

# ARCHAEOLOGICAL INVESTIGATIONS AT THE

DELAWARE  
PARK SITE  
(7NC-E-41)



appendices

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## APPENDICES

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APPENDIX A

Research Proposal

An Archaeological Data Recovery Program  
At The Delaware Park Site (7NC-E-41)

Introduction

The Delaware Park Site, a multicomponent prehistoric archaeological site (Archaic and Early/Middle Woodland Periods), was discovered during a "location and identification" survey commissioned by the Department of Transportation, State of Delaware, as a part of their Delaware Route 7 Highway Improvement Project. This site was subjected to a reconnaissance survey by Mid-Atlantic Archaeological Research, Inc. of Newark, Delaware, who identified the site as an early prehistoric site and who located the rough boundaries of the cultural resource. During the reconnaissance, subsurface tests revealed the presence of several aboriginal features which had been dug into the subsoil for a depth of at least 100 centimeters, and which contained prehistoric artifacts and charcoal.

Upon recommendation from Mid-Atlantic Archaeological Research, Inc. (MAAR) the Department of Transportation (DOT) authorized an intensive survey to determine the extent and general contents of the site. This information was obtained by MAAR with the assistance and advise of the Bureau of Archaeology and Historical Preservation of the State of Delaware. With the concurrence of the State Historic Preservation Officer, the DOT submitted a request for a Determination of Eligibility to the Keeper of the National Register of Historic Places of the Heritage Conservation and Recreation Service (HCRS). The Determination of Eligibility was approved and the Advisory Council on Historic Preservation concurred with a ruling of no adverse effect with a condition.

The condition imposed upon the Department of Transportation involved the development of an acceptable mitigation plan and its implementation. The following research proposal was developed to meet the Advisory Council condition. This proposal considers the nature of the archaeological record in the project area, pertinent research problems defined for the general Mid-Atlantic Piedmont/Coastal Plain interface, and the potential for answering defined problems within the scope of the required services.

Background Information: The Delaware Park Site

7NC-E-41 is located on a knoll overlooking the White Clay Creek just upstream from its confluence with Mill Creek and the Red Clay Creek. The site is demonstrative of a continual occupation of the White Clay Creek valley. The nearby Clyde Farm property, which contains a similar span of occupation, is located within a half mile of 7NC-E-41. The Clyde Farm Site has been known to archaeologists for over seventy years and is currently listed on the National Register of Historic Places. Unlike The Delaware Site, however, the Clyde Farm has been extensively disturbed and is not known to contain an intact dense occupation area containing subsurface features.

The archaeological investigations at the Clyde Farm, which have been conducted over a period of fifteen years by various organizations and individuals, reveals an area of occupation which covers 43 acres of the Old Clyde Farm on Churchman's Marsh, an area of open water and marsh at the confluence of White Clay Creek and the Christiana River. Surface collecting done by avocational archaeologists and relic collectors have apparently resulted in the removal of thousands of finished artifacts (knives, projectile points, ground stone tools, etc.) and lithic and ceramic debris. Periods represented in the collections inspected by the MAAR research team include all but the Paleo-Indian Period of the prehistoric record. Also found in surface collections are evidences of an early European occupation (Dutch brick among other items).

The interpretation of the Clyde Farm data suggests that it was a heavily occupied base camp or series of base camps for a hunting and gathering people. The attractiveness of the site on two large tidal streams and an extensive marsh area can be pointed to: the area would have supported a relatively large and varied natural resource community. The flora and fauna native to such an area would have surely been exploited by prehistoric aboriginal peoples.

Upstream from The Delaware Park Site, at the confluence of White Clay Creek and Pike Creek is the Green Valley Site. Excavated under the auspices of the Bureau of Archaeology and Historic Preservation by a member of the MAAR research team, this site contained a widely dispersed series of Archaic Period campsites. Although intensive excavations were conducted at the Green Valley Site, no subsurface features could be found to provide contextual associations for recovered artifacts. Thus, like the Clyde Farm collection, the excavations at the Green Valley Site were unable to provide information about site function, seasonality, subsistence patterns and other significant data that would be useful to the archaeologists interested in human ecology during the early prehistoric periods of Mid-Atlantic coast occupations.

#### Known Data Categories

The Delaware Park Site is located on a ridge of Camus soil, a Holocene Period alluvium, and is adjacent to an extinct channel of the White Clay Creek. The current channel forms a horseshoe of which the center is the site. The location and identification survey and the intensive survey resulted in the gathering of surface distributional and subsurface distributional data. The site is known to contain Archaic and Early/Middle Woodland artifacts, scattered over an area measuring approximately 200 meters by 200 meters. One half of this rough square is quite low and apparently not as densely occupied. The ridge top contains a heavy concentration of subsoil features which has been estimated at one feature per eight square meters.

The intensive archaeological survey conducted by MAAR at the site indicates that features exist along the ridge top as well as for a short distance down both side slopes. Low areas were not intensively investigated and may contain similar subsurface features. A large area, mechanically stripped and flat shoveled by a MAAR field crew, contained 45 features of various types. Several excavated features were over 100 centimeters in depth, regular in outline, and

contained artifacts, charcoal and, in one case, a burnt log. Some of the feature fill revealed preserved seeds that may relate to aboriginal activity. Also excavated during the intensive survey were shallow fire hearths containing fire cracked rock. A number of the features are large amorphous stains that can not yet be interpreted.

Surface collections include artifacts of various lithic materials and as ceramics. Quartz was found in the form of numerous flakes and rejected cores, as well as in the form of bifacially flaked knives and scrapers. Brown jasper was also found in certain areas of the site. A few projectile points relate to Archaic Period occupations. Also recovered during the surface survey were ceramics of early Delaware and southeastern Pennsylvania pottery types (thick sherds with net-impressed and corded surfaces). These types probably relate to types known as Hell Island Cord-marked and Susquehanna Net-impressed.

Distributional data is available through a systematic surface recovery procedure. This data indicates that horizontal differentiation of cultural activity can be expected, a possible characteristic of intra-community specialization. Also available at the Delaware Park Site is paleoecological data concerning possible Holocene environments of Archaic aboriginals.

The basic data categories to be emphasized in the research design section of this proposal are:

- a. With the potentially tight control over provenience and context of artifacts recovered from subsurface features, it should be possible to relate artifacts within a particular temporal phase. This would allow for a definition of a cultural sequence during late Archaic and early parts of the Woodland Periods.
- b. Archaic Period sites with associations of artifacts and features are not common, and the presence of such contextual information at the Delaware Park Site will possibly allow the interpretation of functional artifact and feature categories, the delineation of site function, and possibly intra-site patterning.
- c. The features at 7NC-E-41 are known to contain floral remains and may have other indicators of natural resources available to Archaic Period site occupants (as well as those present during the Early/Middle Woodland Period). The study of prehistoric subsistence will be discussed below.

#### Proposed Research Problems

While it is recognized that the Delaware Park Site has the potential to provide pertinent data to a variety of possible research problems, the following set is proposed as part of the research design to be conducted by Mid-Atlantic Archaeological Research, Inc. These problems can be addressed within the data limitations of known categories at the site. Data recovery techniques will be used, however, which should provide for the addressing of related problems by other investigators.

## Problem: Cultural Components and Temporal Sequences

Based upon data collected at the Delaware Park Site during the intensive survey, it can be expected that occupation of the site by Late Archaic Period and by Early/Middle Woodland Period peoples occurred. While it has been obvious to archaeologists, interested in Delaware and the Delmarva Peninsula portion of the Middle Atlantic Coast, that occupation during these periods is rather wide-spread in terms of areas in which diagnostic artifacts of the Archaic and Early/Late Woodland have been found, it is also true that very little contextual and temporal data about this occupation is available. The Late Archaic has been extensively documented throughout much of the Middle Atlantic Piedmont (reference is made to investigations by W. Fred Kinsey and Barry Kent in Pennsylvania). Early/Middle Woodland Period components have been explored in the coastal plains of Delaware, as well as in Maryland and New Jersey. As a consequence of these investigations, a general understanding of the two cultural periods as well as the relationship between the two is present.

The Delaware Park Site is located very near the interface between the Piedmont and the Coastal Plain physiographic provinces (the Fall Line zone). The site contains known evidence of both the Late Archaic and the Early/Middle Woodland Periods and has the potential of providing such evidence in context. It is possible that both cultural periods in their Piedmont and their Coastal Plain manifestations are present at the Delaware Park Site.

### Hypothesis (1)

The cultural components of Late Archaic and Early/Middle Woodland Periods present at the Delaware Park Site will be represented by artifacts common to these periods in both the Piedmont and the Coastal Plain.

### Test Implications

Surface collections and feature excavations should produce diagnostic artifacts (projectile points, etc.) that have been found in Late Archaic and Early/Middle Woodland components in the Pennsylvania Piedmont and the Delaware Coastal Plain. These should include projectile points of the Piedmont Tradition (square-stemmed), ceramics of the Wolf's Neck, Hell Island and related ceramics, and by associated artifact types.

### Methods & Techniques

In order to demonstrate or refute the above hypothesis, it will be necessary to define Archaic and Early/Middle Woodland artifact types and to determine their presence or absence at the Delaware Park Site. This will necessitate typological category descriptions and the recovery of sufficient data (including projectile points and ceramics) to make an interpretation of identity of recovered

artifacts with defined types. Recovery will be done by total excavation of feature fill, sifting of soil removed from the feature, and by lab procedures designed to allow for the keying out of artifact traits leading to identification. Type descriptions will be done by utilizing defined types from the literature of pertinent investigations.

### Hypothesis (2)

The sequence of cultural components present at the Delaware Park Site will parallel those found at sites situated in similar environments (Fall line zone) in Maryland and New Jersey.

### Test Implications

The sequence of features excavated at the Delaware Park Site should contain diagnostic artifacts paralleling those from identified sequences elsewhere along the Piedmont-Coastal Plain interface. Absolute dates for the Delaware Park Site features containing diagnostic artifacts will relate systematically to those obtained from similar contextual associations in Maryland and New Jersey Piedmont-Coastal Plain sites.

### Methods & Techniques

The sequence of features must be determined by subjecting charcoal samples found within features containing diagnostic artifacts to radio-carbon dating techniques. Also useful in the establishing of temporal sequence are concerns with overlapping or intrusive features, and by utilizing geological data to aid in establishing chronological sequence. It is proposed to subject charcoal from at least 20 features to radio-carbon analysis. A consultant geologist will be available to identify deposits, establish sequences (if possible) and to recommend various soils and/or geological tests.

### Problem: Subsistence/Settlement Systems

Although the Delaware Park Site is not located directly within the fall zone but is actually within the tidal reaches of the White Clay Creek, it is situated at the point where Mill Creek valley empties into the vast Coastal Plain. This is an interface location that may have been traversed and occupied by aboriginal peoples, utilizing both environments for resource procurement and settlement. The site function of 7NC-E-41 is therefore a problem which relates to subsistence/settlement systems of both the Piedmont and the Coastal Plain.

Aboriginal subsistence and settlement patterns have been the subject of a rather extensive investigation by archaeologists working in Delaware's coastal plain (reference work by Thomas, Griffith, Wise and Artusy, 1975). These investigations resulted in the construction of models that have been tested in the coastal plain. Similar subsistence/settlement models have been developed in the Piedmont regions of Maryland and New Jersey. None, as far as is known, have been adequately tested, however. Furthermore, very little work has actually been conducted in areas along the Fall Line.

The determination of site function, i.e. the part played by the Delaware Park Site in a particular system, must be ascertained through a study of the artifact and feature functions, and through an investigation of the natural resource base exploited by the aboriginal occupants of the site during both the Archaic and the Early/Middle Woodland Periods. The total exploitive pattern can be only understood through a study of sites exhibiting different functions in areas of different environments and natural resource distributions. Nevertheless, the study of the Delaware Park Site can form the basis for such a comprehensive investigation.

#### Hypothesis

The Delaware Park Site, situated at the mouth of a valley and near the mid-point of the White Clay Creek, should contain evidence of the exploitation of riverine resources on a seasonal basis (spring).

#### Test Implications

Feature fill should contain evidence of fish scales if preservation allows these to be present. Data recovery techniques should be used to assure the recovery of any fish scales present. Also present at the site on the surface and in the features should be large amounts of fire cracked rocks in concentrated areas.

#### Methods & Techniques

Feature fill should be subjected to flotation techniques in order to recover fish scales and small fish bones that may be present, either unmodified or charred. The surface zones should be examined and any evidence of cultural activity should be recorded. This includes all pieces of fire cracked rock. Chemical tests should be applied to soil samples from selected areas to determine if any heavy organic concentrate can be found.

#### Hypothesis

During the summer occupation of the Delaware Park Site exploitation of natural flora should have been practiced. This subsistence practice would not present a conflict of scheduling with the riverine resources exploitation pattern.

### Test Implications

Summer floral resources exploited by aboriginal peoples include seeds and young sprouts. Evidences of these items should be found in subsurface features used during the period of plant exploitation.

### Methods & Techniques

Flotation of feature fill samples must be applied in order to recover seed and charred plant materials.

### Hypothesis

Economic groups exploiting a wide range of micro-environments and ranging over a variety of geographical areas should carry with them from camp to camp materials obtained in previously occupied areas.

### Test Implications

Due to the lack of lithic resources in the vicinity of the Delaware Park Site, it can be expected that materials will have been carried from previous camp locations if this material was available at that location. It is postulated that the season of occupation at 7NC-E-41 was in the spring, and that winter quarters for Late Archaic and Early Woodland peoples was in the uplands to the north. Consequently, it can be expected that lithic materials utilized and lost at 7NC-E-41 will have been derived from the Delaware and Pennsylvania Piedmont.

### Methods & Techniques

The most dependable method of identifying lithic materials is through trace element analysis. It is proposed that samples of lithics, excavated from the Delaware Park Site, be subjected to Atomic Absorption Analysis in order to identify the characteristic trace elements. These will then be compared with control specimens from known aboriginal workshops in the Piedmont region.

## DISCUSSION

In general, a research design should address specific problems defined by the investigator and pertinent to the scientific climate of the particular field of investigation. The above problems, which revolve about chronology and human economy, are certainly pertinent to the general paradigm current in archaeology in North America. Nevertheless, since archaeological field investigations are generally destructive of data, it is always necessary for the archaeologist to strive for "total recovery". The archaeological strategy employed in the proposed study is to address certain research problems while attempting to recover data that might be pertinent to problems of other investigators. The concern is reflected in the discussion to follow of general field research tasks and processes to be followed in the laboratory.

## Specific Research Tasks

### Task 1: Background Investigations

Task 1 will consist of the preparation of a detailed research plan based on the research design and discussion of research problems. The plan will be a "blueprint for action" to be followed as close as possible by the research team. Task 1 will be completed and approved by the DOT review team prior to the initiation of Task 4, as outlined below.

### Task 2: Logistics

#### A. Selection and Counseling of Research Team

During this task the research team will be selected. The members will be counseled as to procedures to be followed during the project. All team members will be provided with a copy of the research plan developed during Task 1 and will be expected to become familiar with it.

#### B. Establishing of Research Facilities

This task will include the preparation of temporary field headquarters in the facilities of MAAR. Also to be prepared are the necessary laboratory, processing area, and storage facilities.

#### C. Acquisition of Field Equipment and Materials

All necessary field tools, supplies and special equipment will be acquired during Task 2. This will include necessary site covering and utility services.

#### D. Project Planning

This task will also consist of the scheduling of specific research activities and the coordination of personnel, equipment and contractual services. Included in this task are the renting and/or leasing of excavation equipment, the arranging for photographic services, and other essential planning as noted below.

### Task 3: Subsurface Exposure & Feature Identification

#### A. Identification of Project Limits

Research personnel will meet with Department of Transportation engineers for the purpose of determining, in the field, the exact project limits and to key in field stations to project design plans. Permanent survey markers will be established.

B. Establishment of Site Grid and Project Map

This task involves the surveying of a metric grid system to be used to record excavation data. A project base map will be developed by the research team from plans provided by DOT.

C. Mechanical Stripping of Top Soil

A Gradall will be provided (with skilled operator) to remove, in scheduled phases, the top soil strata from the project area. This operation will be phased depending on weather conditions and the rate of flat shoveling achieved by the field crew.

All top soil removed from the project area will be trucked to a designated stockpiling area within the construction limits and the project bounds. MAAR will not be required to "backfill" the site. DOT will provide any permits required.

D. Flat Shoveling - Field Crew

This phase of the field work will be initiated when machine operations have been completed in a given area and will be continued until all areas have been "dressed down". The purpose of this task is to identify subsurface features. All such evidence of human activity will be recorded for further investigation. Flat shovelers will be assisted by the front-end loader, which will remove soil to an inactive area of the site.

E. Recording of Data

A recording team shall be established whose purpose is to accurately and efficiently record evidences of human activity in the project area. Field excavators will inform the recorders when such evidence is uncovered. The recording team will be responsible for mapping, photography, cataloging features and artifacts in the field, bagging and removal of data from the field to the lab facilities.

F. Temporary Conservation Measures

All features uncovered during mechanical stripping and flat shoveling shall, after proper recording, be covered with transparent plastic sheeting and, when appropriate, straw or dirt, until they can be scheduled for further examination.

#### Task 4: Excavation of Features

##### A. Section Excavation

This step of Task 4 will involve the selection of a "section" of each feature for exploratory excavation. The selected section will be mapped on a unit/feature record form and oriented to take advantage of lighting conditions at the site. Excavation will proceed by carefully removing feature fill by physical strata and/or subfeature. Intrusive features will be considered as separate entities. Each strata will be separately screened and all artifacts will be retained and numbered according to the identified strata or subfeature.

These section excavations will be conducted by small hand tools. Items found within each strata will be photographed as thought appropriate by supervisory personnel.

Following the identification of feature strata and/or subfeatures within the selected section and the removal of all fill from that section, a procedure will be initiated to collect soil and/or charcoal samples from the remaining part of the feature. All soil removed from this second section will be subjected to flotation. Large samples of the flotated soil will be retained for further analysis. Charcoal from this section will be used in radio-carbon analysis, and seed collection will be emphasized.

##### B. Phosphorus Testing

Samples of surface fill from selected features will be tested for phosphorus. Attempts will be made to determine if the phosphorus content of a feature will facilitate its identification.

##### C. Recording

The recording team will be responsible for all field drawings, photographs, and other records of excavated features. The team will coordinate with excavators at all times.

#### Task 5: Data Processing

This task will consist of the processing of all data recovered from the investigation, including Field notes, photographs, drawings, and artifacts - both finished tools and manufacturing and domestic debris. This data will be cataloged, described, and graphics will be prepared showing category identifications, frequencies and site distribution. Data will be presented for use in the publication or for project files.

Artifacts will be washed and numbered and, after inventorying, will be placed in storage containers suitable for transport and temporary storage. This inventory will be complete and will reference pertinent identifying data.

Field photographs will be printed and/or developed as is standard procedure in the archaeological profession. Each photo will be identified as to date of exposure and exact provenience. A short description of each photo will be attached. Field drawings will be recopied, if necessary, to assure their readability.

Data to be processed under various contractual services will be submitted to qualified persons according to task needed. Laboratory tests will be sent to acceptable DOT organizations or persons.  
readability.

Radio-carbon Dating - it is proposed to submit at least 20 samples to a qualified radio-carbon laboratory. Geochron, Inc. will be used if possible. The objective is to order features chronologically.

Seed Identification - seeds recovered from feature excavations, with char-plant stalks, etc. should be prepared for analysis by University of Delaware personnel.

Soil Testing - soil samples from features, together with some control samples, will be submitted for phosphorus, calcium, and Ph tests, as well as others considered useful for identification of features and feature function or contents.

Lithic Trace Element Identification - selected lithic samples will be subjected to Atomic Absorption Analysis at a qualified lab.

Geological Data Interpretation - consultant services will be obtained to be present on site, periodically, as required from a qualified Geologist. This consultant will also be involved in analysis of soil samples and the decisions as to what samples to take and to analyze.

#### Task 6: Report

This task will consist of the preparation of a project report according to standards of the Interagency Archaeological Services agency and to the requirements of the DOT. The task will be accomplished both in the field (prior to the close of field work) and in the office facilities, labs, etc. The report will be both descriptive and interpretative, and will attempt to contain information on procedure as well as on the results of the study.

At the completion of a draft final report a review session will be held with the Bureau of Archaeology and Historic Preservation review team. The team will review and submit requests for modification, if any. The final project report will be submitted within 30 days of the receiving of review comments.

## Work Schedule

It is understood that authorization to proceed by December 1, 1979, will be sought and that the field operations are to continue throughout the winter months. It is accepted that all field operations will be completed by the end of June, 1980.

Schedules are flexible because of uncertainties due to weather problems that may occur. It is anticipated that a crew of eight will be employed for the duration of the project. This will be modified as needed to meet schedules (more crew will be employed in case of work lag or stoppage due to weather conditions). An outline of the personnel is included in the budget and the following describes the position to be used, and their qualifications and/or duties.