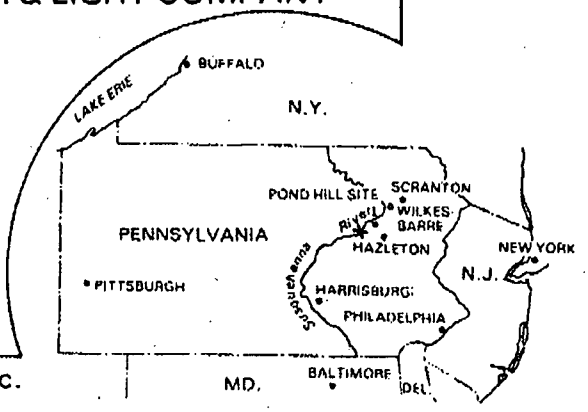
MANAGEMENT SUMMARY

Archeological Investigations at the Susquehanna Steam Electric Station

PENNSYLVANIA POWER & LIGHT COMPANY



*THE SUSQUEHANNA SES FLOODPLAIN

Commonwealth Associates Inc.
R-2282B

MANAGEMENT SUMMARY:

ARCHEOLOGICAL INVESTIGATIONS AT THE SUSQUEHANNA STEAM ELECTRIC STATION: THE SUSQUEHANNA SES FLOODPLAIN

R-2282B

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March 26, 1981

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Combined to 1 page

INTRODUCTION

Investigations of the cultural resources along the Susquehanna Steam Electric Station (SES) were initiated in June 1980. Fieldwork included archeological survey, excavation and geoarcheological deep testing. Field operations proceeded for a six week period and were followed by analysis and write-up phases. Results of the field and analytical studies are summarized in the present Management Summary. A more detailed account of the survey, excavation and geoarcheological testing is contained in the technical report. Evaluation of the significance of the cultural resources and recommendations for their preservation were determined on the basis of the testing and site assessments detailed in that document.

The focus of the work conducted by Commonwealth Associates was on the prehistoric archeology of the tracts under investigation, and on the identification of the prehistoric environment. The focus on the environment reflects prevalent archeological thinking attributing the story of man's interaction with his changing habitat as a chronicle of cultural development through time. The methods and approaches of environmental archeology have generated successful research strategies in prehistory over the past 20 years. The location of the archeological study area, along the alluvial plain of the Susquehanna, provides an optimal setting for utilizing the environmental approach in the present work. Specifically, the techniques of geoarcheology

were found to be especially helpful in identifying both the nature of environmental change along the floodplain and the processes of archeological site formation. Recognizing the different types, distributions, and concentrations of artifacts was prerequisite to establishing criteria for site determination. Geoarcheological methods enabled investigators to infer what settings were most likely to contain archeological materials.

The present report is an overview of the research concerned, and outlines the methods applied in the archeological work and the general results of the research. The tables and figures record major cultural components and stratigraphic sequences documented at key locations. Primary archeological and geological observations along the SES floodplain are summarized and integrated, first on a local scale (i.e., within the general project area) and second, within the greater framework of the late Quaternary sequence and Pennsylvania prehistory. The major concern of this report is a series of site-by-site evaluations of the cultural resources present. Plates 1-5 illustrate representative artifacts recovered from the sites. Recommendations of procedures to be followed for site preservation are offered when applicable.

FIELD METHODOLOGY

The project area was systematically searched on foot by Commonwealth personnel using two methods of investigation:

surface walkover or shovel testing. Crew members transected the survey area spaced approximately 30 meters apart, scrutinizing the surface for archeological evidence. Where ground visibility was exceptionally good, such as in cultivated areas, crew members were spaced approximately 10 meters apart to allow for a more adequate investigation. Dense vegetation cover obliterated much of the survey area, however, and in this case a shovel probe strategy was employed. This entailed digging an approximate 30 cm^3 test hole every 30 meters along the transects. The contents were then separated and thoroughly examined by trowelling for both cultural evidence and anomalies in soil composition.

Transects were conducted along arbitrary directions designated to allow for maximum efficiency. This included following crop rows, bypassing standing water, and following watercourses. Local landmarks provided easily defined boundaries. Special attention was given ridge tops, terraces, drainages and other favorable habitation sites where there was a greater likelihood that archeological evidence would be found due to selective environmental utilization. Erosional features and impacted areas disturbed by landscaping activities, such as drainage ditches, were also given special attention.

Any locus of surface artifacts or subsurface shovel test finds located during the initial survey was flagged, noted

on a regional map and given a preliminary site number. Following the completion of the survey, each tentative "site" was more thoroughly investigated.

Criteria established by the Pennsylvania Historical and Museum Commission were used to evaluate each locus. Single artifacts found in areas where no other artifacts occur were designated as "isolated finds." Two or more artifacts found in close proximity of each other constituted a "site."

Following the location of a site, two methods were employed to determine its horizontal dimensions. These included either intensive surface survey where ground visibility was favorable, or systematic shovel testing at intervals along transects radiating from a datum stake which was arbitrarily planted within estimated site boundaries. The establishment of definite site boundaries was necessary to determine the presence of smaller site units. Inversely, following detailed investigation, several of the tentative sites originally discovered were incorporated into a single cultural unit. These transects were usually directed along the cardinal directions. Sharp decreases in artifact density determined boundary points.

Once the site dimensions were adequately determined, a relevant sampling strategy could be designed and then applied.

Small sites with very light artifact scatters underwent complete collection. Larger sites that exhibited the potential for statistical treatment were subjected to a more systematic collection procedure. Two meter diameter circular units were completely surface collected and a 30 cm^3 test hole was sunk within each unit. Distance and bearing from the datum of these units were chosen randomly. Additionally, selective collection of diagnostic and unusual artifacts was also done at each site. All artifacts were bagged according to provenience.

Site survey forms were completed at each site as part of the investigation procedure. Noted on these forms were pertinent environmental factors concerning vegetation, topography, exposure, soils, drainage, slope and water source. Research procedures, site integrity, legal locations and general observations were also annotated.

On the basis of this preliminary site analysis, it was decided which sites warranted test excavation, where these units would be placed within the site boundaries, and their number and horizontal dimension. Criteria for selecting test unit locations included relative artifact density, which was determined during preliminary testing, and the physiographic locale. Attempts were made to choose areas least affected by recent agriculture and landscaping activities. Number and size of the test units were decided by the site's estimated potential along with time and personnel considerations.

After staking out a 1.00 x 1.00 m or 1.00 x 2.00 m unit oriented along cardinal directions, the unit was surface collected. Then, beginning with the plow zone, and continuing by subsequent 10 cm arbitrary levels, the unit was reduced until at least a sterile 10 cm level was encountered. Occasionally, the test unit was subdivided to facilitate expedient deeper testing. All material was dry screened through 1/4 inch hardware cloth, and cultural evidence was noted on appropriate test excavation forms. Features were measured and sketched, artifacts were bagged and when possible charcoal samples were collected. Soil color and texture was also noted, and the test unit was photographed.

The mapping strategy applied during this survey consisted of two phases: a preliminary estimation of site locality and a later coordination with established control points. First, sites were roughly plotted on field maps by the observer, utilizing local topographic features and project landmarks such as tree lines, roads, watercourses, etc. Relative distances were paced and then converted to meters, and bearings were shot with a hand held brunton compass from an arbitrary point of reference, usually the site datum. To aid later investigation, sketch maps were frequently drawn of the locale.

Following the preliminary survey, a transit was used to record all site datums relative to one of two benchmarks established at the project area. Following this, all test units and trenches associated with each individual site were recorded relative to datum. Elevations were computed and each site was later plotted on a master project map.

During the course of field investigation, interviews were conducted with people known to have some experience with the local archeology. These included several collectors, two of whom are employed at the survey location. They provided specific information relating to several of the sites inventoried. This proved especially useful because borrowing activities had previously destroyed a substantial portion of one such site. More general information concerning the survey area was gathered from several landscaping contractors and a local landowner. Amateur archeologists with large collections from along the river valley were also consulted.

Permission was requested to use the name and materials of the person interviewed, and usually their collection was photographed. On occasion, a tape recording was made of the interview. Most of the questions asked dealt with the locations of sites they had visited and their collection procedures.

Following the completion of fieldwork, all lithic and ceramic materials, carbon and soil samples were sent to the Commonwealth Associates' laboratory for further analysis.

Lithic and ceramic materials were washed, identified according to material type, function and typology, sorted by site and excavation level and then assigned temporary catalogue numbers.

Carbon and soil samples were sent to appropriate laboratories. C^{14} dating techniques were employed to determine relative dates and selective soils underwent particle size analysis.

Geoarcheological investigations conducted at the study areas were geared toward both reconstructing the succession of local prehistoric environments and identifying those sedimentary processes responsible for the natural and cultural sequences along the floodplain. It was necessary to explain the natural disposition of cultural materials and to identify why particular artifacts, or other types of cultural residues are dispersed as they are. This is very difficult to accomplish in practice since an unlimited combination of subsurface and post-occupational processes often alter the archeological record to an undiscernible jumble. Traditionally, the control mechanisms for archeologists and geologists alike have been monitoring the subsurface or stratigraphic record.

The geoarcheological investigations identified stratigraphic relations at sites and generally revealed the order and sequence of succession. Outlining the floodplain sequence provided a general background for understanding the basis for sustained versus intermittent prehistoric occupation in this location. Such a study involved examination of contemporary geomorphic process and long term geomorphic activities that fashioned, degraded, and stabilized the former landscape, in this case the floodplain. It was possible to isolate unnaturally disturbed - i.e., cultural-sedimentary-matrices - given a careful reconstruction of local stratigraphy based on sampling and correlation of stratigraphic units. This was the strategy adopted at the SES location.

In summary, the geoarcheological subsurface testing program attempted to, first, outline the local alluvial succession paralleling the archeological succession and, second, to determine to what degree and intensity utilization of the floodplain by prehistoric groups could be documented.

LOCATION AND GEOGRAPHIC SETTING

The SES site is situated along the Susquehanna River floodplain in Salem Township, Luzerne County, Pennsylvania. The floodplain reaches its widest extent at the site location and is directly east of U.S. 11 and 5 miles east-northeast of the borough

of Berwick, Pennsylvania. The study area covers a longitudinal strip of about 2.5 miles and width of one-fifth to 1.5 miles. The site location and accessibility is shown in Figure 1.

Locally, the project area is situated within the basin of the North Branch of the Susquehanna which follows a north-south course in the immediate vicinity before winding west and southwestward around Bell Bend and towards Berwick (Figure 1 and 2). The drainage network is closely linked to structural features of the basin. The North Branch enters the project area by flowing along a southeasterly course from New York State to the Wyoming Valley where it breaks through the rimming mountains and bends southwestward. Above the valley, flow is transverse to the structure, while in the Valley, it follows the strike. At Nanticoke the River is deflected to the northwest, cuts across a structural ridge (Pottsville) and then flows along a narrow shale valley to the southwest.

FIELD OPERATIONS

[redacted] At that

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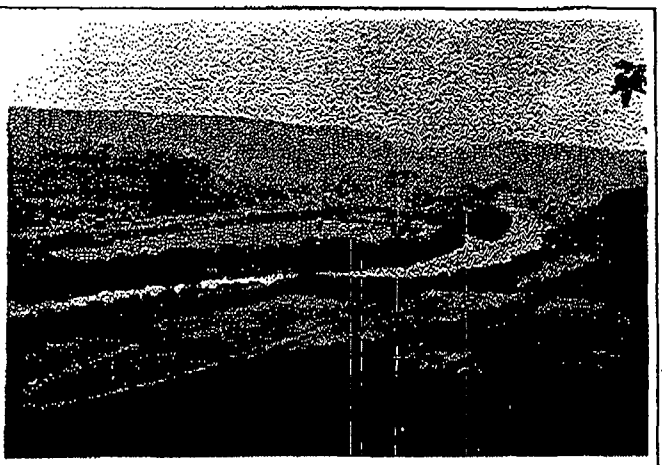

a. Panoramic overview from Council Cup promontory.

b. Aerial view.

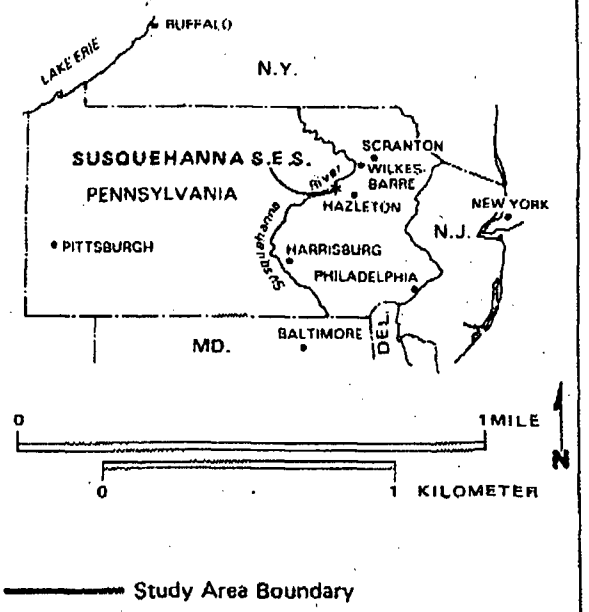

FIGURE 2

THE S.E.S. FLOODPLAIN GEO-ARCHEOLOGICAL TESTING AREA

SUSQUEHANNA S.E.S.

Archeological Investigations At The Susquehanna S.E.S. Floodplain

juncture is abuts steep-sided Woodfordian-age frontal kames and outwash terraces. The substantial build-up of the post-glacial Holocene floodplain at this meander of the Susquehanna suggested that a systematic deep-testing program of the alluvial deposits might provide valuable stratigraphic controls for both dating the archeological materials and outlining the ancient floodplain settings in which the prehistoric groups subsisted. The necessity for conducting subsurface investigations was obviated by formerly reported finds of Late Archaic, Woodland and Transitional components that lacked provenance and geo-archeological context. The deep-tests served to complement the controlled excavation strategy applied by the CAI archeologists in determining the potential for encountering deeply buried sites. The aim of this particular phase of the field investigations was to provide as intensive and extensive a view of localized floodplain sedimentation at what appeared to be one of the potentially diagnostic archeological areas along the Middle Susquehanna.

The trenches were placed at strategic locations [redacted] determined on the basis of soil, sediment and land-form associations with documented artifact clusters. Artifact concentrations of high density were designated by numbered SES units and excavated in accordance with the procedures outlined earlier. The disposition of the artifacts and their frequency of occurrence in distinctive strata provided indications of

prospective trenching areas. This information when considered in conjunction with particular landform configurations was responsible for the design of the test-trench transects and division of the research tract into component testing units as illustrated in Figure 3. Transect A-B runs slightly northwest-southeast longitudinally parallel to the floodplain. In each of the three study areas - southern, central and northern - transverse segments cross-cutting the floodplain provide stratigraphic sections from major test trenches (also referred to as "STTs") and SES locations (archeological and excavation units) to the riverbank. [redacted] It has been estimated by PP&L, that up to 2 meters (6 feet) of topsoil and overburden have been removed over the past five years in the course of the relandscaping operation. The post-survey assessment is that archeological sites along the SES had the highest propensity of occurring in these presently nonextant soil/sedimentary units. At least one well documented and rich archeological site has been largely destroyed by bulldozing activities as far west as the access road south of the

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Ichthyological Associates headquarters. Only the eastern remnant of this site survives and was designated SES-5 when rediscovered by the CAI archeological team.

The western extent of the field operation was therefore limited to those portions of the tract, lying primarily to the east, that remained largely intact at the time the work was conducted. Select agricultural areas that yielded archeological materials were trenched at specific locales mutually agreed upon by PP&L, CAI and farmer Drew Chapin, to whom PP&L leased a portion of the floodplain.

While the entire SES tract was thoroughly surveyed and tested, decisions on where to place particular trenches were made on the basis of the scientific and logistical considerations outlined above, as well as accessibility. Only two SES locations, 1 and 9, were not deep-trenched, as artifact yield was minimal and their backswamp provenances mitigated against a high archeological potential. In this regard, however, it is emphasized that since a mosaic of habitats characterizes the general floodplain setting, placement of particular trenches was directed towards articulating particular microenvironmental variables that pointed to locational preferences of those prehistoric groups that

exploited the Middle Susquehanna. [redacted]

Field survey and excavation began on June 9, 1980, while deep testing operations were initiated on June 24, 1980, once all SES locations were mapped and the trenching transect was established. A backhoe with front-end loader was subcontracted from Clare Hock, Inc., of Bloomsburg, Pennsylvania. Between June 24 and July 2 the deep trench stratigraphic profiles were studied, sampled (for soil and sediments, and archeological materials), photographed, and drawn . Concurrently, excavation units were taken down to depth as determined by the CAI team. Trenches measured 1 m by 5 m and were dug up to c. 2.5 meters (7.5 feet) depending on stratigraphic significance and correlation potential. The substance of individual trench accounts reflects both their relative stratigraphic significance at particular locales and archeological potential for revealing the more extensive patterns of occupation and sedimentary succession. Figure 3 shows the location of the deep test trenches and excavation units that were dug and studied over the course of the 1980 field season.

Southern Study Area

[redacted] The floodplain soils are either the typically well drained silt loams of the Pope series or the wetland silty-clays of the Holly series that display seasonally high water tables and become increasingly dominant in the backwater areas [redacted]. Deep testing was confined to the northern edge of the study area in the vicinity of SES site-testing Units 2, 3, 4, and 5. This portion of the study area provided mainly geological information, specifically, the isolation of the stratigraphic boundary between Pleistocene and Holocene floodplain deposits.

In particular excavations at STT-3 (Figure 3) rounded out the stratigraphic testing program in the southern portion of the study area and filled in chronological gaps in the sedimentation record. Chronostratigraphic controls were provided by the unconformable surface of the Woodfordian-age gravels and sands and the plow zone association of the Late Archaic assemblage. The cultural materials assume added significance since first, their fresh condition and diagnostic spatio-temporal affinities indicated that they had been minimally dispersed subsequent to site utilization and, second, their stratigraphic context is readily correlated with the natural sedimentary units.

Textural similarities between the occupational stratum and the underlying natural unit show that the Late Archaic is equivalent to a sustained Holocene interval of floodplain aggradation.

Central Study Area

[redacted] The area has been intermittently farmed since the turn of the century, as evidenced by irregular furrow patterns and the presence of buried plow zones exposed in the course of subsurface testing. The deep testing program focused on two major east-west transects, labelled C-D and E-F, (see Figure 3) the placements of which coincide with both archeologically substantial concentrations and a high potential for establishing subsurface stratigraphic correlation.

Vegetation cover is considerably more open in this vicinity than in the southern area, although the immediate topography is more differentiated. The floodplain landscape is very mildly undulating consisting of gentle, longitudinally oriented rises and depressions reminiscent of a subdued ridge-swale setting. In fact, the east-west transects were designed to investigate the overall floodplain configurations along this portion of the river since the aerial photographs suggested a distinctive alignment of long and narrow troughs and peaks that roughly parallel the course of the river.

Transect C-D (see Figure 4) runs northwest-southeast across trenches STT 4, 5, 6 [redacted]. It should be noted that the transect begins at the edge of another disturbed area, where earth has been very recently removed for construction of the recreation facilities. Examination of maps and records at the Wm. Penn Museum, Harrisburg, Pennsylvania, showed that this operation probably impacted Site 36Lu16 ("Golomb" site) formerly reported by Smith and Remaley. Test excavations have also been reported at this locality by Solenberger (1980 communication to U.S.N.R.C.) which disclosed the presence of Late Archaic materials. Cultural components recorded at the location, including a high proportion of Brewerton and Lamoka materials, indicate an affinity with Site 36Lu15. Interviews with PP&L personnel as well as CAI's reconnaissance and the initial site report, however, show that the destruction of 36Lu16 occurred between 1967 and 1978, prior to installation of the Riverlands Transmission line. In any case it was decided that deep testing of the location would be of minimal utility so that operations began immediately east of it. Geomorphologically, transect C-D is situated on the inside bend of the Susquehanna, a significant depositional locus, as discussed in a subsequent section.

In general, the transect C-D cut across three diagnostic floodplain landforms at STT-4, 5, and 6, representing the levee, channel, and flood basin respectively.

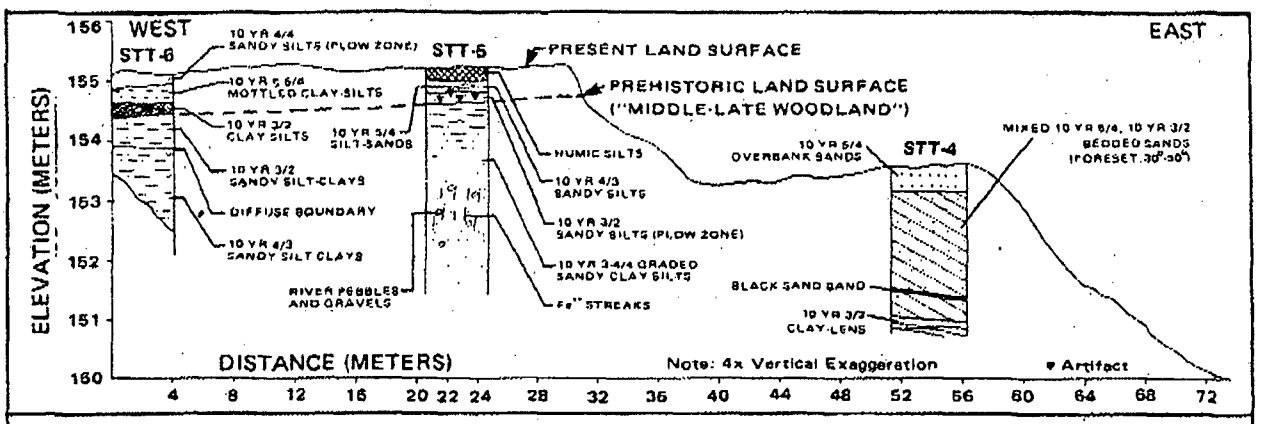

FIGURE 4

TRANSECT C-D ACROSS CENTRAL AREA – STT 4 · STT 5 · STT 6

SUSQUEHANNA S.E.S.

Archeological Investigations At The Susquehanna S.E.S. Floodplain

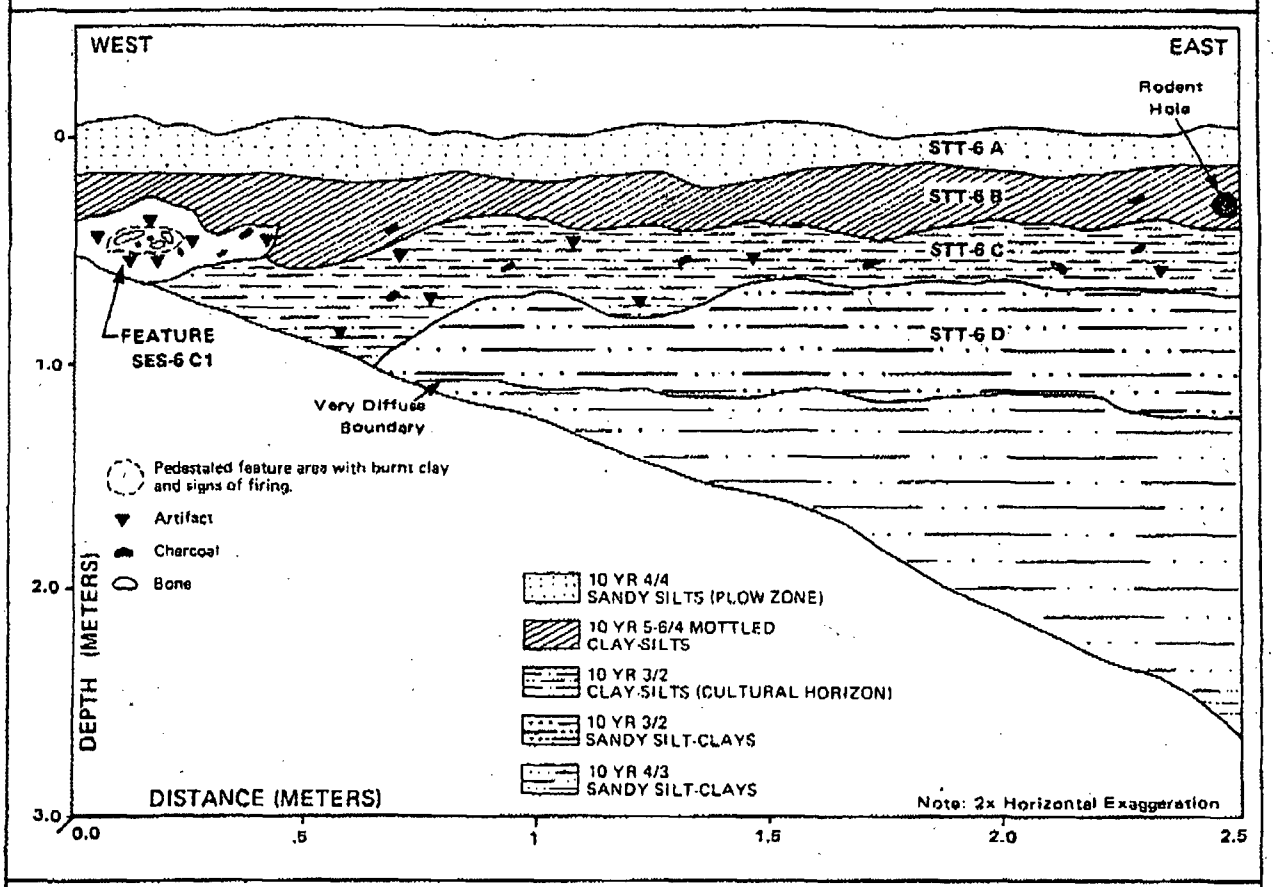

FIGURE 5

DETAILED SECTION – STT 6 (NORTH FACE)

SUSQUEHANNA S.E.S.

Archeological Investigations At The Susquehanna S.E.S. Floodplain

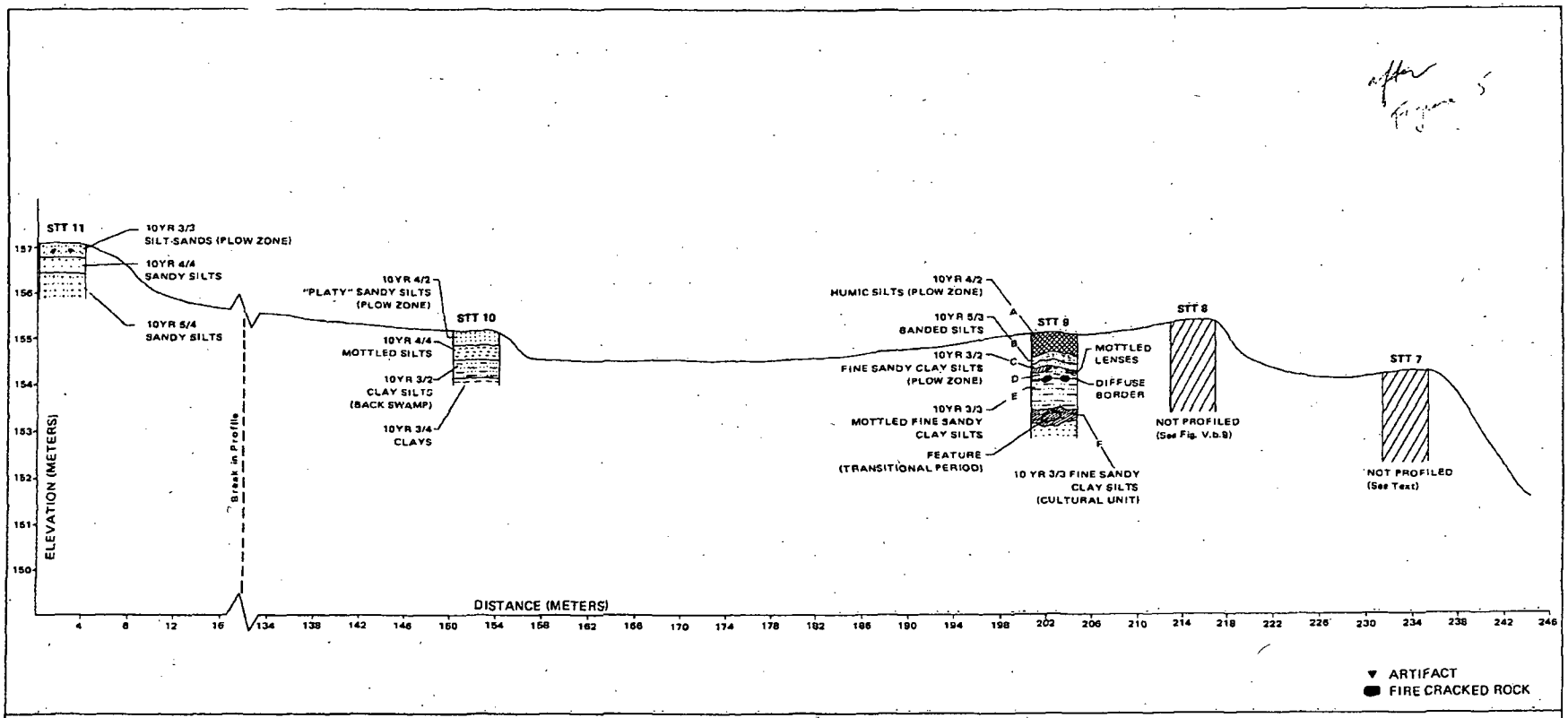

FIGURE 6

TRANSECT E-F ACROSS CENTRAL AREA –
STT 7 · STT 8 · STT 9 · STT 10 · STT 11

SUSQUEHANNA S.E.S.
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Features encountered at STT-6 and SES-6 were discernible in the profiles, and components of the features included fragments of charcoal and bone as well as freshly flaked and retouched pieces of argillite that appeared to be associated with the same assemblage. Burnt clay and other indications of firing distinguished feature matrices. Stratigraphic relations suggested that features document Middle/Late Woodland occupations in this area. Preservation of the faunal material was poor and the bone was too fragmentary to permit precise identification of species, though the gross morphology suggested a possible avian form. Insufficient charcoal survived for dating purposes. Figure 5 illustrates the stratigraphic position and relations of FEATURE SES-6C1.

Transect E-F (Figure 6) is broadly west to east and also traverses a heavily disturbed area. [redacted] Site SES-7 may actually represent a remnant portion of a site tested and excavated by a crew from the Wm. Penn Museum in the summer of 1978 (B. Kent, Pennsylvania State Archeologist personal comm). [redacted]

[redacted] The spatial distribution of the trenches is shown in Figure 3 and lateral extent of the transect and profiles are presented in Figure 4.

Transect E-F (Figure 6) provides a representative picture of the differentiated floodplain environment and its utility as a focus for prehistoric activity. The exposures in the floodplain basin locales at STT-8 and 9 document former slackwater environments that constituted aquatic habitats and were clearly attractive to aboriginal groups of the Transitional culture. This type of microenvironmental niche extended to STT-11. At STT-11 the ridge location, provided a high and dry setting suitable perhaps for more sustained life and activity and ideal for a base camp location.

Northern Study Area

Test trenches STT-12-17 were placed at various locations in the northern area [redacted]. Topographically the tract reveals the same subdued ridge and swale relief noted for the central area. Archeologically five excavation units were dug here, but none of them disclosed any major cultural

features or *in situ* occupations; the locations were designated SES-10-14. One previously recorded site is contained within the study limits and was reported to the William Penn Museum as the "Waznach site," 36Lu17, in 1967 by Remaley. His account relates the presence of Archaic Lamoka and Brewerton components as well as minor Transitional and aceramic Late Woodland components. The site area was relocated and excavation Unit SES-13 and test trench STT-17 (see Figure 3) were centered in the vicinity.

Most of the land in the tract is agricultural and was in crop (potatoes and corn) at the time of the study. Survey conditions were therefore optimized, as the crew was able to walk between the furrows and investigate a relatively well exposed territory. Lack of rain did inhibit visibility for the archeological crew, as well as bias some of the geological observations, since the baked nature of the plowed sediments lent a uniform appearance to most of the surficial deposits. The deep testing program here attempted not only to supplement the subsurface archeological work, but to articulate patterns of soil distribution and topographic interrelationships. Not surprisingly, no major inconsistencies or stratigraphic discontinuities with the lower portion of the floodplain were isolated. [redacted]

[redacted] No cultural materials were recovered at STT-12 or 13, however, and correlations are largely speculative and based on field relations. For this reason detailed stratigraphic sections are not presented here. [redacted]

SYNTHETIC OVERVIEW

The combined prehistoric and geoarcheological findings reported in the previous chapter have contributed to a more synthetic understanding of the interaction of prehistoric groups with changing environments. In the present study, the index of changing environment was the dynamic development of the floodplain through time. This chapter assesses the contexts of the major prehistoric finds along the 1.5 mile stretch of the west bank of the Susquehanna and correlates their distributions with particular floodplain features.

Major archeological sites are listed below, along with their primary cultural components and record of discovery.

Archeological Site	Cultural Components	Source
SES-3(36Lu15)	Late Archaic	Smith & Remaley, 1967; CAI, 1981
SES-6(36Lu16)	Middle/Late Woodland	Smith & Remaley, 1967; Solenberger, 1980; CAI, 1981
SES-8(36Lu49)	Late Archaic-Transitional-Historic	CAI, 1981
SES-10(36Lu50)	Late Archaic	CAI, 1981
SES-11(36Lu51)	Late Woodland	CAI, 1981
SES-13(36Lu17)	Late Archaic-Transitional	Remaley, 1967; CAI, 1981
SES-14(36Lu52)	??	CAI, 1981
SES-15(36Lu53)	??	CAI, 1981 (Pond Hill Report)
SES-16(36Lu48)	Historic	CAI, 1981

Omitted from the list of archeological sites are locations formerly referred to as "isolated finds" (see Technical Report, Table V.a.1) since the contexts of such artifacts are uncertain and do not constitute evidence for in situ presence of man. In particular test trench and excavation units located between STT-1 to STT-6 featured major archeological concentrations contained in upper sediments. Overbanking of sands, silts and mud typified floodplain sedimentation along the Middle Susquehanna and upper stratigraphies at SES profiles are consistent with this tendency.

Summarily, the studies at SES bridged the disciplines of Quaternary paleoecology and prehistoric archeology to outline the sequence of geological and cultural developments along

the floodplain. Figure 7 integrates geological and archeological occurrences across the SES floodplain into a general natural-cultural sequence. Optimal geoarcheological and prehistoric data come from deeply buried sites that enabled partial reconstruction of the floodplain history since the terminal Pleistocene and documented the archeological sequence since Late Archaic times (i.e. over the past 4000 years).

[redacted]

These observations may be extrapolated regionally and to some degree zonally. In particular, similar geological and archeological sequences have been reconstructed for the Upper Susquehanna River Valley, an area that has been more systematically and thoroughly investigated by Quaternary researchers. Zonally, studies across the northeast have shown that the flourishing of Late Archaic cultures is associated with both climatic amelioration and widespread

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population growth. While isolated evidence for early prehistoric developments is not anomalous, no cogent model has emerged establishing patterned subsistence or settlement trends. Studies of fluvial geomorphology and palynology suggest regional environments that were significantly different from those of the present.

The SES survey has contributed towards the enrichment of the prehistoric and Late Quaternary geological records of the Middle Susquehanna River, along neglected but archeologically rich areas. It is hoped that the findings of the present project will generate future research programs along both local and regional lines.

EVALUATION OF SIGNIFICANCE AND RECOMMENDATIONS

Prior to discussing site-specific recommendations it is necessary to define those criteria applied by Commonwealth to evaluate site significance.

Preliminary determinations were made according to National Register Criteria (36 CFR Part 60, Section 60.6 Criteria for Evaluation). However, in light of current research objectives, alternate criteria were also used. Archeologists have argued that the National Register may not be the most effective management tool for assessing the collective importance of dispersed sites in a single study area. They

suggest that National Register criteria are too general and nonspecific to provide detailed explanations for potential archeological significance of particular site components. Accordingly, conservationists and cultural resource contractors have shown that, under current criteria, any site would qualify according to Part d of 36 CFR Part 60. Because of this they have claimed that National Register criteria are unworkable in a research and management context.

In response to this criticism of National Register criteria, federal and state archeologists have suggested that the significance of a site be assessed by considering its scientific potential in terms of specific research questions and designs. Currently, state resource plans are being developed to facilitate comparative significance judgment and to provide a framework for judging significance. For purposes of the present evaluation, appropriate research questions were applied, in addition to National Register criteria, to strengthen evaluations.

Attempts to evaluate the significance of the sites located were limited by the research methods applied. Complete and thorough appreciation of cultural resources are impossible under even the best of circumstances. The present project developed an optimal recovery strategy given the terrain and vegetation cover. Application of this strategy resulted in site location based upon surface observations and limited

shovel testing. This investigation was designed to determine presence or absence of cultural resources. The difficulty of making National Register determinations on the basis of surface indication has been documented in the past. Using a shovel testing strategy does not necessarily remedy this situation; this is apparent by the failure of shovel tests to delineate the boundaries or function of sites. Preliminary assessments and determination were made on a combination of National Register criteria and specific research questions recently proposed by the Conference on Michigan Archeology.

Preservation may still be warranted in the case of sites considered not eligible for inclusion on the National Register of Historic Places. Many of the prehistoric sites located have been disturbed to come extent, but these disturbed sites, as well as small or surface sites, may also provide significant archeological data.

The following table presents significance classifications for each site located. Three classifications are offered and identify significant, potentially significant, and non-significant sites. Site-by-site assessments and recommendations are discussed in turn.

TABLE VII.1: SIGNIFICANCE OF ARCHEOLOGICAL SITES

SITE	SIGNIFICANCE CLASSIFICATION		
	YES	POTENTIAL	NO
SES-3		X	
SES-6	X		
SES-8	X		
SES-10			X
SES-11	X		
SES-13			X
SES-14			X
SES-16			X

SES-3

Previous work at this location identified two Late Archaic sites that were quite extensive and documented what may very probably have been a major prehistoric occupation. [redacted] Only isolated portions of the original tract remain undisturbed. The site was considered to be only potentially significant since primary archeological evidence has been largely destroyed or displaced. Commonwealth's testing program revealed that artifact concentrations do not extend below the plow zone so that preservation of major features is improbable. The former size and probable extent of the site is such that selective undisturbed areas may yet disclose archeological materials, albeit not of a primary nature. Major mitigation is clearly not called for, but preservation procedures for intact portions of the sites could be implemented with minimal effort and in conjunction with Pennsylvania Power & Light's relandscaping operations. [redacted] Should this plan prove unfeasible, or if further development is scheduled, monitoring of such activities is suggested.

SES-6

Excavation of this site revealed diagnostic artifacts as well as several *in situ* archeological features occurring to depth and below plow zone. This is a probable Middle Woodland

site that provided initial evidence for the existence of an occupation horizon with possible suggestions of activity areas. The site was discovered as a result of the profiles exposed by the drainage ditch that was cut through it. The erosion that is occurring along the cut is already destroying the archeological evidence and will continue to do so if not checked. A first step in the preservation of this significant resource would include soil infilling, seeding with protective plantings, and grading of exposed profiles, a procedure already initiated by PP&L. [redacted] If this area is to be disturbed, excavations of designated areas should be undertaken. PP&L has no plans to disturb this area as part of its operations. This area will be fenced in the event of future construction on the floodplain.

SES-8

Deep testing at this site disclosed the presence of cultural materials of the Transitional period at a depth of approximately 1.5 m. This is a potentially critical site, as it may document a pivotal prehistoric period which is not very well understood by archeologists. Additionally, the deeply buried setting of the site suggests that materials may be well preserved and that the site may be defined in terms of the alluvial history of the floodplain. There are, however, no

significant surface distributions of an archeological nature, so that since no major disturbances of the landscape are scheduled for this area, mitigation and intensive investigation of this site are not warranted. [redacted] In the event that future developments necessitate subsurface disturbances or earth removal, close monitoring of operations is imperative and further testing may be called for.

SES-10

While diagnostic Late Archaic artifacts were found at this site, they do not extend below the plow zone or across a wide area. No further work is needed at this site, though future landscaping operations should be supervised.

SES-11

Excavations suggested that a Woodland-period occupation occurred at this site. Materials were found below the surface and plow zone and offered the potential for site preservation. At this stage the total recovery of materials is not sufficient to justify a major mitigation effort, but the site should be considered a significant resource. [redacted] Fencing is also a viable option.

SES-13

This is not a significant site and no further work nor recommendations are needed.

SES-14

This is not a significant site; no additional work is necessary.

SES-16

This is not a significant site; no additional work is necessary.

In summary, of the eight new sites identified along the SES floodplain, only three are considered to be significant and offer possibilities for recommendation to the National Register by the Pennsylvania State Archeologist. Of these sites only one (SES-6) is in danger of adverse impact and should be mitigated in the near future. The two other significant sites and one potential site, SES-3, demand preservation from future relandscaping or construction with the exception of the mitigation at SES-6. None of these recommendations should significantly alter Pennsylvania Power & Light's plans or schedule of activities for completion of the SES project.

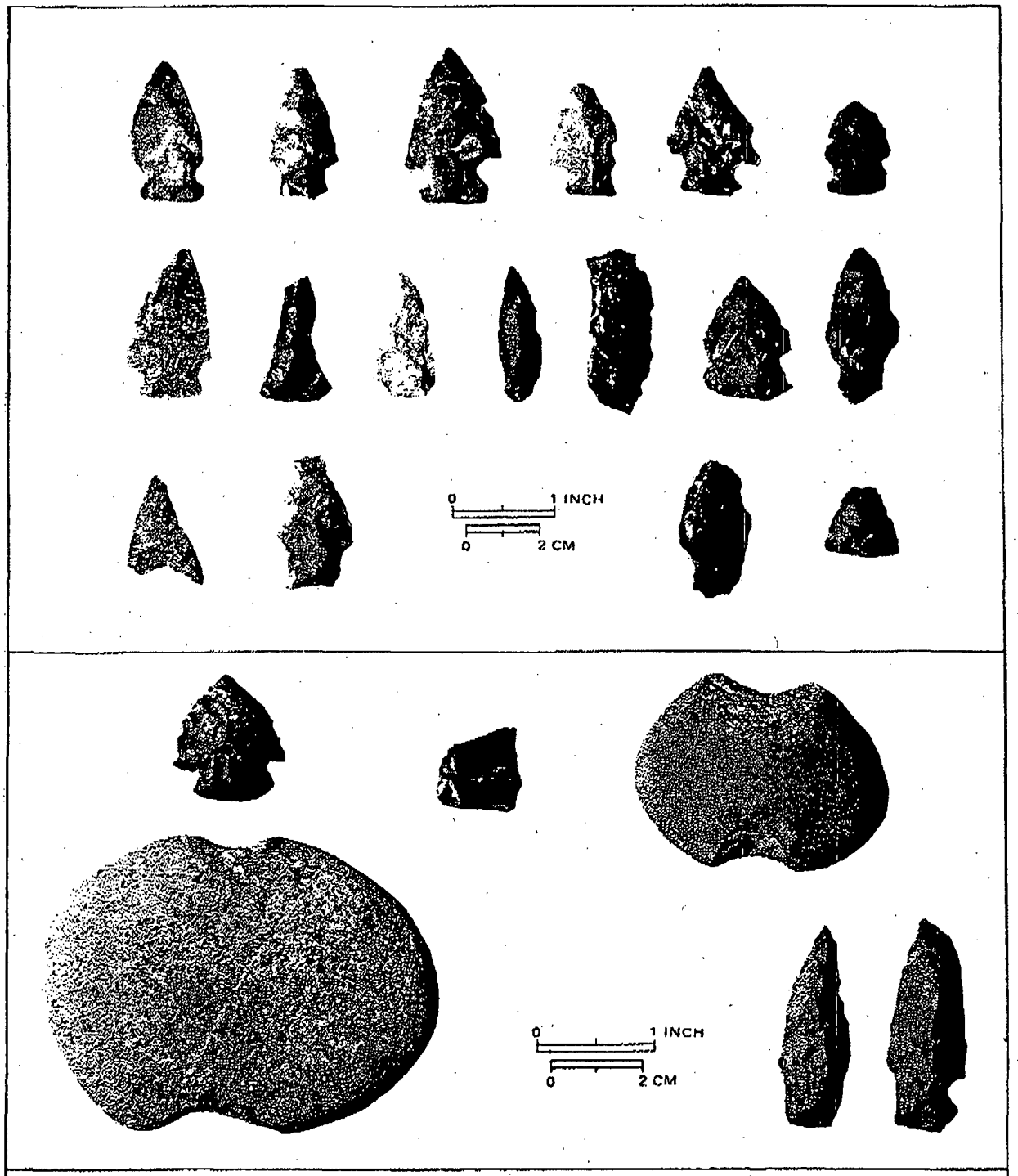
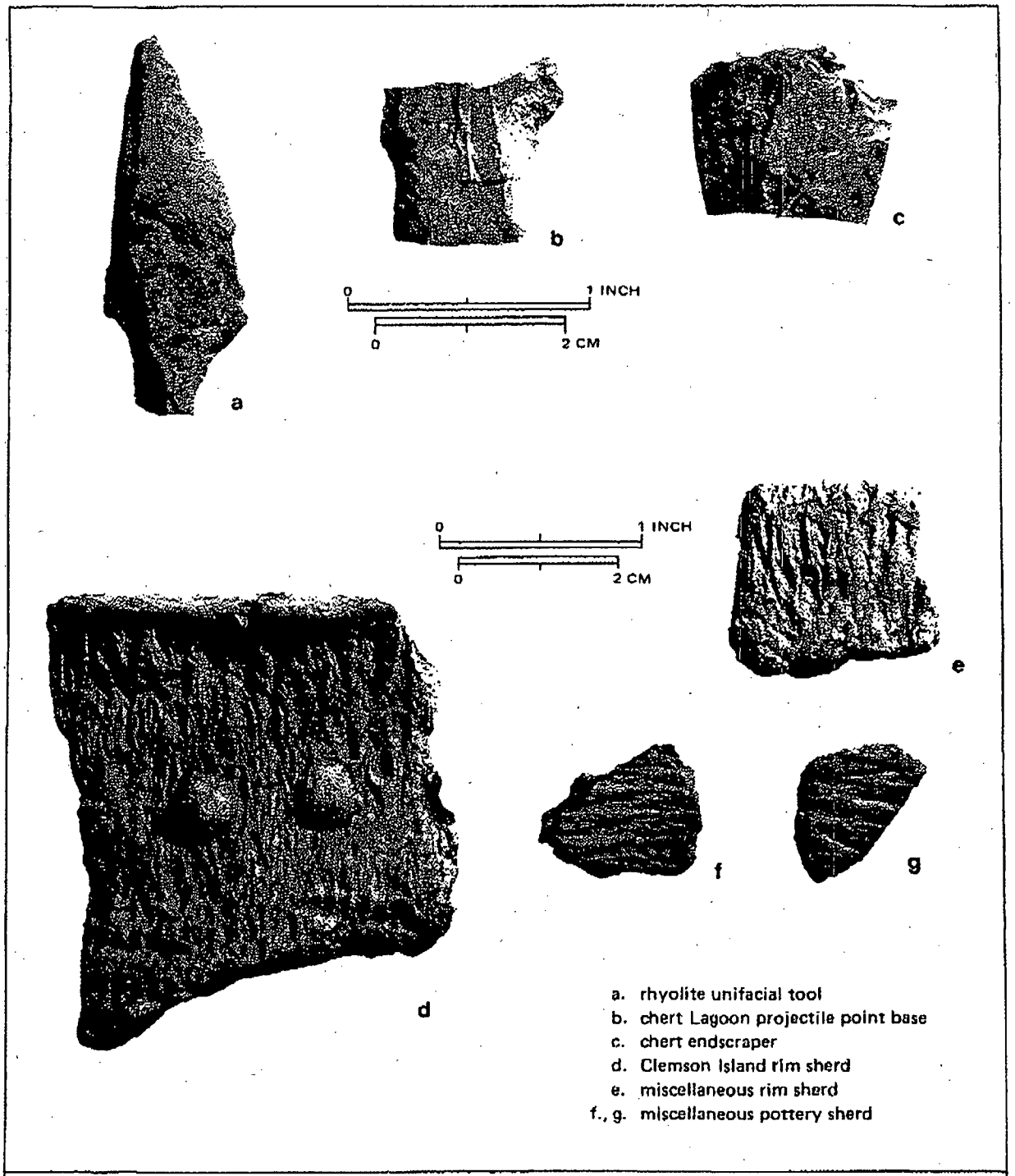


FIGURE 8

MISCELLANEOUS LATE ARCHAIC ARTIFACTS: SES-3 (36 Lu 15)

SUSQUEHANNA S.E.S.

Archeological Investigations At The Susquehanna S.E.S. Floodplain

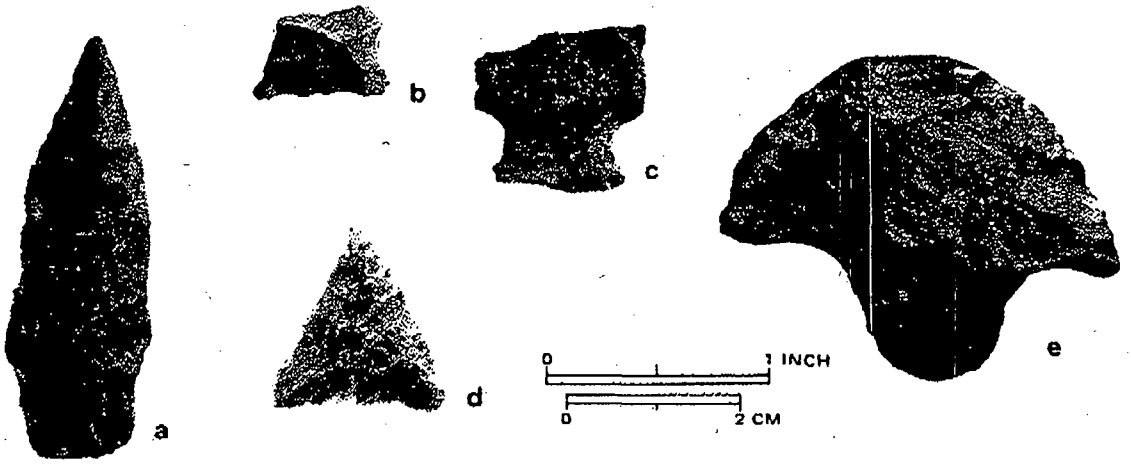


a. rhyolite unifacial tool
b. chert Lagoon projectile point base
c. chert endscraper
d. Clemson Island rim sherd
e. miscellaneous rim sherd
f., g. miscellaneous pottery sherd

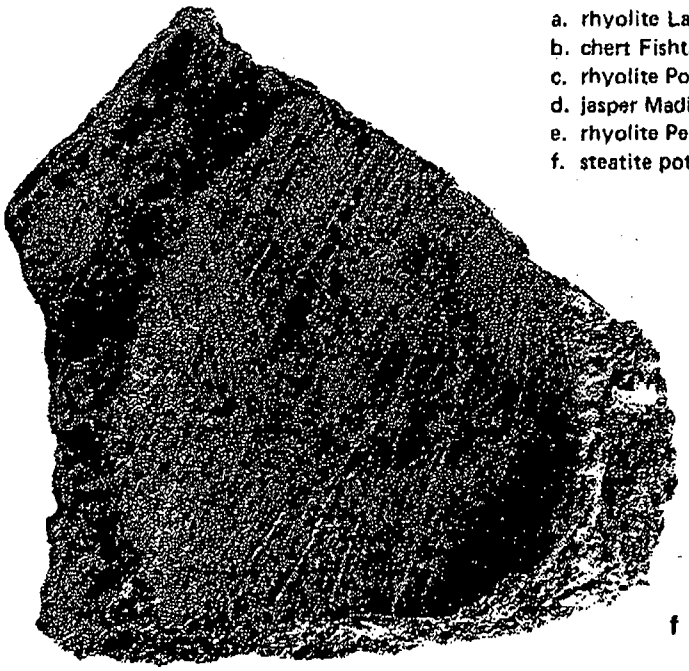
FIGURE 9

ARTIFACTS: SES-6

SUSQUEHANNA S.E.S.
Archeological Investigations At The Susquehanna S.E.S. Floodplain



a. rhyolite Lamoka-like projectile point
b. chert Fishtail-like projectile point base
c. rhyolite Poplar Island projectile point base
d. jasper Madison projectile point
e. rhyolite Perkiomen scraper
f. steatite pot sherd



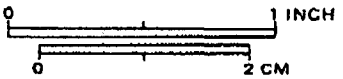
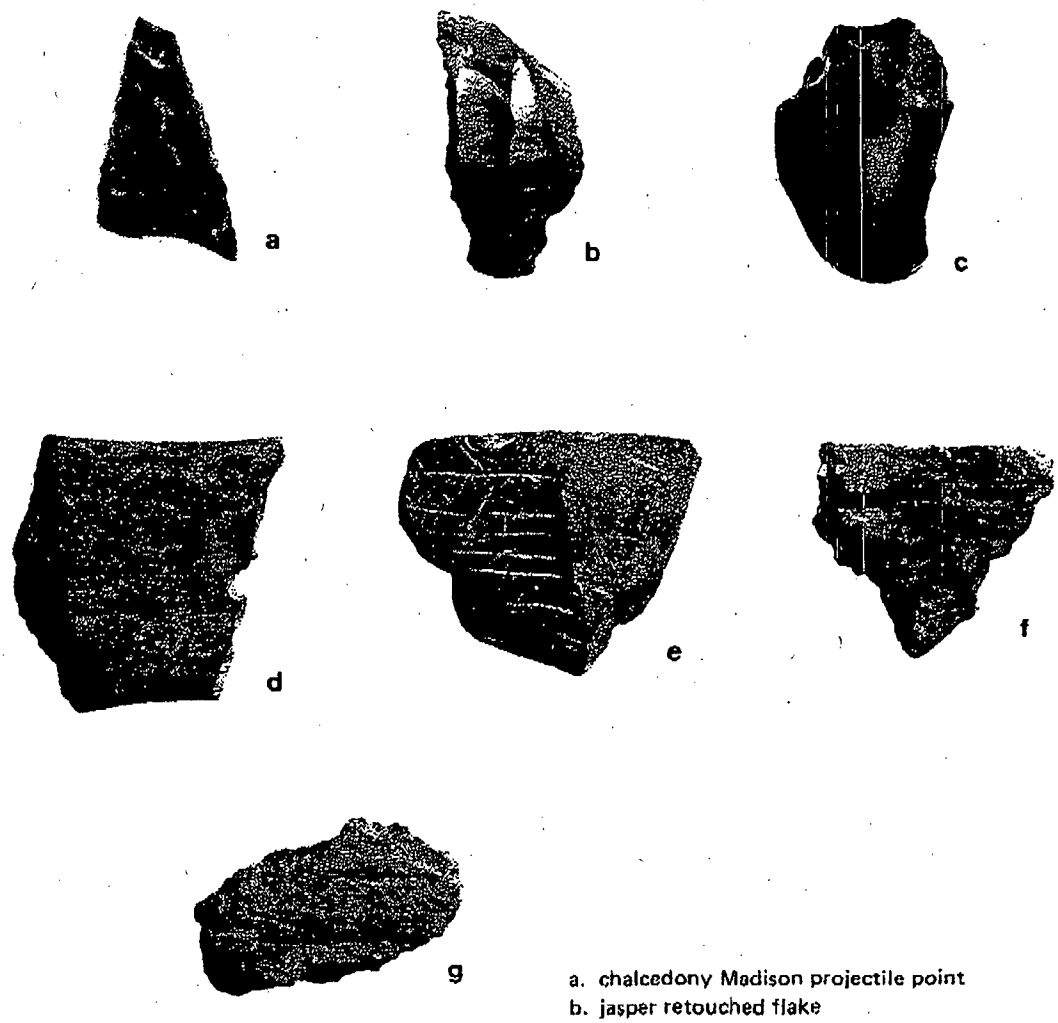


FIGURE 10

ARTIFACTS: SES-8

SUSQUEHANNA S.E.S.
Archeological Investigations At The Susquehanna S.E.S. Floodplain



a. chalcedony Madison projectile point
b. jasper retouched flake
c. chert unifacial tool
d. slate gorget fragment
e. incised shale
f. pottery rim sherd
g. miscellaneous pottery sherd

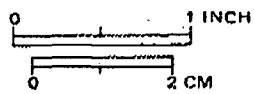
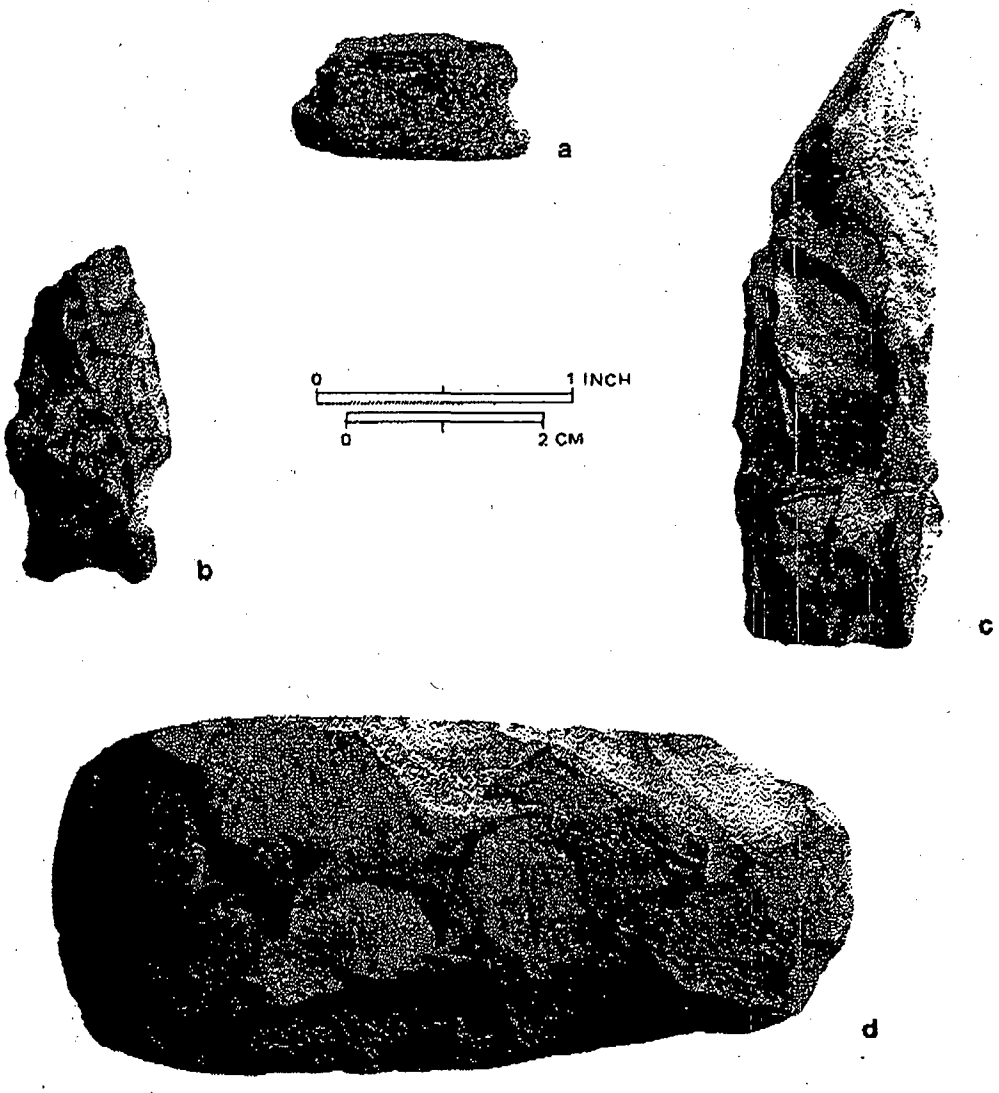


FIGURE 11

ARTIFACTS: SES-11

SUSQUEHANNA S.E.S.
Archeological Investigations At The Susquehanna S.E.S. Floodplain



0 1 INCH
0 2 CM

a. Brewerton side-notched projectile point base
b. Brewerton ear-notched projectile point
c. argillaceous shale knife
d. adze

FIGURE 12

ARTIFACTS: SES-10,13

SUSQUEHANNA S.E.S.
Archeological Investigations At The Susquehanna S.E.S. Floodplain