IV. LUMS POND FIELD INVESTIGATIONS

Investigation of prehistoric activity at the Lums Pond site was conducted in a three-phase study typical of Cultural Resource Management investigations. The phases consisted of 1) survey, aimed at accurately identifying the location of the site; 2) testing, or evaluating the significance of the site; and 3) data recovery, mitigating the effects to the site of the proposed development.

Survey and Testing: Finding and Evaluating the Site

Survey

The initial phase of investigation of the Lums Pond site, the site identification survey, was conducted in May of 1994, in conjunction with the survey and testing of several additional locations along the southern portion of the SR 896 improvement project (Petraglia and Knepper 1995). The Lums Pond site lay on abandoned farmland. The field containing the site had been plowed numerous times but had been left fallow for a number of years. Plowing has obvious negative effects on archaeological remains. Artifacts within reach of the plowshare, usually in the upper 12 to 18 inches of the soil profile, are moved. Because context, or the physical associations between artifacts, are key elements in behavioral interpretation, plowing alters the archaeological integrity of the remains. Nevertheless, experimental studies have shown that while plowing does disturb the original arrangement of artifacts at a site, general patterns of artifact distribution may survive even after decades of cultivation. A side-effect of plowing that is beneficial to site survey is that artifacts are periodically brought to the surface, allowing the location of a site to be recognized by the surface distribution of artifacts. Replowing an agricultural field is thus a method often used for rapid site identification.

This technique was not a practical option at the Lums Pond site. The entire site area was heavily overgrown and would have required extensive clearing prior to plowing, and thus a subsurface survey was undertaken. The survey consisted of the excavation of a series of round, shovel-test-pits, referred to as STPs, each measuring 50 centimeters (about 19 inches) in diameter. The STPs were excavated in a grid pattern 20 meters apart across the entire project area. This type of excavation provided a systematic sample of the deposits, guaranteeing that all sections of the property were examined with equal intensity. In all, the grid contained 134 STPs. Ensuring that the grid was accurately aligned was made difficult by the dense undergrowth. To keep the grid true, several straight-line transects were cleared southward from Howell School Road (Plate 1) using a combination of a tractor-driven mower, operated by personnel from Lums Pond State

Park, and hand-held equipment—the latter included a gasoline-operated weed-eater and several sharp machetes.

Artifact counts from each STP were plotted on a computer-generated site map, and the locations of artifact concentrations, denoting the extent of prehistoric activity at the site, were recorded (Figure 3). The systematic shovel test excavations provided enough data to relocate the site originally discovered in the 1970s.

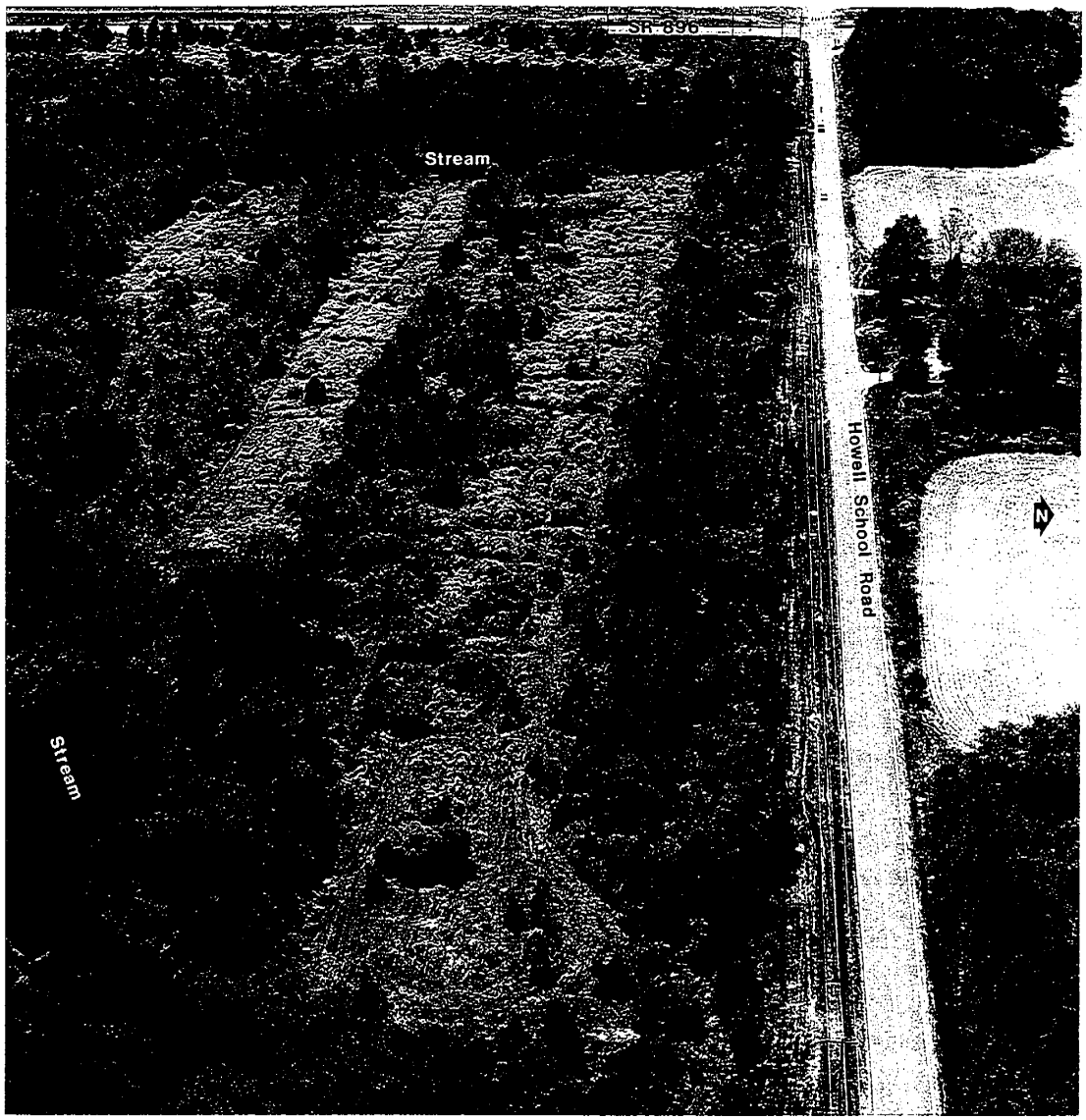

Plate 1. Aerial Photograph of Lums Pond Site During Survey and Testing Investigations

Testing

The second phase of investigation at the site consisted of testing, designed to evaluate the significance of the site. Significance was judged on the basis of the potential of the site to meet criteria making it eligible for nomination to the National Register of Historic Places. The testing procedures were designed to answer questions concerning 1) the size or dimensions of the site, both horizontally (area) and vertically (depth); 2) depositional integrity, or determining how well-preserved the original arrangement of the remains might be; and 3) chronological affiliation, determining the site's age, as well as the number and lengths of the occupation episodes.

To define the horizontal limits of the site, 110 additional shovel tests were excavated around positive STPs, those that contained artifacts, in the original survey grid. The shovel test data provided a more complete view of the horizontal extent of the site. Artifacts were scattered across almost the entire field, with greater numbers occurring in three areas on the terrace above the stream at the east edge of the project area, as illustrated in Figure 3 in which artifact density is depicted with contour lines.

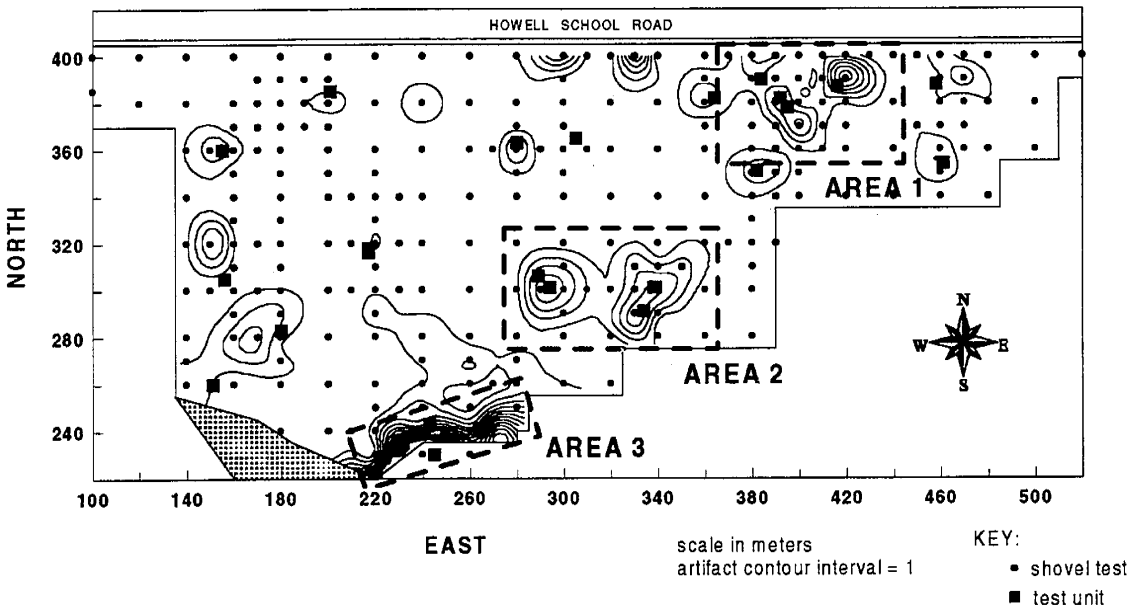

Figure 3. Survey and Testing Excavations with Artifact Density Contours

To investigate the vertical dimensions of the site, twenty-five 1-meter-square test units were excavated throughout the site area. The unit locations were chosen to further investigate the areas of prehistoric activity indicated by artifact concentrations, as well as to test the major physiographic features represented, such as the high ground along

Howell School Road or the stream terraces on the eastern and western edges of the site. The test units provided detailed views of stratigraphy in each area and supplemented the artifact data recovered from shovel testing. An initial series of five test units was excavated, in May of 1994. Information was retrieved from these tests that indicated the potential for significant deposits at the site. Following consultation with officials from DelDOT, the Delaware Division of Parks and Recreation, and the Delaware State Historic Preservation Office, an additional 20 units were excavated in January of 1995 to increase coverage and refine data as to context and site integrity. In addition, a geoarchaeological specialist was employed to examine landscape history and soil profiles as an aid in assessing depositional integrity. The eventual goal of this research was to determine the amount of disturbance the site had sustained over the years, and thus, how much reliable data might be expected concerning prehistoric activity at the site.

Testing Results

A plow zone measuring an average 30 centimeters in depth was found across the entire site area. While the site was known to lie in an agricultural field, an important finding was the presence in several areas of a second plow zone buried beneath the top plowed layer. The presence of a buried plow zone suggested that fairly dynamic processes of erosion had occurred at the site. The soils exposed by harvesting and cultivation had readily moved downslope toward the streams, borne by winds during dry periods or washed downslope by heavy rains. This type of soil movement is an ongoing phenomenon throughout the eastern United States, and has been occurring at an ever more rapid pace since land was first cleared on a widespread basis by European colonists. Erosion associated with agriculture has, in many areas, led to the depletion of farmlands, the choking of springs, and the silting up of numerous regional streams. The process has implications for the burial of archaeological sites, as will be discussed in some detail below.

Artifacts from both the historic and prehistoric periods were recovered from the plow zone. Since historic maps showed no structures within the study area, only scattered historic period artifacts were expected. And in fact, few historic artifacts were found, and those recovered were distributed randomly across the field. As summarized in Table 2, the artifacts consisted of domestic debris, such as small ceramic sherds (coarse and refined earthenwares) and small sherds of bottle glass, along with a cut nails, small pieces of brick and coal, and a few miscellaneous items such as part of a molded kaolin pipe-bowl, a brass button, and part of a silver half-dime dated 1829. In general, these artifacts appeared typical both in character and in frequency of the type of historical

debris recovered from heavily plowed fields. They reflected the general rural, agricultural use of the surrounding land during the mid-nineteenth through early-twentieth-centuries.

Group	Class or Type	Count	Frequency(%)
Architecture	Nails	17	11
	Window Glass	22	14
	Roofing Slate	1	<1
	Brick	sampled	
Domestic/Industrial	Ferrous Metal Wire	1	<1
	Coal/Clinker	sampled	
Domestic	Refined Earthenware	46	29
	Coarse Earthenware	13	8
	Porcelain	1	<1
	Bottle or Vessel Glass	53	33
	Spoon	1	<1
Personal	Tobacco Pipe	1	<1
	Button	1	<1
Activities	Coin	1	<1
Total		158	

Table 2. Historic Period Artifacts from Survey and Testing

Prehistoric artifacts, in contrast, occurred more frequently and indicated specific and repeated use of the project area during several periods of prehistory. As detailed in Table 3, the vast majority of the artifacts were stone, consisting mainly of chipped stone tools or the debris resulting from the manufacture of stone tools. The raw material used in making stone tools at the site included stone available in the immediate vicinity of the site, such as jasper, quartz, chert, and quartzite, as well as materials such as argillite, ironstone, and rhyolite that originate in regions as far away as southern New Jersey, south-central Pennsylvania, and western Maryland. Bifacially chipped tools, either projectile points, knives or partially manufactured tools, were recovered along with other forms such as unifacially worked scrapers. Three of the projectile points were of styles known to have been used during the early portion of the Woodland I. The points consisted of a small Fishtail of black chert; a stemmed point of argillite, associated with the Bare Island type; and a long-bladed, contracting stem point, also of argillite, falling into the Lackawaxen Contracting Stem or Poplar Island category (Figure 4).

Several fragments of aboriginal ceramic were also recovered. The sherds were small and heavily weathered, so that it was difficult to place them with confidence into known types. Nonetheless, the materials used as tempering agents in the paste—sand, crushed quartz, and in one case, shell—suggested that the site had been occupied during portions of both the Woodland I and II periods. A final artifact type found in most parts of the site, fire-cracked rock, was significant toward the general assessment of site

function. Heat-fractured rock typically results from the construction of hearths or from stone boiling. The presence and relative frequency of fire-cracked rock in portions of the area was an indication of fire-related activities, implying that the site had seen more than temporary use.

Morphological Type	Count	Frequency(%)
Flakes	743	60
Chips	79	6
Cores	5	<1
Bifaces	6	<1
Projectile Points	5	<1
Unifaces	3	<1
Fire-Cracked Rock	397	32
Steatite Fragments	2	<1
Ceramic Fragments	4	<1
Total	1244	

Table 3. Prehistoric Artifacts from Survey and Testing

Jasper was the most common lithic material recovered during testing, and it was obtained most frequently as pebbles and cobbles nearby stream beds. This conclusion was based on the size and shape of most of the flakes and on the presence of cortex, the weathered rind that occurs on the exterior of a stream rolled pebble. Area 1, at the top of the hill, was an exception to this general trend in that a large percentage of the jasper chipping debris recovered there consisted of relatively large jasper flakes with no cortex. These flakes appeared to have been derived from the jasper outcrops at Iron Hill, which lay a short distance north of Lums Pond. All of the jasper and other artifacts from Area 1 were recovered from the plow zone, and consequently their original contexts were not preserved. However, the material was sufficiently clustered that portions of a workshop or tool manufacturing area could be discerned.

While the plow zone was continuous across the site, below the plow zone, deposition varied depending on the terrain. In Area 2, a deep pit feature was encountered in one of the test units. The feature extended into a coarse sandy deposit at a depth of approximately 1 meter below surface grade, and had an estimated diameter at the opening of approximately 90 centimeters. The pit contained fill which was uniformly lighter in color and more silty in texture than the surrounding, natural sediment. Artifacts were recovered from the pit including a quartz biface fragment, one flake each of quartz and rhyolite, and two small fragments of fire-cracked rock. At this stage of the investigation, the function of the feature was unclear, although based on its shape and size, it appeared to have been a large storage pit.

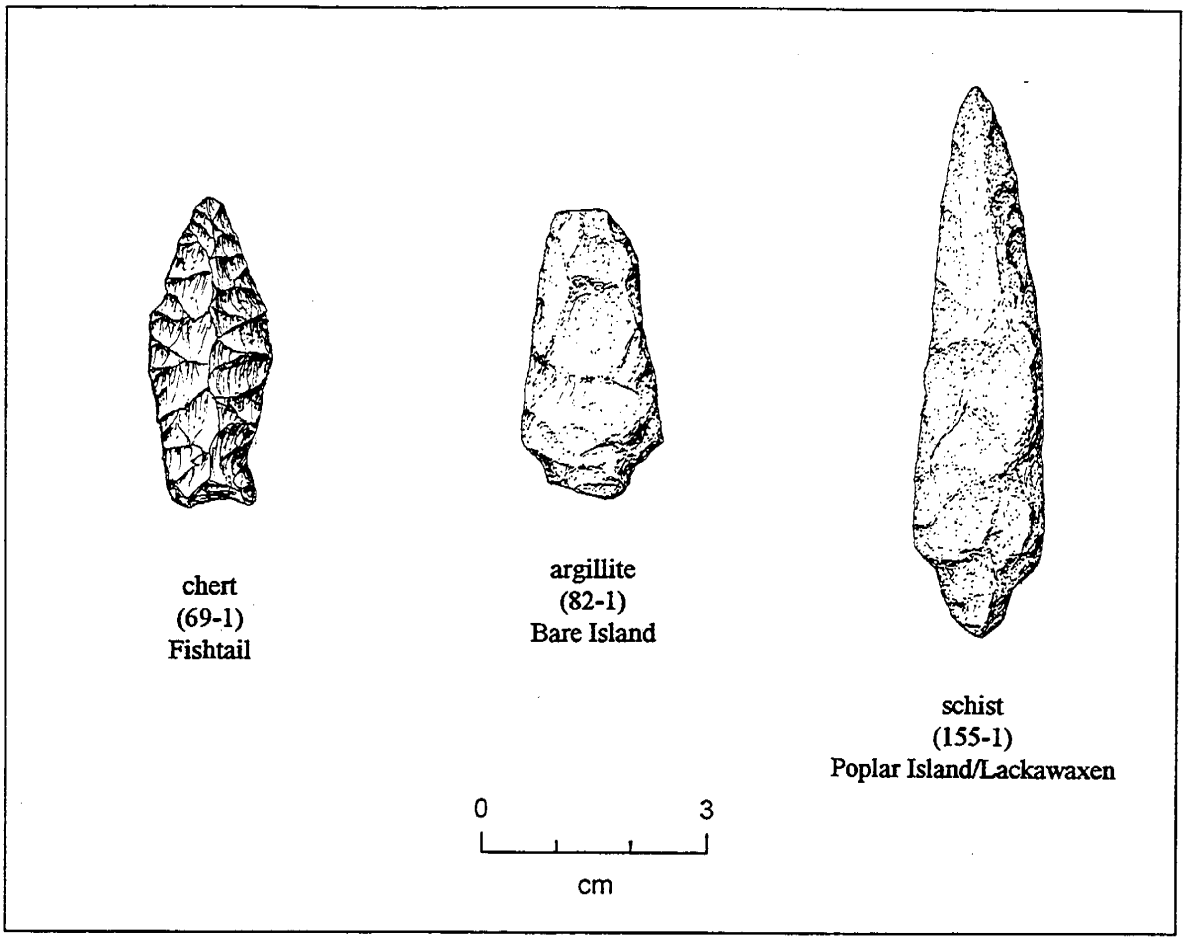

Figure 4. Projectile Points Recovered During Survey and Testing

In Area 3, in the southernmost part of the site, the plow zone lay over a second, buried surface layer. This layer was identified by heavy charcoal-staining and the presence of prehistoric artifacts. High artifact counts were recorded in shovel tests and test units in Area 3, suggesting relatively intensive prehistoric activity in that part of the site. Area 3 lay at the edge of the current active floodplain of the stream that ran east of the site. The prehistoric surfaces appeared to have been rapidly buried during one or more major floods, and so the potential for archaeological materials to lie sealed undisturbed within the flood deposits was considered high.

Evaluating the Potential Significance of the Lums Pond Site

Archaeological survey and testing investigations at Lums Pond demonstrated that both historic period and prehistoric remains were present within the area proposed for construction of the wetland mitigation site. The historic period artifacts consisted of a

thin scatter of material, neither great in overall frequency nor clustered so as to suggest the presence of unmapped structures. Instead, the artifacts were typical of the type of debris recovered from agricultural fields that have seen repeated and long-term plowing (Roberts and Barrett 1984; Delaware State Historic Preservation Office 1993:45). The artifacts were not considered to be potentially significant under National Register criteria, and thus no further archaeological investigation of the historic period component of the site was recommended.

In contrast, testing indicated that a substantial and significant amount of prehistoric material was present at the site. The findings suggested that areas along the margins of the streams south of Howell School Road had been used by prehistoric populations to obtain specific types of resources. The streams meander across relatively wide floodplains that support wetland vegetation such as vines, reeds, marsh grasses, and tuberous plants. Such an environment attracts a variety of animal life, from amphibians and reptiles to various birds and large and small mammals. These marshy areas would thus have provided an abundant and reliable resource base for the inhabitants of the region.

Chronologically diagnostic artifacts, those for which time periods are known, were recovered during testing of the Lums Pond site, and suggested that the area was used primarily during the early portions of the Woodland I period. According to current models of Archaic and Woodland period settlement in Delmarva (Custer 1989, 1994), the resource procurement locales at Lums Pond would have been relatively small and used for short periods of time as support camps associated with larger, base-camp settlements along a nearby major stream, such as St. Georges Creek.

In general, artifact counts across the site were moderate, suggesting that the area had not been heavily utilized. Relatively few temporal components were represented in the chronologically diagnostic artifacts, and thus the potential for superimposed occupations and subsequent mixing by historic period cultivation appeared to be low. Correspondingly, the potential for the recovery of data from discrete activity areas was considered high. Three main areas were discovered as centers of prehistoric activity (Figure 3), and in each case, the type of data available for study and the context in which the data were contained were different. Area 1 contained lithic debris that represented the remains of a workshop or stone tool manufacturing area. While the artifacts in Area 1 were located in plow zone levels, the occupation episode appeared to be distinct and unmixed with earlier or later material. Area 2 contained at least one pit feature that extended below the plow disturbance. A relatively large number of artifacts in the plow zone in this area indicated intensive activity and thus the potential for the discovery of other sub-plow zone features. Area 3 contained artifacts in a buried, and thus relatively

undisturbed context. Given the fact that most prehistoric sites known in Delmarva lie in cultivated fields, the discovery of prehistoric artifacts in unplowed contexts was considered very significant.

Based on these findings, the prehistoric components of the Lums Pond site were determined to be potentially eligible for nomination to the National Register of Historic Places, under Criterion d. That is, the site had the ability to yield information relative to Woodland period settlement, subsistence, and technology in the Mid-Peninsular Drainage Divide Management Unit of Delaware. Because each of the three areas contained different types of data in different contexts, three separate approaches were recommended. A detailed mitigation workplan was developed for the site in coordination with officials from DelDOT, Delaware SHPO, and the Delaware Department of Parks and Recreation. Data recovery excavations were conducted in May and June of 1995.