discarded rocks to accumulate.

Woodland Period (1000 B.C.–A.D. 1600)

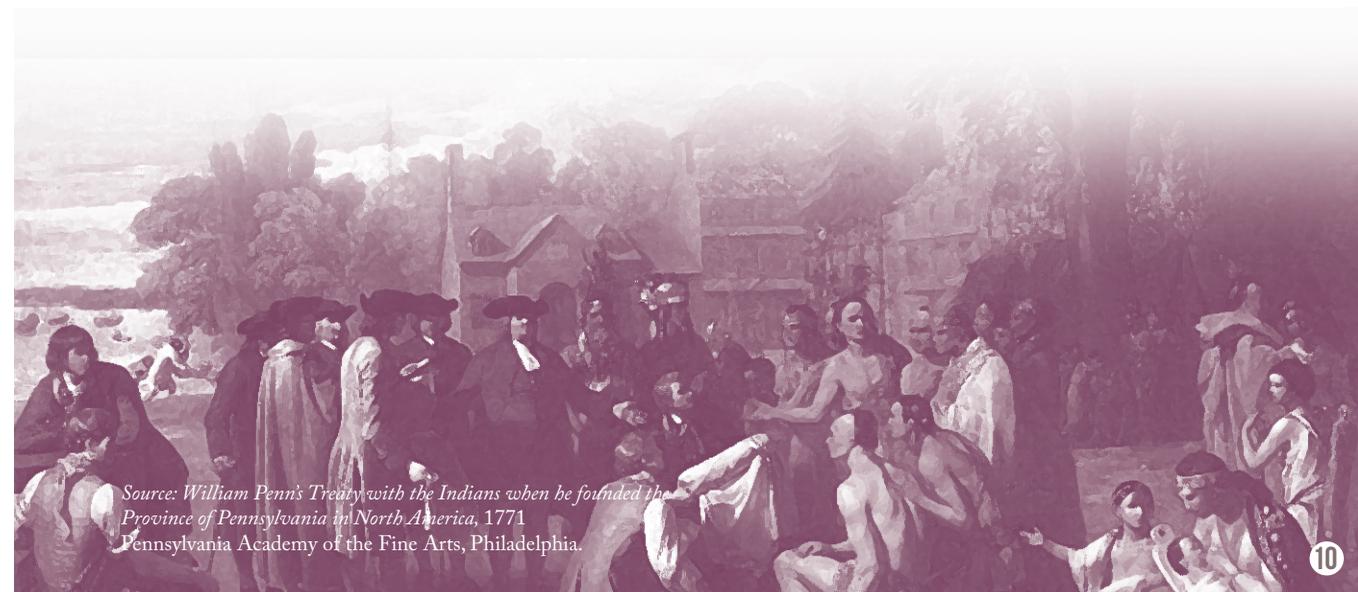
The division between the Archaic period and the **WOODLAND PERIOD** is generally drawn at a point when pottery appears in the archaeological record. The first of the ceramic wares in the region are known as Marcy Creek ceramics. These vessels were typically flat-bottomed with soapstone fragments as a body, reflecting the earlier use of soapstone bowls; furthermore, in some instances, the clay to make Marcy Creek ceramics was tempered with pieces of crushed soapstone bowls. This period is also characterized by an increase in the length of time Native Americans spent at base camps. Food storage pits rarely found at Archaic sites became more common during the Early Woodland (1000 B.C.–400 B.C.) and Middle Woodland (400 B.C.–A.D. 900) subperiods. This suggests that

families may have returned to base camps during late winter when resources became more and more scarce in order to live off of stored foods, such as dried meat, shellfish, berries, nuts, roots, and other plants.

The Late Woodland subperiod (A.D. 900–1600) witnessed the appearance of domesticated plants, including maize, beans, and squash; however, wild plant remains are still found at Late Woodland sites. The increasing **SEDENTISM** that resulted from the availability of domesticated plants led to a mix of Native American groupings, varying from base camps with storage pits and burials to individual farmsteads strung along the river. However, in the Delaware River Region/Valley, the presence of large villages is not clearly indicated, although extensive evidence of repeated occupation exists.

Contact Period (A.D. 1600–1750)

The Woodland period ended with the arrival of European settlers and their accompanying trade items, thus ushering in the **CONTACT PERIOD**. Beginning as early as the sixteenth century, European trade goods and influences appear in Native American archaeological sites in the region. Regular contact between the Native Americans of southeastern Pennsylvania and Europeans began in the first half of the seventeenth century. During this period, the replacement of native lifeways, encroachment from European settlers, and civil conflicts created stressful conditions compounded with diseases from Europeans that decimated native populations. Surviving groups began a general migration west and north out of eastern Pennsylvania; by the middle of the eighteenth century, Native Americans had all but vanished from southeastern Pennsylvania.



Source: William Penn's Treaty with the Indians when he founded the Province of Pennsylvania in North America, 1771
Pennsylvania Academy of the Fine Arts, Philadelphia.

Often, the only way to reconstruct the past during the Precontact era is to conduct archaeological investigations. These investigations are broken down into three phases: Phase I (Identification), Phase II (Evaluation), and Phase III (Treatment). Although most states (including Pennsylvania) provide detailed guidelines dictating the specific approach to each phase, the general goals and approaches to each phase of archaeological investigation remain the same.

Phase I: Identification

Phase I archaeological investigations answer the questions “Where is it?” and “What is it?” when referring to archaeological sites. In other words, the first phase is identification. Phase I studies include the development of research designs, archival and background research, field survey, and analysis. The research design provides a framework that describes all of the activities to be accomplished during the

investigation. Archival and background research acquires information on an area’s known and potential archaeological properties prior to initiating field survey. Research can be done through documentary sources found online; in libraries, archives, historical societies, and other facilities; and through oral interviews of people who live or work near a particular area.

Field survey as part of Phase I investigations often includes a pedestrian walkover as well as **SUBSURFACE SAMPLING** or **TESTING**. As part of a walkover, archaeologists look for key things, including signs of ground disturbance that may have compromised any archaeological potential; evidence of archaeological sites above ground such as foundations; and factors that may help determine if an archaeological site may be present, such as water sources and the steepness of the ground. Subsurface sampling or testing is often used to determine if sites are present; this is typically done through **SHOVEL TEST PITS** or **TEST UNITS** as part of Phase I efforts.

The analysis of Phase I investigations will reveal the presence or absence of archaeological sites in the project area. Project designers may use that information to redesign a project to avoid a site. If avoidance is impossible, it will be necessary to know if the sites encountered are

important enough to meet the criteria of the National Register.

Phase II: Evaluation

Like Phase I investigations, Phase II studies entail development of research designs, archival and background research, field studies, and analysis. As such, sometimes archaeologists choose to combine Phase I and II investigations depending on the nature of the project and the goal of the research.

The goal of Phase II investigations, however, is to evaluate an archaeological property for eligibility for listing in the National Register of Historic Places. As part of this decisive evaluation, Phase II investigations define the boundaries of the archaeological site in question; identify the activities, functions, and age of the site; and interpret the site’s local or regional significance. Archival and background research undertaken as part of Phase II investigations also utilize many of the same sources as Phase I but may also include consultation with soil scientists and geomorphologists, who can help reconstruct how a site was preserved or altered over the centuries by the interaction of climate, soil, and bedrock.

A Phase II investigation should tell project

The north wall of Test Unit 1 at the Shannon Site.



designers if a site is still intact and whether or not it contains the kinds of information necessary to reconstruct how the site's former occupants lived. In other words, if the site meets the National Register criteria and retains its integrity (see Appendix B), then ultimately the site is determined eligible for listing in the National Register.

Phase III: Mitigation Measures

The goal of Phase III investigations is to avoid or minimize impacts associated with a project on an archaeological property that has been listed in or determined eligible for listing in the National Register. If avoidance or minimization is not possible and the project will damage

or destroy the site, some sort of mitigation will be necessary. Most archaeological sites that are eligible for or listed in the National Register derive their importance from the information that they contain about the site's former occupants. Consequently, most mitigation measures undertaken for archaeological sites take the form of an excavation that recovers a larger sample of that important information (**DATA RECOVERY**). Other kinds of mitigation measures could include in-place preservation, creation of interpretative programs or signage associated with the archaeological site, websites, a popular publication (like this one), or some combination of these measures.

Data recovery is extremely labor and time intensive. Data recovery at the Shannon Site required a winter shelter to shield the crew during excavations.



An archaeologist performing data recovery at the Shannon Site.

WHAT LIES BENEATH: THE SHANNON SITE

As part of the Phase I and II investigations for the Hellertown Road Bridge Project, it was determined that the Shannon Site is eligible for listing in the National Register. The site, which has remained partially preserved for over 900 years, has the potential to provide a clean snapshot of daily living during its time of occupation (A.D. 1100) in the Late Woodland period (A.D. 900-1600).

The Shannon Site is extremely unique given its location and setting. Most of southeastern Pennsylvania has been farmed for centuries, and the repeated plowing typically disturbs any intact archaeological deposits at a site. Despite its rural setting, the Shannon Site was never plowed due to its location sandwiched between a Native American footpath (that eventually grew into present-day Hellertown Road) and the nineteenth-century Shannon dwelling. This makes the Shannon Site particularly important because it has essentially remained intact, preserving any record and remains of Native American life. The artifacts and features preserved at the Shannon Site are basically just as they were when its Native American occupants left it. For an archaeologist, the value



of a more-or-less undisturbed and unplowed site like the Shannon Site is very similar to the value of an undisturbed crime scene for a detective. The less the scene has been tampered with, the more information it can provide. There is essentially no substitute for finding a scene or a site intact when you are trying to reconstruct what happened in a specific area at a specific period of time.

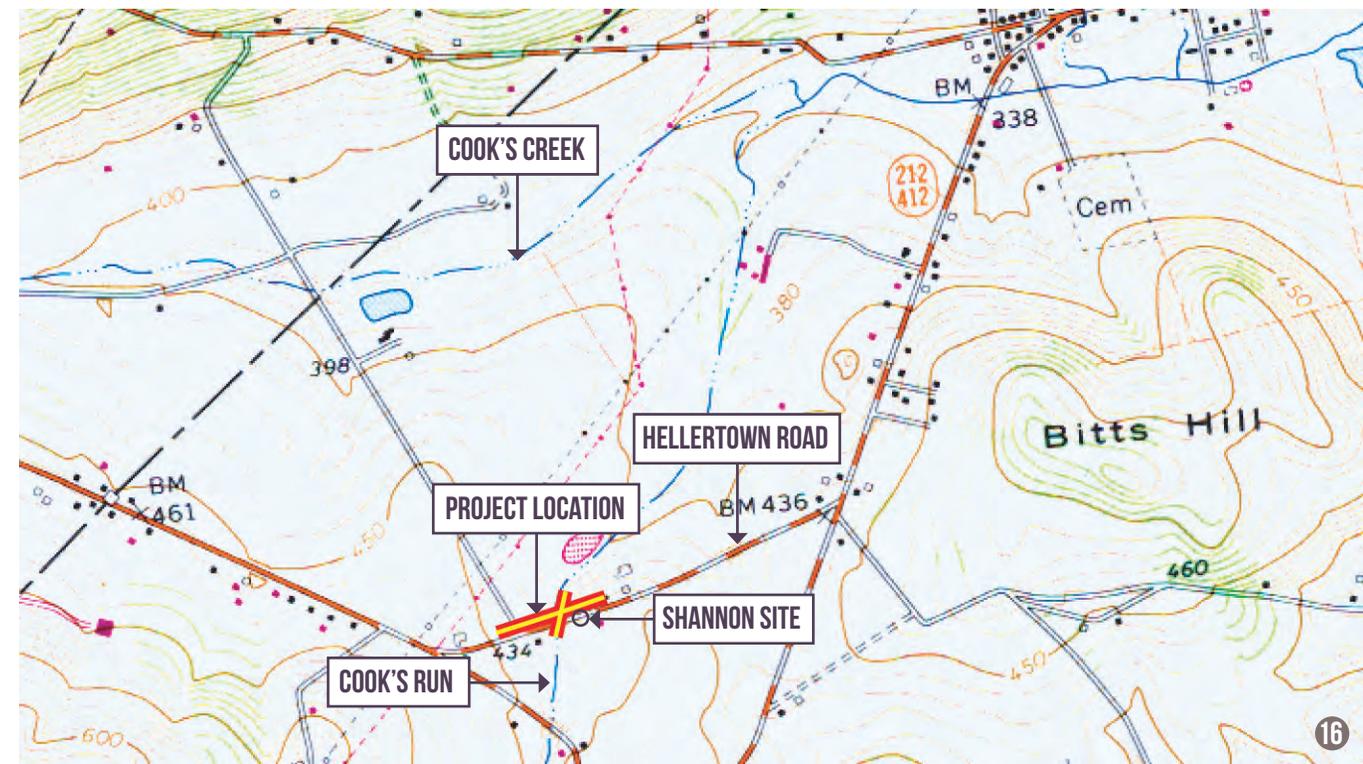
Due to project design requirements and safety concerns regarding the Hellertown Road Bridge Project, PennDOT determined that the Shannon Site could not be avoided; thus, Phase III mitigation measures were required. Therefore, PennDOT and FHWA, in consultation with the State Historic Preservation Office (SHPO) staff, funded a data recovery at the Shannon Site in order to recover some of the artifacts and important information contained within the property. The combined results of the investigations and archaeological data recovery excavations at the Shannon Site produced a better understanding of Native American life in this region during the Late Woodland period (A.D. 900-1600).

SETTING THE SCENE

The Shannon Site is located where Hellertown Road crosses Cooks Run, a tributary of Cook's Creek within the Delaware River Valley (see below). Steep forested hills flank the western side of the roadway, while the land east of Cook's Creek is gently to moderately sloping. The overall geography of the area is considered upland in nature, meaning it is a higher elevation than found in low-lying floodplains. Cook's Run near the Shannon Site provided water, fish, and other resources as well as a travel route to the Delaware River, located 6 miles to the northwest. The site's ample access to water made

it ideal for people to live there, and after the Contact period it was even more ideal for people to farm the land.

In addition to the supply of water, the Shannon Site is located in close proximity to high-quality sources of **CHERT** and **JASPER**, which were stones utilized for tool making throughout the Precontact era. The use of stone tools served as a common thread throughout the time periods of Native American activity in eastern Pennsylvania.

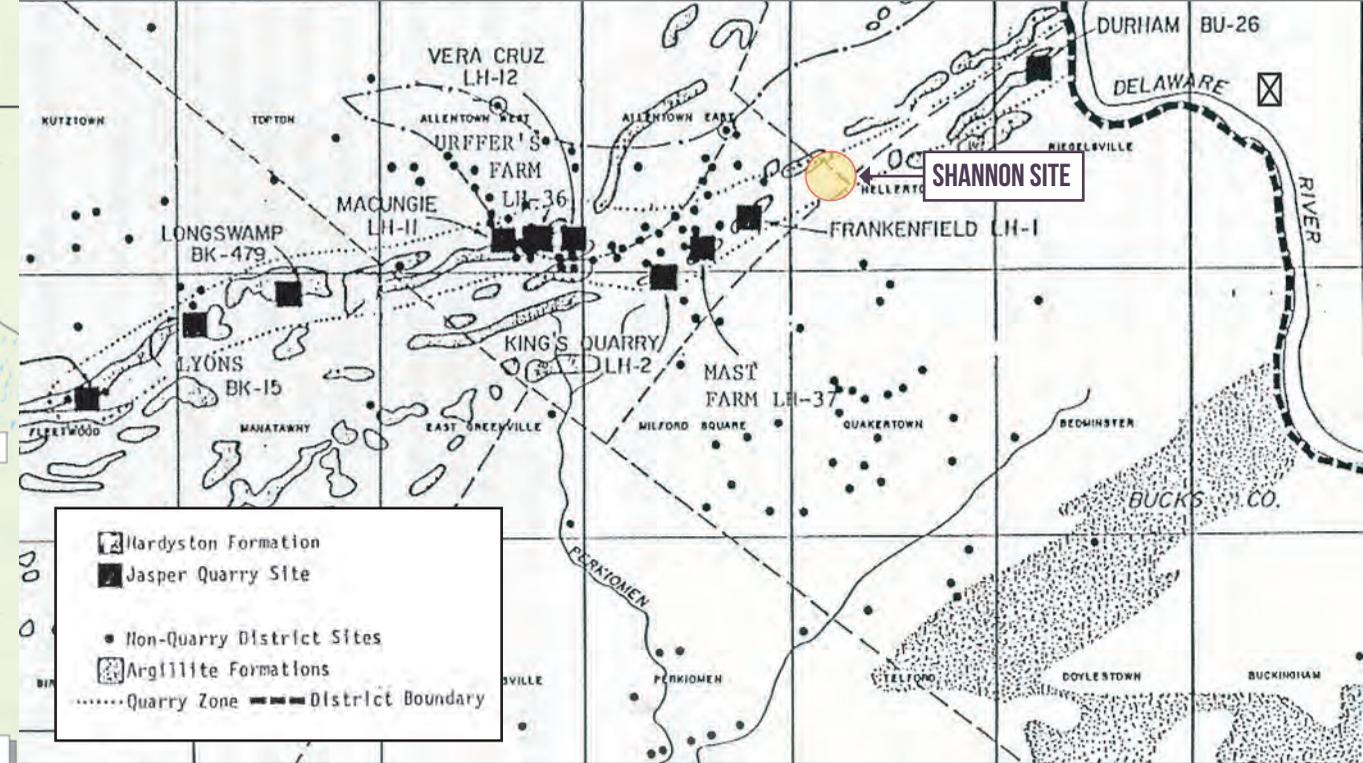




The Shannon Site is located on the border between the Reading Prong/New England Physiographic Province and the Triassic Lowland Section of the Piedmont Physiographic Province.

The Shannon Site is located on the border between the Reading Prong/**PHYSIOGRAPHIC PROVINCE** and the Triassic Lowland Section of the Piedmont Physiographic Province. The physiography, or physical geography, of this area consists of relatively steep hills incised by narrow streams. These provinces contain stone material that was used for making stone tools. In particular, chert and **JASPER** were utilized in the production and use of stone tools. Chert was found in the form of rocks poking out of the ground (for example, on a hillside

where erosion is taking place) as well as in the form of water-rounded, fist-sized rocks along the banks of creeks and streams. Jasper was also found on the surface, as well as in known high-quality jasper quarries in Berks and Lehigh counties. Referred to as “Hardyston” jasper, this concentration of jasper measured approximately 34 miles in length and extended from a source near the Delaware River to a quarry on the headwaters of the Schuylkill River. The source was known throughout the region by Native Americans who traversed overland foot-



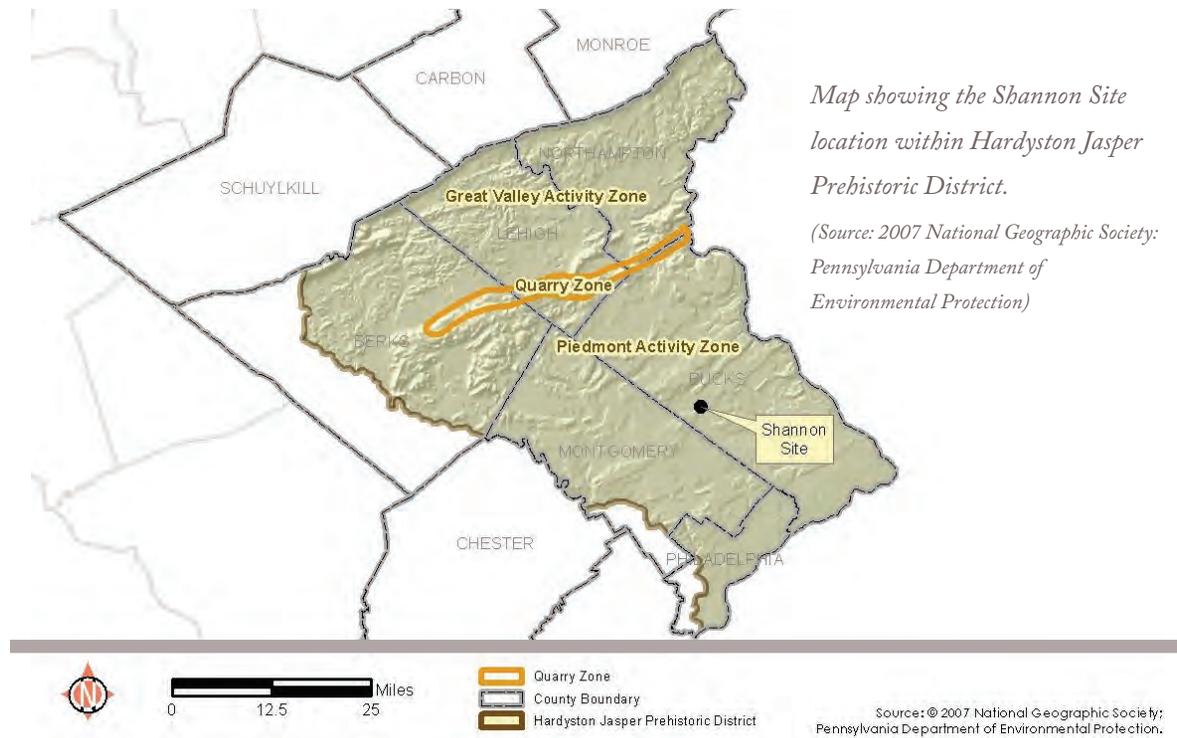
The Shannon Site is located with the Hardyston Jasper Prehistoric District, a 34-mile-long concentration of high-quality jasper.

paths and waterways to gather the high-quality stone material.

During the Late Woodland period, the Shannon Site was located in a temperate climate characterized by multiple layers of vegetation that lose their leaves every year. One can still typically see this in a hike through southeastern Pennsylvania forests, wherein larger trees shelter smaller trees that form the upper and middle layers, followed by a third, lower layer of small shrubs and plants. Rapid changes from cold and dry to wet and warm were typical. Although this natural setting no longer char-

acterizes the Shannon Site today (due largely to historical deforestation and agricultural activities, as well as modern-day development), its resource-rich ecology undoubtedly attracted human occupations in the past.

Native Americans traversed Bucks County traveling to and from the various sources associated with the high-quality chert and jasper sources, and it is quite possible that the Shannon Site was used as a seasonable resting spot when traveling back and forth from these resource-rich areas. Thus, what is known today as Hellertown Road began as a Native



Map showing the Shannon Site location within Hardyston Jasper Prehistoric District. (Source: 2007 National Geographic Society; Pennsylvania Department of Environmental Protection)

American footpath. As European settlement occurred throughout the mid-eighteenth century and the Native Americans all but vanished from southeastern Pennsylvania, the footpath evolved into a more formal route for settlers traveling north and west from the Delaware River; however, it functioned largely as part of the “local business” center within Springfield Township, providing a route for township residents to and from a creamery and mill complex in the mid-nineteenth century. The extant two-story Shannon dwelling located adjacent to the Shannon Site was constructed by this time as well. The construction of the dwelling actually contributed to the preservation of the Native American site, as opposed to harming it. The close proximity of the dwelling to the roadway

prohibited plowing and other intensive agricultural activities, as the ground above the site was and remains the dwelling’s domestic front yard. Throughout the late nineteenth and into the twentieth centuries, although Hellertown Road remained primarily a local road, it was likely incorporated into the more formal transportation network used for shipping agricultural products from Bucks County to the Philadelphia market. The preservation beneath the front yard of the Shannon dwelling and its close proximity to the two-lane roadway and associated construction activities throughout the Contact period lend to the remarkability of the site’s preservation for over 900 years.

As part of any data recovery investigation, including the Shannon Site, it is important to develop specific questions to help guide research and also provide a framework for the interpretation of data recovered from the site. In addition, the answers to these research questions help to reconstruct the day-to-day activities of the Native American population in what is now upper Bucks County.

The following four basic research questions were used to guide the data recovery investigations at the Shannon Site:

How old is the site?

Various methods are used in combination to determine the age of the site. Artifacts are collected and analyzed that possess certain traits (e.g., shape, material, or function) that can

be associated with specific time periods or date ranges. If organic materials (e.g., wood charcoal) are collected, these can be subjected to **RADIOCARBON DATING** techniques.

Did people live at the site on more than one occasion?

If the site produces artifacts that can be associated with different cultural groups or different parts of the Late Woodland period (e.g., different pottery types), this could be evidence that the site was occupied more than once.

What did people do at the site?

The kinds of tools and features found at the site can be used to infer the sorts of activities



RADIOCARBON DATING WAS DEVELOPED IN 1949 BY THE AMERICAN CHEMIST WILLARD LIBBY AT THE UNIVERSITY OF CHICAGO. THIS METHOD OF CHEMICAL ANALYSIS REVOLUTIONIZED ARCHAEOLOGY, AS REFINEMENTS TO LIBBY’S ORIGINAL TECHNIQUE HAVE RESULTED IN MORE PRECISE DATES ON MATERIALS UP TO 40,000 YEARS OLD. FOR A CLEAR DESCRIPTION OF RADIOCARBON DATING, PLEASE GO TO [HTTP://WWW.PBS.ORG/WGBH/NOVA/TECH/RADIOCARBON-DATING.HTML](http://www.pbs.org/wgbh/nova/tech/radiocarbon-dating.html)

An archaeologist performing investigations at the Shannon Site.

conducted at this location. The working edges of stone tools often retain microscopic evidence of how they were used (scraping hides, wood-working, etc.), and features sometimes preserve burned food remains, discarded objects of various kinds, or stored supplies, all of which can help reconstruct day-to-day activities that occurred at a site.

What do the artifacts tell us about the resources and activities at the site?

Access to all kinds of critical resources, from jasper to hickory nuts, had a profound effect on the kinds of places and encampments used by Native Americans. By looking at the site locations employed by people throughout the Precontact era, and the distribution of those important resources across the landscape, the relationship between resources and site locations can sometimes be reconstructed. If the distribution of one or both changes with the passage of time, this may be evidence of how Native American cultures and the Precontact environment changed as well.



ANSWERING THE QUESTIONS

The pursuit of answering the questions was carried out under a data recovery undertaken as part of Phase III mitigation measures for the Hellertown Road Bridge Project in Springfield Township, Bucks County, Pennsylvania. In answering the research questions above, the archaeologists combined research with in-field testing, or data recovery excavation, as well as technology. The purpose of the data recovery was to mitigate, or offset, the project's physical impacts to the site via intensive excavation driven by research questions. Ultimately, a successful data recovery sheds new light on the site within its wider cultural and regional context.

The result of the data recovery and associated analysis are then presented in a report format for future use by archaeologists, historians, anthropologists, and others interested in the particular lifeways, time period(s), and other information presented in the report.

The combined Phase I/II investigations of the Shannon Site, which utilized limited field investigations and intensive research undertaken online and at local historical societies and libraries, determined that the Shannon Site was an intact, National Register-eligible archaeological resource; however, this investigation did not provide any artifacts that could be dated to a specific time period. Therefore, the artifacts uncovered as part of the data recovery needed to be analyzed in order to date the site.

In addition, by exploring the locations of where these artifacts were discovered within the site, it may be possible to determine how many occupations occurred at the site. Intensive artifact analysis also aided in determining what activities occurred at the site by analyzing how and for what purpose each artifact was used.

Given the small size of the Shannon Site (5 meters long by 3 meters wide), data recovery was undertaken throughout the entire site. Artifacts taken from the site were analyzed in an archaeological laboratory. All recovered materials were appropriately washed or dry-brushed and subsequently labeled. Each cataloged artifact received a specific number used as a reference throughout the processing and analysis. All artifacts were identified with regard to type, function, and cultural and temporal affiliation when possible by highly qualified and trained archaeology professionals.

The archaeological investigations at the Shannon Site also involved removing horizontal layers of soil to expose artifacts and features. **STRATIGRAPHY** refers to the sequence of soil layers, or strata, that reflect the passage of time and the processes that formed and preserved the site. A site (like the Shannon Site) that contains multiple occupation layers (the topmost dating to the nineteenth and twentieth centuries, with the Late Woodland site preserved beneath) allows the reconstruction of the past in one specific

location. Ultimately, as an archaeologist digs deeper into the ground, he is also literally digging deeper into the past. A site found in an upland setting like the Shannon Site will typically not extend deeper than 1 foot below the surface. The upland location of the site didn't accumulate new sediment over time like a floodplain location, thus upland settings are relatively close to the surface. Conversely, at the Shannon Site, the topmost layers of nineteenth- and twentieth-century yard fill helped to preserve the soil layers containing the Native American artifacts by keeping them covered.

Modern technology played an important role in the data recovery investigations at the Shannon Site. The archaeologists utilized a chemical analysis that can identify animal protein residue on stone tools to determine what game species were hunted and consumed by the Native Americans at the Shannon Site. Geographic Information System (GIS) data also allowed the archaeologists to analyze the relationship between the physical locations of all Late Woodland sites identified throughout the surrounding region and permitted the successful examination of the Shannon Site within its regional cultural context. This data resulted in a number of useful observations and research hypotheses for the middle Delaware River region that were incorporated into answering the research questions specific to the Shannon Site.



Archaeologists performing investigations at the Shannon Site.

Some of the answers to the Shannon Site research questions came easily, while others took some time to evaluate and conduct additional analyses. The Shannon Site is small, measuring only 5 meters in length and 3 meters in width; however, the information gleaned from this relatively small site is invaluable to our understanding of the way Native Americans lived during the Late Woodland period in southeastern Pennsylvania and the surrounding region.

The data recovery at the Shannon Site uncovered six features attributed to Native American occupation during the Late Woodland period. Two features were identified as hearth remnants; two as refuse pits; one as a **POSTMOLD**, indicating the presence of a shelter; and one as a living surface, meaning a location where daily activities, such as food processing, tool construction and maintenance, and perhaps the location of an impermanent shelter, occurred. A total of 3,361 Precontact artifacts, 96 floral samples, and 13 **FAUNAL** samples were recovered at the Shannon Site during the data recovery.

How old is the site?

The archaeologists determined that the site was occupied during the Late Woodland period, about A.D. 1100 based on the types of artifacts discovered combined with the use of technol-

WHAT DID WE LEARN FROM THE SHANNON SITE?

ogy to confirm the time period. Two triangular-shaped **PROJECTILE POINTS**, or what many think of as “arrowheads,” and a light concentration of pottery pieces were recovered that are attributed to the Late Woodland period in the Delaware River Valley. Five radiocarbon samples were taken that fell within the same time period, confirming that the Shannon Site was occupied between A.D. 900 and 1600.

Feature 2, a refuse pit, at the Shannon Site.



Did people live at the site on more than one occasion?

The archaeologists determined that the site was likely occupied on two separate occasions: during the late spring/early summer and during the fall, but by one group of Native Americans. The locations of the stone tools and features indicated that the eastern half of the site contained the core activity. Based on the artifact and feature data, the archaeologists concluded that it was unlikely two or more completely unrelated occupations would produce features with very similar contents and overlapping artifact concentrations. Thus, the findings suggested that the site was formed by the activities of one small group of Native Americans but at two different times, based on the floral and faunal analysis. In other words, different plants and flowers are

available only during certain seasons, and the discovery of these seasonal fragments (as discussed in more detail below) indicates occupation at different times of the year. The archaeologists believed that the group initially traveled to the site with tools and weapons made mostly of chert. They replenished their toolkits with jasper from a nearby quarry source, discarded their broken chert tools, and left the site with their new jasper toolkits. This was evidenced by the discovery of broken chert tools, flakes, and manufactured jasper debris in lieu of completed tools.

What did people do at the site?

In order to answer questions about the types of activities conducted at the site, the archaeologists looked for patterns in how artifacts were

distributed across the site. Shannon Site analyses involved an examination of artifacts and features and the ways they relate to each other in space and by function.

The excavation results clearly indicated that the main site activities were focused in the eastern part of the site closer to the creek, as evidenced by the higher number and density of artifacts and features. This area was used for actual habitation, as evidenced by the presence of the large quantity of fire-cracked rock, burnt earth, charcoal concentrations, pottery fragments, and high **FLAKE** (or portions of stone) and tool counts. People were likely making fires to keep warm, to use for light, and to cook their food, which explains the presence of the fire-cracked rock; people were using pots to store, process, or prepare foods, which explains the pottery

fragments; and people were making and/or resharpening and using stone tools at this location within the site, which justifies the findings of high flake and tool counts.

Based on artifact and feature data, the archaeologists concluded that tool maintenance, such as sharpening or reconstructing, occurred at the site, in addition to hunting and game processing; gathering plant materials for food, heating, and cooking; clothing maintenance; and possible ritual and medicinal activities. The site's inhabitants may have used the vessels found for cooking or to carry food resources to the site.

What do the artifacts tell us about the resources and activities at the site?

The stone artifacts found at the Shannon Site demonstrate that the site's occupants had direct

Feature 4, a postmold, indicating the presence of a Native American shelter at the Shannon Site.



Precontact pottery pieces found at the Shannon Site.



Flintknapping is the process involved with making stone tools. A sequence of reduction steps (shown below) reflects the process. A flintknapper removes excess material from a chunk of rock to create a projectile point or knife, which is the end product. Archaeologists often find complete and broken examples of the reduction stages.

Source: Susanne M. Haney



access to sources of both high-quality jasper and chert, which they liberally used to make tools. Triangular-shaped projectile points show that the inhabitants hunted medium- and large-sized game animals. Likewise, they also indicate that hunting was done with archery, as opposed to spears or darts. Stone tool fragments found at the site were submitted to a special lab for blood residue analysis to see if the tools were used for butchering animals. This analysis also aids in determining what types of animals were hunted. These analyses detected that the occupants hunted deer, squirrels, beavers, and porcupines, and that they processed them to some extent at the site. No evidence of purposefully planted and harvested crops was recovered from the site, and no tools related to agricultural activities (e.g., stone hoes) were recovered.

Interestingly, the amount of stone artifacts (i.e., a relatively large amount for a site so small) suggests access to an ample supply of the high-quality stone materials. The evidence shows that the occupants of the site utilized these materials in a manner that reflected little concern for their ability to replenish their supply of the materials.

Unfortunately, evidence of gathering and processing plant resources for food, shelter, or medicines is scant. Only two heavy cobble tools,

▼ *A selection of jasper tools found at the Shannon Site.*



which were used to grind or mash seeds, nuts, or plant fibers, were recovered. Charred plant remains collected from the site included dogwood fruit and possible cherry pits. The cherry fruit matures in June, while dogwood fruit matures in the fall. In addition, several carbonized nut fragments were recovered from the site, further indicating the occupation of the site during the fall. These plant finds show two occupa-

▼ *A selection of chert tools found at the Shannon Site.*



tions in a year's time: one in the early summer and one in the fall.

The overall analysis of the Shannon Site reveals a small campsite where Native Americans conducted a variety of daily activities related to getting and processing natural resources and making and re-sharpening stone tools. One can imagine, given the size of the site, that the

group size was small and probably composed of a family and perhaps a few extended family members. This small encampment appears to be consistent with the Late Woodland period in the middle and lower Delaware River regions, which suggests local groups did not completely adopt an agricultural (or horticultural) subsistence lifestyle, but rather relocated to seasonally important locales where wild plant and animal resources could be obtained with relative ease.

WHY IS THE SHANNON SITE IMPORTANT?

Archaeologists determined that the Shannon Site was a small, short-term Native American habitation dating to the Late Woodland period (ca. A.D. 1100). Data showed that the site's occupants likely built a small, impermanent structure at this spot that was probably occupied on two separate occasions by the same small group of Native Americans: during the late spring/early summer and during the autumn. They had access to locally available, high-quality chert and jasper sources, and stone tool manufacturing and maintenance were performed at the site. Other activities included the hunting and processing of game and the collection of plant materials for food, heating, and cooking. Additional activities that likely occurred at the site included manufacturing and maintaining hunting tools, shelters, and clothing from animal products (bone, antler, and hides) and plant materials (fibers and wood).

Archaeologists also concluded that Native American groups used the Delaware River Valley for more than collecting and processing natural resources to support life in larger camps. These camps were often located near major creeks and rivers, where groups are believed by some to have spent most of their time. These larger camps have been the focus of ex-

tensive archaeological studies since the 1960s, whereas studies involving smaller sites, such as the Shannon Site, are relatively recent, providing a unique glimpse into life away from the big rivers of the region. The archaeologists inferred from the Shannon Site that groups were more mobile and not tied strictly to a main base camp. Instead, these groups adopted a hunting and gathering lifestyle that revolved in time and space around seasonally available resources in the region. Some of these resources were available near the Shannon Site, which explains why the site exists. One can imagine other small groups sharing the same lifestyle; groups likely interacted with one another throughout the interior. Although the Shannon Site did not produce a radically new picture of Late Woodland life, the high degree of the site preservation demonstrates the potential significance of these types of sites as cultural resources. Particularly, the Shannon Site suggests that upland sites in this region played a more important role in the subsistence and settlement system of Native Americans in the Late Woodland period than previously suspected. The site was not just a randomly chosen short-term camping site; instead, it was a strategic stopping point that hosted a variety of activities on multiple occasions for weeks at a time. The information derived from

the Shannon Site suggests that these smaller sites are a lot more important than they have been traditionally regarded.

The data recovery performed as part of the Phase III mitigation measures for the Shannon Site has shown that the Shannon Site was a rare cultural resource: an undisturbed, Native American archaeological site in an upland setting in southeastern Pennsylvania. The vast majority of uplands in the northern Bucks County region have been disturbed by centuries of farming and, more recently, by intensive residential and commercial development. While these historic

and modern activities can often destroy Native American archaeological resources, the Shannon Site proves that small, upland sites can remain preserved in the unlikeliest of settings. In the case of the Shannon Site, the site was preserved beneath the front yard of a mid-nineteenth-century dwelling, adjacent to a Native American footpath. The historic land-use pattern as a domestic yard kept the site from being plowed. Dozens, if not hundreds, of small preserved upland sites hidden beneath the various layers of history may still exist in similar settings, perhaps even in your own front yard.

The Shannon Site.





Glossary

ARCHAIC PERIOD 🦕 The period in Pennsylvania dating from 8000-1000 B.C. The people of this period perfected the art of intensive hunting and plant gathering, supporting substantial populations living in groups of various sizes. These groups moved regularly throughout the year among a series of campsites within a well-defined boundary.

ARTIFACT 🦕 Any portable object made, altered, or used by humans.

CHERT 🦕 A fine-grained stone comprised mostly of quartz that can be broken to form a very sharp edge. Chert occurs in sedimentary rocks, such as limestone and dolomite. It varies greatly in color (from white to black), but most often manifests as gray, brown, and light green to rusty red.

CONTACT PERIOD 🦕 The period in Pennsylvania dating from A.D. 1600-1750, which is marked by the arrival of European settlers and their accompanying trade items.

DATA RECOVERY 🦕 Archaeological data recovery excavations are large-scale excavations designed to recover the data a site contains before a project proceeds and the site is lost. Data recovery projects generally include large-scale excavations in blocks when sites are deeply buried or on surfaces where features are present.

FAUNAL 🦕 Animals, or the remains thereof, of a particular region or group.

FEATURE 🦕 A product of human activity that is fixed in place, such as a trash pit, a hole dug for a fence post, or a foundation wall. Unlike an artifact, a feature cannot be removed from a site.

FIRE-CRACKED ROCK (FCR) 🦕 Any type of rock that has been broken by deliberate heating. Rocks were often heated in fires and used for stone boiling or as platforms for roasting. When placed in a fire, the heat reddens the rock and often cracks it. This rock is a common occurrence on Native American sites.

FLAKES 🦕 Distinctively shaped pieces of stone removed in making a chipped stone tool.

HUNTER-GATHERERS 🦕 A way of life, as well as the person who practices it, that involves hunting game and gathering wild plant foods, such as nuts and berries. Hunter-gatherers move their camps periodically to be close to seasonally available foods and other survival needs.

JASPER 🦕 A type of chert with a very high iron content, making it brown, yellow, or red in appearance.

LATE WOODLAND PERIOD 🦕 In eastern Pennsylvania, a period of time dating from A.D. 900 to A.D. 1600. The period is characterized by the use of ceramic vessels, agricultural production, and permanent settlements in floodplain settings along larger drainage systems.

NATIONAL REGISTER OF HISTORIC PLACES 🦕 the official list of the nation's historic places worthy of preservation, as administered by the National Park Service.

PALEOINDIAN PERIOD 🦕 The earliest well-known precontact period in eastern Pennsylvania. The accepted date range for this period is from 13,000-8,000 B.C., although archaeologists continue to discover older artifacts and features.

PHYSIOGRAPHIC PROVINCE 🦕 The division of land masses based on similar landscape features (hills, coastal flats, mountains), rock types, and geological history. The boundaries separating these provinces are marked by abrupt changes in the topography of the land and its underlying geology.

POSTMOLDS 🦕 Soil stains left behind by decayed wooden posts. The size and arrangement of the stains allow archaeologists to identify structures, such as house patterns, made by Native Americans.

PRECONTACT ERA 🦕 The period that predates the arrival of European, typically pre A.D. 1600.

PROJECTILE POINTS 🦕 Commonly called arrowheads, projectile points is a general term used for chipped stone tools used as penetrating tips for spears and arrows.



RADIOCARBON DATING 🦕 A chemical analysis used to determine the age of dead organic materials based on the amount of the radioactive isotope carbon (Carbon 14) that they contain.

SEDENTISM 🦕 People living in groups in a permanent place. This term is applied to the transition from a nomadic lifestyle to a society that remains permanently in one place.

SHOVEL TEST PIT 🦕 Shovel test pits (STPs) are round holes approximately 2 feet in diameter. This standard archaeological technique is used to discover and pinpoint areas worth investigating in the early part of an archaeological excavation and study.

STRATIGRAPHY 🦕 The observable natural and/or man-made layers, or strata of soil, identified during archaeological excavation. Generally, the oldest layers are at the bottom and the more recent layers are at the top.

SUBSURFACE SAMPLING OR TESTING 🦕 Testing of an area that includes the excavation of shovel test pits (STPs) or test units (TUs). This is often done to determine if sites are present or done on a known site to assess whether the site is significant.

TEST UNIT 🦕 Test units are square holes that are approximately 3.3 by 3.3 feet. Like shovel test pits (STPs), this standard archaeological technique is used to discover and pinpoint areas worth investigating in the early part of an archaeological excavation and study.

WOODLAND PERIOD 🦕 The period in Pennsylvania dating from 1000 B.C.-A.D. 1600. This period is characterized by longer periods spent at base camps and the emergence of pottery.

National Register of Historic Places (National Register) Criteria for Evaluation

Information below is taken from the National Register Bulletin “How to Apply the National Register Criteria for Evaluation”. The full bulletin is available here:

<http://www.nps.gov/nr/publications/bulletins/nrb15/>

Criteria for Evaluation

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A.** That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B.** That are associated with the lives of significant persons in our past; or
- C.** That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D.** That have yielded, or may be likely to yield, information important in history or prehistory.

A district, site, building, structure, or object can be significant under one or multiple National Register criteria.

Criteria Considerations

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original

locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- A.** A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- B.** A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- C.** A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or
- D.** A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- E.** A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- F.** A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- G.** A property achieving significance within the past 50 years if it is of exceptional importance.

Integrity

Properties must also retain integrity.

Integrity is the ability of a property to convey its significance. To be listed in the National Register of Historic Places, a property must not only be shown to be significant under one or more of the National Register criteria noted above, but it must also have integrity. The evaluation of integrity is sometimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and how they relate to its significance.

Within the concept of integrity, the National Register criteria recognize seven aspects, or qualities, that define integrity in various combinations.

Seven Aspects of Integrity

LOCATION 🌿 **DESIGN** 🌿 **SETTING** 🌿 **MATERIALS**
WORKMANSHIP 🌿 **FEELING** 🌿 **ASSOCIATION**

To retain historic integrity, a property will always possess several, and usually most, of these aspects. The retention of specific aspects of integrity is paramount for a property to convey its significance. Determining which of these aspects are most important to a particular property requires knowing why, where, and when the property is significant.



For Further Reading

David W. Anthony and Daniel G. Roberts

1988 *Stone Quarries and Human Occupation in the Hardyston Jasper Prehistoric District of Eastern Pennsylvania*. Report on file, Pennsylvania Historical and Museum Commission, Harrisburg, Pennsylvania.

Daniel N. Bailey and John W. Lawrence

2006 *Upland Adaptations during the Late Woodland Period in the Middle Delaware River Drainage: Data Recovery Investigation of the Shannon Site (36BU359)*. Prepared by A.D. Marble & Company for the Pennsylvania Department of Transportation, Engineering District 6-0.

Jay F. Custer

1996 *Prehistoric Cultures of Eastern Pennsylvania*. Anthropological Series No. 7, Pennsylvania Historical and Museum Commission, Harrisburg, Pennsylvania.

James W. Hatch and Patricia E. Miller

1985 “Procurement, Tool Production, and Sourcing Research at the Vera Cruz Jasper Quarry in Pennsylvania.” In *Journal of Field Archaeology* 12: 219-230.

R. Michael Stewart, Christopher Hummer, and Jay Custer

1986 “Late Woodland Cultures of the Upper Delmarva Peninsula and the Lower and Middle Delaware River Valley.” In *Late Woodland Cultures of the Middle Atlantic Region*. Jay Custer, ed., pp. 58-89. University of Delaware Press, Newark, Delaware.

The booklet discusses the discovery and information contained within the Shannon Site, a small short-term Native American encampment dating to ca. A.D. 1100 buried within the seemingly mundane front yard of a typical early nineteenth-century Pennsylvania residence. The Pennsylvania Department of Transportation and Federal Highway Administration sponsored the discovery and excavation of the site prior to the construction of the Hellertown Road Bridge Replacement Project. Ultimately, the combined results of the archaeological investigations of the Shannon Site generated a better understanding of Native American life in Southeastern Pennsylvania between A.D. 900 and A.D. 1600. The site's investigations also demonstrates the importance of archaeology in the study of the past; without which, the story of the Shannon Site and the Native Americans who occupied it would remain unknown.

