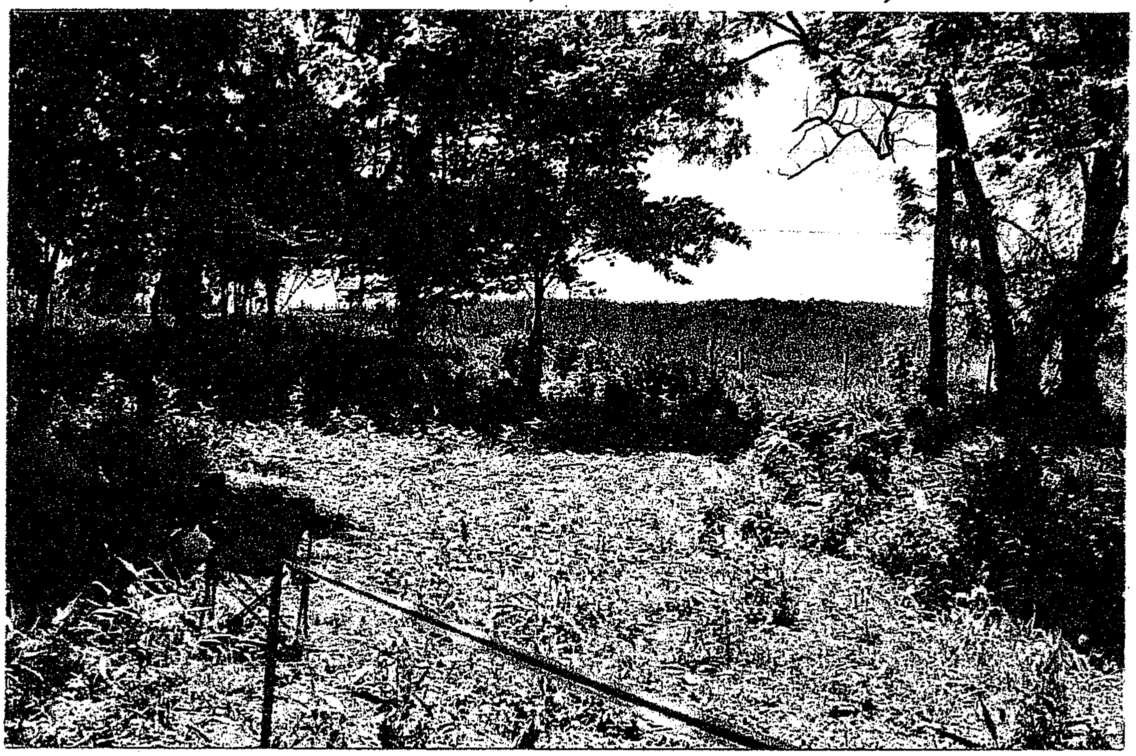
PHASE II ARCHAEOLOGICAL TESTING at SITE 33PK210, SCIOTO TOWNSHIP, PIKE COUNTY, OHIO.



prepared for:

Pro2Serve Technical Services, Inc.
Professional Project Services
P.O. Box 900, Bldg. X-7725
3930 U.S. Route 23 South
Piketon, Ohio 45661

July, 2003

DuVall & Associates, Inc.

Archaeological & Historical Services

1242 Old Hillsboro Road / Franklin, Tennessee 37069
Voice: (615) 791-6450 / Fax: (615) 791-5833

Phase II Archaeological Testing at Site 33pk210, Scioto Township, Pike County, Ohio for the Portsmouth Gaseous Diffusion Plant Piketon, Ohio

Date Issued —July 2003

Prepared by
DuVall and Associates, Inc.
Franklin, Tennessee 37069

Submitted by
Pro2Serve Technical Solutions
Piketon, Ohio 45661
under subcontract 23900-BA-ES144

Prepared for the
U.S. Department of Energy
Office of Environmental Management

BECHTEL JACOBS COMPANY LLC
managing the
Environmental Management Activities at the
East Tennessee Technology Park
Y-12 National Security Complex Oak Ridge National Laboratory
Paducah Gaseous Diffusion Plant Portsmouth Gaseous Diffusion Plant
under contract DE-AC05-98OR22700
for the

U.S. DEPARTMENT OF ENERGY

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Prepared and Submitted by:

Christopher M. Hazel, RPA, M.Sc. principal investigator
DuVall and Associates, Inc.
1242 Old Hillsboro Road
Franklin, Tennessee 37069
(voice) 615/ 791-6450
(fax) 615/ 791-5833

with contributions by:

Dr. John E. Foss
Soils International, Inc.

Prepared for:

Pro2Serve Technical Services, Inc.
Professional Project Services
P.O. Box 900, Bldg. X-7725
3930 U.S. Route 23 South
Piketon, Ohio 45661
(voice) 740/897-4594

Christopher M. Hazel, RPA, M.Sc.
Principal Investigator

Lead Agency:
U.S. Department of Energy
Oak Ridge Operations
P.O. Box 2001, EM-912
Oak Ridge, Tennessee 37831

July, 2003

EXECUTIVE SUMMARY

Phase II archaeological testing was conducted at 33PK210 within a 3,000 m^2 project area during the first two weeks of June, 2003 by DuVall & Associates for Pro2Serve Technical Solutions. Site 33PK210 is a prehistoric artifact scatter of indeterminate extent and cultural period.The project area is located in Scioto Township within the southern portion of Pike County, Ohio. The wooded project area and site lie across a bluff overlooking the Scioto River Valley within the Unglaciated Allegheny Plateau geological province.

Three types of field investigations were conducted during the present study at 33PK210. A Phase I+ survey along a five meter grid was conducted across the entire project area in order to refine the horizontal extent of the site. Phase II testing included: shovel test pit test unit excavation down to sterile subsoil (Horizon B), Geomorphological analysis in the form of auger testing was conducted within test units in order to precisely define the vertical extent of cultural and natural stratigraphy across the project area.

The refined survey of 33PK210 revealed that the actual site area covers the entire 3,000 m^2 project area (x 30 larger than the original site area) and extends across the entire gentle western slope of the bluff-top beyond the eastern edge of the project area and south of the U.S. Department of Energy (DOE) property boundary covering 6,820 m^2. Phase II testing revealed that artifacts were confined to the disturbed upper shallow (<30 cm thick) strata (Ap) across the project area and within scattered tap-roots. Categories of artifacts identified during excavations included fire-altered sandstone, chert bifacial tools, and chert debitage associated primarily with the initial stages of tool production. All categories of artifacts were scattered evenly across the project area. These results are consistent with investigations of other upland artifact scatters in the immediate vicinity.

The present investigations did not identify any intact prehistoric features or cultural strata. It was not possible to speculate the possible function of 33PK210. No culturally diagnostic artifacts were identified. No cultural connection could be established between 33PK210 and other nearby prehistoric sites, particularly from the Late Archaic and Hopewell Periods (33PK22). The investigations within the project area indicate that even though 33PK210 extends outside the DOE property the site does not contain resources eligible for the National Register of Historic Places. No further work is recommended at 33PK210.

ACKNOWLEDGEMENTS

A note of appreciation is in order for the gracious assistance provided by David Snyder (OSHPO), the resource materials provided by Jarrod Burks, Park Archaeologist, and the other rangers at the Hopewell Culture National Historical Park in Chillicothe, and all of the health & safety and security staff from Pro2Serve Technical Solutions, Bechtel Jacobs Company LLC, and DOE who worked along side the field crew through wind and rain at the PORTS Facility. In addition, it is important to note Joe Dayton's unsolicited but greatly appreciated archaeological insight and Dr. Foss' quick and thorough analysis.

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INTRODUCTION

Limited cultural resource analysis has been conducted at Site 33PK210 in compliance with the 1966 National Historic Preservation Act (federal implementation procedures 36CFR60 and 36CFR800.4b) at the DOE Portsmouth Gaseous Diffusion Plant (PORTS) Property in Pike County, Ohio remains. Site 33PK210 was originally identified during a Phase I archaeological survey of PORTS (Skinner 1997). The preceding report details the methods, results, and conclusions from these investigations including: a preliminary Phase I+ survey of the project area and Phase II testing of a sample of the site. The methods presented within this report are the direct result of the Ohio Historic Preservation Office (OHPO) report review, the 1994 OHPO guidelines, and recent communications (3/31/03) with Mr. David Snyder (State Historic Preservation Officer).

This diffuse scatter of prehistoric artifacts was observed across a 15 x 15 meter area in the southwest corner of the DOE property. The density of artifacts observed at the site, and the proximity of 33PK210 to several other prehistoric sites and the Scioto River indicate a potential for intact cultural resources at 33PK210. The OHPO reviewed the Phase I report and concluded that more survey and limited testing should be conducted in the vicinity of the site.

SCOPE OF WORK

DuVall & Associates conducted Phase I+ site survey and Phase II archaeological testing at Site 33PK210 for Pro2Serve Technical Solutions, Piketon, Ohio and the PORTS DOE facility. The Phase I+ site survey refined the precise horizontal limits of artifacts from the site within the DOE property (Project Area). The proposed Phase II testing attempted to: 1) refine the horizontal and vertical limits of intact cultural deposits; 2) estimate the density and distribution of cultural deposits; 3) determine the cultural affiliations of the components represented and; 4) investigate the presence of undisturbed features and other contexts which may be eligible for inclusion on the National Register of Historic Places.

PRELIMINARY PROCEDURES

ENVIRONMENTAL SETTING

Geography

Pike county is located entirely within the Shawnee-Mississippi Unglaciated Plateau physiographic province; a heavily dissected portion of the Allegheny Plateau (Figure 1). Drainages have greatly segmented the upland portions of the county. Elevations within the vicinity of the project area range between 560 ft AMSL along the banks of the Scioto River to 878 ft AMSL atop the highest ridgetop. The county geology is easily divided into three major groups: valley floors or bottomland, minor valley floors or terraces, and dissected uplands (Hendershot 1990). Dissected uplands are characterized with strong relief and intermittent streams. Minor valley floors are relatively narrow with a low gradient and have local fluvial and colluvial deposits. Major valley floors display mature streams between glacio-fluvial terraces.

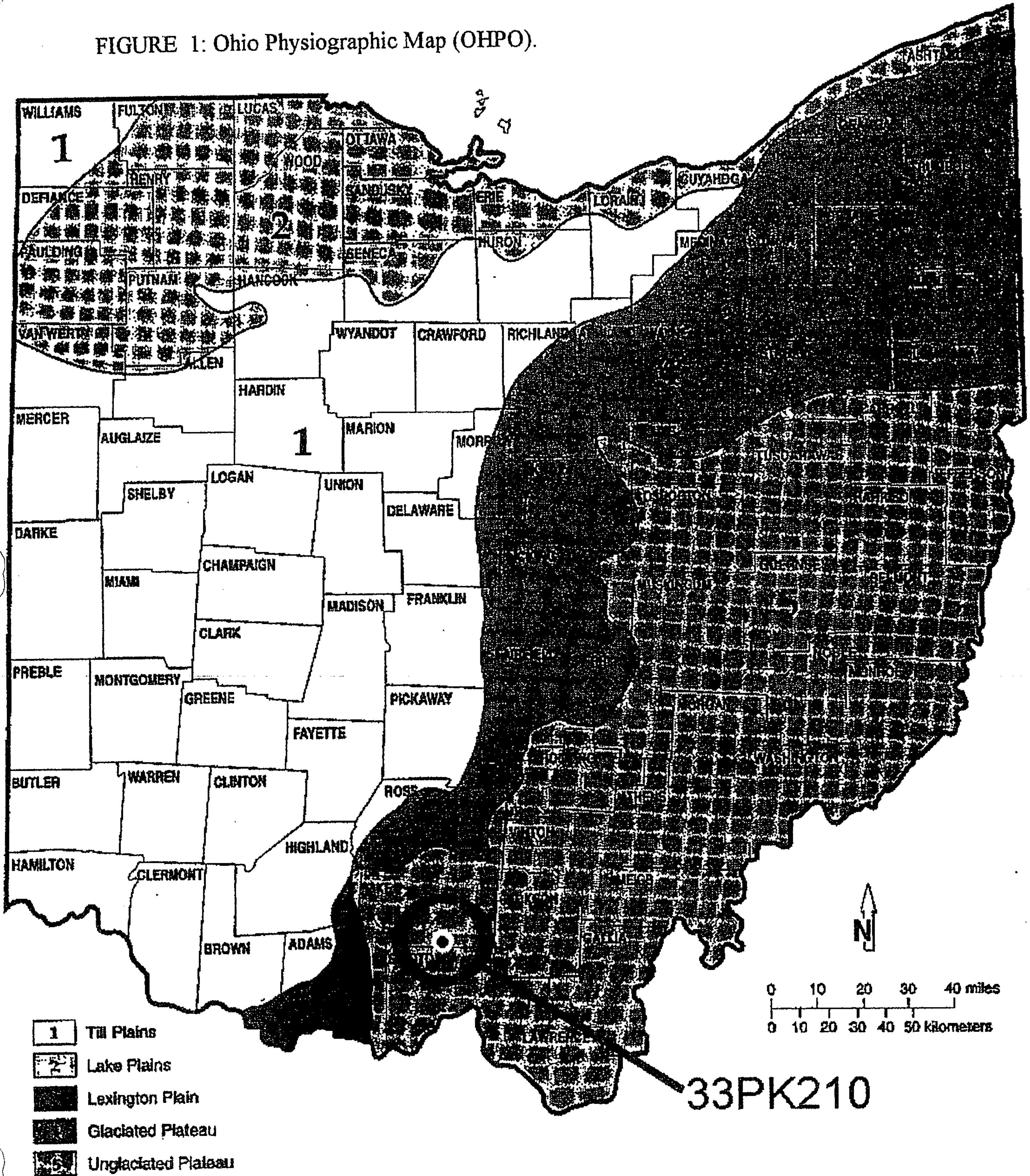
The main valleys in the county contain either mature streams of low gradient or small misfit streams in wide valleys which they could not have cut, such as, Big Beaver Creek Valley. Pleistocene events have created these streams, however glaciation did not directly affect this region (Goldthwait et al. 1961). Two million years ago, before glaciation, the county was associated with the Teays drainage system. The Teays River mainstem had at one time passed through the county. The Teays River valleys were blocked by glacial advance from 2 million to 690,000 years ago. It created Lake Tight which had a depth of up to 900 feet. The Teays system valleys were eventually filled by clay and silt. Abandoned sections of the Teays River valley that were filled with silt and clay can be traced through Pike county. The modern course of Big Beaver Creek and the Scioto River follow along this abandoned section today. The Scioto River Valley is located in the central part of the county. It has a broad undulating peneplain that possesses some monadnock hills.

Most of the county remains wooded. Farming is limited to the wider valleys and ridgetops. These areas can be used for cultivated crops, hay and pasture. The main crops are corn, tobacco, and small grains. Some of the hillsides and bluffs are used for unimproved pasture and woods (Hendershot 1990). The current project area is covered in mature walnut, hawthorn, poplar, cherry, and sugar maple with an understory of blackberries, wild roses, and various succulents.

Geology

The underlying sedimentary bedrock in Pike County is of Mississippian age. The exposed rocks are composed of clastic sediments of marine origin. Marine sandstone and shales are among the most common sedimentary rocks. Chert is a rare element in the sedimentary rock regionally. Outwash terraces in areas along the Scioto River were known to contain easily accessible nodular cherts.

FIGURE 1: Ohio Physiographic Map (OHPO).



Soils

The soil complex within the project area and the total site area is restricted to the Princeton (Pr) soil type (Figure 2). This gentle to steeply sloping well drained soil is commonly associated with bluffs running above the Scioto River Valley. The bluffs are composed of the remnants of pre-glacial valleys. These soils may also be derived from sand dunes composed of the redeposited heavier particles from glacial till. Strong winds off the nearby Wisconsin Glacier had deposited loess across the Southeast US but left behind considerable sand deposits in Pike County (Foss Personal Communication). Princeton soils have a brown to strong brown sandy or silt loam upper strata (Bt) and a strong brown silt loam substrata (Be) (Hendershot 1990). Clayey yellowish brown Omulga (Om) soil types are associated to the Princeton soils and may also be encountered in pockets within the project area.

A detailed description and discussion of soils and the geomorphology of the project area are presented in Appendix A.

Climate

Pike County is hot in the summer and cold in the winter. It rains regularly, which creates soil moisture in the summer for most soils. The total annual precipitation is about 40 inches. Over half of the precipitation occurs between April and September. The average temperature in the winter is 32 degrees F and the average in the summer is 72 degrees F (Hendershot 1990).

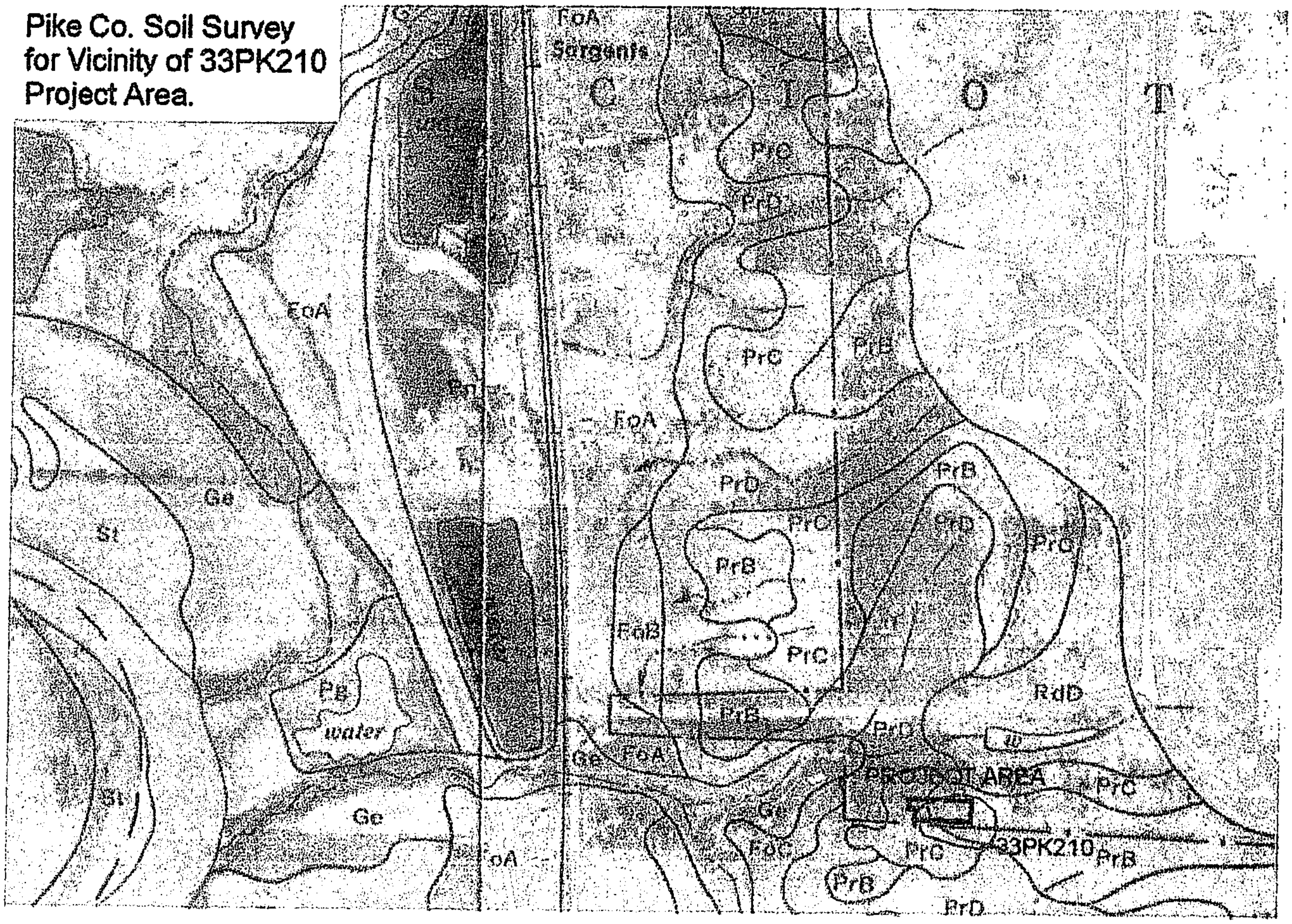
Flora

The prehistoric environment can be described as a mixed deciduous forest (Core 1966). Common species such as oaks, hickories, and chestnuts were found in the locale. Canopy trees like the sycamore, beech, sweet gum, silver maple, river birch, and black willow were abundant along river banks. In general the low-lying areas contained these mixed forests which surrounded the more mesic species. These mixed forests species grew in the drier areas like ridgetops and slopes.

Fauna

The faunal elements in the upper Ohio River basin were varied and abundant because of the diverse climate and aquatic environments as well as the mixed oak forests in the region. The white-tailed deer, black bear, panther, gray wolf and wapiti comprised the mega-fauna in the area (McDonald 1994). The wild turkey and the passenger pigeon until its extinction would have had the greatest economic importance among the avifauna.

FIGURE 2: Soil Survey Map of Vicinity of Project Area (Hendershot 1990).



Other animals of economic importance located in the region were beavers, muskrats, species, canadian and white geese, and wood duck. The loon, common merganser, trumpeter swan, great blue heron, kingfisher, and sandhill crane were also among the animals that lived in the Ohio River basin.

Upland reptiles included the timber and massasauga rattlesnakes, copperhead, hognose snake, black snake, garter snake, and box turtle (McDonald 1994). Aquatic reptiles include snapping and painted turtles and various water snakes (King 1979).

Amphibians recorded during archaeological investigations include the common toad and various frog species. Yellow perch, various catfish and sucker species have been archaeologically documented in central Ohio (McDonald 1994). Ohio muskellunge, pike, sturgeon, paddlefish, gar, carp and bass specieis, walleye, white crappie, buffalo fish, and drum are currently available in the Ohio River Valley and along its larger tributaries draining the central portions of the state (Trautman 1981). Available shell fish species would have been vast and has included hundreds of species of mussels and from the wide variety of riparian environments (deep, shallow, swift, slow) within the state.

The abundant wildlife originally available to the prehistoric inhabitants of Ohio have been limited by environmental changes. The effects of urban development and hydro-engineering have expatriated many animals such as freshwater mussels, the panther, wapiti and gray wolf over the past few hundred years (Barbour and Davis 1974).

CULTURAL SETTING

Paleoindian (15,000 B.P.-10,000 B.P.)

The first inhabitants of this area probably began to move in between 10,000 to 15,000 years ago (McDaniel 1987). The mouths of some of the valleys drained into glacially fed rivers. The mouths of these valleys became plugged by outwash deposits from the rivers swollen with the melting glaciers. As a result, these plugged valleys contain elevated benches of outwash. Areas like this tended to contain a large variety of natural resources which would allow for a broad range of sources for resource exploitation. Because paleoindian subsistence was based on hunting and foraging, this type of environment would have been a perfect locale. Large Pleistocene megafauna such as mastodon, bison, and stag moose would have been readily available. Paleoindians are considered to be nomadic, optimizing their ability to hunt these animals.

The most common artifacts identified from this time period are lancolite projectile points. These points were probably fluted in order to remove a face from the base and aid in shafting. Other artifacts include backed knives, unifacial end scrapers, bipolar flakes, burins, and pitted stones.

There are few paleoindian sites recorded in Pike County. Previous surveys of projectile point/knife (pp/k) collections within the state have identified only 5 fluted points in the county (Seeman and Prufer 1982:165) and a possible fluted point associated to the Early to Middle Archaic 33PK55 site. This small number may be due to the low intensity of current land use in the region and a lower number of regional artifact collectors (Lepper 1986) suggested by the higher frequencies of fluted points found in more developed and populated surrounding counties (Ross and Scioto).

However, the majority of paleoindian artifacts have been either isolated finds or from disturbed contexts (i.e. 33PK55). Well documented paleoindian sites from the vicinity of Pike County have been located on larger river terraces (Seeman et.al. 1994). The location and the paucity of sites within the county suggest that 33PK210 is not likely to be associated to the paleoindian period.

Early Archaic (10,000 B.P. – 5,000 B.P.)

In the Early Archaic period the environment became more arid. It is believed that in Ohio this opened more areas for habitation. Subsistence was mainly focused on animals such as elk and deer. The megafauna from the Pleistocene were extinct by this time. There was still nomadic seasonal foraging but it was focused on smaller land areas. There was also a population increase. Artifacts were more diverse in variety and have been found frequently over diverse geographic areas. For the first time, there was the appearance of ground stone and slate tools. Examples of artifact assemblages from this period include: beveled and serrated knives, unifaces, gravers, end scrapers, and side and corner notched projectile points. Local chert resources were used regularly with some exotic materials used as well.

The majority of well documented Early Archaic sites within the Allegheny Plateau or Great Lakes Regions of Ohio have been recorded along river terraces and high ground adjacent to marshes or lakes (Brashler, et.al. 1994; Kozarek et.al. 1994; Lepper 1994). However, the upland lithic scatters 33PK55 and 33PK56 both contain Early Archaic components. Other Early Archaic sites recorded in Pike County include lithic scatters or isolated finds at 33PK33, 33PK48, and 33PK154 located within bottomlands. The location suggests that 33PK210 may be associated with the Early Archaic period.

Late Archaic (5,000 B.P.-2,600 B.P.)

In the Late Archaic period groups began to show regional expressions. These groups focused more on exploiting the environment in their own region. Plants became more important to the diet. Focused resource procurement may have been the result of intra-regional resource competition, an increase in population, environmental stress, or refined economical resource exploitation (Pratt 1981). As a consequence, the sites are larger and have evidence of rehabitation. There is also evidence of at least semi-permanent settlement in the form of structures and large midden deposits (McDaniel 1987).

There is evidence during this period of long distance trade. Utilitarian tools were primarily composed of local materials (chert). Burial goods, however, showed evidence of long distance trade. There was increased variation in projectile point styles with side corner notching becoming more common. Slate was used to produce ornamental goods. Ground polished stone artifacts composed of ironstone or greenstone such as celts and axes were common during this period.

Four types of Late Archaic sites have been observed within the vicinity of the project area: large open habitation sites with multiple periods of use along river terraces (33PK164, 33PK155, 33PK47, 33PK35, 33PK32), small short-term occupation sites on knolls or ridgetops overlooking large drainages (33RO307, 33RO308, 33RO309, 33RO319, 33RO320, 33RO324, 33PK56 and 33PK55), artifact scatters within rockshelters (33PK222), and cemeteries (33PK33).

Though several miles away from the project area, the Madiera-Brown Site 33PK133 (combined with 33PK164) and the Mabel Hall Site 33LE97 are open habitation sites with well documented Late Archaic components. Investigations of the artifacts and features at these two terrace sites uncovered patterns of raw material use, tool production and site functions. Comparisons with these two sites are relevant to any interpretation of Late Archaic occupation in South Central Ohio.

Early Woodland and Adena (2,600 B.P.-2,000 B.P.)

Early Woodland Period cultures are considered to be more focused on local environments. Big circular houses and permanent villages are observed during this period though there is still evidence for seasonal campsites and rockshelters. During this period, subsistence consisted of hunting, gathering, and horticulture supporting the larger sedentary populations. Evidence of permanent settlement includes overlapping structures and storage pits and large midden deposits(McDaniel 1987). Artifacts associated with this period include weak-shouldered lobate-stemmed points, bar or keel-shaped atlatl counter-weights, and flat-bottomed ceramic vessels (Tuck 1978).

The Adena mortuary complex is considered to be the first example of burial mound construction within Ohio. Mounds from this period have also been associated to circular earthworks or enclosures. These mound burials usually contain grave goods including mica sculpture, copper bracelets, polished stone (beads, gorgets, celts), marine shells, and effigy and tubular pipes. The grave goods and mounds suggest an increase in social hierarchy (Clay 1992).

Adena complex and Early Woodland sites within the vicinity of the project area have been recorded in bottomlands on major terraces of large drainages. The majority of the documentation of these sites are either earthwork descriptions or artifact collections (33PK32, 33PK46, 33PK47) though lithic scatters from this period have been documented recently (33RO307, 33RO308, 33RO309, 33RO319, 33RO320, 33PK153 and 33SC380). Hilltop Adena sites have been observed commonly in the central and western portions of the state (Licking, Butler, and Greene Counties).

Hopewell (2,200 B.P.-1,400 B.P.)

The Hopewell cultural period is characterized by a marked increase in population, dependence on a corn diet, and long distance trade. The Hopewell had a very organized long distance trade network including items from as far away as South Dakota, Wyoming, and the Gulf of Mexico. There is evidence for complex levels of social organization. However, the majority of occupation sites are associated to large permanent earthen ceremonial centers and burial mounds. These mounds were more extensive and elaborate than the Adena mounds and are often associated with linear or geometric earthworks.

Hopewell occupation sites have been recorded in the vicinity of the project area including 33PK153 and 33PK154. The former site contained diverse botanical remains indicating complex horticulture (Church 1995). Single mound sites located along terraces in the vicinity of the project area include 33PK2, 33PK3, 33PK33, and 33PK180 (Mills 1912). Several Hopewell earthworks have been recorded within Pike County (Figure 3) including mound groups (33PK1 and 33PK4) and mounds with circular and square enclosures (33PK6 and 33PK22).

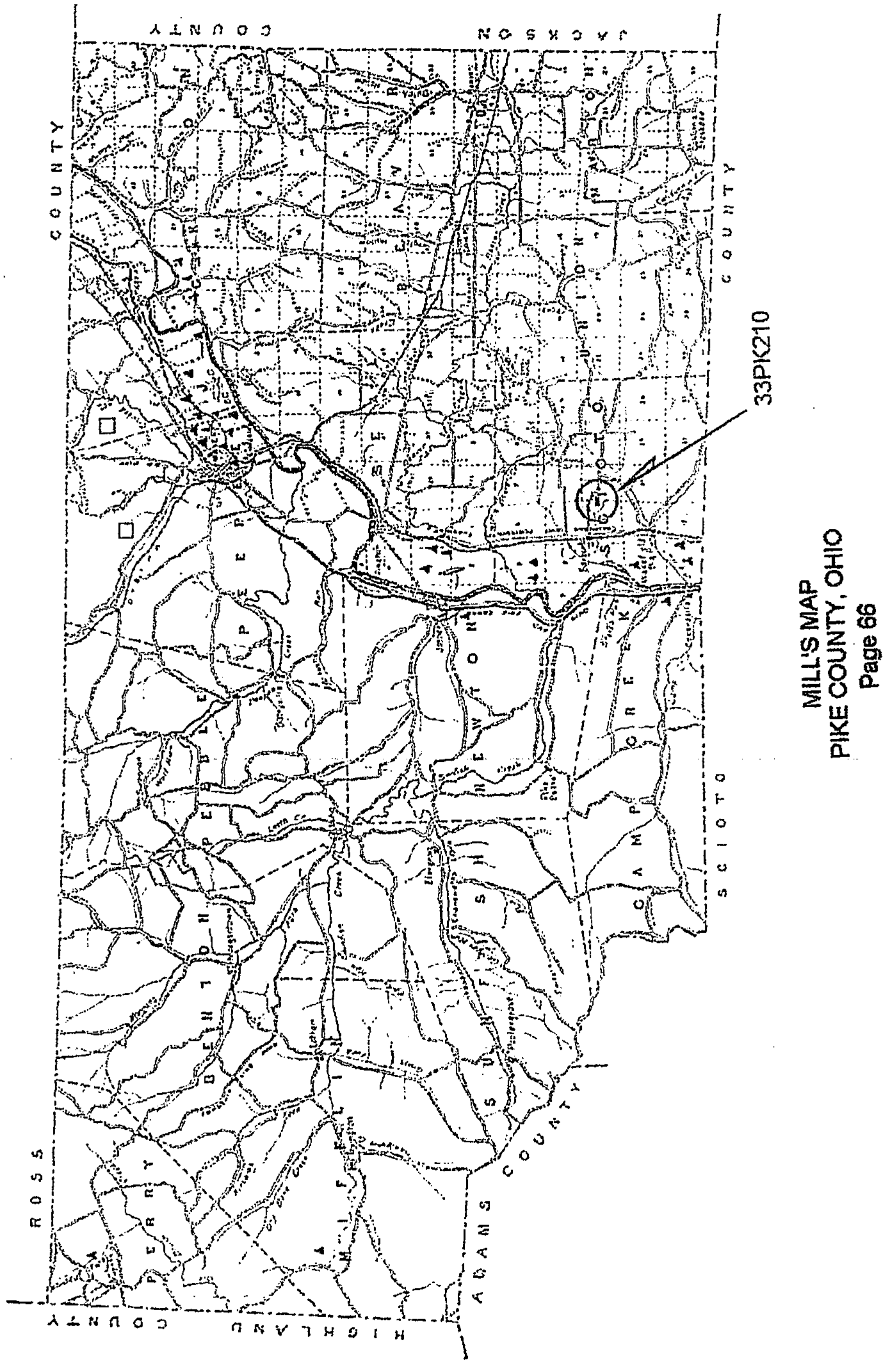
Hopewell sites seem to reflect limited seasonality which included the exploitation of upland environments. Upland Hopewell sites are either along the terraces of minor drainages (Yant Mound) or within rockshelters. Hopewell rockshelters have been recorded in Ross (Peters Cave), Jackson (Wise and Stanhope Caves), and Lawrence Counties (Brady's Run) (Seeman 1996). Only two examples of upland Hopewell mound complexes have been recorded in the vicinity of the project area: a double mound located on an upland knoll (33PK4) and a single mound located on a fourth terrace (33PK5). Lithic scatters containing Middle Woodland artifact types have been recorded on low knolls and kames in near by Ross County (33RO307, 33RO308, 33RO309, 33RO319, 33RO320).

Fort Ancient (1,400 B.P.-400 B.P./1600 A.D.)

The Fort Ancient cultural period is characterized by concentrated populations within large palisaded villages, a corn-beans-squash diet, the bow and arrow, regionally specific pottery manufacturing, and formal cemeteries (Seeman 1992). Social organization appears to have become more complex (i.e. chiefdom level) though there is no longer any evidence of the large scale trade network that existed in the Hopewell Period (Braun 1988). The palisaded villages appear to be associated with larger central urban centers like Fort Ancient or Monongahela. Some common artifacts from this period include: triangular points, celts, mortar and pestels, hoes, and highly decorated shell-tempered pottery.

Most of the large Fort Ancient settlements are located along the terraces or atop bluffs immediately above major stream and river valleys. The only Fort Ancient site within the

FIGURE 3: Mill's Map of Pike County Showing Mound Sites (OHPO).



vicinity of the project area is a disturbed artifact scatter (33PK136) located along a terrace. Fort Ancient sites have been recorded in nearby Ross County at the Morrison Village site (33RO3) and along the Scioto River at the Fuert, Higby, and Gartner sites (Drooker 2000).

Fort Ancient occupations rockshelter sites containing pit features have been excavated in Ross County at Peters Cave and in Jackson County at Chesser Cave (Church and Nass 2002).

Historic Period (1600 A.D. to Present)

The Historic Period of Pike County can be represented by two separate factions: that of the Native American and Euro-American. Proto-historically, Native Americans utilized the region of Southern Ohio until their subsequent defeat at Fallen Timbers and their removal from the region provided for in the Treaty of Greenville in 1795 (Bond 1941). Prior to this treaty, the Native American influence was heavily felt throughout the area in the form of raiding excursions undertaken by the Iroquois which subsequently eliminated any and all other tribal competition by the latter 1600s. Used primarily for hunting and trapping, the vicinity of Pike County also acted as a form of "demilitarized zone" between warring Iroquois and Western Algonquian nations.

With the development of multi-cultural communities during the 1720s as well as the introduction of the fur trade, many Native Americans began to settle along the secondary rivers of Upper and Middle Ohio. Along the Scioto River, the Delaware and Shawnee tribes co-existed until intense tribal warfare and the intrusion of Euro-Americans forced the tribes to relocate to parts of the Muskingum River (Bond 1941). By 1795, with the acceptance of the terms of the Treaty of Greenville, the Native American influence in Southern Ohio was all but negated.

Late prehistoric and proto-historic settlements within the Central Ohio River Valley are generally described as small nuclear hamlets composed of small circular structures along terraces of major streams (Nass and Hart 2000). Upland sites from this period have not been recorded within the vicinity of the project area though the Gartner Site (33RO19) north of Chillicothe has been recorded along a knoll overlooking the Scioto River.

PREVIOUS INVESTIGATIONS

The majority of archaeological investigations within Pike and neighboring Ross and Scioto Counties have been restricted in general to the valleys of the major tributaries, and in particular to the Scioto River Valley. This is due to three factors: Previous investigations in the Scioto River Valley have shown that over the past 5,000 years the majority of prehistoric occupation sites are located along river terraces; artifacts from sites within the floodplain and along the terraces are more frequently exposed to collectors by the more intensive agricultural activity within this region of the counties.

Generally, roadway and other civil improvements, along with their federally mandated cultural resources studies, are concentrated within urban areas and along the wide valleys.

Phase I archaeological reconnaissance surveys of the upland regions surrounding the Scioto River Valley have been conducted recently in anticipation of road construction (Clarke and Addington 1983; ODOT 1992), housing (White 1978; White 1979), pipelines (Weller Von Molsdorff and Keener 1997; Hazel 2001), and government facilities (Schweikart, et.al. 1997).

The above referenced Phase I survey of the PORTS Facility conducted by Schweikart, et.al. (1997) resulted in the recording of two prehistoric lithic scatters and five isolated finds across the undeveloped portions of the +2,000 acre DOE property. Both scatters were located along the bluff overlooking the Scioto River. However, shovel test pits within one of the scatters (33PK186) indicate that there is little potential for intact deposits (shallow soils). The other scatter (33PK210) is located within a half mile of Hopewell earthworks and had sufficiently deep soils to indicate the potential for intact prehistoric deposits. The conclusions of the Phase I report and OHPO revisions (Snyder 2002) resulted in the recommendation for intensive Phase I and Phase II testing at 33PK210.

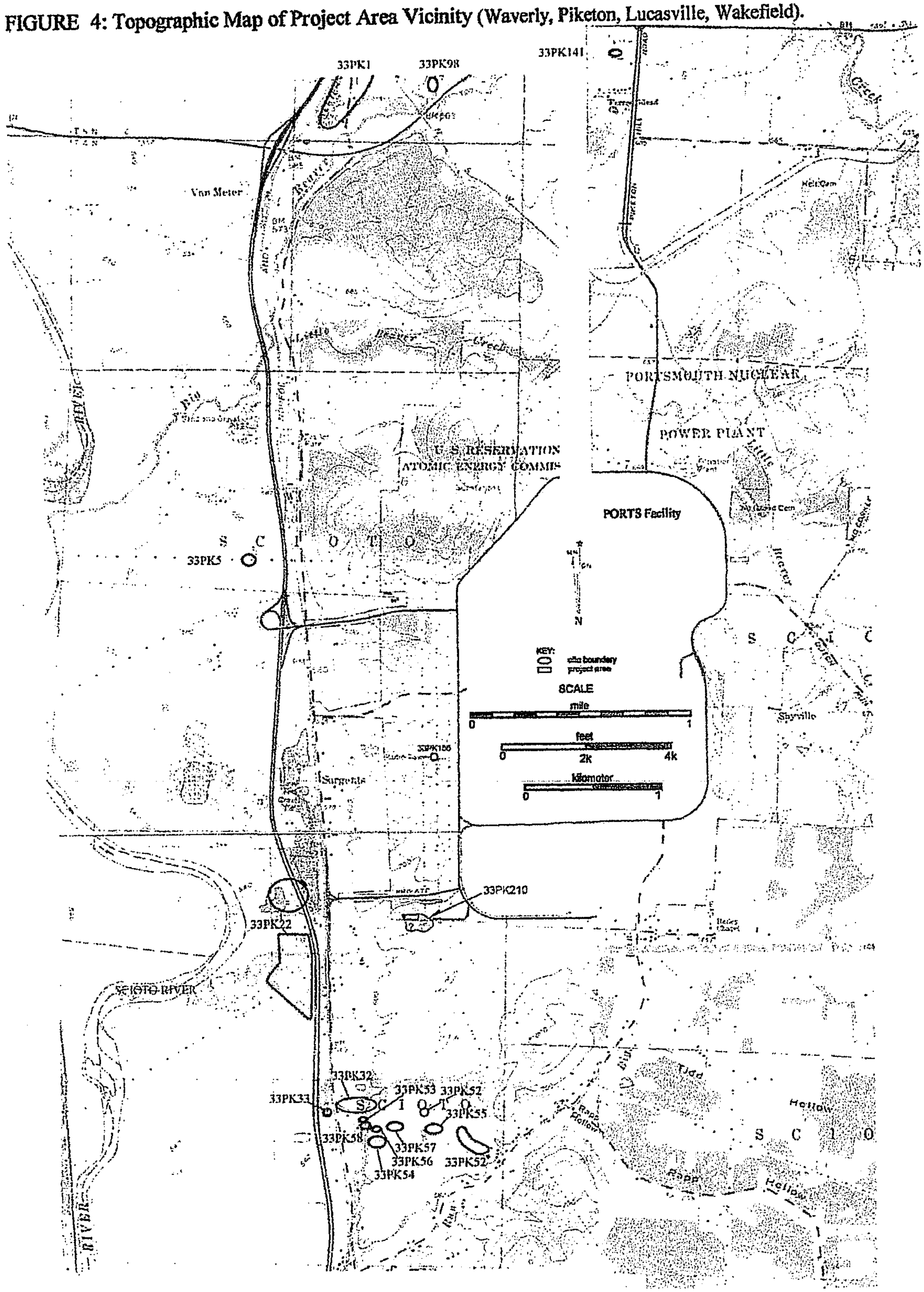
RESEARCH DESIGN

A Phase I survey was conducted in the wooded portion of a bluff 100 meters south of the southwestern entrance road to the PORTS facility. The survey along this bluff covered a 100 meter by 30 meter area (Schweikart, et. al. 1997). The survey incorporated visual inspection and the excavation and on site screening of a total of 17 shovel test pits spaced at even 15 meter intervals along two parallel transects. The bluff is wooded with a variety of mature and immature species. Mature walnuts border the site to the south. Mature hawthorns run along the northern portion of the site and immature cherry and walnut cover the site area. Recent push-piles containing rotting stumps also border the site to the north. The trees within the vicnity of the site are widely spaced and a dense understory of blackberries and wild roses proliferate around the immature growth.

Site 33PK210 was identified as a prehistoric lithic scatter located across a 112 m^2 area on the gently west sloping edge of the bluffline overlooking the Scioto River (Figure 4). Only three pits containing artifacts were identified. The artifacts included six non-specific flakes composed of either Delaware (5) or unknown (1) chert. The horizontal location of these artifacts was not recorded (Schweikart et.al. 1997). No other categories of artifacts or cultural deposits were observed within the site area.

The site is located less than a half mile east and 150 feet above the Scioto Works I Site (33PK22), a large Hopewell Period earthworks, located along the tertiary terrace of the river. Several other bluff and upland prehistoric lithic scatters are located a mile to the north and south of 33PK210, respectively (Figure 4). Unfortunately, none of these

FIGURE 4: Topographic Map of Project Area Vicinity (Waverly, Piketon, Lucasville, Wakefield).



upland sites appear to be intact nor have they been associated to any specific prehistoric cultural period. Site 33PK210 was anticipated to be a permanent or semi-permanent prehistoric occupation site. In order to investigate this hypothesis it was necessary to remove recently disturbed soils in order to uncover intact prehistoric domestic features such as prepared floors, storage pits, fired hearths, or post-moulds. In addition, geomorphological analysis would be used to determine if post-Pleistocene soils, uncontaminated by recent agriculture, are present across the site area.

It was also anticipated that the artifacts observed within 33PK210 would be associated to either the nearby Hopewell earthworks site along the river terrace or to upland Late Archaic short-term occupation sites (33PK55 and 33PK56). A complete analysis of artifacts recovered from surface collection, test pits and test units was proposed in order to identify various categories of artifacts including types of projectile points/knives and ceramics associated to the Late Archaic and/or Hopewell periods using current regional tool typologies (Griffin 1945; Justice 1987; DeRegnaucourt 1991; Church 1995).

METHODS

The research, field and laboratory direction was conducted by Christopher M. Hazel, M.Sc., R.P.A. Well qualified technicians from DuVall and Associates staff constituted the remainder of the field and laboratory crew including Christopher Turvy, Christopher Armstrong (MA), Matthew Bosworth (MA), Matthew Weaver, Brady Witt, and Jeremy Galbraith. Outside consultation for the geomorphological analysis was conducted by Dr. John E. Foss.

Background Research

Information was gathered from appropriate state and local archives and previous cultural resource reporting from the area. Research was conducted at the Ohio Historic Preservation Office, Columbus, Ohio on 5/21/03 and the Hopewell Culture National Historical Park in Chillicothe, Ohio on 6/1/03. The former research involved a review of all prehistoric Ohio Archaeological Inventory (OAI) forms from the southern half of Pike County and the northern half of Scioto County as well as select OAI forms from upland prehistoric sites from Jackson and Ross Counties. In addition, a review was conducted on all relevant cultural resource reports from Pike County and upland site studies from Ross County, and the Mills Maps (OAI) for Pike, Ross, and Scioto Counties.

The Hopewell Park interpretive center and library provided access to region-specific artifact typologies (Justice 1987; DeRegnaucourt 1991) and several recent syntheses of archaeological research from the major cultural periods within Ohio and the vicinity, most of which have been produced by the Ohio Archaeological Council (Dancey 1994; Prufer, et.al. 2001, Seeman 1992; Dancey & Pacheco 1997; Pacheco 1997; Genheimer 2000; Hart & Rieth 2002).

This research was conducted in order to document previous investigations of prehistoric sites within the vicinity of 33PK210. This research was used to interpret the results of the present field investigations and aid in recommendations for further investigations at the site.

Field Investigations

Field investigations were conducted within a 110 by 30 meter project area across a wooded bluff within the southwestern corner of the DOE PORTS Facility (Figure 4). This project area covered the entire wooded portion of the landform and encompassed the Phase I site area for 33PK210. Investigations began with the establishment of a site datum and a five meter grid system across the project area (Figure 5). The site datum (grid point N100/W100) was established at the US Atomic Commission Datum (701 feet above mean seas level) conveniently located within the southeastern corner of the project area. The grid ran parallel with the fence-row/DOE property boundary along the southern edge of the project area. The fence-row/boundary runs east to west at an angle of five degrees north of west (275°). The eastern edge of the project area followed the edge of the wood. The northern and western edge of the project area conformed to the top of the slope leading down to the Scioto River Valley. The latter two sides also included a small northwestern extension of the project area

Using the site datum as the controlled elevation the project area contour at each five meter grid point was recorded from a central grid point (N115/W145). The site datum was used as the controlled elevation.

The definition of horizontal limits of 33PK210 began with the analysis of Phase I+ shovel test pits (Figure 5). A total of 147 shovel test pits (121) measuring 50 x 50 cm or surface exposures (26) measuring 1 x 1 meter were either manually excavated or systematically surface collected along the grid spaced at 5 meter intervals. Shovel test pits were manually excavated into sterile subsoil and did not exceed fifty centimeters in depth. All soils were screened on site through 1/4" hardware cloth. All artifacts recovered were bagged, labeled with their provenance, checked for radiation, and retained for laboratory analysis. This survey precisely defined the site area within the project area and identified artifact concentration (Figure 6).

A total of six test units were manually excavated within the project area immediately preceding the shovel testing. Test units included four test units (A-D) measuring two meters square and two test units (E-F) measuring 1 meter square (Figure 5). The test units were placed within the center of artifact concentrations revealed by shovel testing, particularly those containing lithic debitage (Figure 6). Test units were excavated either in arbitrary 10 cm levels or to the interface with "natural" changes in the stratigraphy (Figure 7 and Plate 1). All test units were excavated at least five centimeters into sterile subsoil (Horizon Be or Bt). These test units permitted the controlled determination of the precise horizontal and vertical limits of the site. Test unit excavation also investigated the presence of intact subsurface cultural features. All soils from test units were screened on site through 1/4 inch hardware cloth. A 10 liter soil sample was also were screened on site through 1/4 inch hardware cloth. A 10 liter soil sample was also taken from the A Horizon from each test unit in case it was determined to be a prehistoric strata and suitable for OCR dating. All artifacts recovered were bagged, labeled with their provenance, checked for radiation, and retained for laboratory analysis. Artifacts were analyzed to determine the possible cultural affiliation of the prehistoric components at the site.

Geomorphology and artifact analysis were used for the determination of cultural affiliations for the deposits at 33PK210. The results of test unit excavation were complimented by the subsequent geomorphological analysis. Dr. John E. Foss was sub-contracted to perform the analysis of five auger tests adjacent to or within test units and shovel test pits within the project area. Auger testings did not exceed one meter in depth. This analysis allowed for a better understanding of site stratigraphy, determined the approximate age of cultural deposits, and assessed past natural and cultural disturbances within the site. This analysis was conducted over the course of a single day and provided invaluable evidence for the state of preservation of prehistoric deposits (See Appendix A).

FIGURE 5: Project and Site Area.

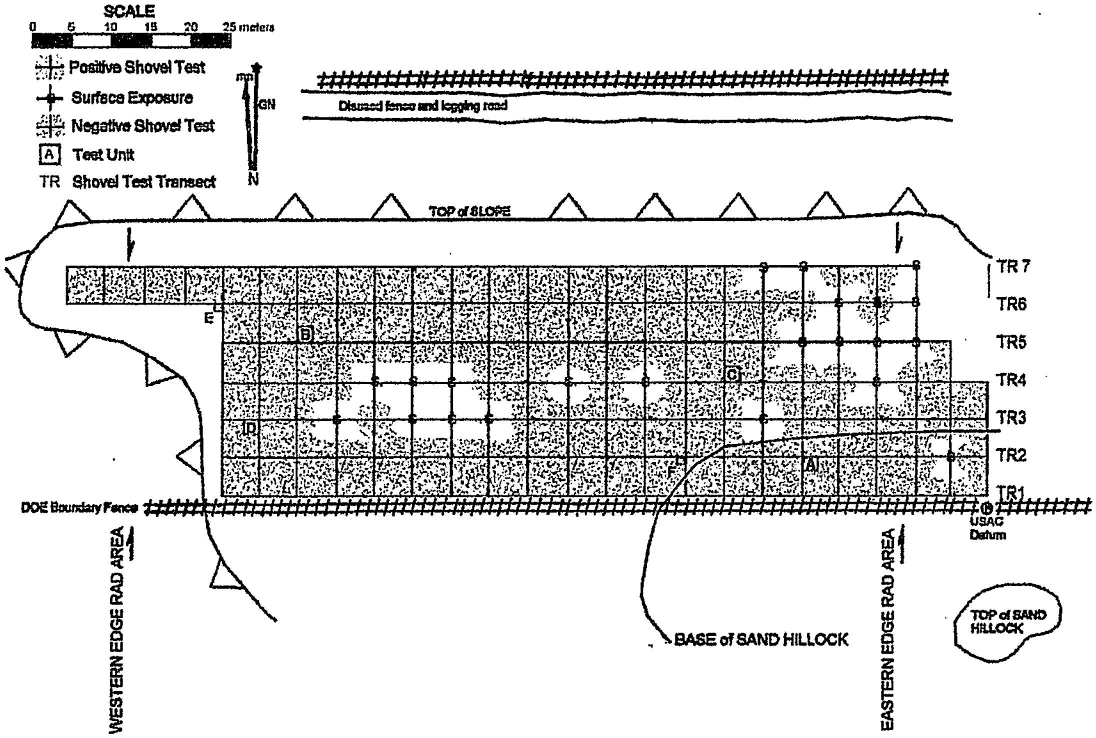


FIGURE 6: Artifact Concentrations Within Project Area.

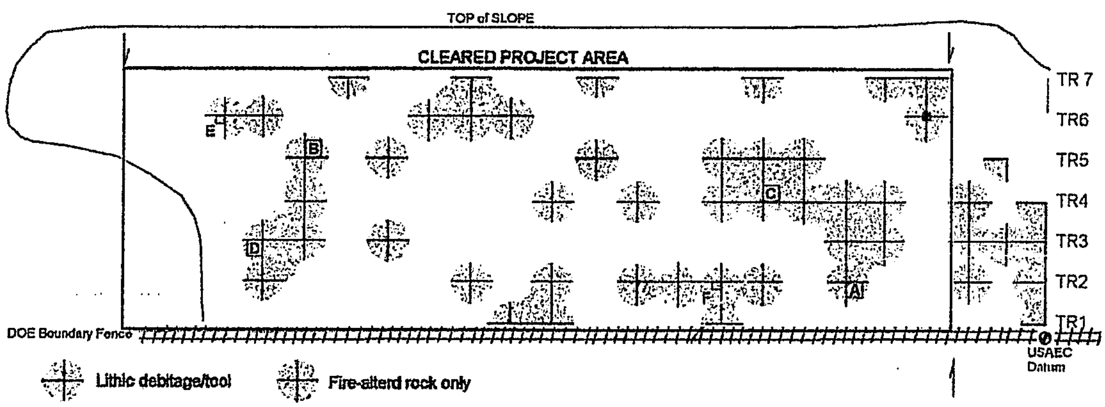


FIGURE 7: Test Unit A Profiles

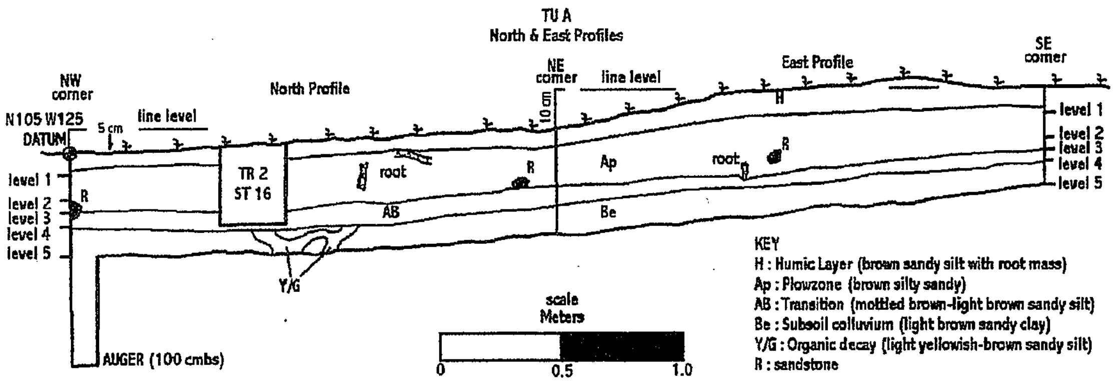


PLATE 1 : Excavation of Test Unit B (View East).

The content of the five features identified within test units were sampled at the discretion of the Field Director. The goal of feature excavation was to acquire artifact samples for temporal assessment and to establish the function of the features. Features which were confidently identified as root disturbances (Features 2, 3 and 5) were not excavated. All of the possible prehistoric features (1 and 4) were half-sectioned. These features were recorded in profile and then completely excavated. All excavated feature fill was screened through 1/4" hardware cloth except for a three liter soil sample taken from the second half of each feature for flotation and micro-botanical/faunal studies. These excavation methods permitted an assessment of the integrity of prehistoric components of the site and the site's NRHP eligibility.

The stratigraphy and contents of every shovel test pit was recorded on standard forms. Two sides, usually including the adjacent shovel test pit, and the base of the AB stratum of each test unit were drawn. A sample of shovel test pits, two profiles and the base of the AB stratum of each test unit, and the top, profile and post-excavation view of Features 1 and 4 were photographed in both color and black & white print film. General views of site and project area conditions including vegetation and surface exposures were also photographed.

Site restoration took place upon completion of all excavations, screening, and field recording. Shovel test pits and test units were roughly backfilled for safety purposes. Any additional restoration, such as seeding or re-sodding, was not included in the field investigations.

All artifacts, soil samples, and field equipment were checked for radioactivity and other chemical contamination. All field photographs were reviewed by appropriate security personnel and returned to DuVall and Associates on 7/17/03 completing the field phase of Phase II testing at 33PK210.

Laboratory Methods

All artifacts were washed, dried, sorted, inventoried, and catalogued. All prehistoric artifacts were sorted into categories based on raw material, morphological attributes, and possible function. Charcoal, fire-altered rock, and river-worn rock was weighed and discarded (Recovered charcoal was from root disturbances and was not significant to site analysis). All other artifact categories (lithic tools and debitage) were prepared for permanent curation.

Subsequent analysis of artifact data concentrated on determining the spatial characteristics of artifacts within the site and evaluating artifact samples for evidence of temporal trends or functional characteristics which can be compared/contrasted with other similar sites in the vicinity or greater Mid-west. Lithic artifact analysis recorded raw material attributes (color, texture, wear), tool type, presence of retouch or utilization, presence of cortex, and the presence and type of flake platforms (unifocal or bipolar).

The results of the analysis of artifacts and archival research was examined in order to determine whether significant information is to be gained from further investigations of the site, consistent with the goals of the 1966 National Preservation Act.

RESULTS

Artifact Analysis

A total of 13.32 m^3 of soils were processed during the Phase I+ and Phase II testing at Site 33PK210. The present artifact assemblage not including the debitage recovered by Schweikart et.al. (1997) and is composed of 12.39 kg of fire-altered rock, 295 individual pieces of lithic material including debitage, 6 pieces of lithic tools, and traces of charcoal (from Test Unit B only). All categories of artifacts were recovered from the upper levels (Ap and AB) of test units and shovel test pits or from surface exposures.

Fire-altered Rock

This category of artifact was described as angular stone with red, brown, or black discoloration occurring as a byproduct to cooking, hide-preparation, and a variety of other activities including cremation. Sandstone was exclusively identified as the parent material for fire-altered rock at 33PK210. The presence of this artifact type is considered to be evidence for occupation.

Charcoal

Carbonized plant and animal remains can indicate cooking or house construction. Carbon can be used to determine the age of deposits using radio-carbon dating techniques. All of the charcoal recovered either during excavation, dry-screening, or flotation at 33PK210 was from non-cultural organic disturbances (tap-roots) and was not analyzed further.

Lithic Analysis

All prehistoric lithics considered in this analysis came from shovel tests, test units, and surface exposure. The lithics were sorted into categories based on material, morphology, and function (Table 1). Categories used in analysis are as follows.

Flake & Flake Fragments

A complete piece or fragment of crypto-crystaline quartz material detached during knapping which exhibits certain morphological characteristics, such as a platform and a bulb of percussion.

Primary Flake

A flake with the dorsal surface composed of cortex. This type indicates core reduction, the initial phase of lithic tool production.

Secondary Flake

A flake with vestiges of cortical surface on the dorsal surface but without the entire surface covered in cortex indicating the final stages of core reduction.

Interior Flake

A flake with no visible cortex and with very few flake scars on the dorsal surface. This type indicates a more refined stage of tool production. Smaller forms can indicate the final stages of core reduction in anticipation of formal tool production.

Bifacial Thinning Flake

A smaller flake with numerous flake scars on the dorsal surface produced during the process of formal tool production or reuse. This type is particularly associated to permanent occupation sites.

Bipolar Flake

A flake with two bulbs of percussion indicating two points of impact (hammer and anvil) during the extraction of the point and is a result of a specialized activity associated to the use of smaller nodules of raw material (Hazel, et.al. 2003).

Retouched Flake

A flake with intentional modification of a single flake edge by either pressure or percussion flaking technique.

Shatter

Detached angular pieces that are discarded during the reduction process.

Core/Core Fragment

A nucleus or mass of rock that exhibits flake scars. A core is often considered an objective piece that functions primarily as a source for flakes to be used or modified to produce tools.

Cortex

The chemically or mechanically weathered surface on rocks. Its presence on flakes indicates early stages of lithic reduction. At 33PK210 all cortex was river-worn.

Biface

A tool that has two surfaces that meet to form a single edge that circumscribes the tool. Both faces usually contain flake scars that travel at least half-way across the face.

Projectile Point/Knife (PP/K)

A biface that contains a haft area and is used as a projectile tip or knife blade. These are often identified as arrow points, dart points, spear points, or knife points.

TABLE 1: Summary of Lithic Artifact Assemblage from Phase II Testing at 33PK210.

	ARTIFACT TYPE											RAW MATERIAL			
	primary flake	secondary flake	interior flake	bifacial thinning flake	bipolar flake	flake fragment	shatter	core	biface	retouched flake tool	projectile point/knife	Columbus/Delaware	Upper Mercer	Vanport	TOTAL
Shovel Test Pits	3	9	12			11	1		1			21	15	1	37
Test Unit A	1	3	5			3						4	8		12
Test Unit B	12	30	35	8		53	5	1	1	1		92	50	4	146
Test Unit C	2	19	13	2	2	20	4	1				25	37	1	63
Test Unit D	2	7	6			5			1		1	7	14	1	22
Test Unit E		1				3						3	1		4
Test Unit F	1	4				5	1					6	5		11
TOTAL	21	73	71	10	2	100	11	2	3	1	1	158	130	7	295
% Frequency	7.1	24.7	24.1	3.4	0.7	33.9	3.7	0.7	1	0.3	0.3	53.6	44	2.4	100

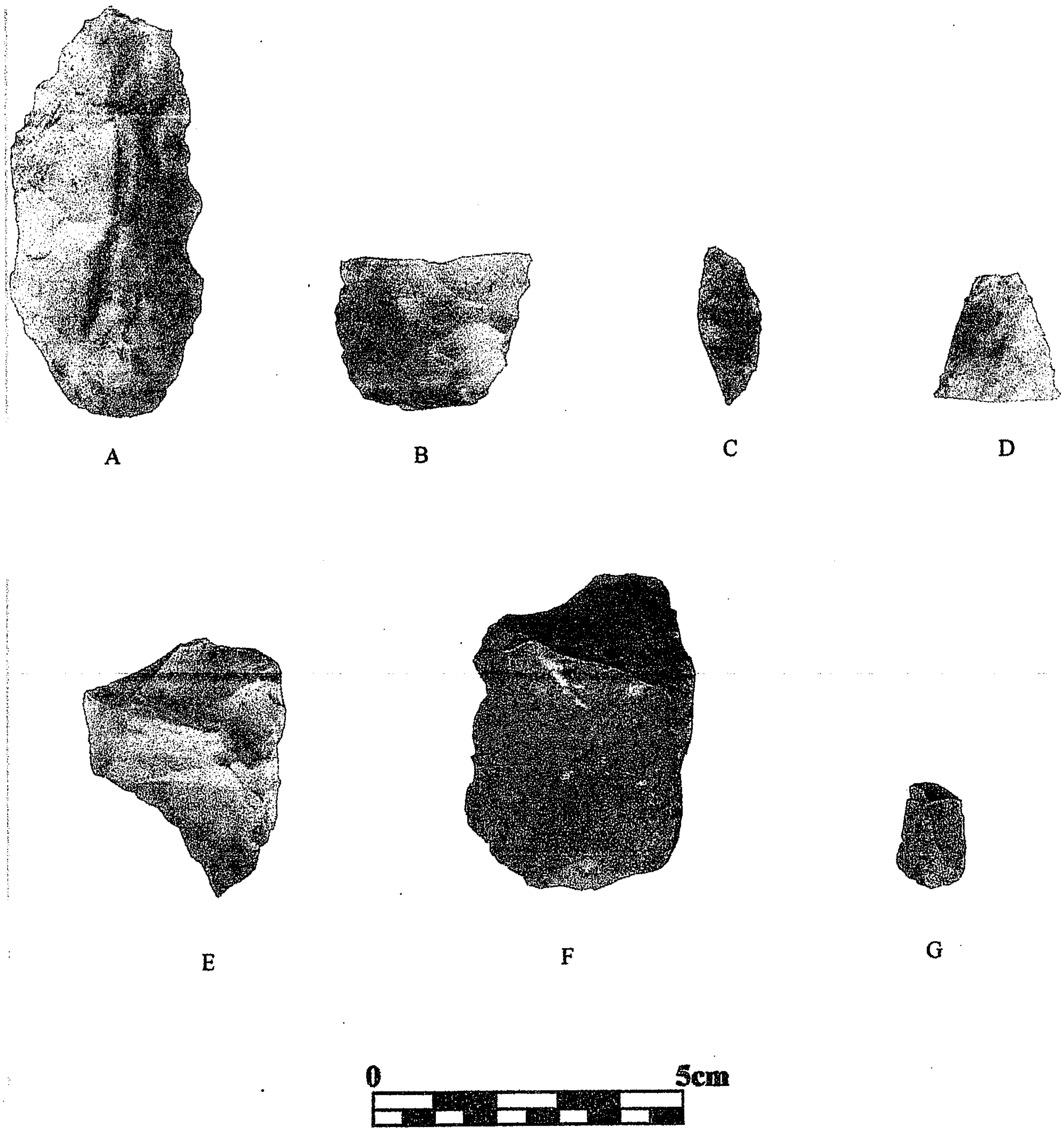
Lithic Analysis Discussion

The lithic analysis of 33PK210 included 295 pieces were recovered from shovel testing and test unit excavation (Table 1). A total of 265 flakes and fragments were recovered. Of these, 94 (35%) flakes exhibited cortex. A total of 11 pieces of angular chert debris were recorded. The debitage density for the entire assemblage was calculated at 19.2 flakes per cubic meter (m^3). The relatively high proportion of primary and secondary flakes and low numbers of bifacial thinning flakes suggests that the majority of tool manufacture at 33PK210 involved core reduction. This suggests that the site was a special activity area (core reduction) used for short periods of time perhaps throughout multiple cultural periods and not a permanent or semi-permanent occupation site as hypothosized.

The only tools in this assemblage were 2 cores, a retouched flake, 3 bifaces, and a distal-section of an unidentified pp/k (Plate 2). The pp/k was the only potentially diagnostic tool observed. Unfortunately, the base and mid-section were not recovered.

The chert tools, flakes and other debris were composed of Columbus/Delaware, Upper Mercer, or Vanport (Converse 1973). These chert types are non-local but are probably derived from river or stream beds (Church 1995). Among the total lithic assemblage there were 158 (53.6%) composed of Columbus/Delaware chert, 130 (44%) composed of Upper Mercer chert, and 7 (2.4%) composed of Vanport chert.

PLATE 2: Lithic Tools from 33PK210



Key: Biface and Biface Fragments (A-C); PP/K Fragment (D); Retouched Flake Tool (E); Core (F-G).

The Excavation

Field work for the survey and testing at 33PK210 took place on the 4th through the 17th of June, 2003. At the time of the field investigations, the weather was fair with temperatures between 60-75 degrees Fahrenheit with partly cloudy to cloudy skies. Trees were in full leaf with a developed understory of brambles, wild roses, and succulents. Surface visibility was adversely affected by late spring plant growth, except where the brambles had been recently mown where surface visibility was excellent (100%). All drainages which crossed the project area contained flowing water. There was no flooding within the project area though shovel test pits in the center of the site filled with ground water overnight.

Shovel Test Pits

A total of 147 shovel test pits (121) measuring 50 x 50 cm or surface exposures (26) measuring 1 x 1 meter were either manually excavated or systematically surface collected (Table 2). Throughout the project areas upper level soils (Ap and AB) were brown well drained silty loams except for shovel tests (Transects 1 and 2 : Shovel tests 14 -21) within the southeastern corner of the project area which were sandy silty loams. Soil texture and coloration conform to descriptions of the Princeton and Omulga soil types (Hendershot 1990). All shovel test pits contained relatively shallow natural levels. Soil stratigraphy was composed of a thin topsoil, a 20-30 cm deep plowzone, followed by sterile subsoil. A "transition" level composed of a mix of plowzone and the subsoil was also observed within the shovel tests. This stratum within shovel tests indicate that the entire project area (and the site area) had been cultivated suggesting the use of a chisel-plow. The observed stratigraphy of all shovel test pits are presented in Table 2.

Artifacts were diffuse and scattered evenly (Figure 6) within the total 4.32 m^3 of soils processed from the shovel test pits. Fire-altered rock and debitage were recorded in the 46 positive shovel test pits. A total of 39 pieces of lithic debitage, two core fragments, a crude biface, 3.63 kg of fire-altered rock, and .11 kg of river cobble were recorded within the 147 shovel test pits and surface exposures. Debitage density for shovel test pits was calculated at 9.03 flakes per m^3.

No features or sub-plow zone cultural strata were observed within any of the shovel test pits.

TABLE 2: Summary of Shovel Test Pit Stratigraphy.

Transect	Test Pit	Ap (plowzone) cmbs	Ap (plowzone) color	Ap (plowzone) texture	Bt (subsoil) cmbs	Bt (subsoil) color	Bt (subsoil) texture	Artifacts
1	8	0-27	10 YR 4/5	silty loam	27-42	10 YR 5/6	clayey silt	far, core
1	9	0-28	10 YR 4/5	silty loam	28-41	10 YR 5/6	clayey silt	far
1	12	0-27	10 YR 4/5	silty loam	27-43	10 YR 5/6	clayey silt	far
1	13	0-32	10 YR 4/5	silty loam	32-50	10 YR 5/6	clayey silt	far
1	20	0-38	10 YR 4/5	silty loam	38-50	10 YR 5/6	clayey silt	flake
1	21	0-37	10 YR 4/5	sandy silt	37-51	10 YR 5/6	silty sand	far, flake
2	2	0-12	10 YR 4/5	silty loam	12-34	10 YR 5/6	clayey silt	far, cobble
2	7	0-23	10 YR 4/5	silty loam	23-38	10 YR 5/6	clayey silt	flake
2	9	0-18	10 YR 4/5	silty loam	18-30	10 YR 5/6	clayey silt	far, biface
2	11	0-22	10 YR 4/5	silty loam	22-34	10 YR 5/6	clayey silt	far
2	12	0-26	10 YR 4/5	silty loam	26-38	10 YR 5/6	clayey silt	flake
2	13	0-22	10 YR 4/5	silty loam	22-35	10 YR 5/6	clayey silt	far
2	14	0-30	10 YR 4/5	sandy silt	30-45	10 YR 5/6	silty sand	far
2	16	0-28	10 YR 4/5	sandy silt	28-40	10 YR 5/6	silty sand	far
2	19	0-31	10 YR 4/5	sandy silt	31-45	10 YR 5/6	silty sand	flake
2	20	surface exposure						
2	21	0-29	10 YR 4/5	sandy silt	29-43	10 YR 5/6	silty sand	far, flake
3	1	0-14	10 YR 4/5	silty loam	15-34	10 YR 5/6	clayey silt	core
3	2	0-18	10 YR 4/5	silty loam	18-36	10 YR 5/6	clayey silt	flake
3	3	0-23	10 YR 4/5	silty loam	23-37	10 YR 5/6	clayey silt	flake
3	4	surface exposure						
3	5	0-25	10 YR 4/5	silty loam	25-40	10 YR 5/6	clayey silt	far
3	6	surface exposure						
3	7	surface exposure						
3	8	surface exposure						
3	16	0-20	10 YR 4/5	silty loam	20-35	10 YR 5/6	clayey silt	far
3	17	0-28	10 YR 4/5	silty loam	28-40	10 YR 5/6	clayey silt	flake
3	19	0-29	10 YR 4/5	silty loam	29-45	10 YR 5/6	clayey silt	far, flake
3	20	0-25	10 YR 4/5	silty loam	25-37	10 YR 5/6	clayey silt	flake
3	21	0-21	10 YR 4/5	silty loam	21-34	10 YR 5/6	clayey silt	flake
4	3	0-21	10 YR 4/5	silty loam	21-36	10 YR 5/6	clayey silt	flake
4	5	surface exposure						
4	6	surface exposure						
4	7	surface exposure						
4	9	0-19	10 YR 4/5	silty loam	19-36	10 YR 5/6	clayey silt	flake
4	9	0-20	10 YR 4/5	silty loam	20-38	10 YR 5/6	clayey silt	flake
4	11	0-17	10 YR 4/5	silty loam	17-40	10 YR 5/6	clayey silt	flake
4	12	surface exposure						
4	13	0-19	10 YR 4/5	silty loam	19-40	10 YR 5/6	clayey silt	core
4	14	0-24	10 YR 4/5	silty loam	24-42	10 YR 5/6	clayey silt	far, flake
4	15	0-24	10 YR 4/5	silty loam	24-37	10 YR 5/6	clayey silt	flake
4	16	0-19	10 YR 4/5	silty loam	19-39	10 YR 5/6	clayey silt	far
4	17	0-28	10 YR 4/5	silty loam	28-41	10 YR 5/6	clayey silt	flake
4	18	surface exposure						
4	19	0-22	10 YR 4/5	silty loam	22-36	10 YR 5/6	clayey silt	far
4	19	0-23	10 YR 4/5	silty loam	23-41	10 YR 5/6	clayey silt	far
4	21	0-21	10 YR 4/5	silty loam	21-37	10 YR 5/6	clayey silt	far
5	3	0-25	10 YR 4/5	silty loam	25-43	10 YR 5/6	clayey silt	flake
5	5	0-30	10 YR 4/5	silty loam	30-48	10 YR 5/6	clayey silt	flake
5	10	0-20	10 YR 4/5	silty loam	20-39	10 YR 5/6	clayey silt	far
5	13	0-25	10 YR 4/5	silty loam	25-45	10 YR 5/6	clayey silt	far, flake
5	14	0-18	10 YR 4/5	silty loam	18-42	10 YR 5/6	clayey silt	flake
5	15	0-28	10 YR 4/5	silty loam	28-44	10 YR 5/6	clayey silt	flake
5	16	surface exposure						
5	17	surface exposure						
5	18	surface exposure						
5	19	surface exposure						
5	20	0-27	10 YR 4/5	silty loam	27-37	10 YR 5/6	clayey silt	far
6	3	0-30	10 YR 4/5	silty loam	30-47	10 YR 5/6	clayey silt	flake
6	4	0-29	10 YR 4/5	silty loam	29-43	10 YR 5/6	clayey silt	far
6	8	0-22	10 YR 4/5	silty loam	22-39	10 YR 5/6	clayey silt	far
6	9	0-20	10 YR 4/5	silty loam	20-41	10 YR 5/6	clayey silt	far, flake
6	10	0-18	10 YR 4/5	silty loam	18-34	10 YR 5/6	clayey silt	far
6	17	surface exposure						
6	19	surface exposure						
6	20	surface exposure						flake
6	21	surface exposure						
7	4	0-28	10 YR 4/5	silty loam	28-42	10 YR 5/6	clayey silt	far
7	7	0-24	10 YR 4/5	silty loam	24-40	10 YR 5/6	clayey silt	far
7	10	0-34	10 YR 4/5	silty loam	34-51	10 YR 5/6	clayey silt	far
7	14	0-31	10 YR 4/5	silty loam	31-48	10 YR 5/6	clayey silt	far
7	15	surface exposure						
7	16	surface exposure						
7	17	0-24	10 YR 4/5	silty loam	24-39	10 YR 5/6	clayey silt	far
7	18	0-21	10 YR 4/5	silty loam	21-38	10 YR 5/6	clayey silt	far
7	19	surface exposure						

Test Units

A total of 4 two by two and 2 one by one meter test units were manually excavated. Test unit placement was dependant on two assumptions: concentrations of positive shovel test pits (Figures 5 and 6) indicate intact prehistoric deposits (Test Units B-E) and prehistoric deposits may be preserved underneath colluvium from the sand hillock (Test Units A and F). Throughout the project area the upper level soils (Ap and AB) were brown well drained silty loams except for the two test units (A and F) along the southeastern corner of the project area which were sandy silty loams. Soil texture and coloration conform to descriptions of the Princeton and Omulga soil types (Hendershot 1990).

All test units contained relatively shallow natural levels, precluding the use of 10cm arbitrary levels in most cases. Soil stratigraphy was composed of a thin humic layer, a 20-30 cm deep plowzone containing the artifacts, and a sterile subsoil. A "transition" level (AB) composed of a mix of plowzone and the subsoil containing diffuse artifacts was also observed within the test units (Figure 8). This stratum and the plowscars observed within subsoil (Be) observed within Test Units D and E indicate that the entire project area (and the site area) had been cultivated with a chisel-plow (Plate 5). The observed stratigraphy of all test units are presented in Figures 7, 10, 11, 12, 13, and 14 and depicted in Plates 3 and 4.

The number of artifacts varied within the total 9 m^3 of soils processed from the test units. Over half of all of the artifacts recovered from test units came from Test Unit B (Table 1). A total of 253 pieces of lithic debitage, two core fragments, two crude bifaces, a retouched flake tool, a mid-section of a projectile point/knife, and 8.76 kg of fire-altered rock were recorded within the six test units. Debitage density for all test units was calculated at 28.77 flakes per m^3.

Test Unit A (Levels 2-3) contained 11 flakes with a flake density of 5 and 1.25 kg of fire-altered rock. Test Unit B (Levels 1-4) contained 143 flakes with a flake density of 70.5 and 3.35 kg of fire-altered rock. Test Unit C (Levels 1-3) contained 62 flakes with a flake density of 32 and 1.55 kg of fire-altered rock. Test Unit D (Levels 1-3) contained 22 flakes with a flake density of 11 and 1.06 kg of fire-altered rock. Test Unit E (Levels 1-2) contained 4 flakes with a flake density of 8 and 0.15 kg of fire-altered rock. Test Unit F (Levels 2-3) contained 11 flakes with a flake density of 24 and 1.4 kg of fire-altered rock.

None of the artifacts were diagnostic. A large portion of lithic debitage displayed water-worn cortical surfaces suggesting that limited core-reduction was taking place on site.

No prehistoric features or sub-plow zone cultural strata were observed within any of the shovel test pits. The five "features" identified within Test Units B, E, and F were recent non-cultural organic disturbances. They contained little to no cultural material and had irregular and non-distinct profiles and bases with tap roots and horizontal root runs (Figures 9 and 14).

FIGURE 8: Base of Test Unit A.

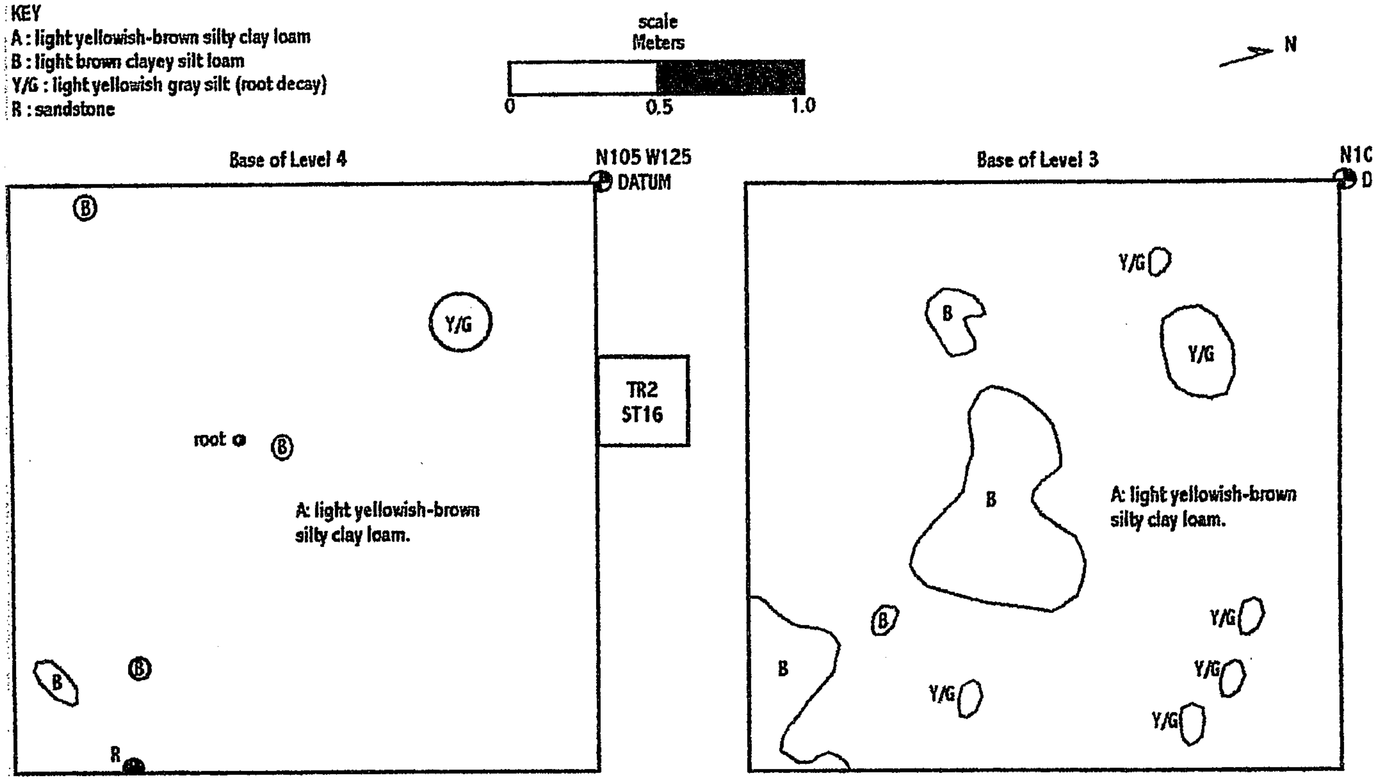


PLATE 3: General View of North Profile of Test Unit A.

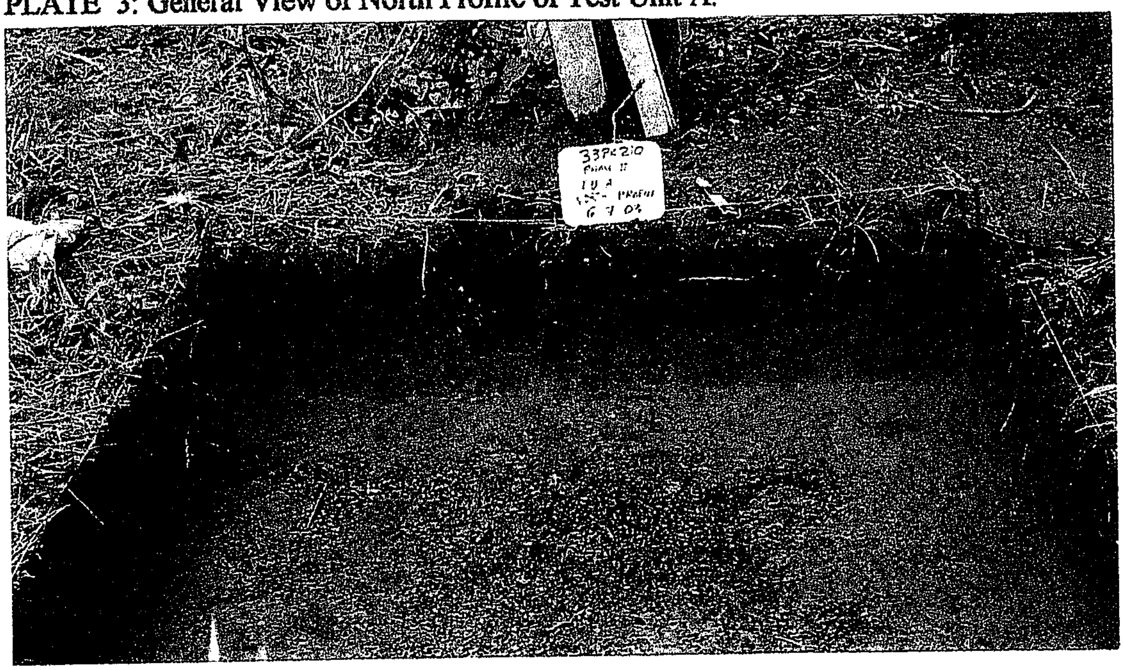


FIGURE 9: Planview of Base of Test Unit B and Feature 1.

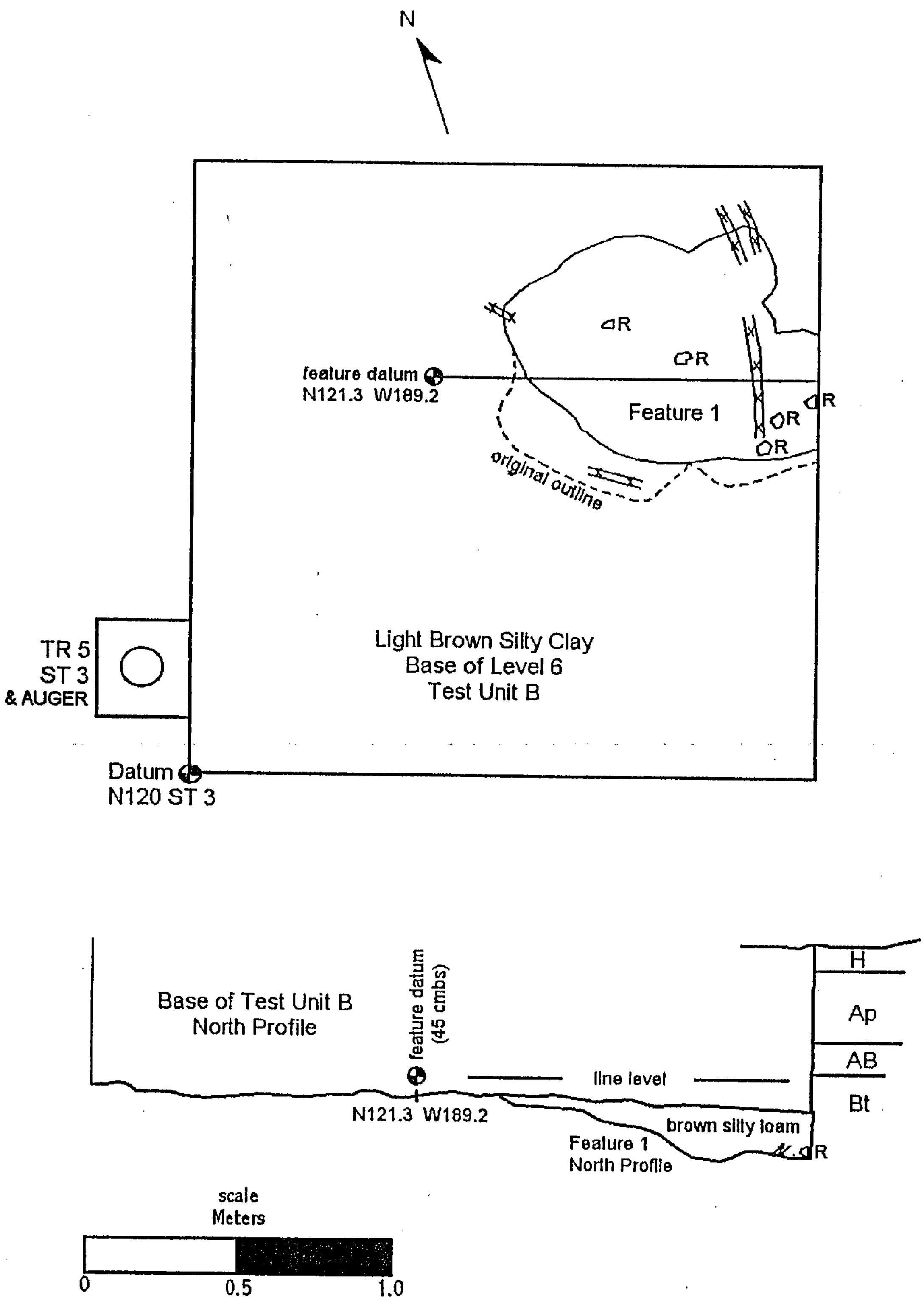
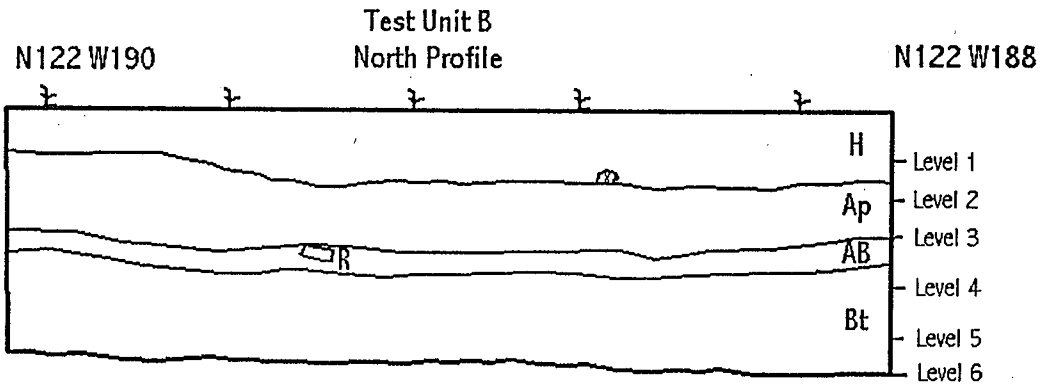
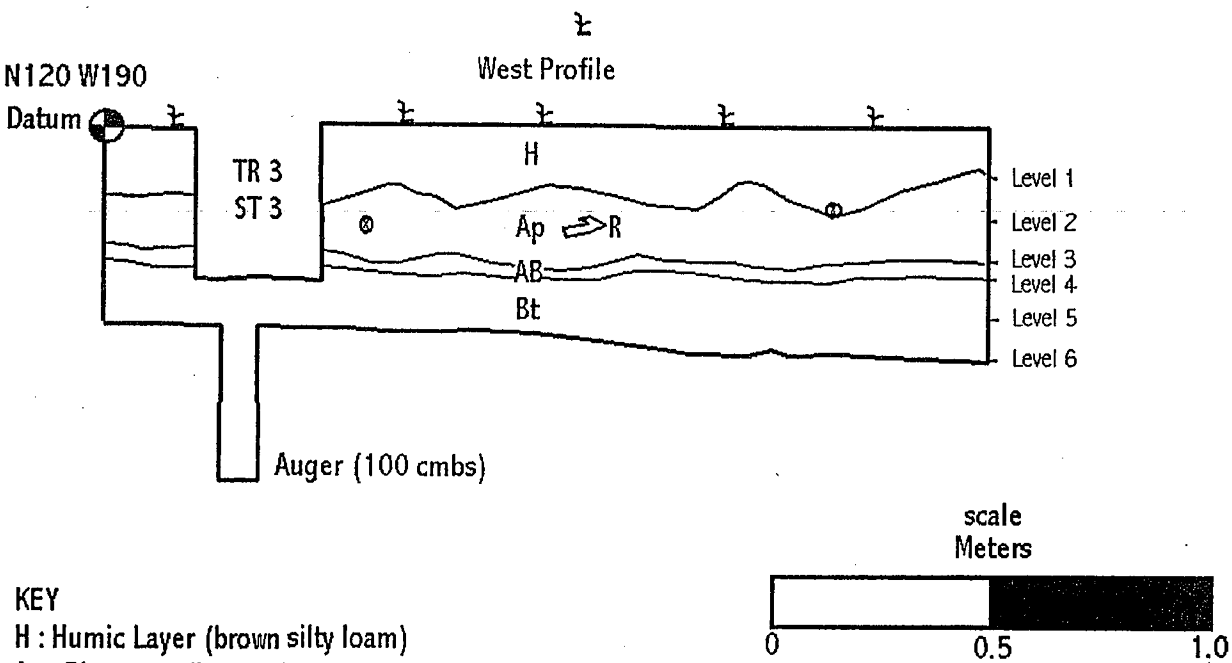


FIGURE 10: Profiles for Test Unit B.





KEY
H : Humic Layer (brown silty loam)
Ap : Plowzone (brown silty loam)
AB : Transition (mottled brown-light brown clayey silty loam)
Bt : Subsoil (light brown silty clay)
R : sandstone

FIGURE 11: Profiles for Test Unit C.

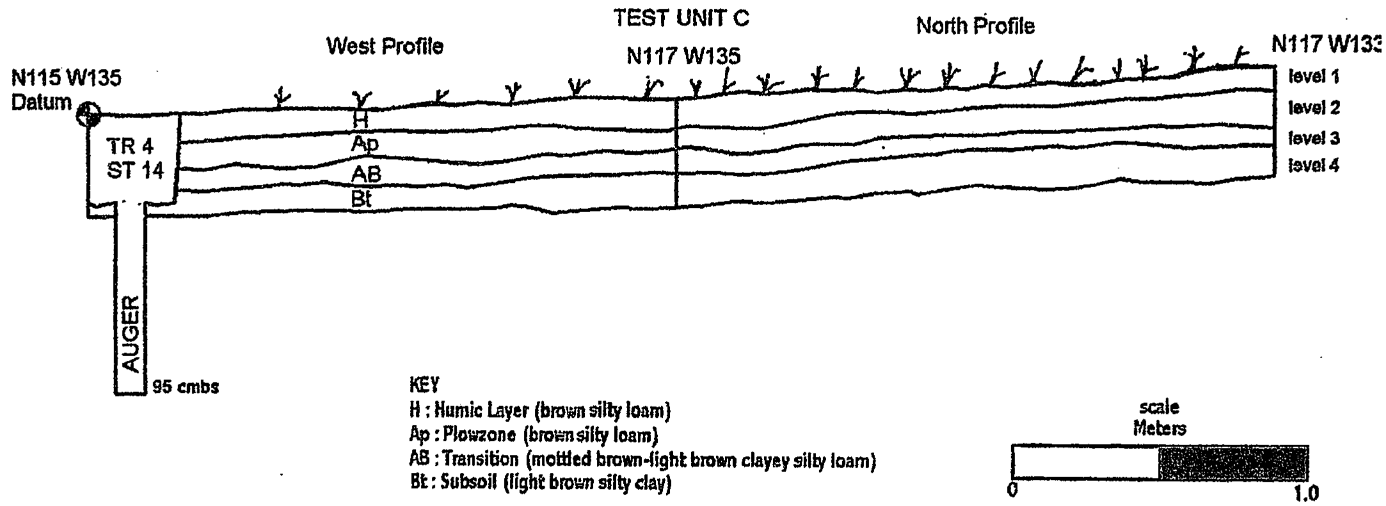


PLATE 4: General View of North Profile of Test Unit C.

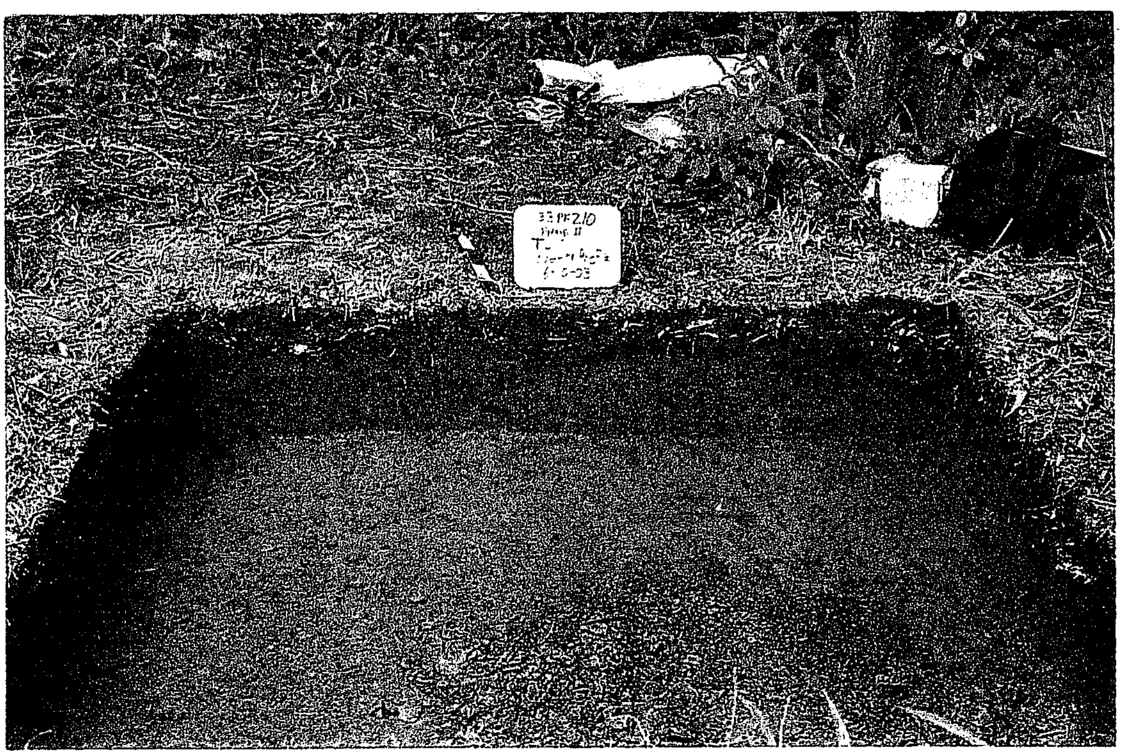


FIGURE 12: Profiles for Test Unit D.

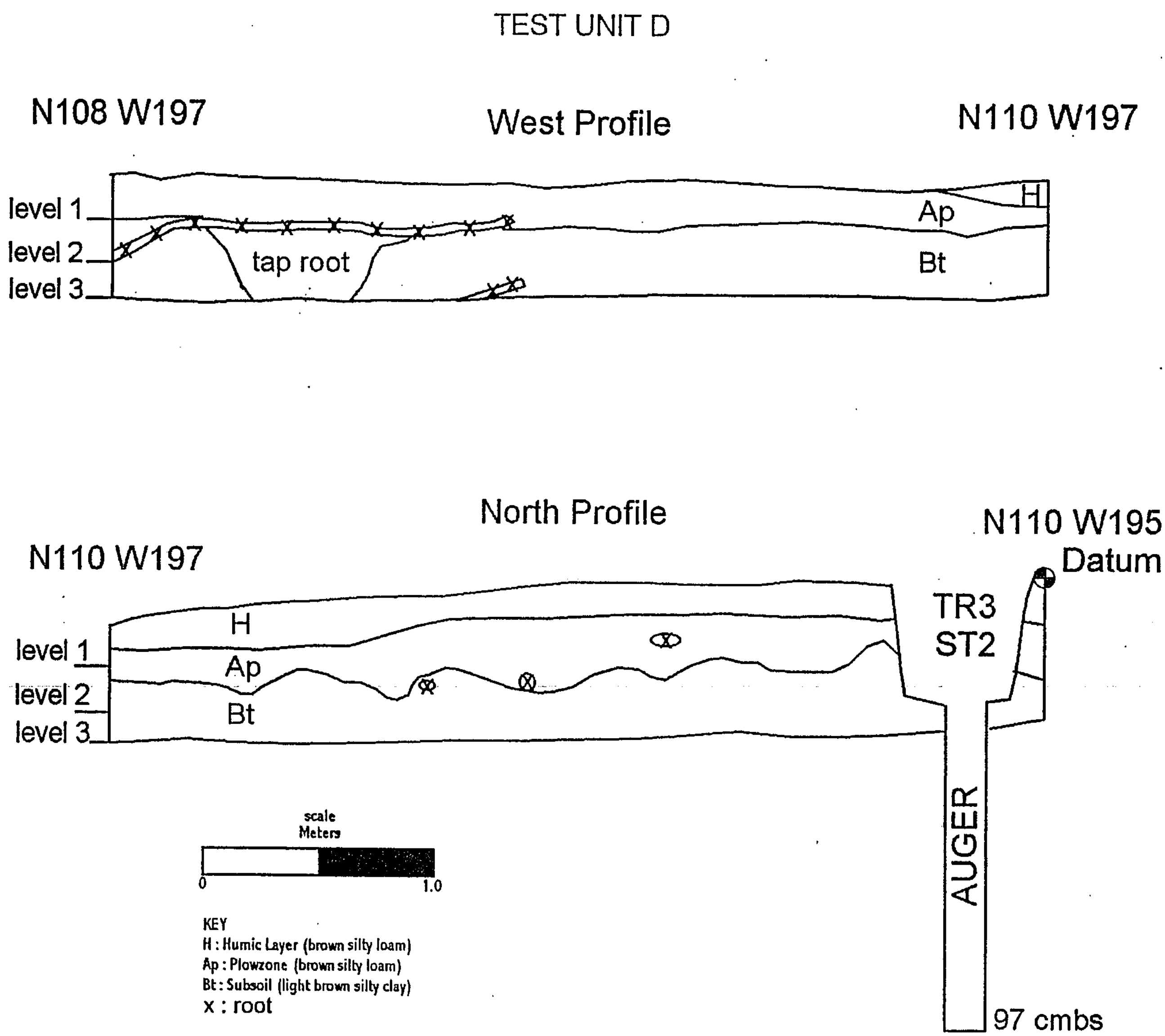


PLATE 5: General View West of Plowscars in Test Unit D.

FIGURE 13: Profiles for Test Unit E.

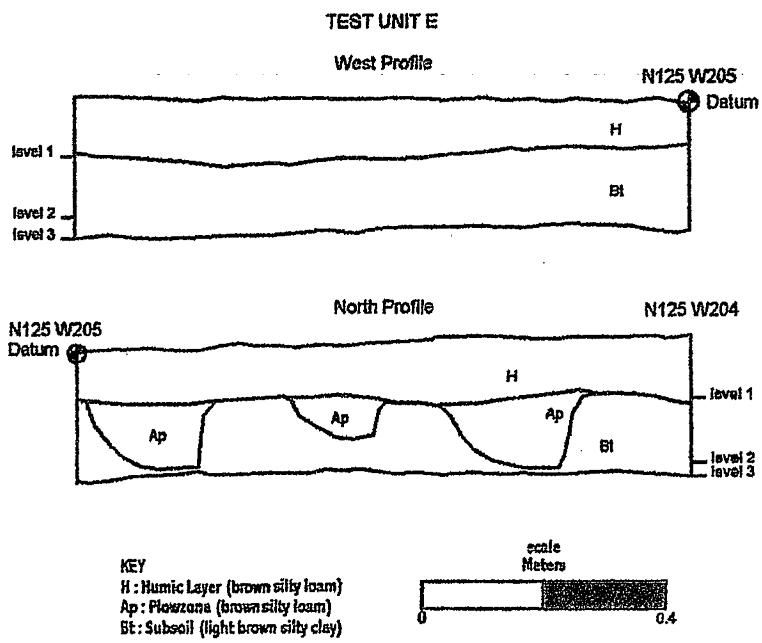
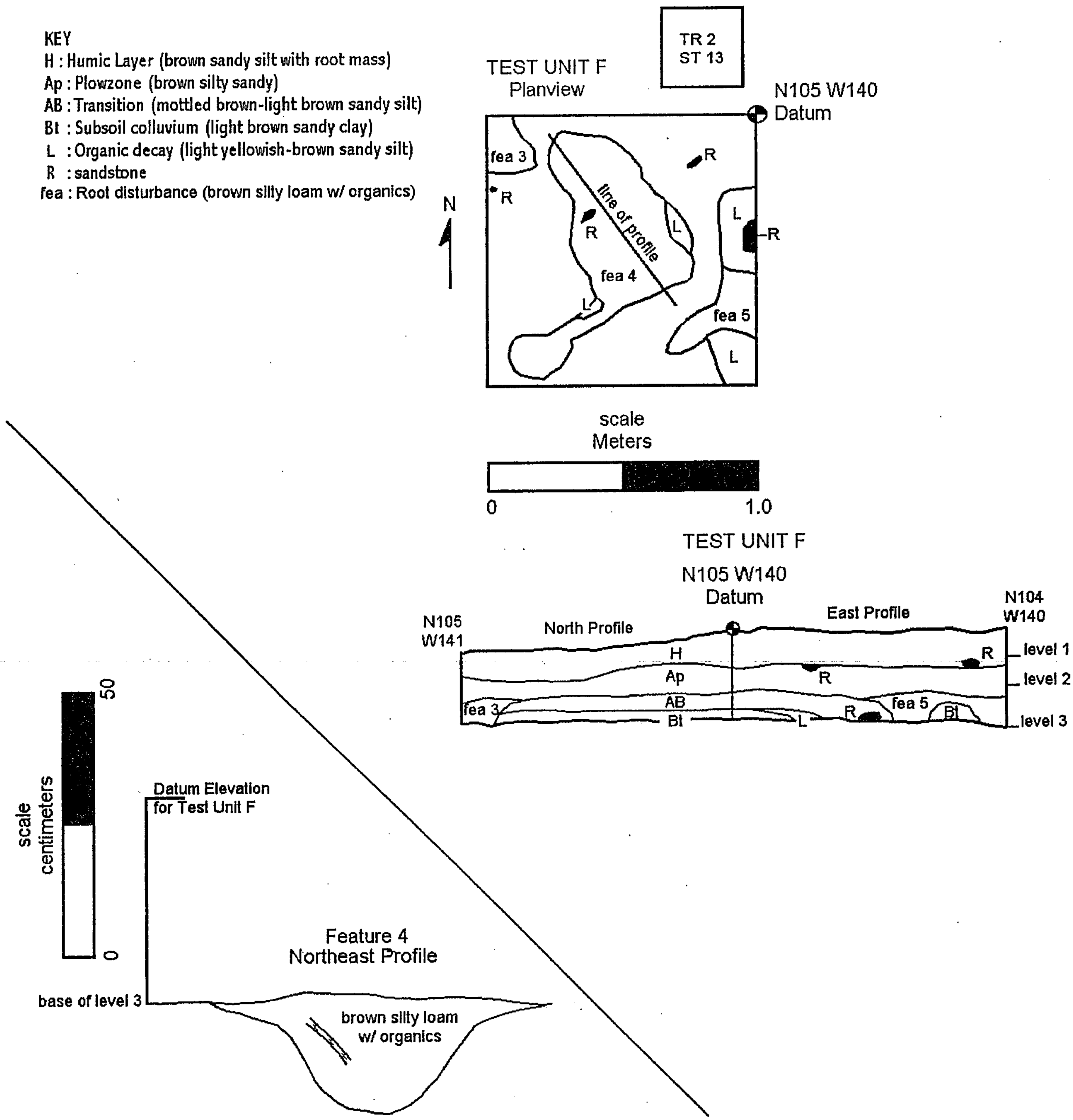


FIGURE 14: Profiles and Base of Test Unit F and Profile for Feature 4.



Auger Tests

A total of five one meter deep auger tests were excavated across the project area (Plate 6). Augers were placed within or immediately adjacent to Test Units A-D and F. Auger test were located at grid points N105/W125, N120/W190, N115/W135, N110/W195, and N105/W140.

The results of the geomorphological analysis of these test conformed with the results of test unit analysis. A shallow plowzone (12-26 cm) overlay a BE transition into subsoil (7-15 cm). All soils below the BE showed characteristics of deposits dating from the Pleistocene or earlier. The sandier soils observed within the southeastern portion of the site were identified as Pleistocene colluvial deposits (BE2) presumably eroded from the small hillock 1.8 meters above and 15 meters south of the site datum. The structure, consistency and boundaries within this colluvium appears old enough to predate human occupation of the region.

Subsoil (Bt) was identified at depths below surface between 19 and 50 cm. This variation may be due to mechanical disturbance (push-piles) of the project area, particularly in the eastern central and southwestern portions (Test Units C and D) of the project area.

No artifacts or evidence for prehistoric strata were observed within any of the auger tests. A complete summary of the geomorphological analysis is presented in Appendix A.

PLATE 6: Analysis of Auger at N105/W140 (view east).

DISCUSSION

Site 33PK210 is located across the western portion of a bluff overlooking the Scioto River and 100 meters south of the southwestern entrance road to the PORTS facility. The present project area along this bluff covered a 100 meter by 30 meter area. Site 33PK210 was originally identified as a prehistoric lithic scatter located across a 112 m^2 area but the present investigations have extended the site area considerably larger.

The refined Phase I+ survey of 33PK210 revealed that the actual site area covers the entire 3,000 m^2 project area. The investigations suggest that the actual site area extends across the entire gentle western slope of the bluff-top beyond the eastern edge of the project area and south of the DOE property boundary covering approximately 6,800 m^2. This area includes a small sand hillock southeast of the Phase II datum (Figure 15).

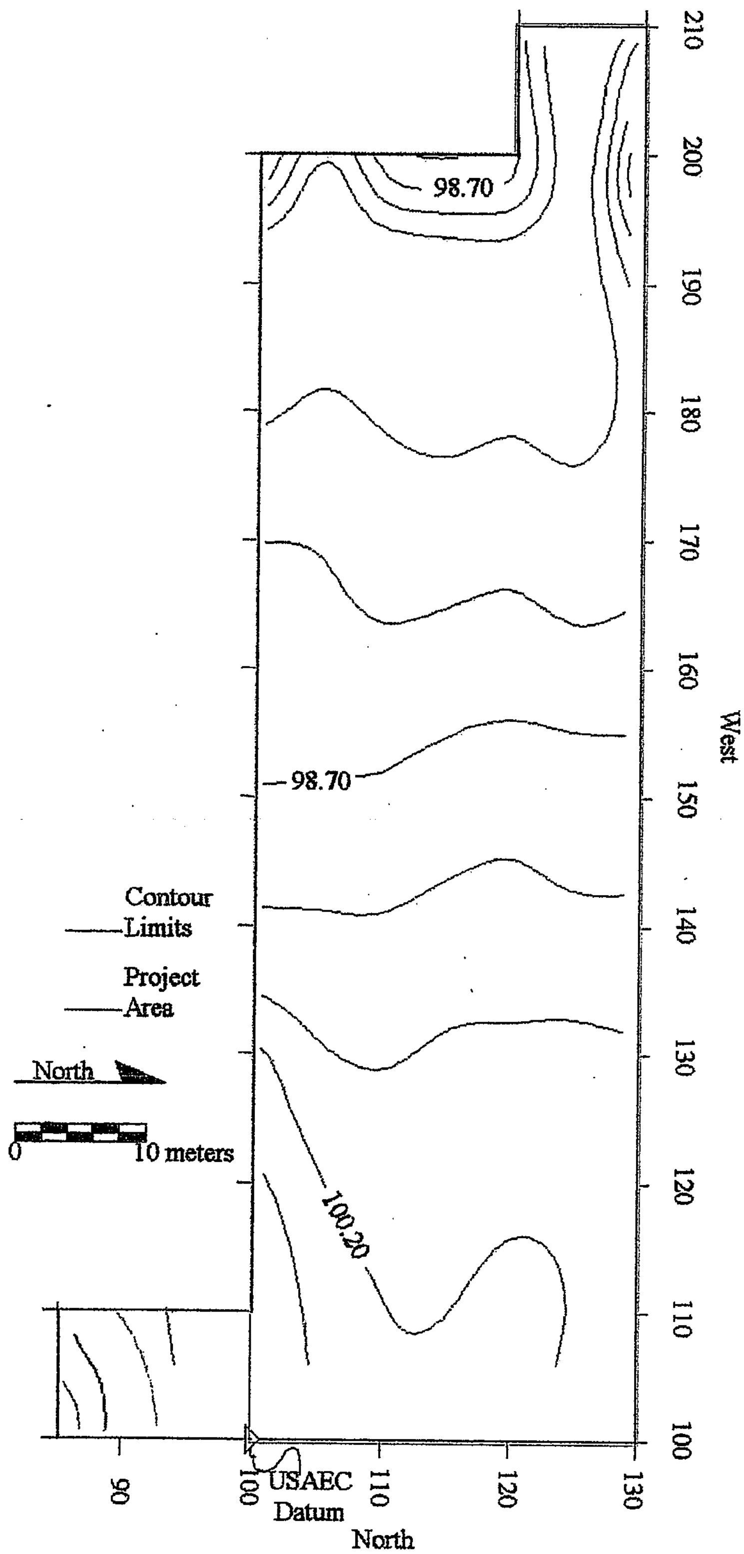
In addition to defining the site boundary, shovel test pit excavation revealed that artifacts were diffuse and scattered evenly within the Ap strata within the project area. Test unit excavation revealed that artifacts are confined to the upper humic and Ap strata (Levels 1-3) across the site. Where artifacts have been recorded below the first 20-30 centimeters, they have been associated to root disturbances (Features 1-5) and have migrated to these depths naturally.

Categories of artifacts identified during excavations included fire-altered sandstone, chert bifacial tools, and chert debitage associated primarily with the initial stages of tool production. These results are consistent with investigations of other upland artifact scatters in the immediate vicinity. All categories of artifacts were scattered diffusely and evenly across the project area.

Visual inspection and test unit excavations indicate that the site has been disturbed in the historic past. Push-piles containing rotting stumps are present across the northern half of the present project area. Some of these piles have +50 year old mature trees growing from them. The appearance and location of these push piles are reminiscent of forestry disturbances. Plowscars are visible within the profiles and at the base of the upper strata of most of the test units. The area has not been plowed or disturbed in any other way since the DOE acquired the property in the 1950's yet significant agricultural disturbance has occurred within the past 200 years of historic land-use (Hendershot 1990).

It was not possible during the present investigations to gain permission from the DOE to extend Phase II testing to this adjacent property. However, it is unlikely that sufficiently preserved cultural deposits would be located anywhere across the bluff due to the same factors which have impacted the present project area (agriculture).

FIGURE 15: Contour Map of the Project Area.



CONCLUSIONS

The site is in close horizontal proximity to the Scioto Works I Site (33PK22), a large Hopewell Period earthworks located along a terrace of the river. Late Archaic short-term occupation sites (33PK55 and 33PK56) on the bluffs of the Scioto have been recorded within the vicinity of 33PK210. Therefore, it was anticipated that site 33PK210 was a permanent or semi-permanent prehistoric occupation site and that the artifacts would be associated either to the nearby Hopewell earthworks site along the river terrace or to a tradition of upland Late Archaic short-term occupation sites (33PK55 and 33PK56). Unfortunately, the present investigations did not identify any intact prehistoric features or cultural strata. It was not possible to speculate the possible function of site 33PK210. In addition, no culturally diagnostic artifacts were observed. No cultural connection could be established between site 33PK210 and other nearby prehistoric sites, particularly from the Late Archaic and Hopewell Periods.

Based on the information gathered from the 2003 investigations at site 33PK210, it was determined that the site is ineligible for nomination to the National Register of Historic Places under Criterion D in compliance with the 1966 National Historic Preservation Act (NHPA) pursuant to 36CFR800. No further investigations are recommended on the site within the present DOE Property.

All materials associated with this project, including artifacts, field notes, maps, photographs, and negatives will be curated at the R.M.D.C. Facilities, PORTS Facility, U.S. Department of Energy, 3930 U.S. Route 23 South, Piketon, Ohio (45661).

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APPENDIX A

PRELIMINARY REPORT ON SOILS OCCURRING AT THE ARCHAEOLOGICAL SITE AT THE DOE FACILITY NEAR PIKETON, OHIO

J.E. Foss
Soil Scientist
Soils International, Inc.
Box 22026
Knoxville, TN 37922

June 14, 2003

GENERAL COMMENTS

The archaeological site is located in Pike County, Ohio in an area that was not directly glaciated but had Pleistocene sediments of loess, eolian sands, and glacial outwash. The archeological site was located in an upland area with the parent material for the soils being loess and eolian fine sands. The soils in the general area of the site were mapped in the Princeton and Omulga soil series (Hendereslot, 1990). The Princeton soils are deep, well drained and formed in eolian fine sand. The Omulga soils are deep, moderately well drained and have formed in loess, colluvium, and old alluvium; these soils also have a fragipan.

Investigations at the site indicated the soils were formed mainly in Pleistocene loess (eolian silts) and soils upslope were formed in eolian fine sands overlying the loess. Profiles TU A and Auger Test No. 1 had eolian fine sands in the upper 30 to 65 cm and silts below the fine sands. Profiles TU B, TU C, and TU D were formed entirely in loess. Some of the fine sands in TU A and Auger Test No. 1 could have originated from the small hill located just southeast of the main area investigated.

Development in the soil profiles examined at the site shows weathering typical of soils of Pleistocene age. Profiles TU B, TU C, and TU D developed in loess had moderately strong argillic (clayey) horizons of silty clay loam and with nearly continuous clay coatings on ped surfaces. Some disturbance was evidenced in the upper 30 to 45 cm; this included a plow zone and possibly some erosion and sedimentation in several profiles. In TU B and TU D a thin A horizon (organic accumulation) has formed in the old plow zone (Ap horizon).

Profile TU A developed in eolian fine sands over loess shows (Table 1) two argillic horizons with one developed in the fine sandy sediments and the other in the loess. Thus, the fine sands below 40 cm have been in place for a sufficiently length of time to form the argillic (minimum of 4,000 years). The upper 40 cm, however, show disturbance of plowing and possibly some sedimentation from upper slopes.

Table 1 Profile descriptions of soils occurring at the archaeological site at DOE location near Piketon, Ohio

Horizon	Depth cm	Color	Mottles	Texture	Structure	Consistence	Boundary
TU A							
A1	0-8	10YR 3/2	None	l	1fpl	vfr	cs
Ap	8-27	7.5YR 3/3	None	vfsl	1mpl	vfr	cs
EB	27-40	7.5YR 4/4	None	fsl	1fpl	vfr	cs
Bt1	40-65	7.5YR 4/4	c2f 7.5YR 5/3	fsl	1fsbk	fr	-
Bt2	65-85	7.5YR 5/4,5/6	m2d 7.5YR 5/6 10YR 6/3-6/2	l	-	-	-
2Bt1b	85-100	7.5YR 5/4	m2d 7.5YR 5/8, 6/3	sicl	-	-	-
2Bt2b	100-120	7.5YR 4/4	m2d 7.5YR 5/8 10YR 6/2	sicl	-	-	-

Notes: Soil is developed in sandy eolian sediment overlying silts; the 65-85 cm horizon is mixed between sands and silts; the Bt horizon developed in the fine sandy sediment is a weakly developed argillic with clay bridging prominent; auger used below 45 cm; A1 horizon has accumulated organics after area left in fallow or woods; 6% slope, northwest aspect; moderately well drained; north wall described 6/11/03

TU B

Horizon	Depth cm	Color	Mottles	Texture	Structure	Consistence	Boundary
A1	0-11	7.5YR 3/2,4/2	None	sil	2mpl	fr	cs
Ap	11-26	7.5YR 4/2,4/3	None	sil	1mpl	vfr	cs
BE	26-45	7.5YR 5/4-5/6	None	sil	1msbk	fr	cs
Bt1	45-80	7.5YR 4/6	None	sicl	2msbk	fr	-
Bt2	80-100	7.5YR 4/6	f2f 7.5YR 6/6	sicl	-	-	-
BC	100-110	7.5YR 5/6	None	sil	-	-	-

Notes: Soil is developed in silty eolian sediment (loess); clay coatings thin, discontinuous in BE and thin nearly continuous in Bt1; well developed argillic horizon in this profile; 2% slope, northwest aspect; moderate permeability; well drained profile; feature present in excavation on east side, fill had more organics than Bt or BE horizon; auger used below 45 cm; north wall described on 6/11/03

TUC

Horizon	Depth cm	Color	Mottles	Texture	Structure	Consistence	Boundary
Ap	0-12	7.5YR 4/2,4/3	None	sil	1mpl	fr	as
EA	12-19	7.5YR 5/4,4/3	None	sil	1mpl	fr	cs
Bt1	19-35	7.5YR 4/6	None	sicl	1mabk	fr	cs
Bt2	35-60	7.5YR 4/6	None	sicl	2msbk	fr	-
Bt3	60-95	7.5YR 4/6	None	sicl	-	-	-
BC	95-120	7.5Yr 4/6,5/6	None	sil	-	-	-

Notes: Soil is developed in silty eolian sediment (loess); clay coatings thin, discontinuous in Bt1 and thin nearly continuous in Bt2 (well developed argillic); 3% slope, northwest aspect; moderate erosion; well drained profile; auger used below 35 cm; north wall described on 6/11/03

TU D

Ap	0-20	7.5YR 4/3	None	sil	-	-	-
BE	20-30	7.5YR 5/4	None	sil	-	-	-
Bt1	30-60	7.5YR 5/6,4/6	None	sicl	-	-	-
Bt2	60-90	7.5YR 4/6	None	sicl	-	-	-
BC	90-110	7.5YR 5/6,4/6	None	sil	-	-	-

Notes: Soil is developed in silty eolian sediment (loess); strong argillic in profile; 3% slope, western aspect; well drained profile; northern part of wall (shovel test area) described on 6/11/03

Auger Test No. 1, N105N, 142W

A	0-12	7.5YR 4/2,4/3	None	vfsl	-	-	cs
Ap	12-20	7.5YR 4/2,4/4	None	vfsl	-	-	cs
BE1	20-30	7.5YR 5/4-4/4	None	vfsl-sil	-	-	-
2BE2	30-50	7.5YR 5/4	None	sil	-	-	-
2Bt1	50-70	7.5R 5/4-4/4	None	sicl	-	-	-
2Bt2	70-100	7.5YR 5/4,5/6	None	sicl	-	-	-
2BC	100-110	7.5YR 5/6	None	sil	-	-	-

Notes: Profile is similar to TU A except the very fine sandy layer is thinner in the Auger Test; described on 6/11/03

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