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ARCHAEOLOGICAL AND HISTORICAL SURVEY

OF

U.S.M.C. BASE CAMP LEJEUNE

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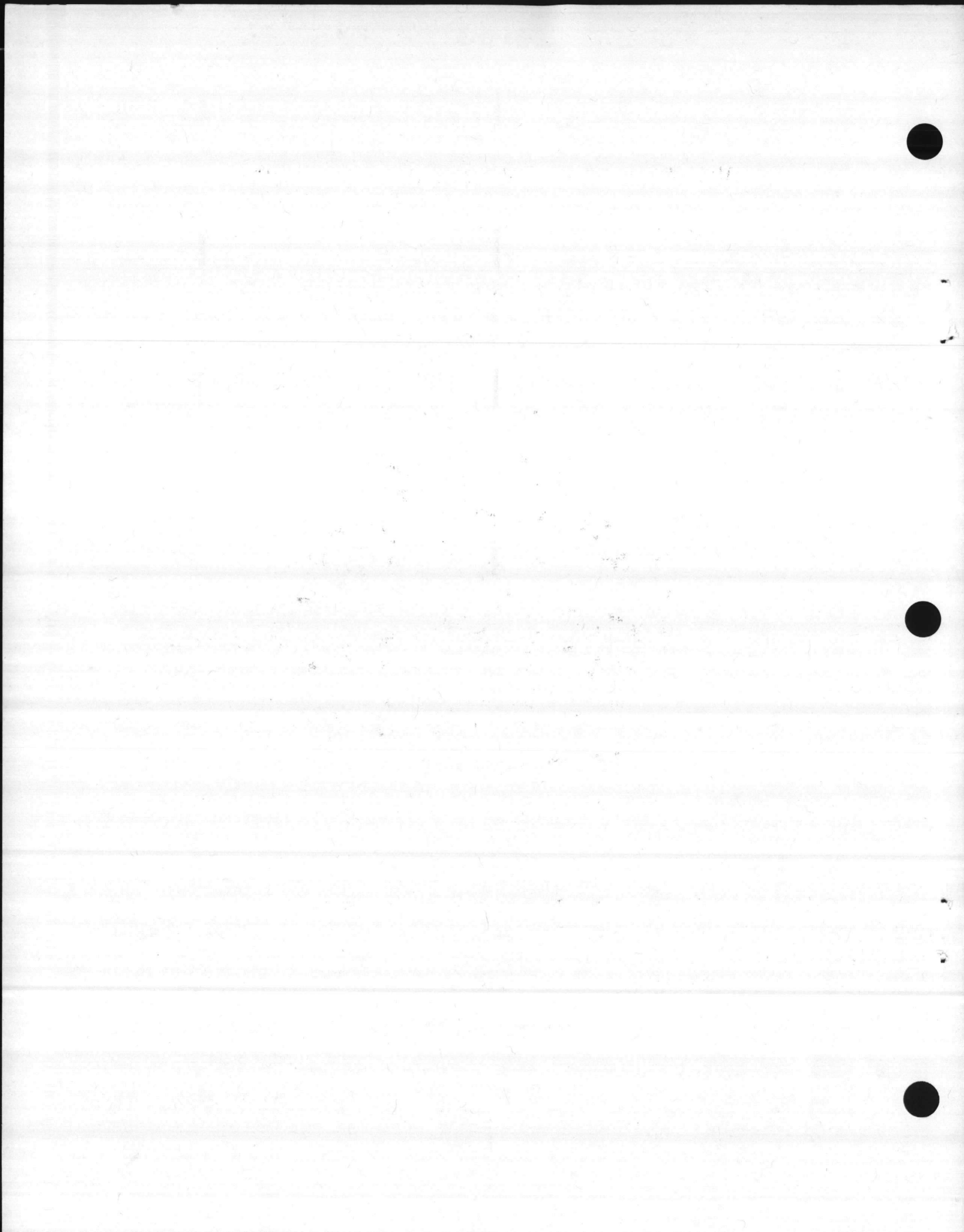


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An Archaeological and Historical Reconnaissance of
U.S. Marine Corps Base, Camp Lejeune.

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-Principal Investigator-

Conducted Under the Auspices of the Department of the Navy

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Abstract

Under contract with the U.S. Department of the Navy, the University of North Carolina at Wilmington undertook an archaeological and historical reconnaissance of U.S. Marine Corps Base, Camp Lejeune, North Carolina from June, 1980 to August, 1981. A portion of the work dealing with the historical record was sub-contracted to Coastal Zone Resource Division of Ocean Data Systems, Inc.

The work consisted of a search of previous work in the area, an on-ground survey of areas selected on the basis of specific environmental zones present at the Base. Within these zones random areas were selected to ensure statistical significance to the findings. Surface collections were made at all sites located and analysis of this material completed. All sites were evaluated for potential eligibility on the basis of surface collection were then tested by excavating a number of two-meter by two-meter squares at each potentially eligible site. Finally, the same procedure was employed at Oak Grove Auxiliary Landing Field in nearby Jones County.

Site locational data was collected from each site on the basis of several environmental and physiographic features. Analysis of these factors showed that sites were clustered within a short distance to water (usually 100 meters or less) and that sites of the Archaic, Early Woodland and Middle Woodland cultural periods tended to be located on higher elevations on freshwater streams. Sites of the later Middle Woodland and Late Woodland periods tended to be located at lower elevations adjacent to salt water.

The results of the analysis showed that the majority of sites located were probably ineligible for inclusion on the National Register of Historic Places because they were either so small, so deflated, or so damaged by military activity that their practical potential for producing research data was approaching nil.

The majority of sites considered eligible for the National Register of Historic Places were shell middens of the Late Woodland period, although a number of earlier sites were also found to be potentially eligible.

ACKNOWLEDGEMENTS

The principal investigator wishes to acknowledge grateful indebtedness to the U.S. Department of the Navy and all of its staff for not only the funding necessary to complete this study, but for all the man-hours of time given in cooperation and help. It is necessary to remember the many students of the University of North Carolina at Wilmington who fought the heat, the insects, the snakes and bears of Camp Lejeune to complete the study. Without them the entire project would have been impossible.

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VICINITY MAP

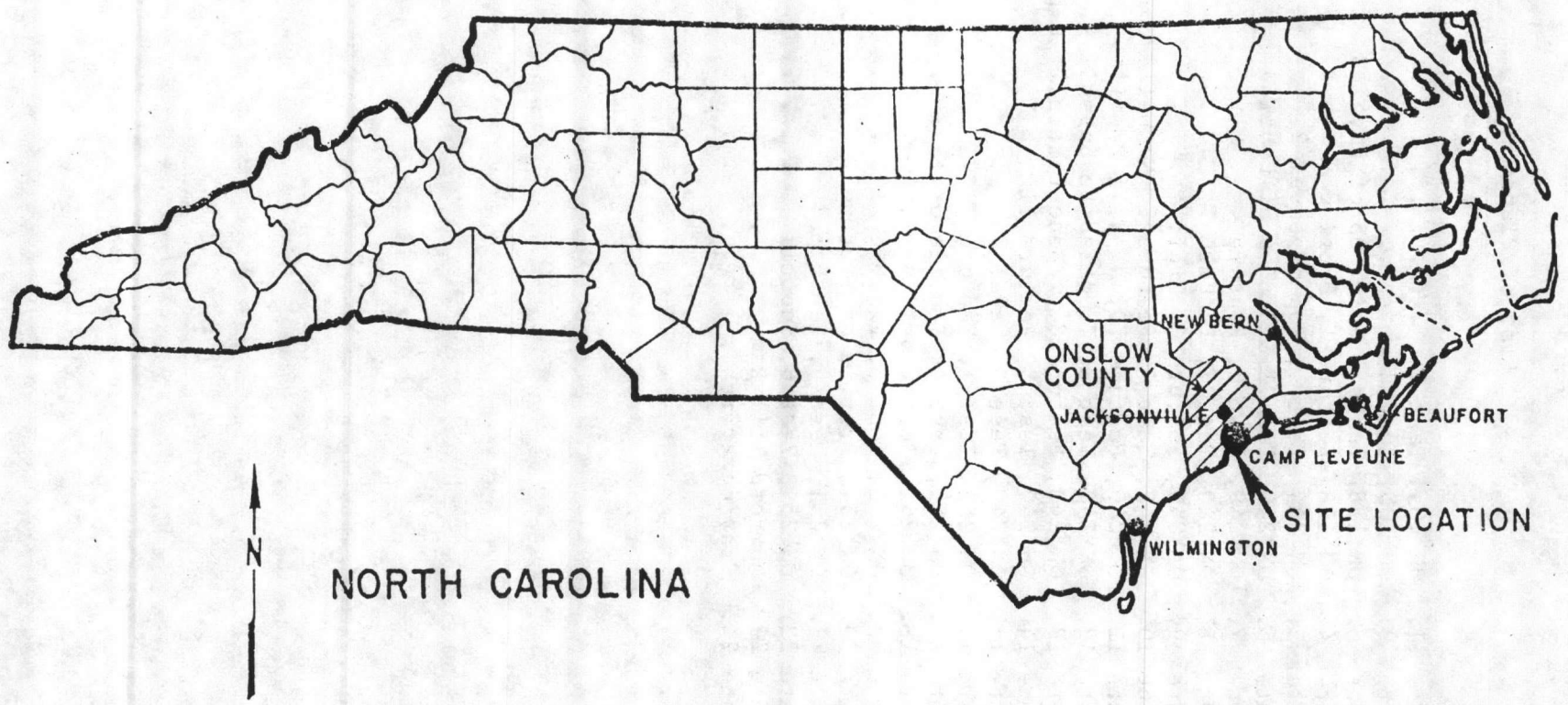


FIGURE 1

During May, June and July of 1980 the University of North Carolina at Wilmington contracted with the United States Department of the Navy to conduct an archaeological/historical reconnaissance of U.S. Marine Corps Base, Camp Lejeune, North Carolina. The purpose of the reconnaissance was to produce a "sensitivity" map of the Base, outlining with as much detail as possible areas on the Base which would have the highest probability of being the location of archaeological sites. The reconnaissance was not intended to be a total survey of the Base or to locate all archaeological sites. Instead, 20 to 25 percent of the Base was to be examined under controlled conditions so that a model could be formulated which would apply to all areas of the Base. Sites were to be located by pedestrian survey, collections made from the surface of each site, environmental factors present at each site recorded, and the above data subjected to a computerized analysis which would generate a model of the environmental and cultural factors which would determine the locations of archaeological sites.

The model produced by survey and computer would then be plotted on Base maps to produce a visual display of the "sensitive" areas of the Base. This map and the accompanying report would provide a tool for future planning at the Base.

Archaeological Background

The coast of North Carolina is probably the most poorly understood archaeological province in the state. While archaeological work began in this area at an early date in the 1930's, the vast majority of archaeological work in the state has been conducted in the piedmont and mountain regions. On the coast early survey work was conducted by the Research Laboratories of Anthropology at the University of North Carolina at Chapel Hill in the early 1930's. Subsequent to the early survey work, there was essentially nothing accomplished until the late 1950's, when William Haag conducted a very brief survey of the northern sector of the coast (Haag 1958). The central sector of the coast was next visited by personnel from the Research Laboratories of Anthropology again in the late 1960's and early 1970's. The present investigator began survey work in 1969 (Loftfield 1970) working near Harker's Island and North River, located approximately 40 miles north of Camp Lejeune. This led to extensive surveying and testing by personnel from the Research Laboratories of Anthropology culminating in the Ph.D. dissertation of this investigator in 1976. During the 1970's extensive work has been conducted in the northern sector of the coast by personnel

from East Carolina University, but most of this remains unpublished. Additional survey and testing has been recently undertaken in the far southern reaches of the North Carolina coast by personnel of the North Carolina Division of Archives and History (CETA 1978). Finally, excavation of a late woodland site some seven miles from Camp Lejeune has recently been reported (Loftfield 1979).

Because so little work has been accomplished to date in the coastal province of the state, much interpretation must be based upon work in the piedmont and mountains. Dating of projectile point types depends on analogy between the points found on the coast and comparable types from the piedmont, as does the dating of general cultural periods.

Human occupation and hence cultural behavior began on the coast of North Carolina by at least 10,000 to 11,000 B.C. Two projectile points of the "Clovis" type were recovered from the White Oak River area, less than ten miles north of Camp Lejeune (Perkinson 1971: 22,24). Dated by analogy of type with similar points in other parts of the country, it can be assumed that they fall into the general range of eastern Paleo-Indian habitation. No other recognized evidence of this period has been found in the immediate vicinity although other Paleo-Indian projectile points have been found from time to time on the coast (Perkinson 1971, 1973). The culture of the makers of these points remains unknown for the present coastal area, but again by analogy it can be assumed that they were hunters of large megafauna and led a very nomadic lifestyle. The finds on the coast today probably do not represent a littoral occupation by Paleo-Indian people, as it is surmised that at 10,000 B.C. the sea stood almost 90 feet lower than it does today (Oaks and Cock 1963: 979-983). Neuman shows that while the sea stood 90 feet lower than today, it rose rapidly until approximately 4,000 years ago, when the rate slowed and stabilized at just slightly lower than today. This would indicate that 10,000 years ago the coast lay somewhere between 25 and 40 miles further east than it does today (Neuman 1972).

Beginning approximately 8000 to 9000 B.C., the Paleo-Indian life style faded with the passing of the large game and the onset of modern climatic conditions. The Archaic period, which succeeded the Paleo-Indian, saw the use of smaller projectile points, an emphasis on hunting smaller game, and a reduction in the territory of each group (Coe 1964). The Archaic continued until approximately 1500 to 2000 B.C. in the coastal area or until the arrival of fire clay pottery, which has traditionally been taken to imply the onset of the Woodland period. While this transition has

not been dated for the North Carolina coast, the presence of Thom's Creek and possibly Stallings Island fiber-tempered ceramics indicates an early arrival of the fired clay ceramic time marker (CETA 1978:52). It is doubtful that the introduction of these ceramics caused or even indicates any adjustment in basic adaptive strategy which is usually implied by the term Woodland. The Woodland period begins with the introduction of pottery, but it implies a change in subsistence to include cultigens. This seems unlikely on the North Carolina coast, but the transition period is poorly understood in the state in general and even more poorly on the coast.

After the appearance of the early fiber-tempered wares and the Thom's Creek ware, there appears an early Woodland ceramic tradition marked by sand tempering. This is followed by a clay-tempered tradition, suspected of being middle Woodland in time, and subsequently by a shell-tempered ware known to be late Woodland (Loftfield 1976, CETA 1978).

Shell-tempered wares, which are most common in the central sector of the coast, are known to exist in Virginia, where they are associated with the coastal Algonquians (Harrington 1948: 251-252, Blaker 1952: 257-258, Evans 1955: 44-46, Brittingham 1947). These wares extend down through the northern sector of the coast, through the central sector where they are predominant, to finally fade out at the Cape Fear River. It has been suggested (Loftfield 1975, 1976) that these wares are probably associated with Algonquian speakers along the coast and their distribution marks the territory once occupied by Algonquian-speaking people.

The Indian presence on the coast has been described by a number of ethnohistoric observers. The first and most illuminating were those of certain members of the Roanoke Colony, especially Thomas Hariot and John White (Quinn 1955). Later, John Lawson described the Indians located along the Neuse and White Oak Rivers (Lawson 1965). In the former accounts, which deal more specifically with the northern sector of the coast, there is little doubt that the Roanoke colonists were in contact with Algonquian-speaking peoples, while Lawson deals with Tuscaroras in the central sector of the coast. However, Lawson states that the coastal Algonquians were a decimated group, indicating that they had fallen on hard times. The Roanoke Colony reports date from 1584 to 1586, whereas Lawson was writing in the first decade of the eighteenth century. Thus there is a considerable time gap between the two accounts. An analysis of the significance of these accounts and a synthesis of the cultural ecolog-

ical material contained in them have been addressed by this investigator earlier (Loftfield 1976).

The Indian presence in the vicinity of Camp Lejeune came to an end by 1715 with the close of the Tuscarora War and the removal of the Indians to other lands. By that time, land grants had been patented in the area and the historic era ushered in.

The work at Camp Lejeune was not conducted in a vacuum. Earlier works by the principal investigator and others were consulted to provide a very strong background for orienting the 1980 reconnaissance.

Archaeological survey at Camp Lejeune actually started in the mid 1960's when personnel of the Research Laboratories of Anthropology at the University of North Carolina at Chapel Hill toured the base recording some few sites. Subsequent surveys were undertaken by the principal investigator in 1973 as a part of research leading to a dissertation for a graduate degree also at the University of North Carolina at Chapel Hill. When that author began teaching at the University at Wilmington it was logical for the survey to continue from that center.

In 1977 a third survey was conducted at Camp Lejeune by then Capt. Lloyd Hekhuis who was stationed at New River Air Station and who was on leave to complete an undergraduate education at UNC-Wilmington. As part of his academic program he completed a reconnaissance of a significant portion of the Base under the direction of Loftfield. This survey provided much of the background for the current reconnaissance (Hekhuis and Loftfield, 1978).

Finally, earlier works by the principal investigator (Loftfield, 1970, 1976, and 1979) provided substantial understanding of the aboriginal occupations of the area now known as Camp Lejeune.

Chapter 2

The Environmental Setting

To generate an effective model of aboriginal occupation it is necessary to first understand the environmental settings which occur in the study area. Primitive cultures are always more closely related to their environments than more technologically advanced cultures and thus an understanding of the environmental zones available to a population is essential to understanding their adaptive patterns. The following description of the en-

vironmental setting at U.S. Marine Corps Base, Camp Lejeune is liberally abstracted from the Final Environmental Statement: Maintenance of the Atlantic Intracoastal Waterway, North Carolina prepared by the U.S. Army Corps of Engineers, Wilmington District in 1975. This document is concise yet complete and constitutes one of the most thorough statements in the public domain.

U.S. Marine Corps Base Camp Lejeune is located in the greater physiographic province known as the Atlantic Coastal Plain. Situated in the tidewater sector of this province, it is on the mainland which is . . .

an area of low elevations and relief, dissected by several large rivers with broad estuaries, and separated from the Atlantic Ocean by a series of narrow, elongated barrier islands. The barrier islands lie close to the mainland, and inshore areas are occupied by narrow sounds, tidal channels, and salt marshes . . .

The mainland represents recently emerged sea bottom covered by a veneer of marine sediments on which young, poorly defined and often poorly drained soils are developed. Vegetation has been cut-over and burned in many areas, and the present distribution of plant associations seldom reflects original conditions.

Climate

The project area is located in a humid mesothermal climatic regime that is characterized by mild winters and hot, moist summers. This regime is tempered by the effect of sea temperatures and breezes in areas within 1 to 2 miles of the Atlantic Ocean. The moderating effect of the sea is clearly illustrated in Table 1

The mean annual temperature for the North Carolina coastal region ranges from 61° to 64°. July is the hottest month and has a monthly average temperature of approximately 80°F. January is the coldest month with monthly means ranging from 44° to 45°F, in the northern coastal sections and 46° to 48°F in the southern coastal areas. Temperatures along the coast seldom exceed 100°F and virtually never fall below 0°F. The average dates for the first freeze in autumn and the last in spring occur during November and March, respectively (See Table 1).

TABLE I

Climatic summary of selected stations in Coastal North Carolina

<u>Subject</u>	<u>Wilmington</u>	<u>NewBern</u>	<u>Station Morehead City- Beaufort</u>	<u>Manteo</u>	<u>Elizabeth City</u>
Average Annual Temperature (°F)	63.8	63.3	-	61.9	62.6
Average July Monthly Temperature (°F)	80.0	80.2	80.6	79.2	79.5
Average January Monthly Temperature (°F)	47.9	46.2	48.0	45.3	44.6
No. Days/yr 90°F	50	68	20	27	39
No. Days/yr 32°F	42	57	25	38	60
Last Freeze Date in Spring (32°F)	Mar. 10	Mar. 22	-	Mar. 16	Mar. 30
First Freeze Date in Fall (32°F)	Nov. 21	Nov. 12	-	Nov. 23	Nov. 8
Average Annual Precip. (In.)	51.29	55.41	54.08	44.31	50.27
Average Annual Snowfall (In.)	1.4	2.4	-	1.3	4.9
Average Annual Relative Humidity (%)	-	-	-	-	-

(From: Carney et.al. 1964, U.S. Dept. Commerce 1965, and Hardy 1970).

Relative humidities along the North Carolina coastal region are high and average 70 to 75 percent annually. Seasonal variance is not great, but there is a slight tendency for highest relative humidities to occur in winter and lowest during spring. A distinct diurnal variation does exist with maximums usually occurring during late afternoon.

The coastal region receives an average of 44 to 56 inches of precipitation annually, most of which falls as rain. Precipitation in the summer is usually in the form of convectional thundershowers while in the winter it is principally cyclonic. Though there are no easily discernible wet-dry seasons, greatest monthly rainfall generally occurs during July, August, and September. Each of these months receives 4 to 7 inches of rainfall annually throughout the coastal region. Fall, particularly October, is the driest part of the year, even though monthly averages would not seem to indicate this. Precipitation during this period is often associated with tropical storms and falls primarily in intense bursts of short duration. Snowfall occurs 1 or 2 times a year with a mean annual accumulation of 1 to 2 inches.

The prevailing wind direction along the coast is from the southwest except during the fall and winter months when northeasterlies caused by offshore storms may prevail. Surface wind speeds average 10 to 13 mph with maximums commonly reached during mid-afternoon and minimums just before sunrise.

The east coast of North Carolina is vulnerable to hurricanes; at least 43 such storms affected this region between 1910 and 1966 (Carney and Hardy 1967). When storms are of unusual severity new inlets may be formed or existing ones closed. The hurricane season begins in June and often extends into November. From June to September the greatest number of storms originate over the Atlantic Ocean, frequently in the vicinity of the Bahama, Winward or Leeward Islands. These storms will usually move inland well south of the state, or move northward paralleling the coast. The latter is the type that most frequently crosses the North Carolina coast. However, most of these have storm centers which pass well offshore and thus, damage is usually restricted to that associated with heavy rain, high tides, and seas. As the hurricane season progresses into late September and October, the center of maximum activity shifts to the western Caribbean. Storms originating in this re-

gion frequently move inland over the Florida land mass and travel in a northerly to northeasterly arc. By the time they reach North Carolina, they have lost most of their intensity because of their overland passage.

Northeast storms which occur primarily during the fall and winter are perhaps a more significant source of damage along the coastal area than are hurricanes. These storms are created when low pressure areas move up the coastline causing a counter-clockwise flow of moisture-laden air. The storms are accompanied by heavy rain and strong northeast winds which may cause unusually high tides and seas. Duration of the storms is variable, but they often persist for from 2 to 5 days.

Geology

The rocks of the coastal counties of North Carolina consist of an eastward thickening wedge of Tertiary and upper Mesozoic sediments resting on a Precambrian to lower Paleozoic granite basement, and covered by a veneer of Pleistocene and recent sand, gravel, and clay (Table 2). The granitic basement slopes eastward from the Fall Line, which forms the boundary between the piedmont to the west and the coastal plain to the east. Two major basement structures are present: the Pamlico Basin (or Hatteras Low) in the North and the Cape Fear Arch (or Great Carolina Ridge) in the south. The most complete sequence of sediments is known from the deepest part of the Pamlico Basin near Cape Hatteras where nearly 10,000 ft. of Upper Jurassic, Cretaceous, and Cenozoic marine and nonmarine rocks have been described (Swain 1952, Richards 1967). To the south the basement rises to within 1109 ft. of the surface in the vicinity of Wilmington where several Cretaceous and Cenozoic formations either disappear or thin considerably (Figure 2).

Possible marine Jurassic rocks, the only ones recognized in the eastern United States, are present in deep wells at Cape Hatteras and Ponzer (Hyde County) (Swain 1952, Brown 1958). Lower Cretaceous rocks, which include marine and continental sandstone and mudstone, outcrop along the Cape Fear, Neuse, and Tar Rivers (Cape Fear Formation) and are found subsurface in wells in Carteret and Pamlico Counties, at Cape Hatteras, and in Pamlico Sound (Richards 1967).

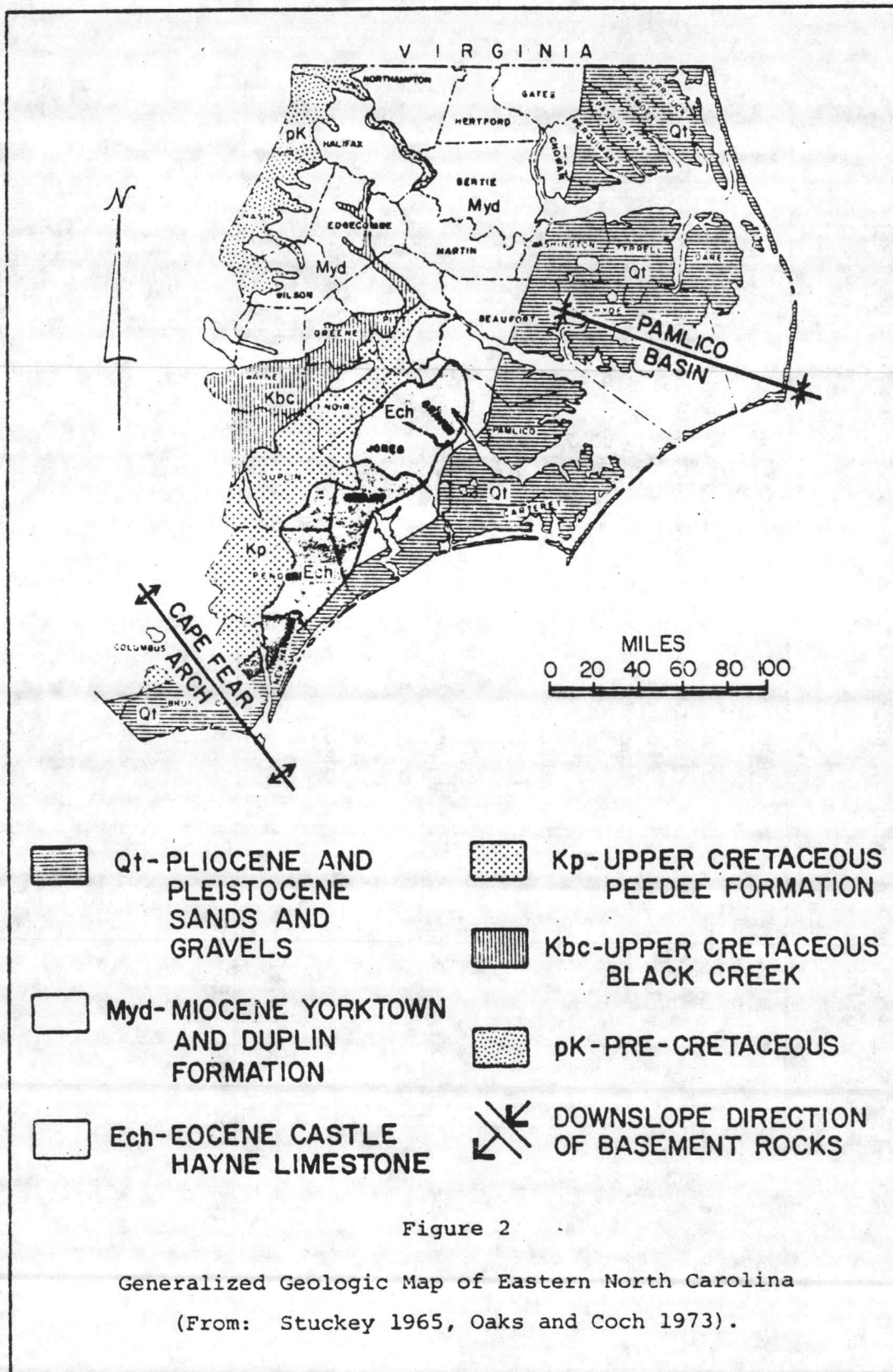
The upper Cretaceous is represented by four formations.

TABLE 2

Geologic time scale and stratigraphic position of rock units of the coastal plain of North Carolina.

<u>ERA</u>	<u>PERIOD</u>	<u>EPOCH</u>	<u>FORMATION</u>
Cenozoic	Quaternary	Recent	Beach and marsh deposits
		Pleistocene	Terrace and surficial deposits
	Tertiary	Pliocene	Croatan Fm.-Waccamaw Fm.
		Miocene	Yorktown Fm.-Duplin Marl
			Pungo River Fm.
		Trent Fm.	
		Oligocene	Unnamed rocks
		Eocene	Castle Hayne Limestone
			Eocene subsurface rocks
		Mesozoic	Cretaceous
Upper	Peedee Fm.		
	Black Creek Fm.		
	Eutaw Fm.		
Lower	Tuscaloosa Fm.		
	Cape Fear Fm., and unnamed subsurface rocks		
Jurassic	Unnamed subsurface rocks		

(From: Stuckey 1965, Richards 1967)



The oldest rocks, the Tuscaloosa formation, consist of alluvial and lake deposits except in the easternmost part of the state where they grade into marine sandstone, limestone, and shale. The continental sandstone and shale of the Eutaw Formation overlie the Tuscaloosa Formation in easternmost North Carolina, but are not found elsewhere in the state. In most areas the Tuscaloosa is overlain by the Black Creek Formation which is composed of siltstone and clay shale of nonmarine, estuarine, marshland, and deltaic origin. The marine Peedee and Black Creek Formations are well represented south of the Neuse River, but to the north they thin and are absent locally (Richards 1967).

Lower and middle Eocene rocks have been tentatively identified at a few localities in the northern part of the state, but the most important Eocene deposit is the Castle Hayne Limestone of middle to late Eocene age. Although rarely exceeding 50 ft. in thickness, it is an important aquifer in coastal counties and is a major source material for cement and crushed stone. The Castle Hayne Limestone pinches out to the southwest along the crest of the Cape Fear Arch (Stuckey 1965).

A few localized pockets of Oligocene rocks have been identified in the area between the New and the Neuse Rivers, but these are poorly known and remain a subject of controversy.

Miocene rocks are widespread on the coastal plain, but are best represented north of the Neuse River. South of the Neuse River, Miocene rocks are discontinuous in distribution. Lowermost Miocene fossiliferous sandstone and limestone in Onslow County are assigned to the Trent Formation (Richards 1950). The Pungo River Formation of middle Miocene age occurs subsurface in Beaufort County and has been identified in wells to the North. It consists of silt, clay, limestone and highly phosphatic sandstone which is mined extensively at Aurora (Kimrey 1965). Uppermost Miocene deposits include the Yorktown Formation which is widely distributed north of the Neuse River, and its southern equivalent, the Duplin Marl, which is best represented in Duplin County. Both formations are important aquifers and consist of highly fossiliferous marine sandstone and shell marl of from 50 to 150 ft. in thickness (Stuckey 1965).

Pliocene rocks of the coastal plain are usually included with Pleistocene and younger sediments as part of the surficial cover because of the difficulty of separating non-fos-

siliferous continental and coastal deposits of similar origin and appearance. Few fossiliferous marine Pliocene deposits have been recognized. These include the Croatan Formation which is best known along the Neuse River east of New Bern and recognized locally in the coastal counties to the north, and the Waccamaw Formation, which occurs sporadically in counties south of the Neuse River (Richards 1950).

The Mesozoic and Tertiary history of the coastal plain is a record of periodic inundation by the sea, deposition of marine and coastal sediments, subsequent withdrawal of the sea, and differential erosion of newly formed deposits. This record is complicated by sporadic uplift of the Cape Fear Arch, coupled to probable subsidence of the Pamlico Basin, which has resulted in tilting and plantation of sediments in a generally north-south direction. During the Pleistocene, and continuing into recent times, the coastal plain was subjected to a series of marine inundations related to waxing and waning of glacial ice caps.

These changes in sea level are recorded in a series of terraces (former sea bottoms) and scarps (former beach fronts) which represent old shorelines. At least seven former shorelines are described, but the older, more westerly of these have been disputed as indicators of high sea level stands. Only the youngest eastern terraces and scarps are generally accepted, and these control surface topography and form and the surface sediments of coastal counties.

South of the Neuse River two major scarps parallel the coast (Figure 3). The Surrey Scarp with crest elevations in the neighborhood of 120 ft. occurs about 45 miles inland. The Suffolk Scarp with crest elevations up to 70 ft. is adjacent to the present coastline except in the vicinity of Cape Fear, where it swings inland about 10 miles. North of the Neuse River the Surry and Suffolk Scarps veer inland to take a north-south trend, so that they lie about 120 and 74 miles, respectively, west of Cape Hatteras. The Hazelton Scarp is first seen in the vicinity of the New River where it intersects the Suffolk Scarp. It runs parallel to the Suffolk Scarp nearly to the Virginia border at a distance of about 20 miles to the west. The relatively flat terraces between scarps dip gently to the east. Although terrace nomenclature is confused, that terrace east of the Suffolk Scarp is generally

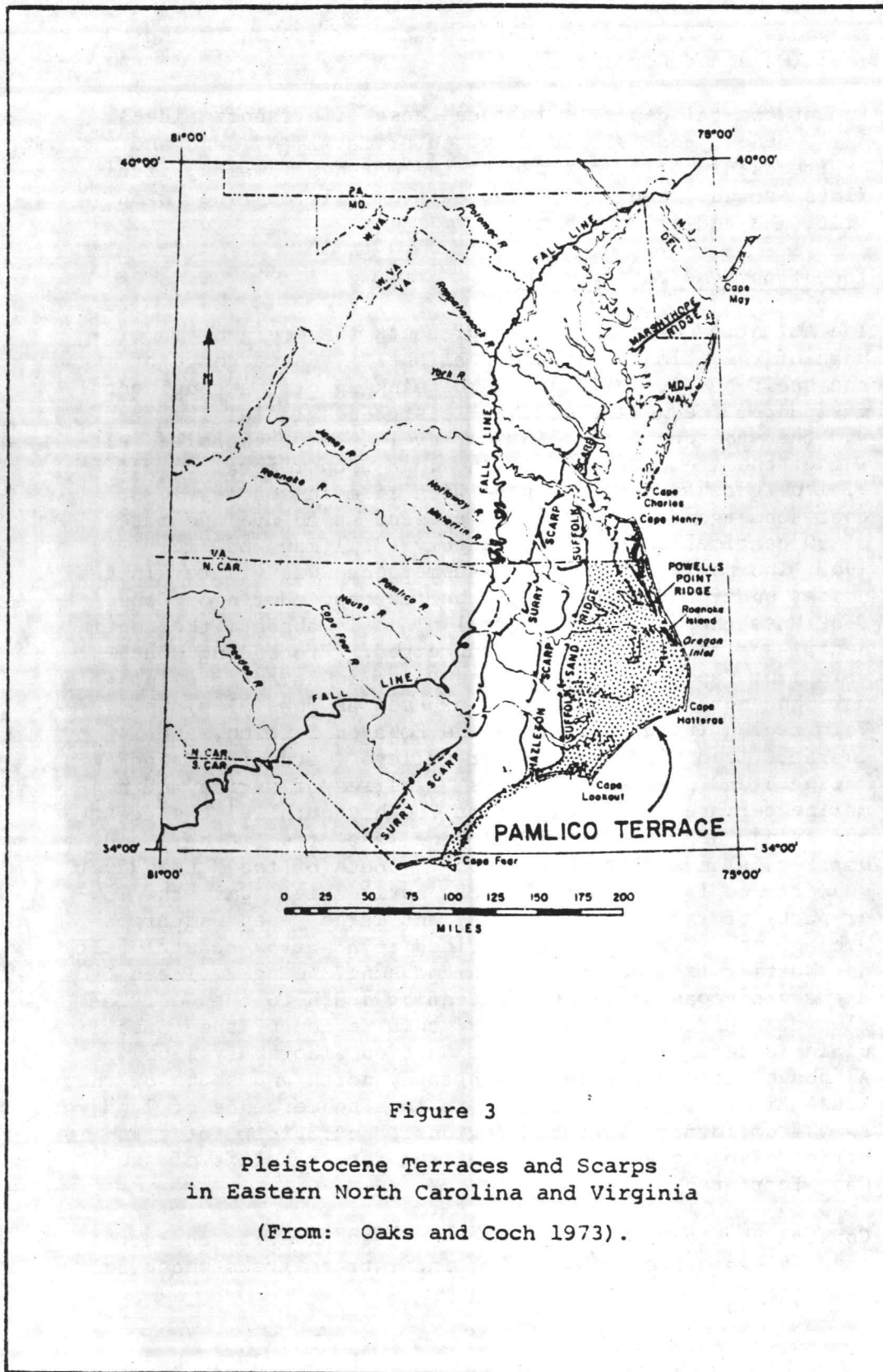


Figure 3

Pleistocene Terraces and Scarps
in Eastern North Carolina and Virginia

(From: Oaks and Coch 1973).

known as the Pamlico and has elevations between 10 and 40 feet (Oaks and Cock 1973).

Recent coastal deposits include those of offshore ridges, bars, dunes, and islands composed primarily of sand and coarser sediment, and those of the marshes, swamps, tidal flats, sounds, and bays composed primarily of finer sand, silt, mud and organic matter.

Topography and Physiography

The Atlantic Coastal Plain represents the emergent inner part of the Atlantic continental shelf. Submergence of the shelf has its origins in the sinking of the continental mass under the weight of the Pleistocene glacial ice cap and the subsequent rise in sea level that accompanied melting of the ice. Rebound of the land upon removal of glacial weight has not kept pace with rise in sea level, so that submergence continues at present at an average rate of 30 centimeters (cm) per century (Milliman and Emery 1968, Thornbury 1965). Land submergence was greater in the north, under and adjacent to the ice cap. North of Cape Cod, Massachusetts, the coastal plain is absent, the continental shelf being entirely submerged. Proceeding southward from Cape Cod to the Neuse River in North Carolina more and more of the shelf is exposed as coastal plain. This region is described as the Embayed Section, and is characterized by drowned river valleys (estuaries) separating broad peninsular tracts, a series of marine and non-marine terraces and scarps that roughly parallel the coast and extend nearly to the Fall Line, and offshore bars and barrier islands (Thornbury 1965). South of the Neuse River, submergence is considerably less noticeable. Only the lower parts of rivers are drowned, and large, open estuaries are absent. Terraces are confined to a narrow coastal belt, and barrier islands and bars are absent, being replaced by a chain of coastal islands extending south to the Georgia-Florida boundary. Accordingly, this region of the coastal plain is termed the Sea Island Section (Thornbury 1965). Although differences in physiography north and south of the Neuse River can be attributed to less submergence of land away from former glaciated regions, the rapidity of transition also suggests influence from recent uplift of the Cape Fear Arch.

Coastal physiography south of the Neuse River is characterized by broad, relatively flat interstream areas whose only

relief is provided by low beach ridges and dunes. Here, however, submergence has not been as great, and most of the rivers are deeply incised into underlying sediments. River banks tend to be steep, with as much as 40 ft. of relief. Offshore bars and barrier beaches are well developed, but are adjacent to, and in some regions merge with, the mainland. Back barrier sounds are narrow and shallow, and tidal marshlands are extensive. Major rivers draining this area include the Shallotte, Lockwoods Folly, Cape Fear and its tributaries, (the New and the White Oak) swamps and lakes are numerous, but not as extensive as those to the north.

"Carolina Bays" are physiographic features of the southeastern Atlantic Coastal Plain whose origin is unknown. Numerous theories have been promoted to explain these half million or so oval or elliptical depressions which dot the landscape. They are particularly abundant in Virginia, North Carolina, South Carolina, and Georgia, are notably regular in size and distribution, are developed on sandy Pleistocene terraces, and are younger than any of the beach ridges with which they are associated. Bays may be several hundred acres in size and up to 30 feet deep. They have raised sand rims, are filled usually with 15 to 30 feet of peat, and are vegetated by a distinct flora. It has been suggested that Carolina Bays represent scars produced by the impact of meteor showers, the schooling of stranded fish in shallow pools during retreat of the sea, extinct lakes or lagoons whose elliptical shape resulted from eddy currents, and limestone sinkholes. Detailed studies of the structure, age, and distribution of the bays have yet to be published, and their origin will remain obscure until such data are available (Thornbury 1965).

Soils

Soils of the coastal counties of North Carolina belong to one of the following Great Soil Groups (Lee 1955):

REGOSOL. "Soils consisting of unconsolidated rock (soft mineral deposits) with few clearly expressed soil characteristics; largely 'dry sand' soils, or soils mostly of slightly weathered clayey material."

LOW HUMIC-GLEY. "Poorly or somewhat poorly drained soils with thin surface horizons (2-8" thick) moderately high in

organic matter underlain by mineral horizons mottled gray and brown or yellow, and rarely gray or red."

Muck. "Fairly well decomposed organic soil material, relatively high in mineral content (40-50%), dark in color, and accumulated under conditions of very poor drainage."

In the newest soil classification, the 7th Approximation (U.S. Dept. Agric. 1960), regosols are included in entisols, inceptisols, alfisols, and ultisols, and much is included in histosols.

Regosols are limited to Brunswick, New Hanover, Pender and Western Onslow Counties along the coast. Low Humic-Gley soils range from eastern Onslow County to the Virginia border, and occupy a narrow north-south band in central Pender and northern New Hanover Counties. Muck soils are distributed on terraces east of the Surry Scarp and are best developed on the Pamlico Terrace east of the Suffolk Scarp in Carteret, Hyde, Tyrrell, Dare, Currituck, and Camden Counties.

Underlying sediments from which coastal soils have been derived are the youngest soil-forming materials in North Carolina. Terrace sands and clays are considerably mixed and virtually flat-lying, and associated soils are poorly developed. Soils in the northern counties tend to contain a moderately high (more than 55 percent) percentage of combined very fine sand, silt, and clay; whereas those in southern counties are coarser, with less than 40 percent fine materials. The most common coastal soil series, as described by Lee (1955) are the Bladen, Dragston, Coxville, Fallington, Klej, Rains, Plummer and Portsmouth.

Vegetation is an important factor in soil formation, and conversely, certain types of vegetation exhibit marked preference for particular soil types. The longleaf pine was dominant originally in southern parts of the coastal plain and grew chiefly on coarser textured, excessively drained soils such as those of the Lakeland series. It is now found in association with turkey oak and wiregrass. The native dominant of central and northern parts of the coastal plain was loblolly pine. It is found on a variety of poor to well drained soils, but is most abundant on those with moderate to good drainage with medium to fine textured subsoils. Poorly drained, highly organic Humic-Gley soils of the region supported stands of bald cypress,

Atlantic white cedar, and a few pond pines, and undergrowth of switchcane and shrubs. Logging and fire have destroyed much of the vegetation, and it has been replaced by fire-resistant shrubs and pond pine.

Biotic Communities

In general, biotic communities are identified on the basis of their dominant vegetation or, in the absence of dominant vegetation, by physiography. (Fourteen) major biotic communities have been determined as being present (in the Camp Lejeune area). These are:

Coastal Fringe Communities

Beach
Dune
Maritime Shrub Thicket
Maritime Forest

Coastal Plain Communities

Swamp Forest
Pocosin
Savanna and Pine Flatwoods
Longleaf Pine - Turkey Oak Forest
Loblolly Pine - Longleaf Pine Forest
Ponds and Lakes
Inland Bogs and Marshes

Estuarine Communities

Open Water
Tidal Marshes
Tidal Flats

All biotic communities are dynamic and evolve toward a steady-state equilibrium with their surrounding physical environment. This is particularly true of the coastal communities because of the often rapid allogenic and/or autogenic changes associated with their physical parameters. The flora and fauna respond to these changes through the process known as ecological succession. As a consequence of succession, many of the habitats along the (sounds) represent intermediate stages or various phases of the distinct biotic community types defined here. An example is a mixed pine-hardwood complex that is intermediate between a pine-dominated community and a hardwood-dominated community.

Biotic communities seldom change abruptly from one community type of another. Instead, they blend more-or-less continuously into each other, producing a transitional zone known as an ecotone. Ecotones typically contain an overlapping of floral and faunal components from both adjacent communities, as well as species which prefer the ecotonal habitat. Thus, ecotones are often highly diverse areas and, therefore, important as wildlife habitats.

Coastal Fringe Communities

The communities within this category occur in close proximity to . . . (the sounds and estuaries) . . . located south of Beaufort and are present on the narrow, elongate barrier islands that separate the . . . (sound) . . . from the ocean.

Beach

Beaches occur along the emergent shorelines that are present on the seaward side of barrier islands. Occasionally they extend along the littoral zones of ocean inlets. Beach communities are comprised of a dry berm zone that is located beyond the high tide line, an intertidal zone that is alternately covered and exposed by tidal action, and a subtidal zone that occurs below the low tide line and extends seaward, merging with the ocean surf. Beaches, in general, are gently-sloping communities that serve as transitional areas between open water and upland terrestrial communities.

The beach community is a harsh environment characterized by steep gradients, extremes, and rapid changes in most of its physical environmental parameters. This is particularly true of the upper surface layers.

Vascular plants are typically absent from these communities primarily because of instability of the substrata, high salinity, and extreme fluctuation of moisture. Seaweeds and seeds of Caribbean and European plants carried by the Gulf Stream are sometimes tossed up on the beach following the passage of storms. Sediments on the beach are stratified by wind and wave energy regimes according to particle size. Sediment composition consists of coarse to fine grained quartz sands, shells and shell fragments, fine

pebble gravel, and varying amounts of mica.

Micro-invertebrates are the predominant faunal organisms inhabiting the beach region, and most live beneath the sand surface where salinities and temperatures are more constant. A considerable portion of these benthic organisms are filter or deposit feeders, and a great diversity occurs in the intertidal zones where there is a concentration of particulate organic matter brought in by the tides or supplied by the decomposition of animals on the beach. Typical beach inhabitants are beach fleas (Orchestia agilis) and ghost crabs (Ocypode albicans) in the beach berm, Florida coquinas (Donax variables), mole crabs (Emerita talpoides) and various burrowing worms in the beach intertidal zone, blue crabs (Callinectes sapidus), horseshoe crab (Limulus ployphemus), sand dollars (Mellita Testudinata), and numerous clams and gastropods in the beach subtidal areas. Countless shorebirds, such as terns, gulls, sandpipers, and loons, rest and feed at the water's edge. Atlantic loggerhead sea turtles occasionally utilize the North Carolina beaches for nesting purposes during June and July.

Although the beach is important as habitat for birds and sand-burrowing animals, it also absorbs wave energy and thus protects biotic communities which occur inland. The greater its width, the greater its energy-absorbing capacity.

Dune.

Dunes are located landward and run parallel to beach communities. "Dunes are essentially waves of drifting sand whose height and direction of movement are determined by wind direction and intensity" (Frankenburg et al. 1971). Although annual prevailing wind directions in the project area are southwesterly, it is the strong northeasterly winds that occur during the fall and winter that are responsible for maximum sand movement.

Few species of plants are capable of inhabiting the dune community due to the inhibitory effect on plant growth by air-borne salt, sediment instability, and frequency of salt overwash. Vegetative coverage is usually sparse and consists predominantly of salt-tolerant perennial grasses. Typical species include American beach grass (Ammophila

breviligulata), bitter panic grass (Panicum amarum), salt-meadow cordgrass (Spartina patens), sea oats (Uniola paniculata), and broomsedges (Andropogon spp.). All of these plants depend on the constant influx of nutrients because leaching in the dune community is very rapid. Likewise, all of the above species derive nutrients from particulate matter attached to the sands and precipitation. As they accumulate sand at their bases, the plants increase the vertical height of the dunes, and their creeping rhizome systems act as sand binders thus stabilizing the dunes to some degree. Occasionally interspersed among the dune grasses are scattered individuals of sea rocket (Cakile edentula), sandspur (Cenchrus tribuloides), seaside croton (Croton punctatus), beach spurge (Euphorbia polygonifolia), evening primrose (Oenothera humifusa), seaside elder (Iva imbricata), beach pea (Strophostyles helvola), and purple sandgrass (Triplasis purpurea).

While the fragile network of dune vegetation is adapted to withstanding the rigors of wind, sand, and salt, the region is easily disrupted by human and vehicular traffic and grazing livestock. Destruction of foredune vegetation by these agents causes the dune to be subject to severe wind erosion. In some areas, the rate of sand movement may be accelerated to such a degree that rapid plant recolonization is virtually prohibited (Frankenburg et al. 1971).

The lack of vegetative cover and insufficient food supply limit the dune community as an important wildlife habitat. Ghost crabs, tiger beetles, dragonflies, Song Sparrows, Savannah Sparrows, Barn Swallows, Six-lined racerunners, Eastern glass lizards and Eastern slender glass lizards are characteristic faunal inhabitants. Black Skimmers and species of terns occasionally utilize the dune communities for nesting purposes during the spring and summer.

The dune community, like the beach, sometimes serves as a protective barrier against storm erosion and damage for the inland environment. Although the initial stress of such storms is sustained by the beaches, those waves that do enter the dune community have their energy rapidly exhausted because of the dune's movable and penetrable landform. Natural dune systems are subject to at least temporary destruction from severe storms, as are the controversial, artificially maintained dunes along the coast.

Maritime Shrub Thicket. Shrub thickets are typically found

landward of the dune communities. They may extend continuously to the edge of the tidal marshes along the western fringe of the barrier islands or blend into a maritime forest.

As the name implies, these communities are characterized by a dense growth of low shrubs that are usually entangled with numerous vines. The community usually begins abruptly on the dune side. The first shrubs are commonly prostrate but they become progressively taller with increasing distant inland. The tops of the shrubs are often closely sheared by wind-borne salt spray and form a smooth, compact, canopy surface. Salt-spray shearing is most evident on the community's seaward side. Substrates in these habitats consist of unconsolidated sands which are intermittently flooded in low swale areas and well-drained on topographically higher elevations. Typical shrub inhabitants are wax myrtle (Myrica cerifera), bayberry (Myrica pensylvanica), silverside (Baccharis halimifolia), seaside elder, winged sumac (Rhus copalina), yaupon (Ilex vomitoria), Carolina laurel-cherry (Prunus caroliniana), live oak (Quercus virginiana), red cedar (Juniperus virginiana), and hercules club (Zanthoxylum clavaherculis). Shrub species distribution and frequency of occurrence in any given area, however, vary according to substratum moisture and degree of salt spray influence. Common vine species in these communities are Virginia creeper (Parthenocissus quinquefolia), poison ivy (Rhus radicans), greenbriars (Smilax spp.), and wild grapes (Vitis spp.). Few herbaceous plants are present on the ground surface due to the shading effect created by the dense shrub and evergreenness of most shrub species.

Maritime shrub thickets do not provide a significant year-round source for wildlife and, because of this, are not heavily utilized.

Maritime Forest

Maritime forests occur landward of maritime shrub communities. Trees in the maritime forest are closely and usually dominated by live oak. Many shrub species occur here as well but are less densely distributed than in the shrub thicket because of shading effects produced by continuous canopy coverage. The maritime forest is subject to the shearing effect of wind-borne salt spray, and the canopy bears a direct relationship to the intensity of salt spray

deposited on the growing shoots. The effects of salt spray are most dramatic on the seaward side of the forest and diminish with increasing distance inland. Other species of trees and shrubs found in these habitats, in addition to those mentioned for shrub thickets, are southern buckthorn (Bumelia lycioides), American hornbeam (Carpinus caroliniana), American holly (Ilex opaca), red mulberry (Morus rubra), wild olive (Osmanthus americana), loblolly pine (Pinus taeda), laurel oak (Quercus laurifolia), pignut hickory (Carya glabra), dogwood (Cornus florida), red bay (Persea borbonia), and beauty berry (Callicarpa americana). Few herbaceous plants are present because the trees and shrub layers effectively prevent sunlight from reaching the ground surface. Substrates in these communities consist of a 1-6 inch layer of organic materials overlying a zone of leached fine to coarse, white-grey sands (Bourdeau and Oosting 1959).

Birds are the most conspicuous faunal inhabitants of the maritime forest. This is particularly true during the spring and fall when numerous migratory species are present.

Coastal Plain Communities

The communities included in this category are those that occur on the coastal mainland either along, or a short distance inland from, the sound.

Swamp Forest

Swamp forests occur in close proximity to that portion of . . . [North Carolina] . . . located north of Beaufort, particularly in Dare, Tyrrell, and Hyde counties. [Some swamp forest is located, however, adjacent to portions of White Oak River and upper reaches of New River.] They frequently occur in low, depressional areas within pocosin communities. There are two major recognized associations: those that are dominated by tupelo gum (Nyssa aquatica) or bald cypress (Taxodium distichum), and those that are dominated by white cedar (Chamaecyparis thyoides). The gum-cypress association develops on soils composed of mucks underlain by gray silts and clays. Standing freshwater is present until the late part of the growing season when the swamp dries out. Water levels fluctuate from 1 to 2 ft. below the surface to 1 - 4 ft. above. Bald cypress occurs

as dominant on the wettest sites with the longest hydroperiod, whereas tupelo gum becomes more abundant on sites with shorter hydroperiods. Both species generally require bare, unflooded mineral soil for seed germination and establishment to occur. Other tree species found in these associations are red maple (Acer rubrum), black gum (Nyssa sylvatica), sweetgum (Liquidambar styraciflua), sweet bay (Magnolia virginiana), red bay (Persea borbonia), water oak (Quercus nigra), and water ash (Fraxinus carolinana). Few shrubs and herbaceous plants occur beneath the tree canopy. A mixed forest often develops where hydroperiods are of intermediate duration.

The white cedar association develops on peaty or semi-sandy soils that are subject to very long hydroperiods. White cedar is usually the only tree species present and often grows in very dense stands. Shrub and herbaceous plants are not common.

Swamp forests are typically very rich in animal life. Of all wooded communities . . . [on the outer coastal plains] . . . , these will generally have the greatest diversity of animal species.

Pocosins. These are the most common lowland forest communities along the . . . coast . . . from Dare County southward. They develop on highly organic soils that are seasonally flooded. Pocosins are commonly found in three situations: in shallow peat and muck filled Carolina Bays, on flat upland areas underlain by impermeable humic and peat substratum, and between sand ridges in low depression-al areas containing shallow peat deposits underlain by sands.

Many plants which inhabit pocosins are adapted to substrates with low nutrients, drought, and low pH conditions. Thus, they are physiologically similar to those species found in and associated with peat bogs of boreal forest biomes. Pond pine (Pinus serotina) is the dominant tree species in the pocosin communities but seldom forms a closed upper tree canopy. A dense shrub layer is usually present beneath the pines, and most species are characteristically sclerophyllous evergreens. Species include red bay, sweet bay, swamp ironwood (Cyrilla racemiflora), zenobia (Zenobia pulverulenta), fetterbush (Lyonia lucida), leucothoe (Leucothoe axillaris), sweet gallberry (Ilex coriacea), dahoon holly (Ilex cassine), and pepperbush (Clethra alni-

folia). Few herbaceous plants occur under the shrub zone because little sunlight is able to reach the ground surface. Where openings in the shrub occur, yellow-eyed grasses (Xyris spp.), pipeworth (Eriocaulon decangulare), sphagnum mosses (Sphagnum spp.), haircap mosses (Polytrichum spp.), running pine (Lycopodium alopecuroides), chain ferns (Woodwardia areolata, W. virginica), cinnamon fern (Osmunda cinnamomea), venus fly trap (Dionaea muscipula) and switch-cane (Arundinaria gigantea) may be present.

Pocosins, like many other pine communities, are variable in appearance and are strongly influenced by fire. Under the conditions of a long hydroperiod and frequent fire, zenobia and pond pine tend to dominate in a low type of pocosin. With fire withheld, swamp ironwood tends to overtop zenobia and develop a swamp ironwood-pond pine dominated community. On somewhat drier sites with shorter hydroperiods, switch-cane dominates frequently on recently burned sites, whereas sweet bay, red bay, loblolly bay (Gordonia lasiantha), and pepperbush become common when fires are absent for lengthy time intervals.

These densely vegetated communities are not generally inhabited by a large variety of animals, although they do serve as a shelter refuge for many animals living in the surrounding area.

Savanna and Pine Flatwoods. Savanna and pine flatwoods communities are best developed in the lower two-thirds of the North Carolina coastal plain. Savanna and pine flatwoods communities are areas of grassland with scattered trees and shrubs of variable density. Strongly influenced by fire, they are highly variable in appearance and composition. Two major situations support these communities. The first is gently sloping sand ridges underlain by haplaquods with humus B horizons. The other is extensive, poorly drained flatland often flooded during wet seasons and underlain by a mottled, clay subsoil.

Longleaf pine (Pinus Palustris) and pond pine are common on both, but the latter is found more often on wetter sites and the former on sandier soils of the ridges. A third pine, loblolly, often grows where substrate moisture regimes are intermediate between these extremes. Beneath the pines occurs a sparse shrub understory containing many of the same species found in pocosins. The ground surface is occupied by a dense and highly diverse herbaceous zone.

Wiregrass (Aristida stricta) dominates sandy soils while grass species of Muhlenbergia and toothache grass (Ctenium aromaticum) are more common on the clays. Other important herbs include pitcher plants (Sarracenia flava, S. purpurea), venus fly trap, panic grass (Panicum leucothrix), meadow beauty (Rhexia alifanus), running pine, fleabane (Erigeron vernus), butterworts (Pinguicula spp.), and many others.

The abundant growth of grasses and forbs provides a good source of food and cover for wildlife. Herbivorous and insectivorous animals are common in these communities.

Longleaf Pine-Turkey Oak Forest. These extremely dry communities are best developed in the southern half of the North Carolina coastal plain. They seldom, if ever, directly border the sound but occasionally occur a short distance inland. Longleaf pine-turkey oak communities develop on ridges of deep, coarse, white to yellowish sands. The soils are excessively well-drained and subject to severe leaching. A thin layer of leaves, pine needles, and cones is often intermittently present on the ground surface.

Longleaf pine is the dominant tree species in these communities. The pines usually occur as widely spaced individuals and thus seldom form a closed upper tree canopy. The short tree or shrub region beneath the pines is dominated by turkey oak (Quercus laevis). Like the pines, these trees seldom occur in a dense, closely spaced stand. Often present to a lesser extent in this zone are scrubby post oak (Quercus margaretta), live oak, bluejack oak (Q. incana), blackjack oak (Q. marilandica), pale hickory (Carya pallida), and dwarf wax myrtle (Myrica cerifera var. pumila). The ground surface in these communities is sparsely vegetated by herbaceous plants due to the lack of soil moisture and nutrients. Wiregrass is usually the most abundant species and is occasionally interspersed by milkweed (Asclepias humistrata), reindeer moss (Cladonia sylvatica), false indigo (Baptisia perfoliata), dwarf huckleberry (Gaylussacia dumosa), bracken fern (Pteridium aquilinum), galactia (Galactia regularis), lupines (Lupinus spp.), and cactus (Opuntia humifusa).

The open nature of the longleaf pine-turkey oak communities causes all canopy layers to be exposed to the drying action of the sun. This openness additionally allows winds to freely circulate throughout the community, creating high

surface moisture evaporation rates. The plants, in response to these xeric conditions, have made many adaptations to prevent or minimize water loss. The leaves of many plants, for instance, have heavily cutinized surfaces (waterproofed with waxy materials) and shapes (linear, revolute, reduced, etc.) which retard evapotranspiration losses.

Under natural conditions, longleaf pine-turkey oak forests are controlled by lightning-caused ground fires. These fires prevent the shrub understory from increasing in height and competitively excluding the longleaf pine seedlings which are not shade tolerant. The fires also control a brown spot fungus which attacks the seedlings.

The xeric conditions and lack of cover limit utilization of these communities by wildlife.

Loblolly Pine-Longleaf Pine Forests. These communities occur at several locations but are, perhaps, more common north of Beaufort. Loblolly pine-longleaf pine communities develop on well-drained to moist sandy soils. They are occasionally found in areas that are intermittently flooded by shallow water.

These communities, as the name implies, are dominated by either loblolly pine or longleaf pine. The former has a wider soil moisture tolerance, is quicker to establish itself in disturbed areas, and has been less subject to timber harvest. Thus it is the more common dominant. Longleaf pine, which has a greater tolerance for fire, tends to be dominant in areas frequently burned and on drier sites, such as sand ridges. Shrubs and herbaceous plants are not abundant in these communities and usually occur beneath openings in the tree canopy. Species include blueberries (Vaccinium spp.), scrubby post oak (Quercus margar-etta), post oak (Q. stellata), wax myrtle, inkberry (Ilex glabra), broomsedges, spike grass (Uniola laxa), elephant's foot (Elephantopus tomentosa), and Heterotheca graminifolia. The ground surface of these communities is usually covered by a layer of leaves, pine needles and cones, the depth of which is dependent on the maturity of the forest and occurrence of fire.

Many of the same animal species found in other pine communities are also found here.

Inland Bogs and Marshes. These biotic communities occur a short distance inland from the [sound] at several locations. The percentage of landscape which they cover in the project vicinity is considerably less than that covered by other coastal plain communities described previously.

Boggs are frequently interspersed among pocosin communities in areas where drainage of surface water is severely restricted or blocked. These communities are characterized by a semi-floating mat or cushion-like vegetation that develops on soils which are thoroughly waterlogged throughout the year. Sphagnum mosses (Sphagnum spp.) are the dominant plant species present, but sundews (Drosera spp.), and pitcher plants may also be common. The low mat growth is occasionally interrupted by small shrubs that are capable of growing in wet habitats. Many of these are the same species found in pocosins.

The dense, congested growth of plants and poor circulation of water which typify these communities prevent rapid decomposition of organic debris. As a result, thick layers of organic peat often accumulate beneath the floating mat. Bog waters are often brown in color and strongly acidic. Anaerobic substrate conditions are common.

Marshes occur in low, poorly-drained areas and along the shallow water margins of ponds and lakes. Standing water is present throughout the growing season with water levels ranging from 6 in. to 3 ft. Vegetational growth is dense and often dominated by emergent herbaceous grasses, rushes, and sedges. Species composition varies depending on salinity of the water. In freshwater situations, species include maidencane (Panicum hemitomon), carexes (Carex spp.), common reed (Phragmites communis), sawgrass (Cladium jamaicense), bit cordgrass (Spartina cynosuroides), spike rush, (Eleocharis spp.), threesquares (Scirpus spp.), smartweeds (Polygonum spp.), cattails (Typha spp.), arrowheads (Sagittaria spp.), pickerelweed (Pontederia cordata), lizard's tail (Saururus cernuus), pennywort (Hydrocotyle umbellata) and wild rice (Zizania aquatica). In brackish situations, saltmeadow cordgrass, saltgrass (Distichlis spicata), black needlerush (Juncus roemerianus), olney threesquare (Scirpus olneyi), and marsh fleabanes (Pluchea spp.) are often common. Substrates in the marshes consist of soft mush which is rich in partially decomposed organic matter and mixed with mineral soils.

Inland bogs and marshes serve many of the same ecological functions as tidal marshes. They are a source of valuable nutrients and detritus, much of which is either consumed insitu by small animals, or is eventually washed into deeper water where it contributes to the food supply of larger pelagic and benthic animals. These communities are often closely associated with the swamp forest, and like the forest, are rich in animal life.

Ponds and Lakes. Several sites on Camp Lejeune are occupied by these aquatic habitats. Ponds and lakes occur in low, depressional areas where the water table reaches the surface or where the ground substrate is underlain by impermeable materials. Distinction between the two water body types is often difficult to make especially since most of the natural lakes on Camp Lejeune are not very expansive. In general, though, ponds have shallow enough waters to permit growth of rooted plants over most of their bottoms while lakes have a central profundal zone that is devoid of rooted vegetation. The failure of rooted plants to become established in the lake profundal zone is attributable to the deeper water depths which prevent sufficient sunlight from reaching the lake bottom. Lakes in the study area are filled with water throughout the year, whereas many of the ponds dry up during periods of drought. Salinities in these water bodies range from fresh water to brackish. Both ponds and lakes occasionally have outlet streams and both trap sediments brought in by runoff. The accretion of sediments eventually causes these water bodies to succeed to an upland terrestrial community.

The vascular flora which is present in ponds and lakes can be divided into three zones: submerged, floating, and emergent. The submerged zone is found farthest from the shoreline. The plants in this region are rooted in the bottom and are completely immersed. They are characteristically thin and delicate, lack supportive tissue, and depend on the water to keep them buoyant. Common species in this zone include bladderworts (Utricularia spp.), waterweeds (Elodea spp.), water nymphs (Najas spp.), proserpinacea (Proserpinacea palustris), egeria (Egeria densa), and pondweeds (Potamogeton diversifolius, P. pulcher) in fresh water to mildly brackish situations, and widegeon grass (Ruppia maritima), and pondweeds (Potamogeton perfoliatus var. burpleuroides, P. pectinatus) in more saline waters. The floating plant zone occurs shoreward of the

submerged plants. The plants in this zone have little supportive tissue, poorly developed root systems, and often two leaf types: broader, heavily waxed leaves which float on the water surface, and small, highly dissected leaves that occur submerged. The stems and floating leaves of these plants frequently contain substantial quantities of spongy tissue which are filled with large air sacs. Typically found in the floating plant zone are water lillies (Nymphaea spp.), spatterdocks (Nuphar spp.), water shield (Brasenia schreberi), starwort (Callitriche heterophylla), duckweeds (Lemna spp.), and alligator weed (Alternanthera philoxeroides). Many of these are more commonly found or restricted to fresh water. The floating plant zone is succeeded by a marsh region dominated by emergent rushes, sedges, and grasses. The species composition has been described previously.

The presence of water and abundant plant growth in many of the ponds and lakes . . . [around Onslow County] . . . provides attractive habitat for a variety of fish, waterfowl, and other aquatic and semi-aquatic vertebrate species.

Communities Associated With Open Water

Sounds, bays, drowned river valleys, and channels form the open water habitat. Salinities vary from 1.2 to 38.4 ppt, and depths range from mean low water to less than 25 ft. As defined here, open water includes all marine and estuarine waters together with all underlying bottoms below the intertidal zone. Intertidal habitats are considered separately as salt marsh and tidal flat habitats (following this discussion).

The open water biota includes the plankton and nekton inhabiting the water column and the benthos living on or in the various types of substrata. The plankton is composed of many types of unicellular algae, various protistan groups (of which the protozoans are most important), larval stages of many invertebrates and fish, and the adult stages of several microscopic invertebrates. Larger animals, such as jellyfish and comb jellies that are carried passively by currents and tides because of their weak swimming ability, are also included in the plankton.

Fish are the principal nekton, but some crustaceans such as portunic crabs, amphipods, and isopods, and some mullusks,

such as squid, spend at least part of their life as nekton. The open waters of the sound are important nursery areas for fish and shrimp. The . . . (sounds are) . . . important fishing grounds for shrimp and spot.

The benthic environment includes a number of communities correlated largely with substratum type. Multicellular green, red, and brown algae, unicellular algae (especially diatoms), and a few aquatic angiosperms, such as widegeon grass and eel grass, are the primary producers within the photic zone of the benthic environment. The submerged aquatics are an important source of detritus, provide shelter for larval and juvenile animals, and serve as bottom stabilizers. Eel grass is known to be highly productive and provides food and cover for many estuarine organisms. Eel grass is the primary food source for Bay Scallops.

The benthic fauna is divided into two groups: epifauna, living on the substratum; and infauna, living within the substratum. Infaunal communities are dominated by a great diversity of burrowing and tube dwelling crustaceans (e.g., amphipods), polychaete worms, and by burrowing bivalve mollusks. Some infaunal invertebrates, especially among the crustaceans, are capable of a high degree of lateral mobility, but the majority can be regarded as essentially sedentary. The infauna is, with rare exception, comprised of filter and detritus feeding invertebrates.

The epifauna contains a diversity of animal groups associated with a diverse flora. Hard substrata, such as rocks, shell and gravel surfaces, and artificial surfaces, such as pilings, wrecks, and weirs, support a rich assortment of attached plants and invertebrates. Typically, these communities contain red, green and brown algae, barnacles, attached bivalves, anemones, corals, sea fans, bryozoans, tunicates, sponges, and foraminifera. The communities formed by these attached organisms host a number of both transient and permanent fish species, and motile invertebrates, including gastropods, star fish, sea urchins, crabs, and shrimp. Attached epifaunal invertebrates are principally filter and detritus feeders, but some motile organisms are carnivores.

The epifauna and flora of muddy and sandy bottoms tend to be much lower in diversity, and most inhabitants are microscopic. These surfaces are unsuitable for attachment by sessile invertebrates. In addition, many sand and mud

bottoms are depositional, and a continual rain of sediment would quickly bury attached animals. Thus, these substrata support diatoms, other unicellular algae, protists, and attached multicellular algae where turbidity is low. Invertebrates primarily include motile deposit feeders, such as polychaete worms, sea cucumbers, and some sand dollars. Some fish and crabs also graze on the bottom. Attached organisms are restricted largely to the occasional bit of shell or small rock lying on the surface. The development of oyster reefs on muddy intertidal bottoms, for example, is dependent on the presence of bits of shell or rock for initial larval attachment.

Some open water organisms can tolerate wide ranges of temperature and salinity, but the majority cannot. Tolerances to environmental parameters also change during the life cycle. Larval or juvenile stages may have environmental requirements dissimilar from those of adult stages within the same species. Anadromous fish and many sedentary invertebrates exhibit this trait. Because of the geologically ephemeral nature of estuaries, fewer organisms are adapted to habitats in brackish waters than to comparable habitats in marine waters. Hence, estuarine communities are less diverse and have shorter food chains than their marine counterparts (Carriker 1967).

Seasonal changes in the open water hydroclimate are reflected in the seasonality of occurrence and abundance of organisms. Many plants and animals are present in a given community for only part of their life cycle. For example, shrimp and several larval and juvenile fish utilize nutrient-rich coastal open water environments as nursery areas prior to migration to ocean habitats.

The open water community is also utilized by waterfowl and shorebirds particularly during the winter months. A considerable portion of the waterfowl are surface feeders and dabblers, and are commonly found along the shallow water zones where they feed on submerged or emergent vegetation. Species of birds which are found in the . . . (deep sounds) . . . are principally diving or fish-eating species. Other vertebrates (i.e., mammals, reptiles, and amphibians) are poorly represented in the open water community except where mildly brackish conditions exist. Many of these are semi-aquatic and, thus, are temporary residents of the community.

Tidal Marshes

Tidal marshes are discontinuously present in the littoral zones along the . . . (coast) They represent a transitional zone between open water and upland terrestrial habitats. Vegetation in the tidal marshes is dominated by emergent, narrow-leaved rushes, sedges, and grasses. Soils are composed of poorly drained peats and mucks, and anaerobic conditions are usually present beneath the ground surface. Meandering throughout many of these communities are numerous tidal creeks laden with suspended silts and particulate organic matter.

The tidal marshes south of Beaufort are somewhat vegetationally different from those found north of this point. To the south, the waters are more saline because of their closer proximity to the ocean. Tidal marsh vegetation in this area is composed of highly salt-tolerant species and is generally arranged in four recognizable zones. The topographically lowest and first emergent zone occurs from mean sea level (msl) to about mean high water (mhw). This marsh region is regularly flooded by semidiurnal lunar tides and is dominated by smooth cordgrass (Spartina alterniflora). This species usually grows in dense stands and attains its greatest height where inundation is most frequent. A belt of glasswort (Salicornia sp.) is sometimes present along the upper fringes of this low marsh zone. The second vegetational zone occurs beyond mhw and includes that portion of the marsh that is inundated by spring or wind-driven tides. Black needlerush is the dominant plant species in this region and usually occurs in relatively pure, dense stands. Beyond the black needle rush region, the marsh is vegetated by a zone of saltmeadow cordgrass and saltgrass which, in turn, is bordered by a mixed herb-shrub association along the upper edge of the marsh. Species present in this highest zone include sea oxeye (Borrichia frutescens), marsh elder, silvering, wax myrtle, and marsh fleabane. Evening primrose (Oenothera humifusa) and Heterotheca graminifolia are sometimes common where dry, sandy areas are present in this zone.

Tidal marshes are important wildlife habitats. The dense plant growth in these areas provides excellent cover for many species of nesting birds, aquatic and semi-aquatic mammals, reptiles, and amphibians. Energy fixed in the low salt marsh is considered the primary energy source for the detritus based food chains in the estuary. Substrates

in these communities are inhabited by a myriad of foraminiferans, nematodes, annelids, anthropods, and mollusks. The importance of these tidal marshes to some commercially important marine species should be noted. It is generally accepted that over 75 percent of the commercially important finfish species are estuarine dependent during some part of their life cycle.

Tidal marshes function as shoreline stabilizers, and they protect the adjacent upland terrestrial communities from storm erosion. The marsh communities also serve to purify water and act as sediment traps for materials brought in by tidal overwash. As the sediments accumulate around the marsh, and subsequently the biotic communities adjacent to it, encroach upon the estuarine waters. Additionally, tidal marshes are important sources of detritus. The detrital matter is partially used and recycled by the marsh system itself, but a substantial portion is ultimately flushed into the nearby open water habitats and eventually into the ocean by tidal action. Once transported, the detritus enters a multitude of faunal food webs, many of which include commercially important fish and shellfish species.

Tidal Flats

Composed of soft sand or mud, these biotic communities occur along the shallow water areas of the (sound) . . . and tidal creeks. Though they sometimes create navigational hazards, they are important as wildlife habitats.

Tidal flats are typically devoid of vascular plants but are frequently inhabited by species of diatoms and bacteria. Tidal flats are alternately covered and exposed by wind-driven or lunar tides. The tidal action provides a constant influx of particulate organic matter to these habitats, creating a rich nutrient supply for filter-feeding benthic invertebrates. When the tidal flats are covered by water, these animals and nutrients constitute an important food source for a variety of fish species. When the flats are exposed, the nutrients and benthic animals are fed upon by numerous wading birds and shorebirds.

Chapter 3

Research Methodology

Biotic communities constitute one of the most important aspects of the total physical environment for understanding resource adaptation. The species existing within an environment are not randomly distributed throughout the entire environment, but rather are congregated together into recognizable communities. Species may be present in more than one community depending on the physical substrates which support those communities (Stark and Voohties 1978:23). For example, many fish species can occupy a number of different ecological zones such as estuary, marsh, or swamp depending on their abilities to withstand differences in salinity. The same is often true of certain shellfish. Thus, it is not sufficient merely to list the species present in a total environment or even to list the preferred habitats of those actually encountered at an archaeological site. The sum total of species in an environment defines the resource potential of an area. A comparison of species present in the debris of a site with the resource potential of an area identifies those species selected for utilization by the past culture under study and thus defines scheduling preferences. This can reflect not only other cultural activities which may influence or be influenced by scheduling preferences, but may also reflect seasonality. Certain species in any environment are available on a seasonal basis only and a comparison of species utilized as compared to total species present may reflect a seasonal occupation.

Finally, species utilized may be a reflection of technology. Certain species are almost always more difficult to capture than others given the level of technology available to a particular culture.

Identification of species present in each biotic community identifies not only the species available for exploitation, but also identifies which communities may have been exploited. In order to fully understand resource scheduling it is as essential to know what resources were available that were not utilized as it is to know which resources were exploited.

The survey methodology employed on this project was based upon an identification of pertinent environmental zones on the Base. These zones can best be defined in terms of the presence or absence of water, and then on the kind of water present. To the aboriginal inhabitant of the area water was of prime concern.

While water for drinking was important, water for transportation movement and as a source of food was probably even more significant. The dense undergrowth typical of the coastal area often made overland travel difficult or impossible for the aboriginal and early historic populations so water transport grew to be one of the predominant factors in site location. In addition, many of the resources exploited by these populations were associated with the water in one way or another. Using the environmental zones defined in the above section it was possible to isolate five major environmental zones at the Base.

The first of these zones was the barrier island zone consisting of Brown's Island and Hurst Island. Much of this zone was unavailable for survey because of its use as a bombing range and impact zone. 250 acres surveyed

Second, and perhaps the most significant zone, is the estuarine area which consists of ground found on the mainland side of the Brown Sound, Sallier's Bay, Mile Hammock Bay, Howard's Bay, Trap's Bay, and New River as well as the intertidal zone of several creeks tributary to New River and the sounds. 23,000 acres

Thirdly was recognized the land adjacent to freshwater creeks. These were in most instances the upper reaches of creeks that were intertidal in their lower reaches. 8,000 acres

Fourth to be recognized was land adjacent to natural lakes and ponds. While not numerous on the Base there are a number of these natural lakes and ponds. 750 acres surveyed

Finally, the remainder of the Base can be classed into the pocosin, savannah, forest, and swamp category. This category which is very diverse is typified by a lack of open or moving water useful for transport. 8,000 acres surveyed

Survey Methodology

The methodology involved in the three previous surveys of Camp Lejeune Marine Corps base of the mid 1960's, 1973 and 1977, is similar to that of the present survey. Cultural evidence was searched for by walking over disturbed areas and examining the ground surface. Road systems including hard surfaced, improved light duty, and unimproved dirt tracks were used to provide access to survey areas. In addition to providing access to certain survey areas, the roads themselves served as "transect" lines to implement a random survey strategy. Due to the fact that the majority of the Base is heavily forested and

consequently unsuitable for surface collecting, the survey strategy employed was a combination of random and non-random methods. Recognizing that one always has a much better chance of finding archaeological materials in disturbed areas than in forested areas, all areas of open ground within designated search areas were examined. This approach provided the maximum return of ground searched per man/hour expended.

At the same time, it is always necessary in gathering data to be used in generating a predictive model to approach the survey area in a random fashion to insure that all types of terrain are examined equally and all types of sites have an equal chance of being discovered. To provide this randomness to the survey several strategies were employed. First, the Base was divided into definable search zones determined by the total environmental setting of each zone. These were described above. Equal attention was given to each of these zones. In addition, certain types of roadways were employed as survey transect lines. Because Camp Lejeune is primarily a training facility there exist numerous unimproved roadways used by tracked vehicles and other heavy traffic. These dirt roads are constantly churned and provide excellent conditions for survey and collection. Since most follow straight lines across the Base they can be successfully used as random survey transect lines crossing any and all environmental zones in their path. By following these roads the survey crew was able to examine selected areas with an equal chance of finding sites in several zones.

Several types of open ground were extensively employed as search areas. These include plowed wildlife feed plots which are randomly placed around the Base, helicopter landing zones (generally referred to as Tactical Landing Zones abbreviated TLZ) shoreline erosional areas, and tracked vehicle maneuver areas.

It is felt that this combination of approaches insured at one time a statistically meaningful sample of all areas of the Base while ensuring that the maximum possible number of sites was located.

The nature of artifact collection at sites varied according to the number of visible articles. If only a few artifacts were available, then a 100% collection was made to insure the best possible site analysis. If cultural material was excessively abundant, then a partial or random collection was made. At some sites, it was logistically impossible or unnecessary to

make a 100% collection. In the instance of isolated finds, when only one artifact was found, it was regarded as a chance discovery of no great significance.

As of this writing approximately 30% of the total available acreage at Camp Lejeune has been surveyed. Of this total, approximately 15% has actually been open ground with a very high degree of surface visibility. The total ground examined is, then, considerably higher than would be the case if a strictly random survey had been undertaken with shovel tests employed as the only search methodology.

For each archaeological site found during surveying activities, a North Carolina prehistoric or historic archaeological site form from the Archaeology Branch of the North Carolina Department of Archives and History, was filled out. Abstracts of all located sites are provided in this report. These forms serve to give a thorough site description and to provide a means for transferring the subsequent data to computer storage. A site number was given to each site by the University of North Carolina at Wilmington's archaeology laboratory and these UNC-W members are used throughout this report. Permanent numbers will be assigned by the North Carolina Division of Archives and History at the end of the current project.

Analytical Methodology

After the site descriptions had been recorded on the field forms and the recovered materials returned to the laboratory an analysis of the materials was performed. This analysis was designed to determine the cultural affiliation of each site discovered. Affiliation of archaeological sites in many cases can be determined by the artifacts recovered from the surface. Specific time periods have recognizable cultural markers which, when adequately studied, and is present in sufficient quantity and quality can determine the temporal position of the site. Similarly certain cultures have recognizable features which if present can determine the culture of the group responsible for the site in question.

Once the cultural affiliation had been determined the information was entered on the field site forms. When thus completed the site form data was coded onto computer forms and the information subjected to a computer analysis designed to specify the physiographic parameters of site location by the various cultural affiliations found to be present on the Base.

After completing the data collection activities described above, an extensive set of data management and analysis procedures was executed. The following material summarizes the major components of these two stages of research.

Data Management

In order to prepare the data for computer analysis, the site survey information was keypunched on machine-readable computer cards using a fixed-field format. The resulting deck of data cards was used to create an SPSS (Statistical Package for the Social Sciences) system file. This entailed inputting, documenting, and file saving the raw data collected using the site survey form. Variable names and extended labels as well as value labels were generated to correspond to the format used on the site survey form.

A number of variable transformations were also generated. All alphanumeric variables were recoded to numeric values for ease of use in statistical analysis. Appropriate value labels were created to document these conversions. In addition, a new variable was computed measuring the distance between each site and the nearest stream. Finally, the multiple responses to the series of the items describing the cultural affiliations of each site were combined into a single summary variable.

After several file editing runs, the completed SPSS system file (data and dictionary) was saved on direct access disc storage at TUCC (Triangle Universities Computing Center) for efficient input during the data analysis activities described below.

Data Analysis

Univariate Analysis. -- In order to provide a reference document for the entire file, as well as to study the basic characteristics of each variable, a codebook of one-way frequency tables and associated descriptive statistics was outputted. These univariate tables displayed the absolute frequency or raw score for each value of every variable as well as the relative and cumulative frequencies of each value expressed in percent. Descriptive statistics were also computed summarizing the central tendency, dispersion, and shape of each variable's distribution of cases. The codebook tables and statistics allowed a check of the reliability and validity of the SPSS data file to ensure there were no errors in coding, punching, and inputting the site survey data.

Bivariate Analysis. -- Further analysis of the site data was accomplished through the use of contingency tables and associated summary statistics. These two-way crosstabulations displayed the distribution of cases arrayed by their position on the values of two variables. The purpose of this joint-frequency analysis was to examine the strength and direction of relationships between three sets of variables: site location, site definition, and environmental setting characteristics.

Crosstabulations were generated to display two covariations between the nine categories of site cultural affiliation and seven measures of site location, definition, and environmental setting: (1) topographic situation, (2) site elevation, (3) type of nearest water, (4) distance to nearest permanent water, (5) elevation of nearest permanent water, and (7) difference in site and water elevations. Marginal and cell entries in each table allowed the analysis of constellations of site characteristics associated within each of the nine categories of site cultural affiliation as well as among all sites as a single group.

Chapter 4 Survey Results

Fifty-eight prehistoric sites, including those recorded before the present study, have been located on Camp Lejeune Marine Base. The distribution of these sites represents a discrete pattern in which only very specific areas contain sites, a pattern repeated throughout Carteret County and the remaining portions of Onslow County.

All sites located thus far are in close proximity to, and have easy access to, either estuarine and tidal water, or to the creeks which are tributaries of these larger bodies. Various types of sites are discernable and these bear a direct relationship to the topography. Those yielding the largest quantities of cultural material, and thereby indicating the most intense occupations, are invariably situated immediately adjacent to salt or estuarine water or on high knolls very near substantial sections of the tributary creeks. Sites near salt water are usually located on flat, dry land and may cover as much as 100 acres. These sites are generally covered with shell fragments to produce shell middens. Those sites located on the knolls adjacent to fresh water streams may be as high as 40 feet above sea level. All these sites lie within 100 meters of wide tributary creeks not far from the upper reaches of the estuaries. The densest concentrations of artifacts at these sites tend to be at the summits of the knolls, thinning out towards their bases. Pottery sherds predominate, associated with stone flakes.

A number of sites represent isolated finds of single artifacts--stone implements, stone flakes or pottery sherds. Again, these are situated on flat ground remote from water or where access to water is unfavorable. It is reasonable to assume that single finds of projectile points or stone implements were simply lost in hunting. There are two sites, however, at which single pottery sherds were recovered. In each of these cases the ground had been greatly disturbed--cleared, scraped, filled--which may have removed most artifact material.

Materials from the site surface collections and Phase II test excavations were assigned a cultural affiliation based on recognizable cultural characteristics. Of the possible cultural affiliations materials were recovered from the Middle Archaic, Archaic Undetermined subperiod, Early Woodland, Middle Woodland, Late Woodland, and Woodland Undetermined subperiod. In addition materials from the historic period were assignable to classifications of Colonial and Historic Period undetermined sub-period.

Each of the recognizable cultural affiliations was then compared with the recorded environmental/topographic/physiographic features recorded at the sites where these affiliations were noted. This analysis produced statistically meaningful models of the environmental/topographic/physiographic parameters within which sites of each affiliation were located.

Middle Archaic 6,000-4,000 BC

The oldest materials found on the Base were of the Middle Archaic period approximately 5,000 to 4,000 BC. The time/cultural markers present for this period were several Morrow Mountain projectile points described and dated by Coe (1964) for the Piedmont region of the state. By analogy the points from Camp Lejeune date to the same period. Three sites were found to have this Middle Archaic culture/time marker present. In all three cases the sites were small or the find isolated. This is not surprising for this area as Archaic period sites are few for the whole coast. It is surmised that this dearth of Archaic sites exists because the rising sea level has drowned the sites. Indeed, only one other archaic site was located by this survey, and its affiliation could not be determined to specific cultural period. This makes a total of four archaic sites located by this survey. Examining the parameters of these sites it can be seen that they were located primarily on first terraces, at 10 feet above present sea level, on freshwater streams, approximately 100 meters from the water which was at current sea level. The sites tended to be approximately 10 feet above the current water.

Early Woodland 1500 BC - 500 BC

The Early Woodland period is marked by the introduction of fired clay ceramics. For the coastal region as a whole the earliest pottery is fiber tempered, but none of this type was encountered by this survey. Indeed, fiber-tempered ceramics are rare in North Carolina as a whole being found usually to the south. Following the fiber-tempered ceramics there is found a somewhat more common type known as Thoms Creek which has been described as early as 1500 BC in South Carolina. This type of ceramic was represented in the current survey collection, but in very limited numbers. More common for the Early Woodland period is a ceramic type known as New River and described in detail by the author in earlier works (Loftfield 1976, 1979). The New River ceramics are generally sand tempered with cord marked surface as the predominant type. Ten sites were identified as Early Woodland on the

basis of having produced either Thoms Creek ceramics or New River ceramics. These sites can be typified as being between 10 and 20 feet above current sea level, between 20 and 50 meters from water which was a freshwater stream. The water was typically at sea level today or up to 10 feet above sea level. Sites were typically less than ten feet above the water on a first terrace situation.

The Woodland period is often thought to be marked by the introduction of horticulture. While domesticated plants may have been tended in the Early Woodland period on the coast there does not seem to be much evidence for it in the site location parameters. A comparison of the Early Woodland site locations shows no appreciable difference from those of the Archaic period. Thus while horticulture may have been introduced in this period it is not probable that it made an appreciable change in the general adaptive strategy or lifestyle of the inhabitants of the middle North Carolina coast.

Middle Woodland

The Middle Woodland period is marked by the production of two new ceramic types. These are the clay tempered ceramics known as Carteret by Loftfield (1976, 1979) and as Hanover Sherd Tempered by South (1960), and the coarse sand/grit tempered sherds known as Adam's Creek by Loftfield (1976) and as Mount Pleasant by Phelps (personal communication 1980). The exact temporal relationship between the Carteret and Onslow series is currently unclear. At any rate twenty sites were located on Camp Lejeune with one of these ceramic types represented. These sites tended to be on first terraces with a smaller percentage on flood plains and an even smaller percentage on second terraces. Sites tended to be at the ten foot elevation or lower although five sites were at twenty feet. The majority are still adjacent to fresh water although six sites were adjacent to salt water. The distance to the water is very diverse with no single distance being predominant. The majority of sites were located on water that was at sea level, but nine sites, or 45% were located on water at an elevation of ten feet.

The majority of sites continued to be located ten feet or less above the water. Middle Woodland cultural materials are the oldest so far found in association with shell middens.

Comparing these statistics with those for the Archaic and Early Woodland above it can be seen that some differences in site location preference have emerged. These differences may reflect

a growing involvement with cultivated plants for the appearance of sites on flood plains is often taken to mean a concern with easily tilled fertile soils. At the same time sites are found which are at higher elevations above water than earlier, and on second terraces. This may indicate a growing specialization in site functions, with some sites located on productive agricultural soils and other sites located in areas more conducive to hunting or specialized collecting. While these inferences are intriguing the current survey was hardly productive enough, or geographically extensive enough to produce sufficient data to even formulate a hypothesis strong enough to warrant testing, let alone prove anything.

Late Woodland 500 AD - Historic Contact

The Late Woodland period is marked by the production of shell tempered pottery called White Oak by Loftfield (1976, 1979) and Collington by Phelps (personal communication 1980) and by a gravel tempered series called Onslow by Loftfield (1976) and Cashie by Phelps (personal communication 1980). South discusses a shell tempered series which he called Oak Island (1960) which is similar to the White Oak and Collington, but may be significantly different in detail.

The majority of Late Woodland sites were located on first terrace situations with a smaller percentage on flood plains and other situations. This placement reflects the inability to call the rises adjacent to the salt water sounds and estuaries anything other than first terrace, although they are clearly not first terrace in the classic sense of the Piedmont. Thus this statistic is somewhat misleading. This definition fits this circumstances adequately for the required analysis, but does, obviously, skew the results somewhat. The majority of sites were located at ten feet or less above current sea level, and were evenly divided between salt water and fresh water. The distance to this water is widely diverse. The vast majority of the water, however, was at current sea level. Almost all sites were ten feet or less above water.

The majority of Late Woodland sites were either shell middens per se or had large amounts of shell present in the site debris. The largest and most significant sites on the Base were shell middens located adjacent to the salt water sounds and estuaries. Earlier work by this investigator (Loftfield 1976, 1979) has suggested that these sites were seasonal villages where the primary activity was shell fish collecting during late spring and early

summer. Excavations at several sites on Camp Lejeune (see pp. 78-96) has tended to verify this evaluation in that few subsurface features were located, little dietary bone was encountered, and the sites seem to be composed of small episodic depositions of shell rather than as a continuous occupational deposition.

The shift in site locations visible in the Middle Woodland period seems to be continued in the Late Woodland, but locations adjacent to salt water become more important. Once again there is insufficient evidence in hand to make any conclusive statements and the change may be merely a reflection of differential preservation with some of the lower elevation sites of even the Early Woodland period lost to sea level encroachment.

Other time periods

Other time periods were either not represented in the survey collection or were handled in a different manner. Not represented in this survey were materials from the PaleoIndian, Early Archaic or Late Archaic periods. The PaleoIndian and Early Archaic periods are rarely represented on the outer coastal plain due to sea level rise. The late Archaic is occasionally represented on the coast, but is still rare. Other time periods of the historic era (after European contact and settlement) were represented in the collection. The environmental data collected is of less use in evaluating these periods since historic documents are available for study. The abstracts of site locations of the historic period are better handled from a documentary approach and are accordingly detailed in Part 2.

Survey Summary

The current survey results show that there is a definite pattern to archaeological site location at Camp Lejeune. Water seems to be one of the most important site locational criteria which is not surprising since for the aboriginals and the early colonial period settlers it provided not only a ready food supply, but the primary avenues of transportation as well. Thus all prehistoric sites were located within a short distance of water of some type. This water was always flowing or connected to flowing water. Thus the lakes and ponds on the Base showed no evidence of utilization by the aboriginal population. This indicates that access to fresh water for drinking was not a primary concern in site location.

Site locational parameters change only slightly from the Archaic through the Early Woodland. With the Middle Woodland a new pattern seems to emerge with a greater number of sites located on flood plains or on flat lands adjacent to salt water. There is an accompanying increase in apparent shellfish utilization. Whether these changes are real or only an apparent change due more to differential preservation of sites cannot be answered with the data in hand. Such a determination would result only after extensive surveys of other coastal regions followed by significant excavations at numerous sites, all of which is clearly beyond the scope of the present endeavor.

Sensitivity Map

The computer analysis of data collected in the field and itemized on the site forms was designed to present a composite picture of prominent environmental, topographic, and physiographic features which defined site locations. This analysis was conducted for each recognized cultural affiliation, then for all prehistoric sites, then for all historic sites, then for all sites combined.

For the purposes of generating the map of sensitive areas the statistics for all sites were used. These were collapsed to provide a "best line" determination of the parameters of site location. Briefly described it can be stated that of all sites located in the survey 75.9% were on first terrace situations. This is not comparable to topographic situations from the piedmont or mountains of North Carolina because on the coast the real first terraces are in many instances drowned. In these circumstances the first terrace may in reality be the second or even third terrace as it would be defined in non-drowned topographic areas. For the purposes of this map, however, the first terrace definition is very workable. Of all sites located 39.7% were at an absolute elevation above sea level of 10 feet and another 19% were at 20 feet elevation. Combining all site elevations below twenty feet indicates that 74.4% of all sites are located at or below twenty feet above sea level. In terms of occurrence on salt water or fresh water we find an almost even distribution with 56.9% on freshwater streams and 43.1% on salt water. In terms of absolute numbers this is correct, but it must be remembered that those sites on salt water were generally larger, more productive and had a higher incidence of eligibility to the National Register of Historic Places. Thus the largest number of all sites was on freshwater streams but the largest number of significant sites was on salt water.

Of all sites located 72% were within 100 meters of the nearest water regardless of its salinity. Of these waters 63.8% were at zero elevation today indicating the preference for waters of sea level. Of all sites located a total of 73% were on water of 10 feet elevation or less.

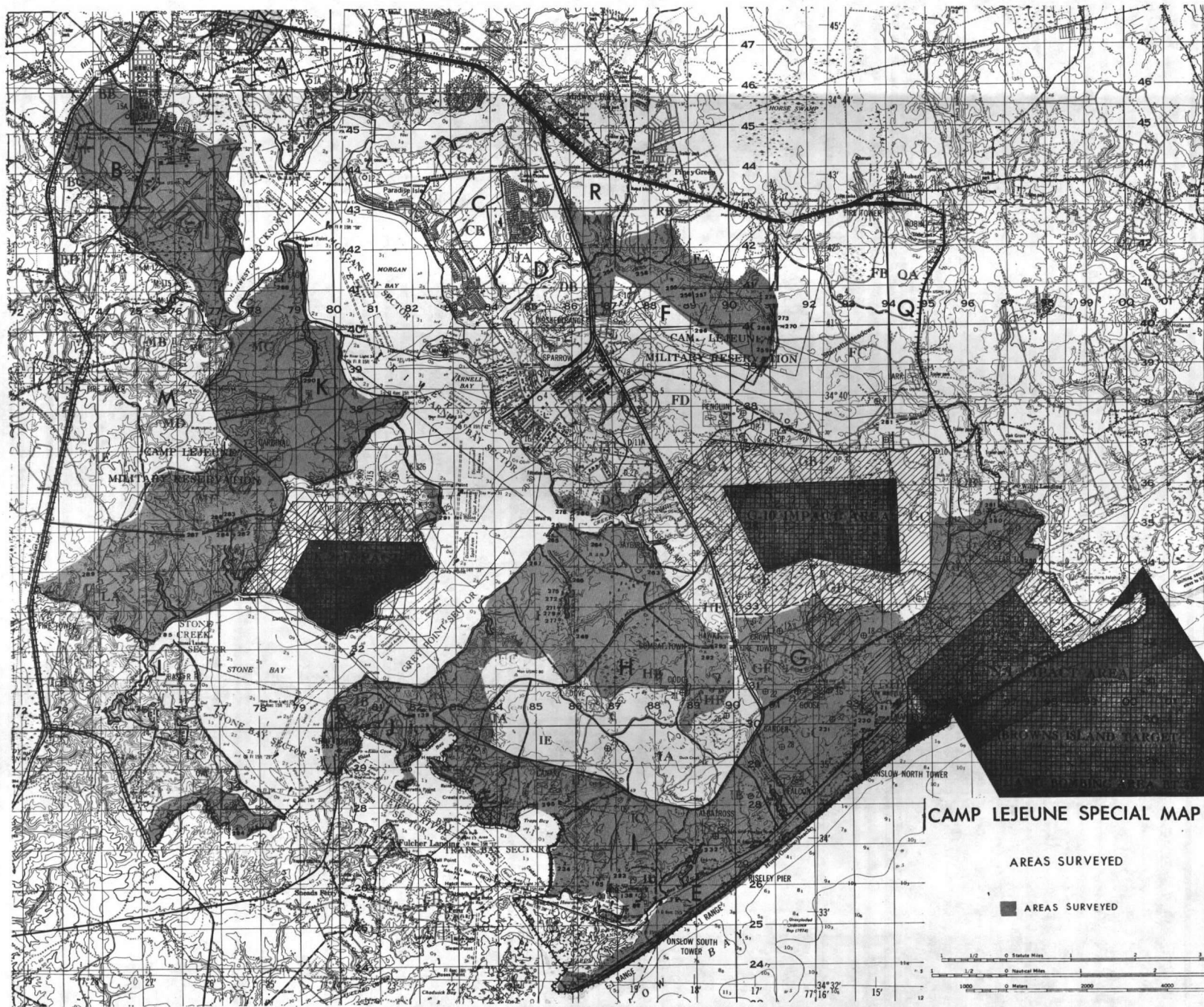
Finally, of all sites located 62.3% were 10 feet or less above the nearest water. This indicates the general tendency for sites to be located near the water without requiring the inhabitants to hike up hills or bluffs to get from the water to the site. This fact is witnessed by the known site locations which are generally on land to which access is easy from the water. High bluffs overlooking New River or other sources of water tended to be uninhabited.

The above parameters define a statistically meaningful percentage of all sites located and were used to generate the map of sensitive areas for Camp Lejeune. The "line" drawn between sensitive and nonsensitive areas was thus based on a number of factors, some of which were held to have more significance than others. In general the line was determined by following on the Base Training Map, contour lines which delineated areas that were first within 100 meters of water, then at elevations ten feet or less above the water elevation, then defining first terraces. In certain area where the "best line" parameters were obviously erroneous accomodation was made for the special circumstances that caused the error. The only area in which this occurred was along the lower reaches of New River and the adjacent sounds where the land is almost entirely low and sites often spaced considerably more than 100 meters from the water.

The "sensitive" areas shown on the map thus represent the geographical regions which are most likely to contain archaeological sites on Camp Lejeune. This area does not necessarily contain archaeological sites. In the final analysis sites are where they are found and many of the sites located within the sensitive area will be of no archaeological significance, while some sites of great significance may be located outside the "sensitive" zone. Notwithstanding these potential discrepancies it is felt that the Sensitivity Map does make a statistically meaningful statement about archaeological site locations. The area shown as "sensitive" is indeed the area of greatest potential for site location while the "non-sensitive" area is indeed highly unlikely to contain significant archaeological sites. The map can thus be used as a planning tool delineating those areas in which future construction, training or other land disturbing activities will have the highest probability of encountering archaeological resources. Con-

versely, the "non-sensitive" areas can be postulated as the areas least likely to contain archaeological resources likely to be damaged by future activities. This should not be taken to mean that no future activities should be planned for sensitive areas. Rather, it should be taken into consideration in the planning stage that there is a greater likelihood of encouraging archaeological remains in the "sensitive" area, and hence a greater possibility that some form of archaeological mitigation will be required should the proposed project actually impact an archaeological site.

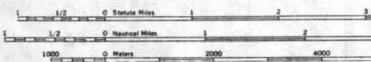


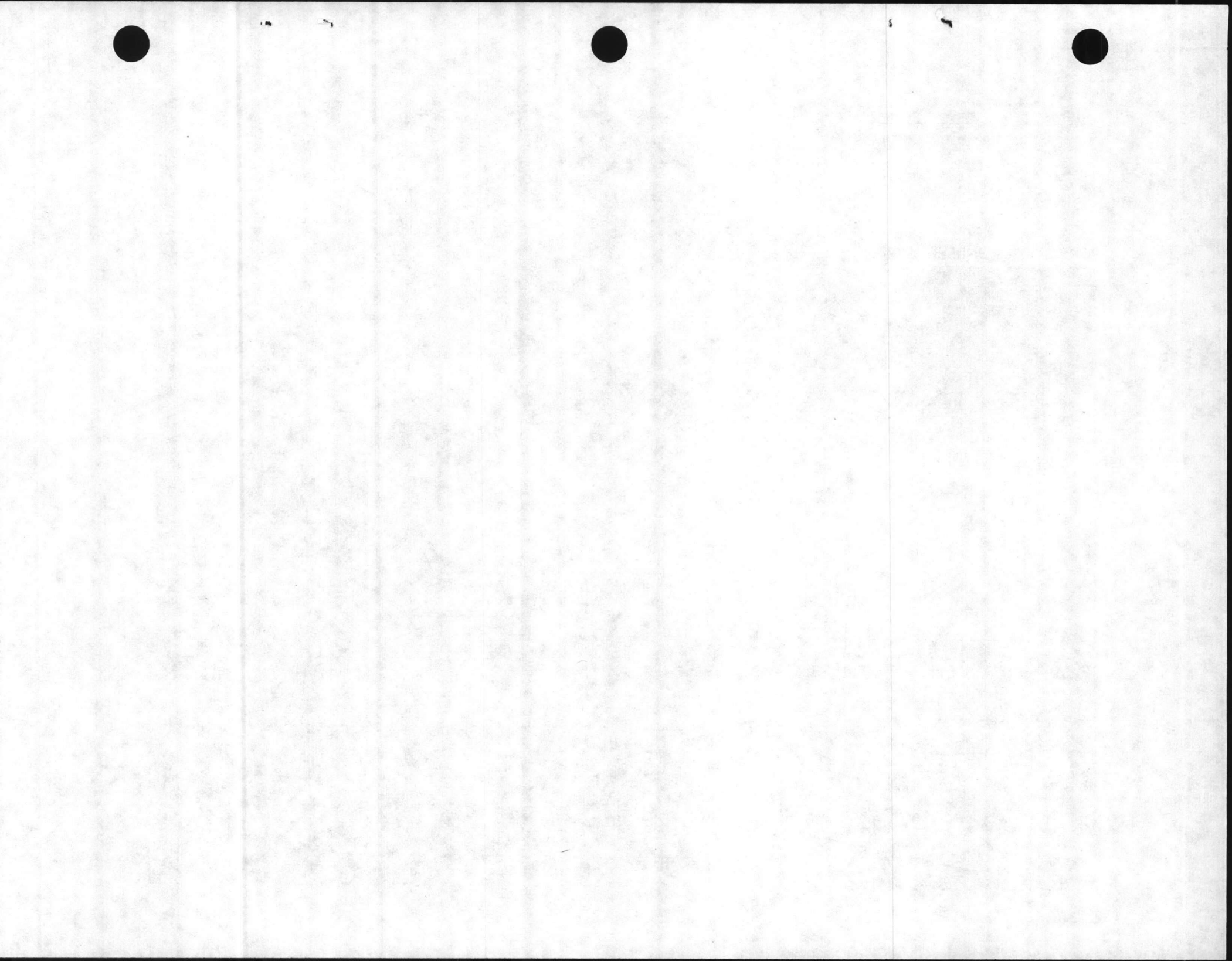


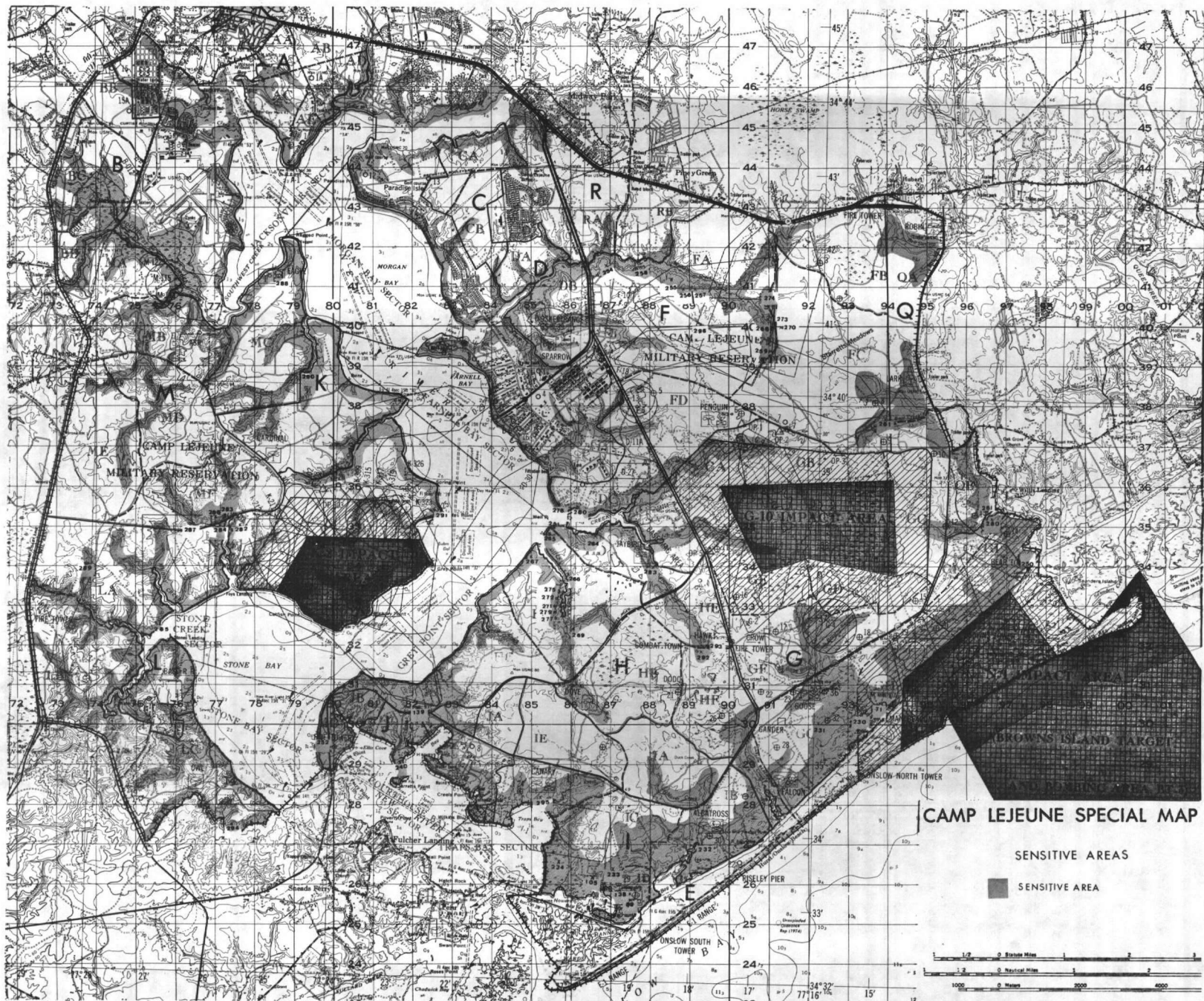
CAMP LEJEUNE SPECIAL MAP

AREAS SURVEYED

AREAS SURVEYED



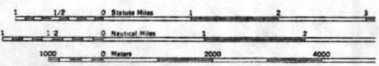


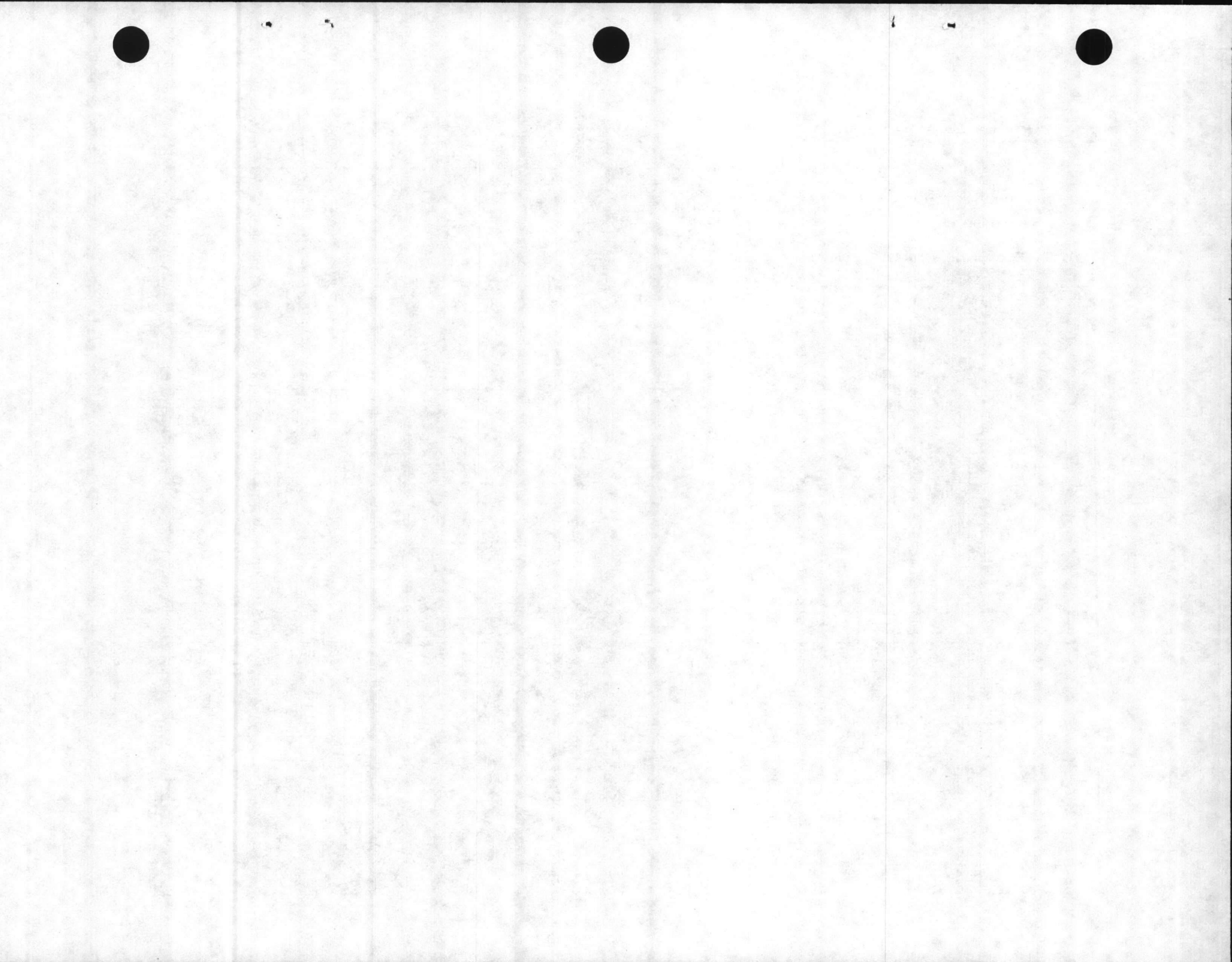


CAMP LEJEUNE SPECIAL MAP

SENSITIVE AREAS

SENSITIVE AREA





Chapter 5 SITES LOCATED

This chapter contains specific descriptions of the sites located during the 1980 field season at Camp Lejeune and incorporates information on sites located previously as well. Site descriptions include locations of sites, conditions at the sites in terms of preservation, erosion, cultural affiliation, and evaluations of the sites' potentials for future research. These data are then used to make a recommendation for management of the cultural resources at the specific sites.

Recommendations for management are based upon a number of factors. These include:

1. Preservation at the site.
Sites which were well preserved were considered more important than sites which were badly damaged or totally destroyed.
2. Relative age of the cultural materials at the site.
Twentieth century materials were considered of no value, nineteenth century materials of greater value and colonial period materials of greatest value for the historic period. All prehistoric materials were considered of value but again the older materials were considered of more value because of their relative scarcity and also because they are the least studied for this geographical region.
3. Density of materials at the site.
Thin surface scatters of materials were considered of no value. With greater concentration of artifacts on the surface per unit of area came a greater significance. Sites which had intact subsurface features or showed great promise of containing those features were ranked as most important.
4. Potential to answer unanswered questions concerning coastal population.

Late Woodland coastal sites with a massive covering of shell mantle have been the most studied on this part of the coast. Therefore they ranked as slightly less important than sites exhibiting other constellations of cultural components. This and other research questions for the coastal area are dealt with in several earlier chapters of this report.

Based upon an evaluation of each site according to the criteria described above a recommendation for management of each was formulated. These recommendations fall into four categories. Most sites were considered as ineligible for inclusion on the National Register of Historic Places primarily because the material was so dispersed or the site so damaged that potential for generating data from research at the site was non-existent or very insignificant. For these sites the recommendation reads as "not eligible for inclusion on the National Register."

Another group of sites were considered to have some potential for future research but not enough to justify inclusion on the National Register of Historic Places. For these few sites the recommendation reads "not eligible for inclusion on the National Register of Historic Places, but warrants protection." The implication of this recommendation is that if the Base land management program can accomodate it, the sites should be preserved. If they can not be preserved the loss would be real, but not extensive.

A third category of sites fell into the recommendation of "eligible for inclusion on the National Register of Historic Places." These sites definitely warrant a protective land management policy. Under this category sites were recommended as warranting protection, or in a very few cases as warranting immediate steps to salvage the preserved data because either erosion or military activities threatened to destroy the sites in a short period of time. It should be noted as a parenthesis to the report that bombing and shelling do not seem to inflict as serious damage to sites as use of the areas for intensive training involving excavations (such as "fox-holes" or the use of tracked vehicles).

The final category of recommendations includes a few sites which were located very late in the field season. A number of these sites seemed as if they would potentially be eligible to the National Register of Historic Places but were located so late in the season that test excavations to determine that eligibility could not be completed. These sites are noted as "potentially eligible to the National Register but needing testing to

verify that recommendation."

Following the descriptions and recommendations is a listing of the catalogue numbers of artifacts recovered from the sites. This number was assigned at the University of North Carolina at Wilmington and represents the number under which the artifact was accessioned into the permanent collection of that institution.

ON^V71

This site is a large grass plot located due north of the Freeman Creek Beacon on Camp Lejeune Marine Corps Base. It is oriented in a northwest, southeast direction and is well defined on the west side by the access road to the Freeman Creek Beacon. The soil consists of a recently plowed sand-shell mixture of an even grey-brown color. The primary crop cover is planted rye and other food grasses for the deer in the area. Several well defined shell middens are present throughout the area and numbers of sherds and stone artifacts were recovered by surface examination. There is a concentration of historic material in the north end of the field. Otherwise, the distribution of aboriginal artifacts appears to be uniform over the entire plot area. This site was not visited during the 1980 survey because of its location in a danger/impact zone. As a consequence there is no catalogued collection. Based on the earlier visitation (Hekhuis and Loftfield 1978) it is recommended that this site be afforded protection from further degradation. It is a potentially significant aboriginal site and has a major component of eighteenth century historic materials as well. It would probably be eligible for inclusion in the National Register of Historic Places.

ON^V105

This site is discussed in detail under Phase 11.

ON^V138

This site is discussed in detail under Phase 11.

ON^V113

This site is a small shell midden located just north of Bear Creek Tower. It was not visited during the 1980 survey because of its location in a danger/impact area. Based on earlier studies (Hekhuis and Loftfield 1978) it is thought that

this site, along with ON^V250, probably warrant protection and may be eligible for inclusion in the National Register of Historic Places. No collection was made in 1980.

ON^V139

On the north side of Highway 172, directly opposite the entrance to the boat basin on Camp Lejeune Marine Corps Base, there is a prominent hill adjacent to the road. The site encompasses the entire hill area but the greatest number of recovered artifacts was concentrated on the crest of and to the south side of the hill. The general site orientation is east-west. The hill's elevation reaches approximately thirty feet above sea level. The face abutting the road shows severe erosion and exposes the sandy soil of which most of the hill is composed. Pot sherds and numerous flakes are visible in the area nearest the road and have been exposed by surface erosion.

The presence of shell tempered pottery, several clay tempered sherd and one sand tempered sherd indicate that the major cultural affiliation of this site is with the Late Woodland period, with only minor representation of the earlier Early and Middle Woodland periods.

Due to the scarcity of recovered materials and the severe erosion caused by road construction it is recommended that this site has no clear archaeological significance, would probably not be eligible for inclusion on the National Register of Historic Places and does not warrant any protection or further concern by the Base.

117p123	ON ^V 139 - Surface	19	potsherds
117b124	ON ^V 139 - Surface	1	bone
117m125	ON ^V 139 - Surface	3	odd rock

ON^V230

Site 230 is located directly across the access road to the Freeman Beacon at Camp Lejeune, N. C. from Site ON^V71. It is also a food plot maintained by the Marine Base personnel and its orientation is from northwest to southeast. The general shape of the site is best described by two long rectangles side by side, with one place slightly ahead of the other. The access road is on the east side and the banks of Freeman Creek comprise the western boundary. It had been recently plowed and seeded, though no plants or vegetation covered the plot during the time of the survey. The soil was comprised of the same sandy -shell mixture

found on ON^V71. The north end of the field held a large quantity of historic material including numerous bricks and plate eating-ware fragments. The greatest concentration of prehistoric artifacts was located in the southern region, although they could be found throughout the entire field.

This site was not visited by the 1980 survey because of its location in a danger/impact zone. Evidence from the earlier survey (Hekhuis and Loftfield 1978) indicates that this site has significance for both the prehistoric and historic periods and warrants protection. It would probably be eligible for inclusion on the National Register of Historic Places.

ON^V231

In a slightly hilly area of Camp Lejeune, southeast of Landing Zone Goose, and on the west side of Freeman Creek, is located Site Number ON^V231. Its general trend is northeast to southwest and is a medium sized food plot. Along with the other sites in this survey, it too had been recently plowed and had no cover vegetation. The soil was of a sandy consistency and was a uniform grey color. A definite shell midden area splits the field in the middle and trends in a north to south direction and disappears into a small creek bed exchange area in the south. Artifacts were concentrated in the eastern half of the field, and consisted of both historic and prehistoric material. This site was not visited in 1980 due to its location in a danger/impact area. Previous work (Hekhuis and Loftfield 1978) indicates a high level of significance. It warrants protection and is probably eligible for the National Register of Historic Places.

ON^V232

Access to this site is gained by following Highway 172 to the sign for Landing Zone Albatross. The site is on a dirt road running southwest from the northwest corner of the landing zone. It is a food plot which is oriented in a north-south direction. The soil, recently plowed, is a mixture of sand and brown-black topsoil which showed no evidence of recent erosion. Few shells were found and some historic as well as prehistoric artifacts were recovered over the entire area of the plot with the greatest concentration of artifacts in the southern regions. For the size of the area exposed, relatively few artifacts were evident on the surface. This site is probably not eligible for the National Register of Historic Places. The limited finds suggest an Early-Middle woodland affiliation.

117p126	ON ^V 232 - surface	8	potsherds
117b127	ON ^V 232 - surface	1	bone
117m128	ON ^V 232 - surface	3	flakes, odd rock

ON^V233

This site is located on the east side of the road leading to Mile Hammock Bay and TLZ Bluebird. It is reached approximately one half mile before the end of the road at Mile Hammock Bay. Current topography shows some soil disturbance from earth-moving machinery and use as a camp site for Marine activity. The area is massively disturbed. Potsherds were scattered amongst the disturbed area with a relatively low frequency of distribution. This site is probably peripheral to ON^V105 and 89 which are in the immediate vicinity, and probably represents an odd encampment by aboriginals in a relatively unfavored location. The collection was small, the frequency of finds low, and the site itself disturbed. The site probably is not eligible for inclusion on the National Register of Historic Places and does not warrant protection. Cultural affiliation is Late Woodland.

117p129	ON ^V 233	13	potsherds
117m130	ON ^V 233	2	flake, odd rock

ON^V234

This site is discussed in detail under Phase II.

ON^V240

This site is discussed in detail under Phase II.

ON^V250

At the base of the Bear Creek Tower on CLNC is located a relatively large rectangular area designated as ON^V250. Generally trending north from the base of the Bear Creek Tower, this sandy soil site shows a fair concentration of shell midden with interspersed potsherds and stone artifacts. The area was partially exposed by the push-back of surface soil when the access dirt road was constructed to the Bear Creek Tower. The vegetation is scrub and pine making surface sampling of the entire area impossible. A view of the area from the tower reveals a generally northerly trend from the base of the tower. The site was not visited in 1980 due to its location in a danger/impact area. Previous research (Hekhuis and Loftfield 1978) suggests that it has a high significance and is probably eligible for the National

Register of Historic Places. It warrants protection. No collection was made in 1980.

ON^V251

This site is discussed in detail under Phase II.

ON^V252

Located on CLNC on the west bank of Pollocks Point directly west of the fire tower is site number ON^V252. This area is a high (up to 50 feet) bank eroded by the New River. Extensive clay substratum marks the current landwater interface at the cliff base. Several possible pit locations were observed at the top of the cliff but were inaccessible due to the extreme rise of the cliff. Very few artifacts were recovered at the base of the cliff probably owing to the rapid encroachment of New River on the bank and the subsequent washing away of artifacts exposed by wave action (Hekhuis and Loftfield 1978). This site could not be relocated in 1980 having probably totally washed away into New River. It is obviously not eligible for the National Register of Historic Places.

ON^V253

This site is located at the south end of Camp Johnson (Montford Point) just north-east of Mumford Point. Access and information as to location of the site may be obtained from the Military Police at Camp Johnson. The site was brought to our attention as the result of the discovery of human skeletal remains (non-aboriginal) exposed in the bank along New River. One piece of aboriginal pottery was recovered from the bank nearby. There was no vegetation on the bank side and the sandy soil showed evidence of extensive erosion (Hekhuis and Loftfield 1978). The skeletal materials were removed by personnel from the Research Laboratories of Anthropology at the University of North Carolina at Chapel Hill. The site was not revisited by the 1980 survey. The site is probably not eligible for inclusion on the National Register of Historic Places. No collection was made in 1980.

ON^V254

To reach ON^V254, turn on to 20 Communications Maintenance Rd, just south of Wallace Creek. The site is at the intersection of this road and the trail leading to area "F-9" found on the camp Lejeune Special Map. Both historic and prehistoric potsherds, including one blade, were found on this area of high

ground, adjacent to the creek edge. The site itself was open ground, being plowed regularly for wildlife and is surrounded by scrub pine. The artifacts were discovered along the road cut, also. They were scattered rather widely, which most likely indicates only short term habitation.

The cultural affiliation of the prehistoric materials ranged from Early Woodland sand tempered pottery through clay tempered and gravel tempered Middle Woodland sherds to Late Woodland shell tempered potsherds. The historic materials were all white glazed stoneware of no diagnostic value.

This site is probably not eligible for inclusion on the National Register of Historic Places due to the low artifact density. Its potential research value is extremely limited.

117a251	ON ^V 254	Surface	8	Flake, point, worked stone
117p252	ON ^V 254 -	Surface	10	potsherds
117p253	ON ^V 254 -	Surface	3	historic sherds

ON^V255

To gain access to this site, turn on to 20 Communications Maintenance Road from Holcomb Blvd., heading southeast, turn north on the second secondary road. The site is on the east side of the road, roughly 100 meters from the creek. The sandy soil has been plowed to accommodate as a small deer browse, approximately 20 meters by 20 meters. It is environed by mixed pine forest. ON^V255 sits on a ridge or bluff overlooking Wallace Creek and is fairly level. Only two prehistoric potsherds were found, apparently of the Woodland period. With such a small scatter of cultural material apparent on the surface, it is summarized that there was no lengthy habitation here. Cultural affiliation is Early Woodland based on sand tempered potsherds. Site is not eligible for inclusion on the National Register of Historic Places due to extremely low artifact density.

117p254	ON ^V 255 -	Surface	2	potsherds
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ON^V257

To arrive at site ON^V257, enter 20 communications Maintenance, from Holcomb Blvd, and beyond the road which leads to the F-9 firing range, turn on to the secondary dirt road which is north. Follow this road, bearing right, to its extinction at the

site which is a field of deer browse. This recently plowed field is on level ground; its soil is sandy loam, and manifests no evidence of erosion. It is surrounded by a mixture of dense pine forest and scrub growth; Wallace Creek lies some 500 yards to its north. A light scatter of recent sherds was collected from its surface as well as some brick and shell. This site represents a recent (second quarter twentieth century) occupation as evidenced by an abandoned Model A Ford Roadster at the site. The site is not considered eligible for inclusion on the National Register of Historic Places due to its recent age. No materials of any great age were recovered.

117a256	ON ^V 257 - Surface	3	bottle glass
117p257	ON ^V 257 - Surface	14	historic sherds
117m258	ON ^V 257 - Surface	3	rocks
117m259	ON ^V 257 - Surface	1	melted material

ON^V258

Site ON^V258 can be gained by entering the road to the F-9 firing range and at the intersection of that road and 20 Communications Maintenance Road. Head east to the first dirt road to the left. Turn left and follow to a borrow pit. A light scatter of prehistoric sherds was collected at the northwest corner of the borrow pit. The soil is sandy clay. The site has been greatly disturbed by the activity of heavy equipment in the area due to the excavation of the pit by the United States Marine Corps. The potsherds recovered from this site were predominately Middle Woodland time period as evidenced by the clay tempering. While the site would perhaps have been of value originally, the massive disturbance caused by the borrow pit activity has rendered it meaningless. It is clearly not eligible for inclusion on the National Register of Historic Places because it has been totally destroyed and would have no research value whatever.

117a260	ON ^V 258 - Surface	1	flake
117p261	ON ^V 258 - Surface	30	potsherds

ON^V259

Proceed east on Communications Maintenance Road from Holcomb Blvd. to first primary dirt road intersection in opening to the north. Travel north on it and to the west side of the road within 1/4 mile is the site; a large field of deer browse, which is 50 meters from and approximately 35 feet higher than a branch of Wallace Creek, to the west. The field is dominated by a knoll which slopes primarily to the North. It is completely surrounded

by Pine forest and scrub growth. The soil is sandy loam and supports deer browse vegetation. Recovered was a light scatter of prehistoric sherds including one prehistoric clay pipe, and some historic sherds. This site appeared promising enough that test excavations were planned. It was here, however, that an unexploded mine was encountered at a depth in the soil and the tests abandoned. At the time of this writing it is assumed that the site has been greatly damaged by military activity, but that research potential may remain. The cultural affiliation was Late Woodland at the lower end of the field as evidenced by predominantly shell tempered ceramics and mid-nineteenth century at the upper end as evidenced by numerous objects from that time period and a significant number of historic potsherds of the "transfer ware" and "feather edged" varieties. The eligibility of this site to the National Register of Historic Places is in doubt. The surface finds suggest that it may retain significant research potential, especially due to its cultural affiliation and its location on the upper reaches of a freshwater creek. Sites of this configuration are rare. Unfortunately, the presence of even suspected unexploded ordnance makes excavation hazardous. Protection for this site is suggested.

117a262	ON ^V 259 - Surface	1	Flaked rock
117p263	ON ^V 259 - Surface	24	potsherds
117p264	ON ^V 259 - Surface	23	historic sherd
117m265	ON ^V 259 - Surface	2	brick frag.
117m266	ON ^V 259 - Surface	1	nail
117m267	ON ^V 259 - Surface	3	odd rocks

ON^V260 and ON^V262

To reach this site turn east off Hwy. 172 at the first dirt road north of Mill Creek. Follow that dirt road, bearing right, to its extinction at the base of Mill Creek. This is a wooded area which slopes gradually south to the marsh grass which is extensive and lies between the bank and the meandering creek. The area, roughly a rectangle of about four or five acres, seems to have been cleared of underbrush and some trees, with about 40 percent ground visibility and some open sandy areas. Potsherds were recovered in a patch of sand about where the road becomes undiscernable, approximately 200 meters from the Creek. There were, however, some late historic sherds recovered on a knoll, which is designated ON^V262, in the same area about 200 meters east of where the projectile point was found and 100 meters north of the creek. For purposes of recording and analysis ON^V260 and ON^V262 were combined because of their close proximity. The prehistoric cultural affiliation of this material is Early Woodland

as evidenced by sand tempered ceramics with a small minority of Late Woodland shell tempered ceramics. The historic component (ON^V262) was of recent the twentieth century. The nail was a round wire nail and the ceramics non-descript twentieth century. These sites are probably not eligible for inclusion on the National Register of Historic Places because of the low artifact concentration and the extensive damage to the site. Research potential is low to nonexistent for this area.

117p268	ON ^V 260 - Surface	16	potsherds
117s269	ON ^V 260 - Surface	2	shells
117a270	ON ^V 262 - Surface	23	bottle fragments
117p271	ON ^V 262 - Surface	28	historic sherds
117m272	ON ^V 262 - Surface	1	nail
117m273	ON ^V 262 - Surface	2	rocks
117m274	ON ^V 272 - Surface	2	brick fragments

ON^V261

This site, as with site ON^V260, can be reached by turning off of Highway 172 at the first dirt road north of where Mill Creek flows under Highway 172. Follow that dirt road, bearing right until reaching a large sandy shallow pit. This site is about four acres in size and has been greatly disturbed by the activity of heavy equipment. It is located on level ground approximately 1/4 mile from Mill Creek. Site ON 260 lies south of this site between Mill Creek and ON^V261. The soil type is sandy. Within the pit itself, but especially to the eastern and western ends of the site, outside the pit were found scatters of historic sherds and some glass. In addition, there was collected a small scatter of prehistoric sherds on the eastern end of the site, again largely outside the pit. Cultural affiliation was Late Woodland based upon ceramic typology. The site is probably not eligible for inclusion on the National Register of Historic Places due to low artifact concentration and massive disturbance to the site. Research potential is nonexistent.

ON^V262 See ON^V260 (above)

ON^V263

ON^V263 may be reached by turning off Sneads Ferry Road, just opposite observation point #5 onto Marine Road, then continuing to the second right to Troop Landing Zone Jaybird. The soil composition of this area, which is just above French's Creek, is

quite sandy. A very few artifacts were found. They were one historic sherd, 2 pieces of brick and one prehistoric potsherd. Cultural affiliation could not be determined because all material was either badly eroded or non-diagnostic. The site is not eligible for the National Register of Historic Places due to extremely low artifact density.

ON^V264

Turn north off Marine Road at second secondary road, then take the first left and the next right, continuing until it reaches French Creek. ON^V264 is located at the edge of the creek, on the west side of the road. The area is surrounded by flat woodland above French's Creek. Sandy loam soil is found throughout. The site itself had been previously cleared but now is lightly covered with scrub and grasses. A variety of potsherds, brick fragments and glass were found scattered about. These historic artifacts were not heavily concentrated in any one particular area, but were dispersed evenly. Once again cultural affiliation could not be determined due to erosion of sherd surfaces and the non-presence of diagnostic artifacts. The site is not considered eligible for inclusion on the National Register of Historic Places due to low artifact density and low research potential. In essence the prehistoric occupation was ephemeral and the historic occupation recent and short term. The site has been eroded and damaged by military activity.

ON^V265

This site is located on Weil Point between Duck Creek and Frenchs Creek. The soil type is sandy loam. The primary crop cover is forest. Prehistoric sherds and historic sherds and glass were recovered. This site is probably an extension of ON^V251 but is located approximately 200 meters to the south. As such it falls under the recommendations for ON^V251.

117p275	ON ^V 265 - Surfaces	3	potsherds
117p276	ON ^V 265 - Surface	4	historic potsherds
117a277	ON ^V 265 - Surface	1	bottle frag.
117m278	ON ^V 265 - Surface	1	flint chip
117m279	ON ^V 265 - Surface	3	brick pieces

ON^V266

Is located by proceeding on Weil Point Road. Take first turn on left. Proceed until arriving at a fork. Turn right 200 meters. Site is located on Duck Creek. Soil is sandy loam

with forest ground cover. ON^V266 lies in a roadway cut. Recovered articles were prehistoric potsherds. Site size is about 25 to 40 meters. Recovered potsherds were non-diagnostic in that severe erosion to their surface made identification impossible. The site was small, the artifacts widely scattered, and the ground badly eroded and damaged. The site has extremely limited research potential and is probably not eligible for inclusion on the National Register of Historic Places.

ON^V267

This site is located on the New River approximately one quarter mile southwest of the mouth of Duck Creek. It consists of plowed feed plots with extensive shoreline erosion. Artifacts recovered were of the historic period but exact age of general time period could not be established. The one bottle glass fragment and two pieces of white glazed stoneware were completely non-diagnostic. The site itself, may have eroded into the river as shoreline recession has been severe in this area. The site is probably not eligible for inclusion on the National Register of Historic Places due to excessively low artifact concentration which in this case suggests the loss of the site to shoreline erosion.

117a280	ON ^V 267 - Surface	1	bottle glass fragment
117p281	ON ^V 267 - Surface	2	historic potsherds

ON^V268

268 is found by entering 20 Communications Road from Holcomb Blvd. and turning left at the first primary dirt road originating on the north side. Follow this road north to the inception of a primary dirt road on the east side, then measure 2/5's of a mile and locate on the west side a secondary dirt road which leads shortly to a field of deer browse about one-half acre in size. This field which was recently plowed is circumscribed by forest and low scrub. Beyond the western edge of the field some 200 yards into the forest is a small bank of Wallace Creek. The field itself has no slope and the soil, which is sandy loam, shows no evidence of erosion. Towards the northwest corner of the field part of a prehistoric stone knife was recovered in the absence of other artifacts. The one artifact recovered at this site clearly represents an accidental loss episode. The cultural affiliation could not be determined as the remaining portion of the blade was non-diagnostic. The site is not eligible for inclusion on the National Register of Historic Places as it really does not constitute a site.

117a282	ON ^V 268 - Surface	1	knife blade
117m283	ON ^V 268 - Surface	12	odd rock

ON^V269

ON^V269 is situated on an extremely high knoll between two small streams which are tributaries to Duck Creek. The site is quite small, facing down two slopes toward each of the two tributaries. The sandy clay soiled area has suffered from gully erosion, causing ground disturbance in the area, aiding in the yielding of the prehistoric artifacts recovered. Found were a scant scattering of potsherds and one blade, possibly of the Woodland or Archaic period. The area is foliated with a very young growth of pine. To reach this site, turn northwest off Marines Road, directly opposite the entrance to Troop Landing Zone Dove, onto a primary dirt road. Next, turn northeast on the first secondary dirt road and proceed approximately 1/3 km. The site is adjacent to the road. Recovered potsherds are primarily sand tempered with only clay tempered sherd present. This indicates an Early Woodland occupation. The occupation was apparently small and short-lived as evidenced by a dearth of artifactual material at the site. This dearth coupled with severe erosion and damage in the area suggests that this site will have no research potential and will not be eligible for inclusion on the National Register of Historic Places.

117p284	ON ^V 269 - Surface	11	potsherds
117b285	ON ^V 269 - Surface	1	bone
117m286	ON ^V 269 - Surface	9	odd rock

ON^V270

Turning onto 20 Communications Maintenance Road, off of Holcomb Blvd., take the first primary road leading north, approximately 1/4 mile down this road, turn west on the first tertiary road, the site is 1/2 mile down this last road. It is located on a high knoll, 50 yards into the woods, near Wallace Creek. The site itself is flat, however. The area soil is sandy and the vegetation is mostly forest. ON^V270 has apparently been subject to only slight erosion and light disturbance. A total collection was made of the site surface, recovering a few historic potsherds, brick and fence remains. A number of old, overgrown fields were observed in the immediate vicinity, suggesting the remnants of a farm. The potsherds recovered at this site were of the twentieth century suggesting no great age for this occupation. The site is thus probably not eligible for inclusion on the National Register of Historic Places.

ON^V271

This site is located North of TLZ Dove and is accessible by dirt roads and trails in fair condition at the time it was recorded. Proceeding southwest on Marines Road, take the dirt road across from TLZ Dove to the right. Past a road to the left and about 1200 meters northwest of TLZ Dove, take the trail to the right and head north for approximately 1900 meters. The site lies approximately 25 meters west of Duck Creek on the first terrace above water. The terrain slopes gently east towards the creek. Soil composition is sandy loam and vegetation is limited to feed grasses and weeds in a plowed field, surrounded by forest.

Artifacts include numerous potsherds of varying types, several flakes, and a few bones.

This site appeared promising enough that test excavations were carried out. The results were disappointingly negative. This site was by far the most productive of the sites located on freshwater creeks with significant quantities of Early and Middle Woodland artifacts. As noted above and in Chapter Phase II, no evidence for subsurface features or stratigraphy were discovered in the testing phase. This suggests strongly that even though this site was very productive on the surface, it will not be eligible for inclusion on the National Register of Historic Places. It probably does warrant protection however, as more extensive testing may reveal areas of potential research value.

117a288	ON ^V 271 - Surface	1	point frag.
117p289	ON ^V 271 - Surface	128	potsherds
117b290	ON 271 - Surface	1	bone
117m291	ON ^V 271 - Surface	6	odd rock

ON^V272

This site is located approximately one quarter mile north of ON^V271, on the next knoll top. Two projectile points were recovered which were respectively a Morrow Mountain (Middle Archaic period) and a Late Woodland triangular shaped point, the base of which was broken away. Potsherds were clay tempered indicating a Middle Woodland period. The site itself was badly eroded which fact combined with the low artifact concentration indicates that this site will not be eligible for inclusion on the National Register of Historic Places.

117a292	ON ^V 272 - Surface	2	chipped stone projectile points
117p293	ON ^V 272 - Surface	6	potsherds
117m294	ON ^V 272 - Surface	10	flakes
117m295	ON ^V 272 - Surface	4	odd rocks

ON^V273

Entering from Holcomb Blvd. onto 20 Communications Maintenance Road, and turning onto the first primary dirt road to the north, then continuing north to the entrance of the first primary dirt road to the right, site 273 can then be found by continuing north beyond this point approximately 1/2 mile. The site itself is in what appears to be the entrance of a dirt road, but which abruptly terminates at a distance of 7 or 8 feet. The soil is sandy, and the area around the site, except for the road, is pine forest. The only artifact found is a stone chip, perhaps the byproduct of toolmaking. Once again this non-site will not be eligible for the National Register of Historic Places.

117m296	ON ^V 273 - Surface	1	flake
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ON^V274

Enter from Holcomb Blvd., onto 20 Maintenance Communications Road, turn onto first north running primary dirt road, proceed to the third secondary dirt road to the north side by a secondary road and a fire break. The main area is a flat field, previously plowed as a deer browse. The sandy-loam soil of the rectangular field was very disturbed and subjected to moderate erosion. The site yielded only a small scattering of historic sherds distributed over a wide area, even directly across the road and in the fire lane. A 100% collection was made, but the sherds were non-diagnostic. It would seem that there was no long-term habitation. This site is not eligible for the National Register of Historic Places.

ON^V275

ON^V275 is accessible by a dirt road branching off Marines Road across from TLZ Dove. Proceeding NW on this road, travel approximately 1200 meters to a trail which forks to the right. Approximately 1600 meters north on the trail the road bed becomes washed out near a tributary to Duck Creek which lies within 30 meters to the East. Soil composition in the area is sandy clay, and modern vegetation consists of 2nd growth pine forest. Artifacts recovered at this site include 7 flakes as well as

numerous potsherds of varying temper and impression. This site is one of a number of sites located along a high ridge just south of Duck Creek and closely resembling the physiographic situation at ON^V271. This particular site was very badly eroded by gully washing which lowers its potential research value. It is probably not eligible for inclusion on the National Register of Historic Places but does clearly warrant protection. Recovered potsherds were primarily of a gravel tempered type which is of low frequency in the area but very important in areas located inland and to the north from Onslow County. This type which is called "Mount Pleasant" by Phelps (personal communication) is apparently contemporary with the clay tempered wares of the coastal region. This site thus has potential importance for study of ceramics in the region.

117p297	ON ^V 275 - Surface	1	historic potsherds
117p298	ON ^V 275 - Surface	59	potsherds
117m29-	ON ^V 275 - Surface	7	flakes

ON^V276

This site is a large cleared area bordering Frenchs Creek. Head south on Sneads Ferry Road. Turn west onto Maintenance Road. Proceed left on first dirt road until site is reached. ON^V276 lies in a disturbed field. Soil is sandy loam. The low artifact density at this site clearly indicated its ephemeral nature and low research potential. It is not eligible for inclusion on the National Register of Historic Places.

117p300	ON ^V 276 - Surface	1	potsherd
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ON^V277 and ON^V279

ON^V277 is approached by making a north west turn off of Marine Road, directly opposite TLZ Dove's entrance. Off that road, take the first right on a primary road bearing north east. The site is located between this road and the upper end of the tidal portion of Duck Creek, roughly twenty meters from the water. It is one of a series of sites discovered along this road and Duck Creek. It is on the top of a small knoll and is relatively large. The soil is composed of sand and vegetation is for the most part scrub growth. Gullies along the road have contributed to area erosion. The artifacts recovered were all of prehistoric nature. They were found along the road bed and areas adjacent to it. ON^V271, ON^V272, ON^V275 and ON^V279 were along this same road and consisted of the same vegetation, topography and soil composition. They also yielded the same sort of cultural material

as ON^V277. Sand tempered sherds, clay tempered sherds and gravel tempered sherds are equally represented at these sites indicating intermittent occupations in the Early and Middle Woodland periods. The low artifact density and severe gully wash erosion suggest that they will not be eligible for inclusion on the National Register of Historic Places. While research potential is low, it is not non-existent and it is suggested that these sites may warrant protection.

117p301	ON ^V 277 - Surface	9	potsherds
117m302	ON ^V 277 - Surface	1	odd rock
117p304	ON ^V 279 - Surface	24	potsherds
117m305	ON ^V 279 - Surface	4	rocks

ON^V280

Site 280 can be reached by entering Main Service Road from Sneads Ferry Road and bearing south on to any available paved streets towards French's Creek until arriving at within 1/5 of a mile of Farrell Bay. Here, on the south side of and adjacent to the street is a cleared area of about 3 acres into which empties a drainage ditch serving the barracks buildings directly across the street. The ground, which is sandy clay and gravel, is greatly disturbed, apparently in connection with road and drainage construction. There is considerable erosion caused by the drainage run off and the exposure of the soil due to clearing. The area, which supports patches of light vegetation, rises toward the street in its north side and is circumscribed on the other three sides by woodland. A sparse scatter of prehistoric sherds were collected from the surface of the site, primarily towards its center. Once again low artifact density and severe erosion and ground disturbance indicate no research potential making the site ineligible for the National Register of Historic Places.

ON^V281

To reach this historic site, turn off Lyman Road from Hwy. 172 at the I-3 Firing Range and take the first good dirt road north, take first passable right, the site is on the right hand side about 1 1/2 miles down, in a large sandy clearing. The clearing is a flat, sandy area close to Bear Creek. ON^V281 is approximately 300 square yards in size and surrounded by the typical forest for the base. No above-ground structures were found but there was a scattering of historic potsherds recovered. The survey crew members made a 100% collection of the site surface. The recovered ceramics were of modern twentieth century non-descript origin indicating a modern period for this occupation.

This indicated that the site will not be eligible for inclusion on the National Register of Historic Places.

117p306	ON ^V 281 - Surface	5	historic sherds
117m307	ON ^V 281 - Surface	1	glass

ON^V282

This site occupies the K-105 grenade range located on the west side of Mill Creek Road; between that road and a small branch of Mill Creek. The range is an approximately 2 acre square field which slopes down on the south side, and is greatly disturbed, having been partially landscaped for its present purpose. It contains an observation tower and some cinderblock bunkers. The soil is sandy with small lumps of clay. A light scatter of prehistoric sherds was collected from the surface. The massive ground disturbance at the site and the low artifact density indicate that this site is not eligible for the National Register of Historic Places.

ON^V283

Take Highway 17 until reaching Verona Loop Road. The site is on the west after crossing Mill Creek. Site is situated on a high knoll in a field to the right of the road. Soil type is sandy, clay loam with Pine Scrub growth. A large number of artifacts were found, mostly prehistoric. These artifacts consisted of prehistoric sherds, flakes and historic sherds.

The cultural affiliation of this site is Early to Middle Woodland as evidenced by a preponderance of sand and clay tempered sherds with a minority representation of gravel tempering. The site was discovered late in the season precluding extensive testing. The density of artifacts recovered plus the lack of ground disturbance suggest that this site will be eligible to the national Register of Historic Places. Verification of this eligibility will rest on test excavations that need to be continued.

117p308	ON ^V 283 - Surface	3	historic potsherds
117p309	ON ^V 283 - Surface	310	potsherds
117s310	ON ^V 283 - Surface	5	shell
117m311	ON ^V 283 - Surface	13	flakes
117m312	ON ^V 283 - Surface	7	odd rocks

ON^V284

This site is directly south of ON^V286, across Verona Loop

Road and west of Mill Creek Road about 1/5 of a mile west of the entrance to Mill Creek Road. It is situated on a Knoll which slopes south and is delimited by a wide clear section of Mill Creek which runs southwest. Although it is forested and ground visibility is extremely poor, this site was thought worthy of investigation because of its proximity to a substantial source of water and to ON^V286 which yielded many artifacts. In fact, ON^V284 might be considered an extension of ON^V286 as it was in the logical pathway between the knoll of ON^V286 and Mill Creek. ON^V284, however, yielded only one sherd and what may be a stone flake. ON^V284 is clearly not eligible for the National Register of Historic Places by itself. In conjunction with ON^V286 it would warrant protection at least, and possibly be eligible to the National Register of Historic Places.

ON^V285

Travelling along Verona Loop Road, take the second turnoff heading south past Mill Creek. Bear right at the road forking and follow until reaching Stone Bay. The site is about 20 meters to the east of the road, along the shoreline. This site has been heavily eroded with the majority of the cultural remains having been washed away. There were quite a few prehistoric potsherds found while surveying the beach, so it may possibly have been a heavily settled area. The soil was naturally sandy and forest began at the ridge directly above the water's edge. Due to the heavy erosion, there is no point in any further work being done at this particular site. Not eligible to the National Register of Historic Places.

117p313	ON ^V 285 - Surface	8	potsherds
117m314	ON ^V 285 - Surface	1	odd rock

ON^V286

ON^V286 is a large knoll north of and adjacent to Verona Loop Road, approximately 1/5 of a mile west of the entrance of Mill Creek Road. Mill Creek itself curves here from the south west and turns northwest. The knoll rises in the bend thus formed perhaps 35 feet above the creek's surface, and occupies a rectangular field running parallel to Verona Loop Road. The field has been plowed, though not recently as evidenced by a substantial growth of weeds and small trees. The soil is sandy clay. To the north the field is delineated by a wooded area which extends a maximum of 50 yards to the sharply dropping bank of the north west running section of the creek. Prehistoric sherds, scattered heavily at the Knoll's Summit and thinning out towards the edges of the field,

were collected along with one nearly complete Morrow Mountain projectile point, one partially worked stone implement and many stone flakes. One glass trading bead was recovered from the extreme eastern end of the field.

The pottery from this site is predominantly Early and Middle Woodland. The Morrow Mountain point suggests Middle Archaic occupation as well. The site was not tested during this survey as it was located late in the season. The site, in conjunction with ON^V284 (see above), is possibly eligible to the National Register of Historic Places. This eligibility must be verified by some testing at the site.

117a315	ON ^V 286 - Surface	2	points
117a316	ON _V 286 - Surface	1	bead
117p317	ON 286 - Surface	14	potsherds
117m318	ON ^V 286 - Surface	4	odd rocks

ON^V287

This site is located on a knoll which is reached by entering Verona Loop Road at Verona and proceeding .75 mile past the entrance of Mill Creek Road. On the north side of Verona Loop road at this point is a primary dirt road directly after which is a field containing the knoll. The soil is of clay and loam, and has not been plowed recently as evidenced by the several years' growth of scrub. It is bounded on the south by Verona Loop Road, and within 1/10 of a mile, a substantial section of Mill Creek. It is flanked on the west by another cleared field, on the north by forest and to the east by the above-mentioned primary dirt road beyond which is forest. This site lies within 1/4 mile of site "286" and a small branch of Mill Creek runs in a northwesterly direction approximately 1/10 of a mile, to the north of it. A moderate scattering of prehistoric sherds was recovered from the knoll. No particularly heavy erosion was evident. Low artifact density at this site indicates that it has no research value and is thus not eligible to the National Register of Historic Places.

117p319	ON ^V 287 - Surface	13	potsherds
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ON^V288

Located on TLZ Eagle, site 288 can be reached by turning northeast on to Eagle Point Road from Verona Loop Road to TLZ eagle which is on the left, a large cleared field of perhaps 12 acres. The land in this area is level and the natural vegetation on all four sides of the TLZ is pine forest. The soil is sandy

loam and there is light vegetation in cleared areas. One partial projectile point of white quartz was recovered from the landing zone approximately 40 yards north of Eagle Point road about equal distance from the northeast and southwest edges of the field. There was no evident erosion. The single projectile point was too fragmentary to identify, and probably represents an accidental loss episode. This site is clearly not eligible for inclusion on the National Register of Historic Places.

117a320 ON^V288 - Surface 1 point frag.

ON^V289

This site is located in the western part of the base. After turning south on the last primary dirt road off Verona Loop Road, bear right until a small creek is crossed. The site is at the second deer Browse on the west side of the road. The field had been plowed within the last six months. The only artifact found was a single quartz, worked tool. It was probably only a chance recovery of no particular significance.

The point was too fragmentary for identification. The site is clearly not eligible for inclusion on the National Register of Historic Places.

117a321 ON^V289 - Surface 1 point frag.

ON^V290

To get on ON^V290, turn on to the road leading to TLZ Eagle from Verona Loop Road. Bear right at the fork in the road, heading east. This road will lead to a large deer browse on the left side. Running behind this field is a firebreak which follows a knoll along a tributary to Lewis Creek. The cutting of this firebreak has apparently brought to the surface a number of artifacts from a site of prehistoric habitation. The soil about the creek is sandy with a slight component of clay. The rest of the area is covered by heavy forest, preventing further surface collection. What was found were many potsherds, flakes and two points. A significant portion of the sherds appeared to be from a single piece of work. The late finding of this site precluded any testing during the 1980 season. The location of the site at the fork of Lewis Creek and the high artifact density at the site suggest that this site will probably be eligible for inclusion on the National Register of Historic Places.

The material recovered from this site was inadvertently dis-

carded.

ON^V291

The site can be reached by taking Verona Loop Road to Rhodes Point Road. Follow it to the point. Site is located on a bluff all along the New River. Erosion is in progress. Soil type is sandy loam. Both historic and prehistoric material was found. This particular location was examined at the request of the Base environmental office as it was the proposed location for a vehicle landing area. The site produced evidence of a colonial period to Mid-Nineteenth century occupation in the form of blue feather-edge ware and two kaolin pipestems. Intensive searching could not locate the central locus of the site and it remains possible that the majority of the site has eroded into New River. The pre-historic component at the site was of Middle Woodland period and also had no visible central locus. The artifacts recovered were found spread over a wide area with a low artifact density. The site area deserves protection from unnecessary destructive activities but is probably not eligible for the National Register of Historic Places due to the apparent erosion and low artifact density.

117a322	ON ^V 291 - Surface	2	pipestem
117a323	ON ^V 291 - Surface	1	point frag.
117p324	ON ^V 291 - Surface	12	historic potshed
117p325	ON ^V 291 - Surface	7	potsherds
117m326	ON ^V 291 - Surface	1	unidentified metal object
117m327	ON ^V 291 - Surface	2	brick
117m328	ON ^V 291 - Surface	1	bottle glass

ON^V292

The site is located about 20 meters east of Combat Town. The site is located in a pine scrub clearing with sandy loam soil. Artifacts recovered were aboriginal sherds. This site is associated with the upper reaches of French's Creek but had a very limited size. The few artifacts recovered indicated a very ephemeral occupation and the site has no research potential. It is thus not eligible for the National Register of Historic Places.

117p329	ON ^V 292 - Surface	3	potsherds
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ON^V293

Site can be reached by traveling on Marine Road until reach-

ing Combat Road. Head due west for 400 meters. Site is just east of French's Creek on the left. Soil composition where aboriginal potsherds were found was sandy loam type. This site, like ON^V292 was of very limited size indicating a short-lived occupation. The site area is totally destroyed by plowing and earth-moving activities conducted there by the U.S. Marine Corps. Given the shallow nature of the site itself and the destructive activities in the area the site has no remaining research potential and would not be eligible for inclusion on the National Register of Historic Places.

117p330	ON ^V 293 - Surface	18	potsherds
117m331	ON ^V 293 - Surface	2	odd rocks

ON^V294

Site can be reached by going to Everet Creeck or Stone Bay, on Camp Lejuene's side. ON^V294 is approximately 110 meters from the creek. Aboriginal sherds and some worked stone were found. Soil was sandy loam type. ON^V294 was located too late in the field season to permit any testing at the site. The density of artifacts and the non-eroded topographic situation indicate that this site may contain intact subsurface features or stratigraphy and would thus have research potential. The site is probably eligible for inclusion on the National Register of Historic Places but this would need to be verified by testing at the site. Cultural affiliation of the site is predominantly Middle Woodland as evidenced by a preponderance of clay tempered and gravel tempered sherds, indicating at least limited occupation during the Early and Late Woodland periods.

117a332	ON ^V 294 - Surface	2	point frag.
117p333	ON ^V 294 - Surface	1	historic potsherd
117p334	ON ^V 294 - Surface	54	potsherd
117m335	ON ^V 294 - Surface	6	flake & odd rock

ON^V295

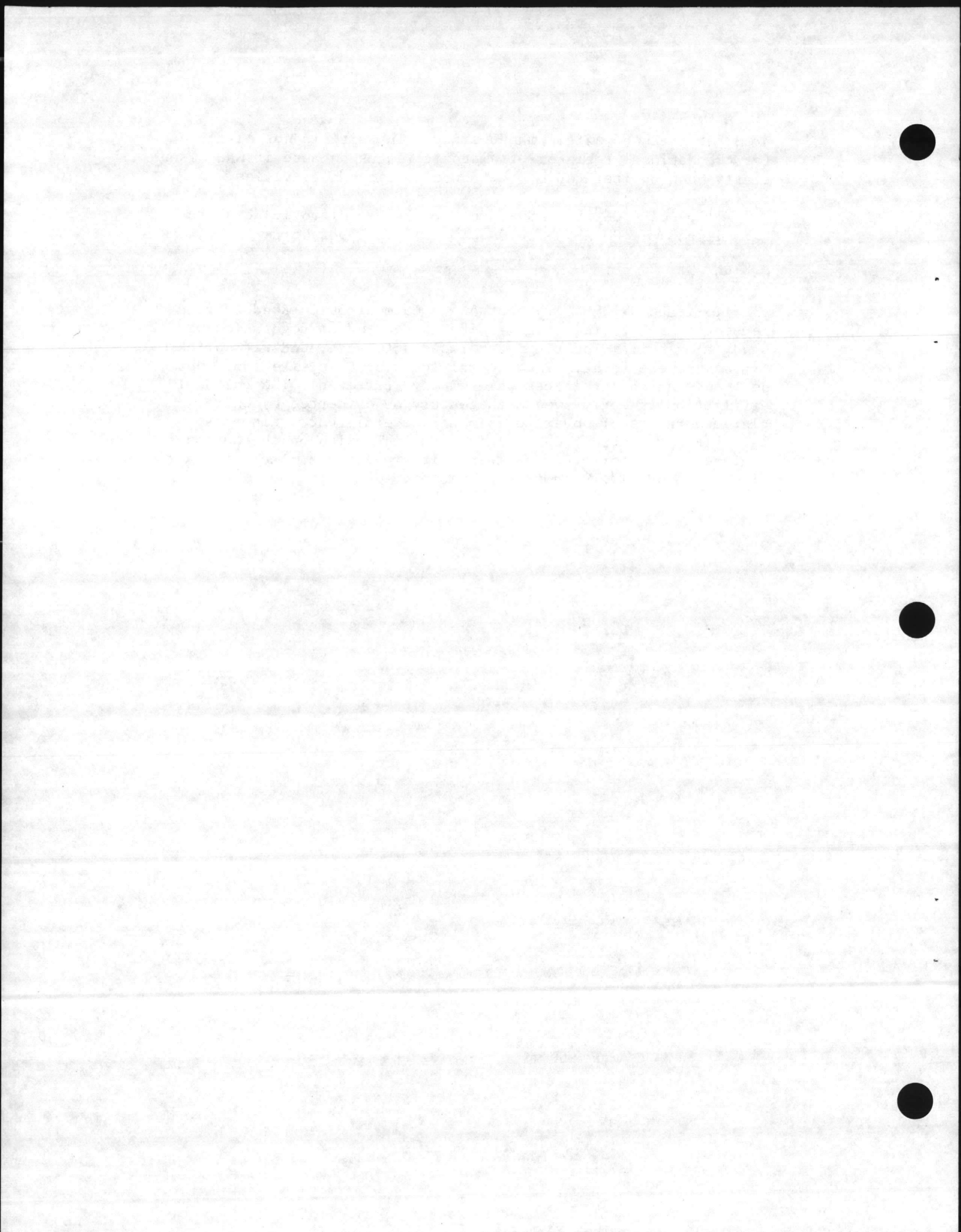
Turn south off highway #172 on to entrance road to TLZ Canary. Take left fork near water. ON^V295 lies next to Traps Creek. The sight was on level ground; the soil composition was sandy loam with secondary growth. Artifacts collected at ON^V295 were aboriginal sherds. The cultural affiliation of the prehistoric materials was Middle Woodland as evidenced by clay tempered sherds and gravel tempered sherds. The site has unfortunately been destroyed by wind erosion caused in large part by clearing for and use of the area as a helicopter landing zone and by use of the

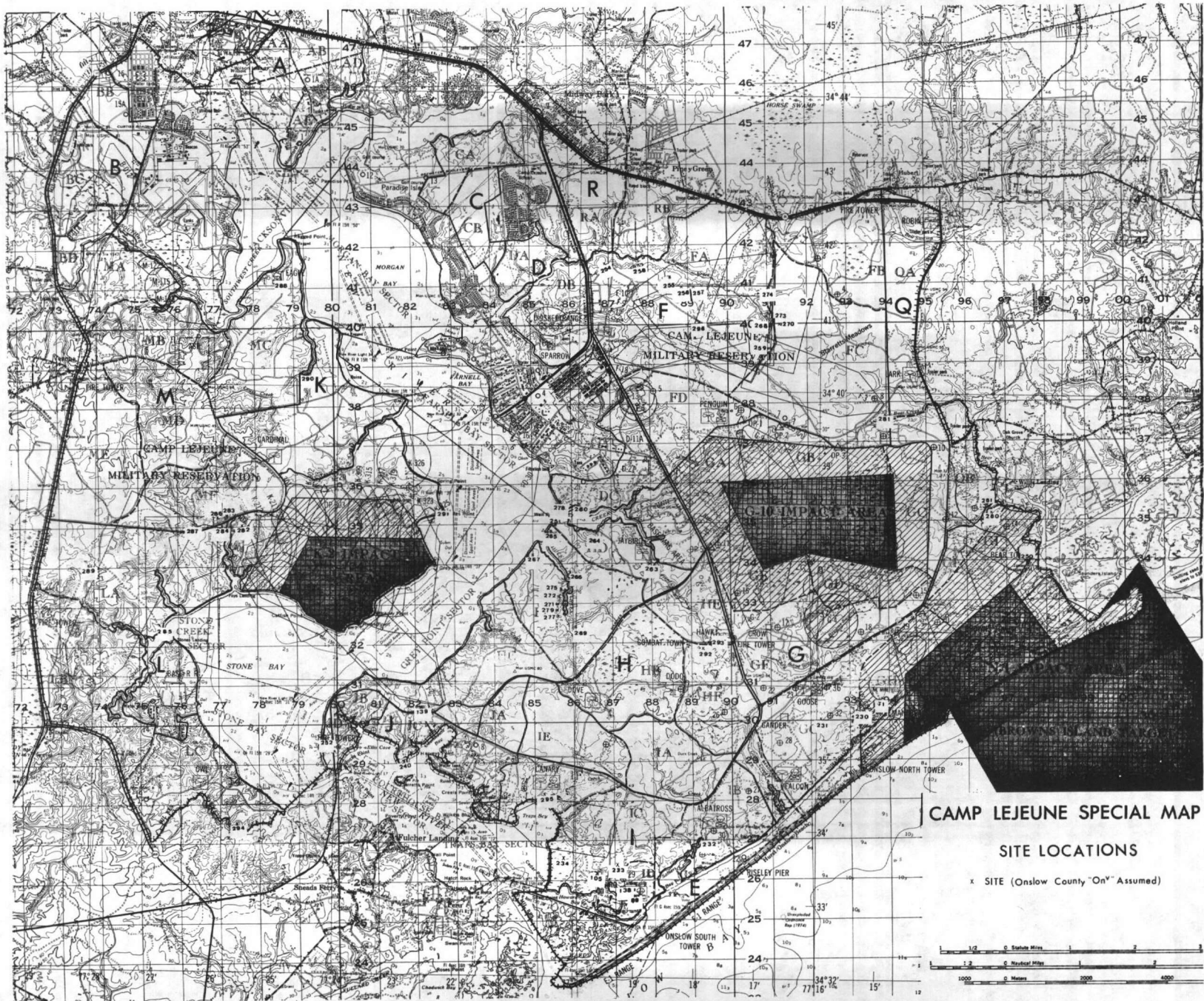
area for tracked vehicle maneuvering. The site is not eligible for the National Register of Historic Places because it has essentially been obliterated by the above mentioned activities.

117p336	ON ^V 295 - Surface	5	historic potsherd
117p337	ON ^V 295 - Surface	16	potsherds

ON^V296

To reach ON^V296 turn east on 20 Communication Road to road leading to F-9 firing range. Site is cleared of vegetation with sandy clay soil. Historic potsherds scattered around with brick fragments were found. The central locus of this site could not be found and the artifacts were widely scattered. The cultural affiliation is early twentieth century as evidenced by white glazed ceramics of modern origin and several rusted tin cans. This site is probably not eligible for inclusion on the National Register of Historic Places due to its recent age, lack of central site area and widely scattered remains.







Chapter 6 SITES TESTED

The second phase of work at Camp Lejeune consisted of opening a number of test excavations at selected sites to determine the potential for eligibility to the National Register of Historic Places of those sites. While not all sites considered potentially eligible for inclusion on this register were tested, those selected were the sites with the greatest probability of containing intact materials of potential research interest. Sites were selected on the basis of gross size, quantity and quality of materials recovered from surface collections, and visible conditions at each site. Large sites were selected on the basis of material concentration. Sites which produced either a large quantity of materials from the surface, or very old materials, or materials that were in other ways interesting were also selected. Finally sites that had specific research interests were examined as were several that had visible subsurface features in immediate danger of loss due to erosion or military activities. Sites were selected against if they had totally eroded into the water or had been excessively damaged by military or construction activity.

Test excavations were conducted at a total of eight sites, each selected for different reasons. This should not be taken to mean that only these eight sites have potential for inclusion on the National Register of Historic Places, or that these are the only sites on the base which warrant further work. They are, however, the most promising of the sites so far located. Sites selected for testing include ON^V138 which is located immediately adjacent to the runway at TLZ Bluebird. The site was noticed because a very large shell-filled pit was eroding from a cut created in building the runway. The pit was thus exposed to almost immediate destruction. Upon excavation it became apparent that this was a historic site dating from the middle of the 18th century and was thus of extreme importance historically to the area.

ON^V105 is located just west of the road leading to Mile Hammock Bay at the water's edge. It had been severely impacted by construction of the landing and loading facilities at Mile Hammock Bay, but due to its proximity to ON^V234 and the extensive shell midden at the site tests were conducted. This was a prehistoric site.

ON^V234, a prehistoric site, was chosen for testing due to its enormous size. This site covers at least one hundred acres

and consists of a thin covering of shell midden with a very high concentration of potsherds and other artifacts. This site was selected because it is by far the largest site on the Base, and, indeed, would qualify as one of the largest sites on the central coast of North Carolina.

ON^V240 was tested for two reasons. First, it is the only large site immediately adjacent to the salt water that did not have a high concentration of shell. This lack of shell caused the belief that the site may have had a function different from the vast majority of sites located along the salt water that are more typically covered with a large shell midden. The ceramic counts from this site were identical to those from the more common shell midden sites as well. The second reason it was chosen was the large number of exposed subsurface features in immediate danger of destruction from military activity that occurs on this part of the Base, namely tracked vehicle maneuvering.

The final site tested with positive results was ON^V251. Located at the confluence of French's Creek and New River this was the only site located so far inland on New River that showed any degree of preservation. Other sites located on prominent confluences along New River were apparently totally eroded into the water as sherds could be collected at the water's edge, but not on the dry ground adjacent. At ON^V251 there were sherds on the high and dry ground, and close investigation revealed a number of exposed subsurface features which made the testing more fruitful.

All test excavations were conducted in two-meter-by-two-meter squares. The soil matrix was removed by flat shovel with all fill sifted through 1/2 inch hardware cloth. Excavation levels generally consisted of 5 centimeter depths except where visible stratigraphic zones were present. The floors of all excavation levels were trowled and photographed in both black and white and color. Black and white photographs were taken with a 4" by 5" Crown 28mm lense. Scale drawings were made of all excavation floors which had visible cultural disturbances present at a scale of 1:20. Any cultural features noted were excavated separately generally by bisection with flotation samples collected and field floated. After excavation these features were refilled with sifted soil and the excavation of the test square continued until a level of clearly pre-cultural sterility was encountered. After excavation all squares were refilled.

Because of the extremely preliminary nature of the testing no effort was made to tie the test squares to any established grid nor was an effort made to tie them to a set datum or bench mark

for vertical control.

The testing phase provided the data upon which the summary evaluations of sites considered eligible to the National Register were made. Detailed test results and specific recommendations follow.

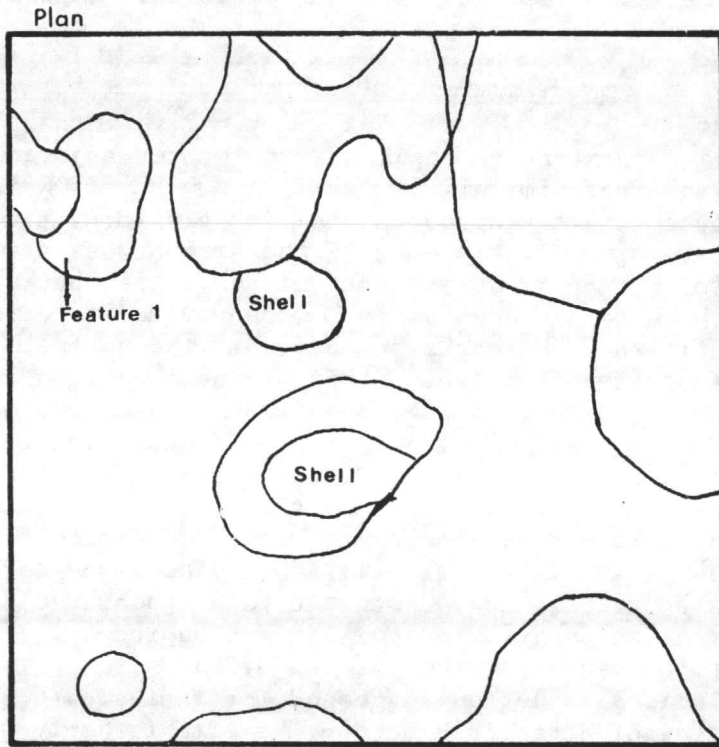
ON^V105


ON^V105 is an extensive shell midden located adjacent to Mile Hammock Bay and approximately one half mile west of ON^V138. The site was chosen for testing because of its proximity to ON^V234, which is located immediately east of the site across a small creek and because of its apparently intact midden. The southernmost portion of the site had been badly damaged by construction of the landing facilities at Mile Hammock Bay, but the northern part of the site was apparently intact. This northern portion was wooded. A total of seven tests were dug each two meters by two meters on a side and to the sterile yellow subsoil (sand) which in most cases was located between 15 and 30 centimeters from the ground surface. The tests were essentially all negative in that while numerous sherds were recovered there was no evidence of subsurface features or any intact stratigraphy. The major portion of the site was apparently more disturbed than appeared on the surface, but even the undisturbed portion was unproductive. Based on the negative results of the testing at the site it is recommended that this site not be suggested for inclusion on the National Register of Historic Places. The site is badly damaged and has, apparently, little to offer as far as research potential. Any information that might be recovered from this site would in all probability be better represented at ON^V234 which is in close proximity. Only three drawings are presented from ON^V105 due to the negative test results.

The cultural affiliation of the recovered materials was entirely Late Woodland in the form of shell tempered ceramics.

117p1	ON ^V 105 - test 1	40	potsherds
117b2	ON ^V 105 - test 1	1	bone
117s3	ON ^V 105 - test 1	1	shell
117m4	ON ^V 105 - test 1	1	odd rock
117p5	ON ^V 105 -- test 2 level 1	38	potsherds
117b6	ON ^V 105 - test 2 level 1	1	bone
117m7	ON ^V 105 - test 2 level 1	1	odd rock

Figure 7
On 105
Test 1



scale  1 meter

ON^V105 Test sq. 1 at subsoil. Camera facing north.

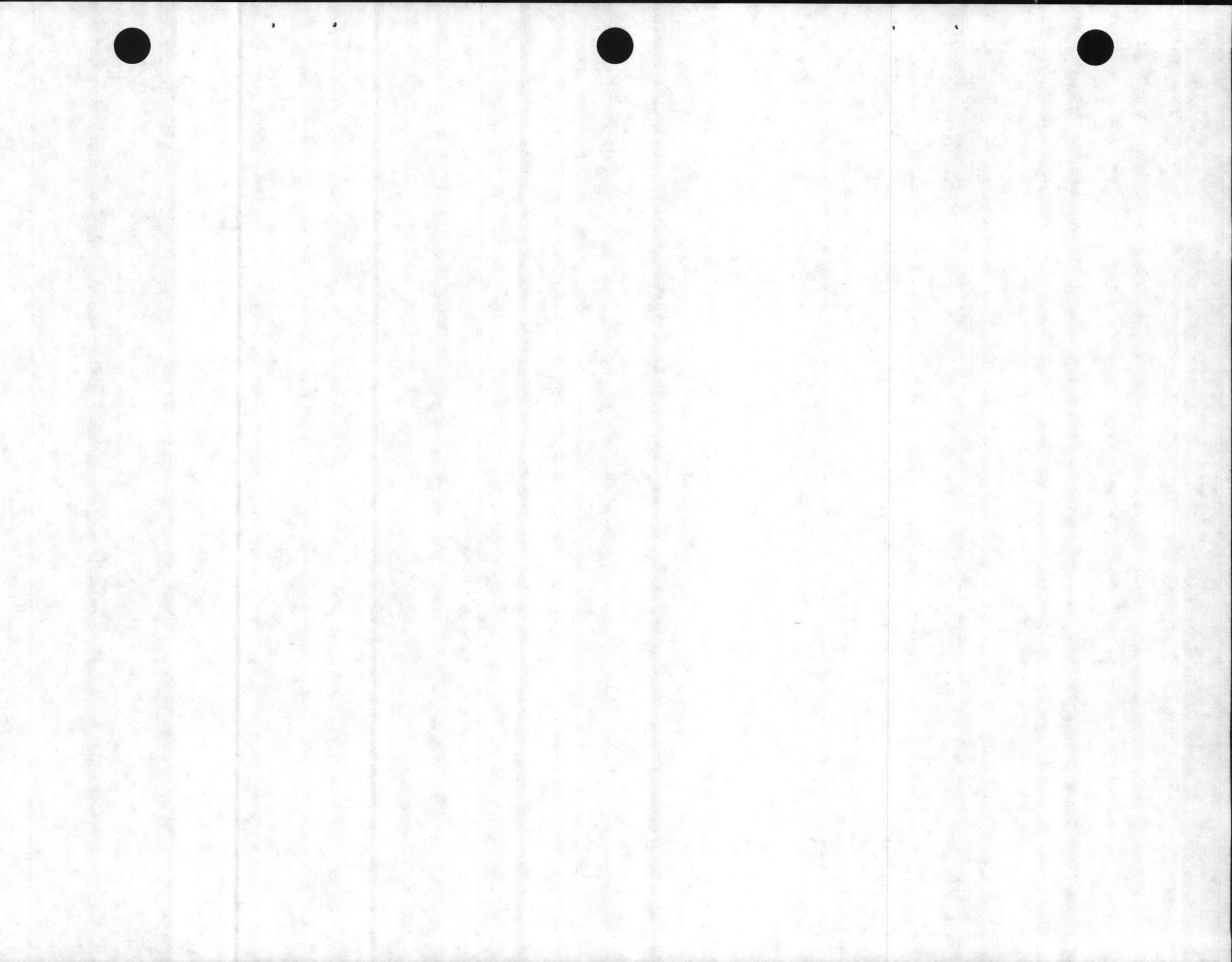


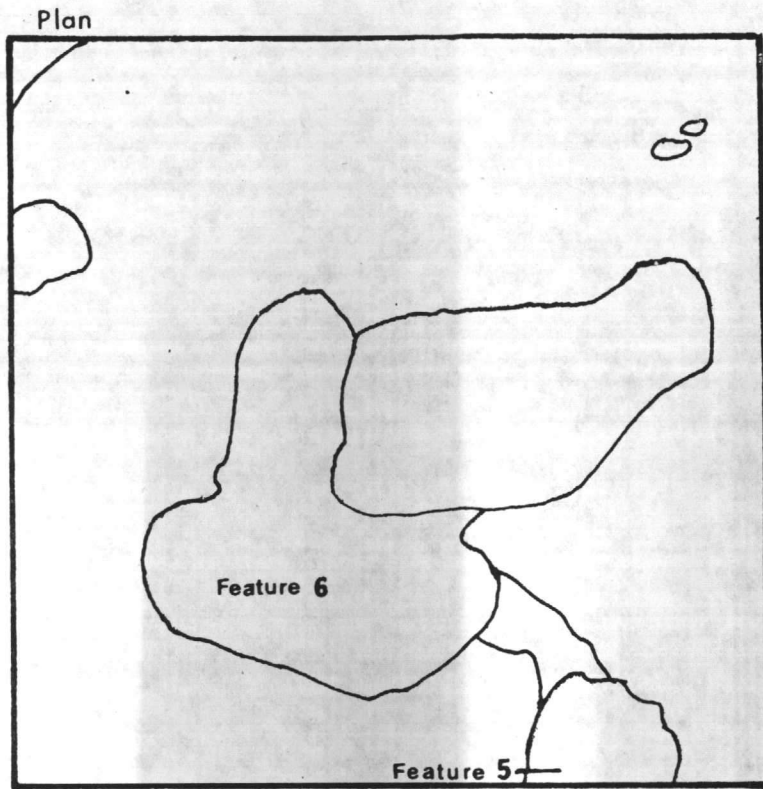




Figure 8

On^y 105

Test 2



ON^V105 Test sq. 2 top of subsoil. Camera facing north.

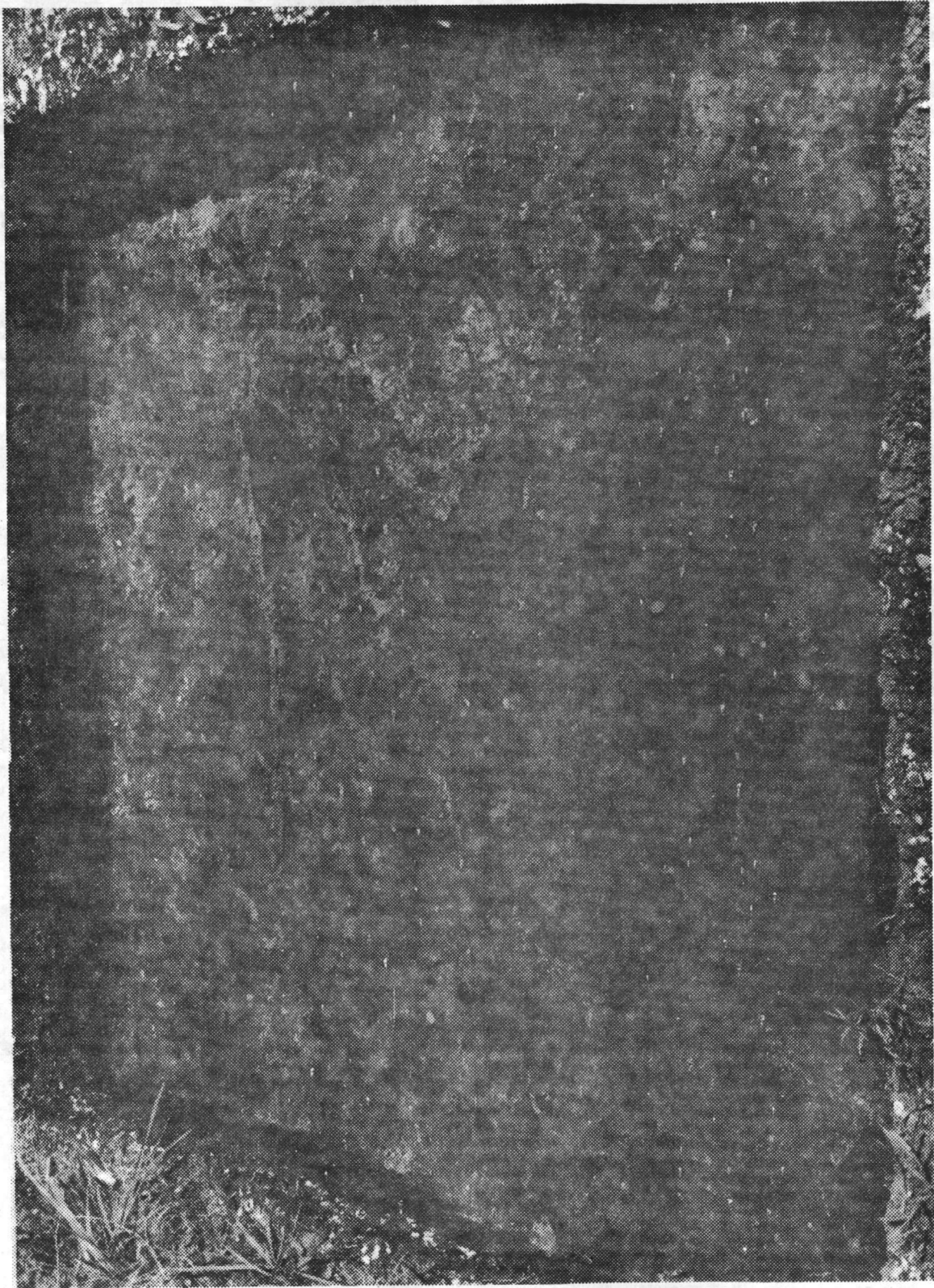


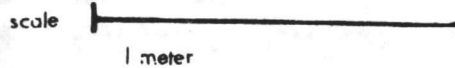
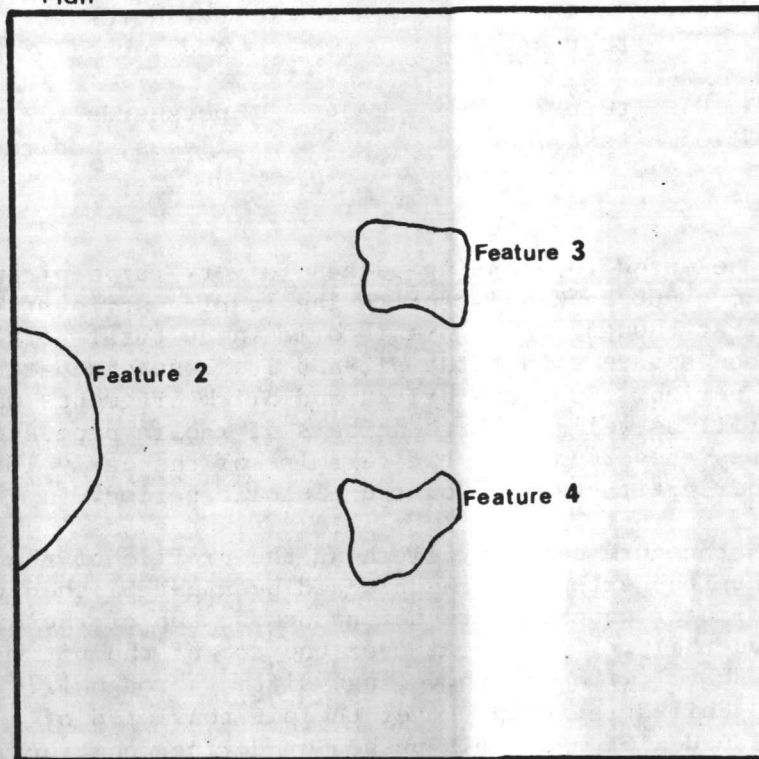


Figure 9

OnY 105

Test 3

Plan



117a8	ON ^V 105 - test 3	1	point
117p9	ON ^V 105 - test 3	39	potsherds
117m10	ON ^V 105 - test 3	6	slakes, odd rock
117a11	ON ^V 105 - test 4	1	point
117p12	ON ^V 105 - test 4	2	potsherds
117m13	ON ^V 105 - test 4	1	odd rock
117p14	ON ^V 105 - test 7	34	potsherds
117m15	ON ^V 105 - test 7	2	flakes, odd rock

ON^V138

ON^V138 was selected for testing because a very large pit was seen eroding from a cut bank adjacent to the landing strip at TLZ Bluebird. At first thought to be prehistoric in cultural affiliation, it was soon apparent that the pit and its contents dated to the colonial period. Numerous bricks and brick fragments were present in the fill as well as large numbers of kaolin pipe stems and bowl fragments, assorted domestic ceramics of the early 18th century, and other artifacts, all of the historic period.

Excavation procedure began by cleaning the profile of the exposed pit. When the extent of the pit had been established two two-meter-by-two-meter squares were set up on the top of the bank immediately above the pit. The soil over the top of the pit was then removed by shovel with all shovelings sifted through 1/2 inch hardware cloth. Soil stratigraphy over the pit consisted of a very recent overburden of materials pushed up during construction of the landing strip. This varied in depth from approximately 5 cm. to 20 cm. Beneath this overburden lay an old plow zone that approximated 15 cm. in depth. After the removal of the old plow zone a subsoil of yellow/brown sand was encountered. At this level the plan outline of the remains of the pit became visible. Having thus defined the pit in both profile and plan, the fill of the pit was excavated, sifted through 1/2 inch hardware cloth, and a portion saved for flotation.

Shell was the most abundant material recovered from the pit. A total of 141 pounds and 1 ounce of oyster shell were recovered (63.50 kg), plus six pounds, two ounces of clam shell (Mercenaria mercenaria) (2.70 kg), and minute weights of arc (Andara ovalis) and mussel (Modiolus demissus). Thus oyster was by far the predominant food refuse in the pit by weight.

The next most prominent material recovered from the pit was bone and bone fragments. A total of 1,370 bones and large bone

fragments were recovered. These bones have not been identified to species level but a cursory examination indicated an approximately equal weighting of bones from wild animals and from domestic animals.

The predominant artifact recovered from the pit was the kaolin pipestem. A total of 50 were recovered and analyzed. Three of the stems were of 6/64 inch bore, 34 of 5/64th inch bore and 20 of 4/64th inch bore. Using the Binford regression formula a mean date of occupation of 1751-52 is derived. Land patents in the immediate vicinity begin in 1738 supporting the mean date of occupation derived from the pipestem analysis.

The next most prevalent artifacts were pieces of domestic ceramic. Of the total ceramic collection from this feature eleven pieces or almost half were yellow slipware with brown combing. This type of ceramic is ubiquitous at eighteenth century sites in southeastern North Carolina and indicates only an eighteenth century period of occupation. The remaining ceramics items were undiagnostic, consisting of red and brown glazed earthenware and two pieces of white glazed slipware with no identifying marks or designs. The analysis of ceramic remains from this site thus supports in a general manner the date of occupation derived from pipestem analysis and firmly places the date of this occupation in the eighteenth century and more specifically in the middle of that century.

The excellent state of preservation of the materials recovered from this site plus its colonial time period suggest that this site may be eligible for inclusion on the National Register of Historic Places. Examination of the surrounding area revealed no immediate evidence of other intact structures or features and, indeed, the site area has been severely damaged by military and construction activity. Nonetheless the excellent condition and concentrated quantity of recovered material suggests that there is probably a very large amount of potentially recoverable material and interpretive data remaining at the site. The existence of the large refuse pit suggests strongly the presence of a major house at the site and indicates the high probability that this site may have been one of great prominence in the area during the colonial era.

117a16	ON ^v 138 - Surface	3	pipestems
117a17	ON ^v 138 - Surface	1	metal object
117p18	ON ^v 138 - Surface	5	potsherds
117p19	ON ^v 138 - Surface	1	historic potsherds
117b20	ON ^v 138 - Surface	1	teeth
117m21	ON ^v 138 - Surface	3	gunflint, brick, glass

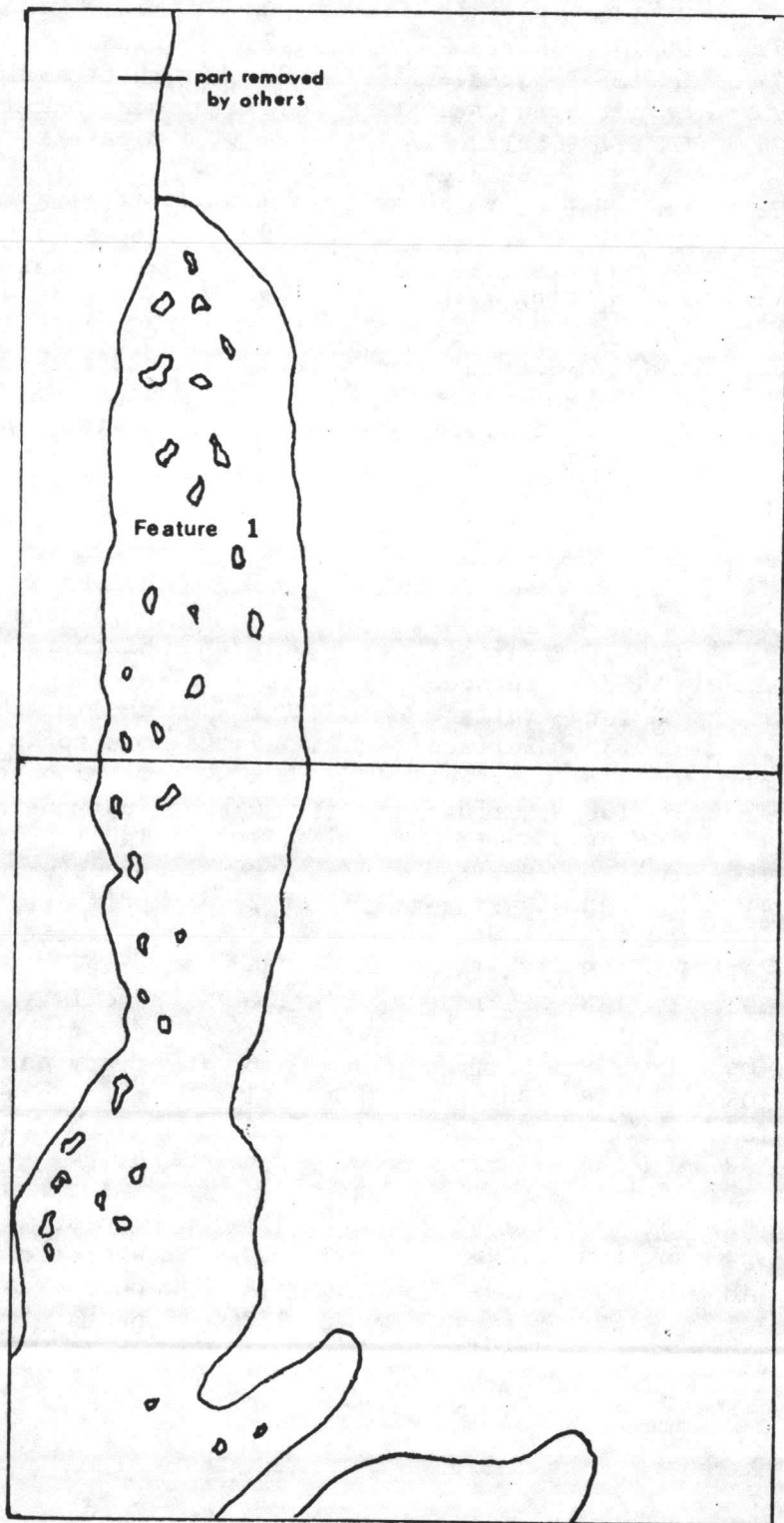
117a22	ON ^v 138 - Surface		2	pipestems
		(sifting)		
117p23	ON ^v 138 - Surface	"	1	potsherd
117b24	ON ^v 138 - Surface	"	33	bones
117m25	ON ^v 138 - Surface	"	1	odd rock
117m26	ON ^v 138 - Surface	"	6	bricks
117a27	ON ^v 138 - Surface	"	15	pipestems
117p28	ON ^v 138 - Surface	"	3	potsherds
117p29	ON ^v 138 - Surface	"	2	historic sherds
117b30	ON ^v 138 - Surface	"	240	bones
117s31	ON ^v 138 - Surface	"	6	shell
117m32	ON ^v 138 - Surface	"	16	nails
117m33	ON ^v 138 - Surface	"	2	glass
117m34	ON ^v 138 - Surface	"	1	gun flint
117m35	ON ^v 138 - Surface	"	6	brick
117a36	ON ^v 138 - Surface	"	4	pipestems
117p37	ON ^v 138 - Surface	"	1	potsherd
117b38	ON ^v 138 - Surface	"	56	bones
117m39	ON ^v 138 - Surface	"	2	metal objects
117m40	ON ^v 138 - Surface	"	17	rusty nails
117a41	ON ^v 138 - Surface	"	2	pipestems
117b42	ON ^v 138 - Surface	"	60	bone
117m43	ON ^v 138 - Surface	"	2	rusty nails
117m44	ON ^v 138 - Surface	"	2	glass
117m45	ON ^v 138 - Surface	"	2	odd rocks
117a46	ON ^v 138 - Surface	"	4	pipestems
117p47	ON ^v 138 - Surface	"	1	potsherd
117p48	ON ^v 138 - Surface	"	6	historic potsherds
117b49	ON ^v 138 - Surface	"	80	bone
117s50	ON ^v 138 - Surface	"	3	shell
117m51	ON ^v 138 - Surface	"	5	odd rocks
117m52	ON ^v 138 - Surface	"	1	glass
117m53	ON ^v 138 - Surface	"	12	rusty nails
117m54	ON ^v 138 - Surface	"	1	metal object
117a55	ON ^v 138 - Surface	"	2	pipestems
117p56	ON ^v 138 - Surface	"	3	potsherds
117b57	ON ^v 138 - Surface	"	170	bone
117m58	ON ^v 138 - Surface	"	2	metal object
117m59	ON ^v 138 - Surface	"	6	glass
117m60	ON ^v 138 - Surface	"	17	rusty nails
117m61	ON ^v 138 - Surface	"	7	odd rocks
117a62	ON ^v 138 - Surface	"	1	pipestem
117p63	ON ^v 138 - Surface	"	1	historic potsherd
117b64	ON ^v 138 - Surface	"	65	bone
117s65	ON ^v 138 - Surface	"	1	shell
117m66	ON ^v 138 - Surface	"	10	rusty nails
117m67	ON ^v 138 - Surface	"	2	glass

117m68	ON ^V 138 - Surface	1	odd rock
117a69	ON ^V 138 - Surface	5	pipestems
117p70	ON ^V 138 - Surface	4	potsherds
117p71	ON ^V 138 - Surface	3	historic potsherd
117b72	ON ^V 138 - Surface	190	bone
117m73	ON ^V 138 - Surface	2	glass
117m74	ON ^V 138 - Surface	22	rusty nails
117m75	ON ^V 138 - Surface	5	odd rock
117a76	ON ^V 138 - Surface	1	pipestems
117p77	ON ^V 138 - Surface	1	potsherd
117p78	ON ^V 138 - Surface	1	historic potsherd
117b79	ON ^V 138 - Surface	80	bones
117m80	ON ^V 138 - Surface	12	rusty nails
117m81	CN ^V 138 - Surface	3	glass
117m82	ON ^V 138 - Surface	1	gunflint
117m83	ON ^V 138 - Surface	5	odd rocks
117a84	ON ^V 138 - Surface	1	pipestem
117p85	ON ^V 138 - Surface	1	historic potsherd
117b86	ON ^V 138 - Surface	21	bone
117m87	ON ^V 138 - Surface	4	rusty nails
117m88	ON ^V 138 - Surface	2	metal objects
117m89	ON ^V 138 - Surface (sifting)	5	bricks
117a90	ON ^V 138 - Surface	4	pipestems
117p91	ON ^V 138 - Surface	1	historic potsherd
117b92	ON ^V 138 - Surface	110	bones
117s93	ON ^V 138 - Surface	2	shell
117m94	ON ^V 138 - Surface	5	odd rocks
117m95	ON ^V 138 - Surface	1	metal object
117m96	ON ^V 138 - Surface	6	rusty nails
117a97	ON ^V 138 - Surface	1	indian pipestem
117a98	ON ^V 138 - Surface	9	pipestems
117p99	ON ^V 138 - Surface	2	potsherds
117p100	ON ^V 138 - Surface	2	historic potsherds
117b101	ON ^V 138 - Surface	264	bones
117s102	ON ^V 138 - Surface	20	shell
117m103	ON ^V 138 - Surface	2	odd rocks
117m104	ON ^V 138 - Surface	16	rusty nails
117m105	ON ^V 138 - Surface	1	metal object
117m106	ON ^V 138 - Surface	6	glass
117m107	ON ^V 138 - Surface	6	brick
117a108	ON ^V 138 - Level 2	11	pipestems
117p109	ON ^V 138 - Level 2	7	historic potsherds
117p110	ON ^V 138 - Level 2	4	potsherds
117b111	ON ^V 138 - Level 2	130	bones
117s112	ON ^V 138 - Level 2	1	shell

Figure 10

On Y 138

Plan



scale 1 meter

ON^V138 Test sq. 1 and 2, troweled at subsoil showing outline of feature 1.



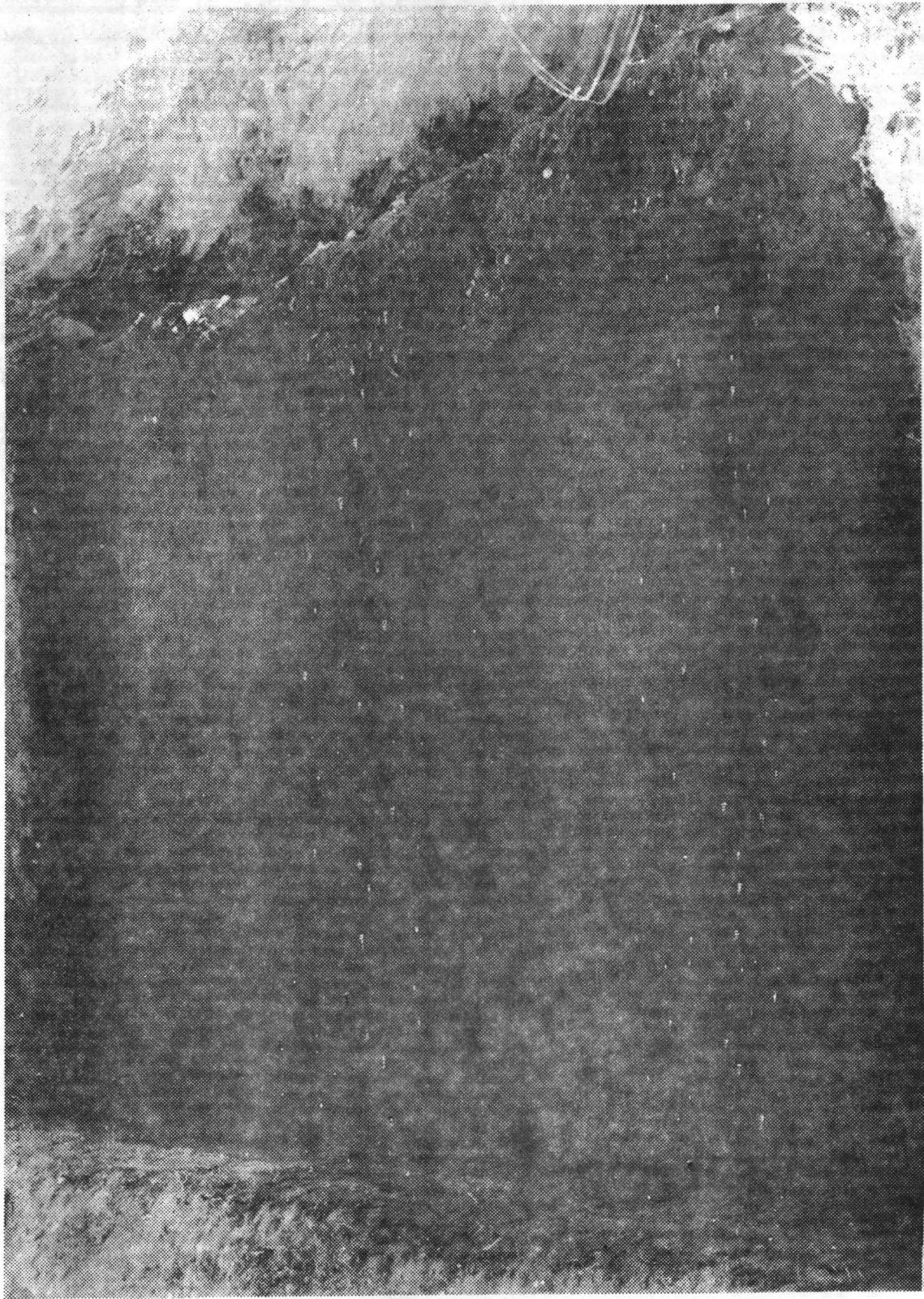
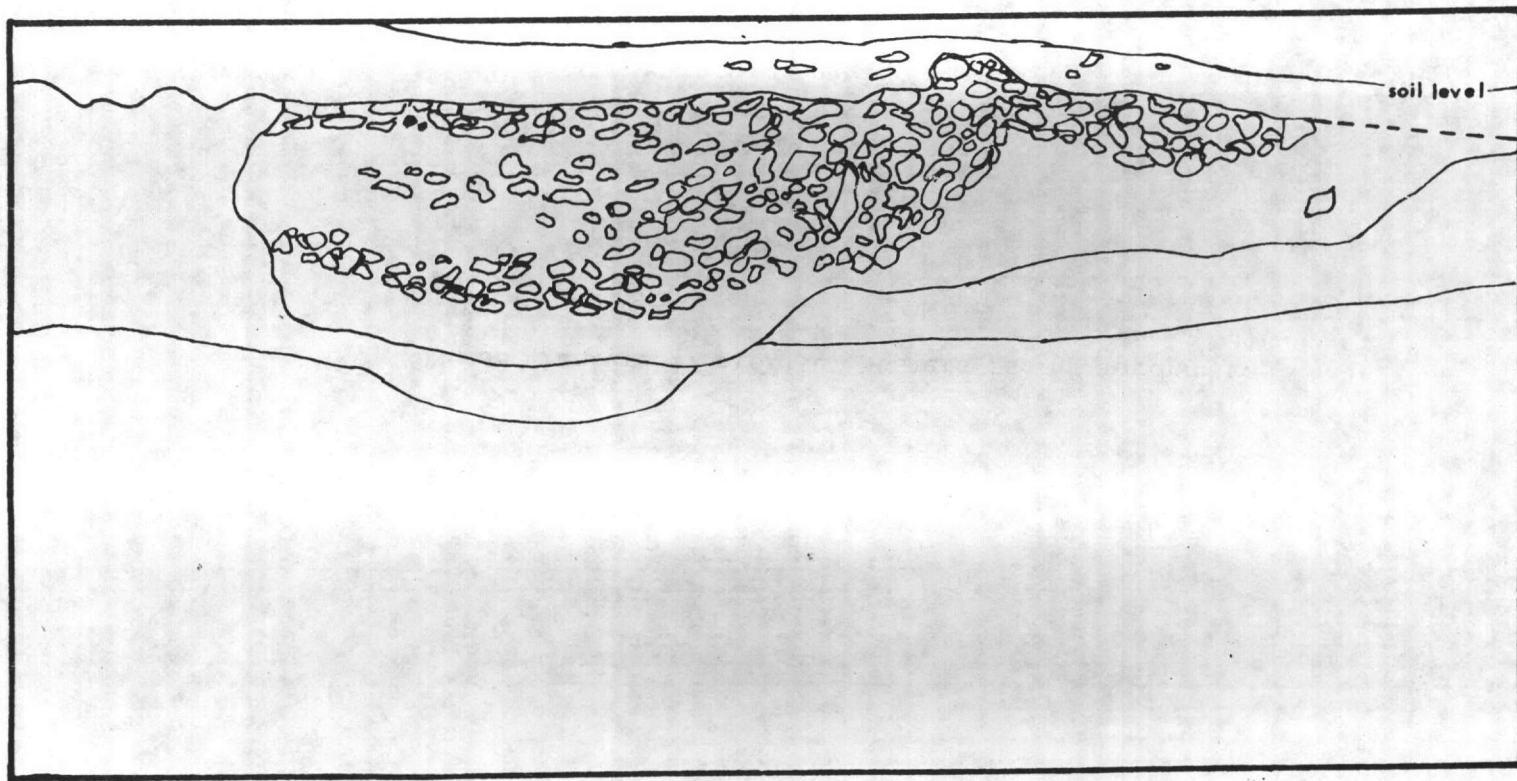




Figure 11

On^y 138

Profile

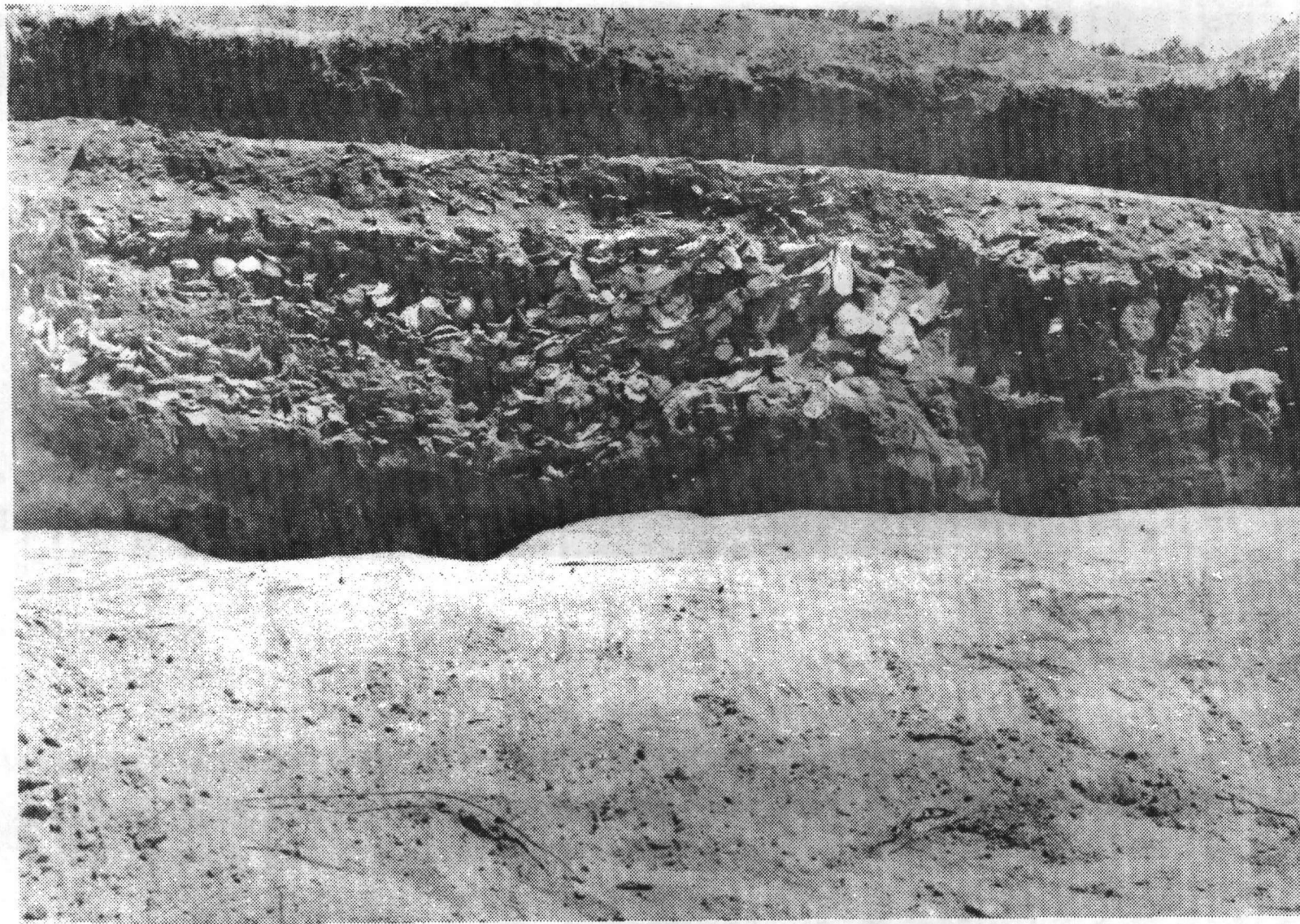


soil level

90

scale
1 meter

ON^V138 Feature 1, profile. Camera facing northwest.





117m113	ON ^V 138 - Level 2	6	rusty nails
117m114	ON ^V 138 - Level 2	4	odd rocks
117m115	ON ^V 138 - Level 2	2	glass
117m116	ON ^V 138 - Level 2	2	gun flint
117m117	ON ^V 138 - Level 2	2	bricks
117a118	ON ^V 138 - Level 3 (troweling)	1	pipestem
117b119	ON ^V 138 - Level 3	10	bones
117m120	ON ^V 138 - Level 3	1	rusty nail
117m121	ON ^V 138 - Level 3	1	odd rock
117eb122	ON ^V 138 0-flotation		

ON^V234

ON^V234 is probably the single largest site on the entire Base. It extends from an unnamed tidal creek just east of Cedar Point westward to Traps Bay. In areal extent it covers at least 100 acres. The entire site is shell midden with some areas more continuously covered with shell than others. Recently logged, the area is currently in second growth pine of less than five years age with at least one large feed plot on one part of the site. A total of nine two-meter-by-two-meter tests were excavated at this site. Five of these tests were in the open feed plot described above, one was adjacent to the feed plot service road, and three tests were placed on the high ground adjacent to Trap's Bay. In general the results of these tests were disappointing in that only one clearly recognizable feature was located, that in test number one. This feature consisted of a small (.7 by .7 by .5 meter deep) storage pit. The pit fill was barely darker than the surrounding matrix (all sand) and contained several potsherds and not much else. Even the flotation recovery yielded scant material. Numerous bones that were too fragmentary to be identified were recovered from the several levels of the test excavation.

Other test squares contained no recognizable features or other visible cultural disturbances. However, there was in several test squares evidence of an intact stratigraphy in that cultural materials were recovered below the depth of plow disturbance. At the same time the analysis of recovered ceramics indicates that there is a number of different ceramic types represented at the site and that there is separation of these types by excavation level where the intact deposits occur.

Test square one.

This test was located in the plowed feed plot. Soil strati-

graphy consisted of a plowed top soil generally brown in color with a 20 centimeter depth. This was underlain by a light brown to yellow subsoil of sand. A second excavation level of approximately 15 centimeter depth was removed from the subsoil layer. Beneath this zone the subsoil became noticeably lighter in color approaching white. There was almost no shell in any of these levels.

All soil removed was sifted through 1/2 inch mesh hardware cloth. Artifacts recovered included ceramics with shell temper, clay temper, and gravel temper. The majority of the shell tempered sherds were in the top soil while the majority of the clay tempered sherds were in the upper zone of the subsoil.

At the bottom of level one, the top soil, there appeared a dark discoloration. This was treated as a cultural feature and upon excavation proved to be a small storage pit. Its fill was a sandy brown soil, not unlike the top soil, and it contained shell tempered ceramics and one broken projectile point. This small triangular chipped stone point was of a late woodland period, contemporary with the shell tempered ceramics. Nothing was recovered from the flotation process except wood charcoal. Numerous bone fragments were recovered which await a further analysis.

The results of the excavation at test one indicate clearly that there are preserved subsurface features at ON^V234 as well as some stratigraphic separation of cultural materials.

Other tests conducted at the site were less rewarding. No additional cultural features were discovered although there was some evidence for intact stratigraphy at two of the tests. Even this evidence, however, was less than conclusive. The site seems to be the remains of many seasonal occupational episodes. This is perhaps clearest in the area of the feed plot where it is possible to see a number of scattered concentrations of shell midden separated by intervening areas lacking shell. The majority of the cultural materials recovered came from the vicinity of the shell middens. It is suggested that each of these shell midden areas represents a seasonal occupation by a small number of people. Taken all together these small occupations add up to the enormous site known as ON^V234.

In many of the shell midden deposits the site stratigraphy is deep enough that there exists an undisturbed layer of shell, soil, and artifacts beneath the plowed zone. Once again this attests for the presence of some undisturbed stratigraphy.

Finally, the total shell midden is more continuous although

not necessarily deeper as one approaches Trap's Bay and is more discontinuous, but not necessarily shallower as one removes from Trap's Bay. Taken as a whole the site is very impressive in its size and despite the failure of the testing program to uncover any more cultural features than it did the site remains worthy of preservation. In the time allotted for testing at this site it was impossible to adequately cover even a small portion of the site. Thus today the vast majority of the site remains untested. Given the total size of the site, the current high degree of preservation including not only some subsurface features, but even stratigraphy in some areas, it appears that prudence would dictate this site to be of potentially great importance for understanding the culture history of the area as well as understanding the adaptive strategies of the prehistoric populations of the central coast of North Carolina. It is recommended that this site be nominated to the National Register of Historic Places and immediate steps taken to insure its preservation.

Because the site is today being reforested, it is suggested that reforestation continue and this site area enter a land use classification which would ensure its future perpetual preservation.

The cultural affiliation at this site is Middle to Late Woodland as evidenced by Clay tempered, gravel tempered and shell tempered ceramics.

117p131	ON ^V 234 - Surface	475	potsherds
117s132	ON ^V 234 - Surface	1	shell
117m133	ON ^V 234 - Surface	23	odd rocks
117a134	ON ^V 234 - Surface	3	chipped rock
117a135	ON ^V 234 - Test 1	1	projectile
117p136	ON ^V 234 - Test 1	253	potsherds
117b137	ON ^V 234 - Test 1	49	bones
117s138	ON ^V 234 - Test 1	2	shell
117m139	ON ^V 234 - Test 1	26	odd rocks
117p140	ON ^V 234 - Test 2	35	potsherds
117m141	ON ^V 234 - Test 2	4	odd rocks
117p142	ON ^V 234 - Test 3	190	potsherds
117b143	ON ^V 234 - Test 3	2	bone
117s144	ON ^V 234 - Test 3	1	shell
117m145	ON ^V 234 - Test 3	11	odd rocks
117p146	ON ^V 234 - Test 4 Topsoil	4	potsherds

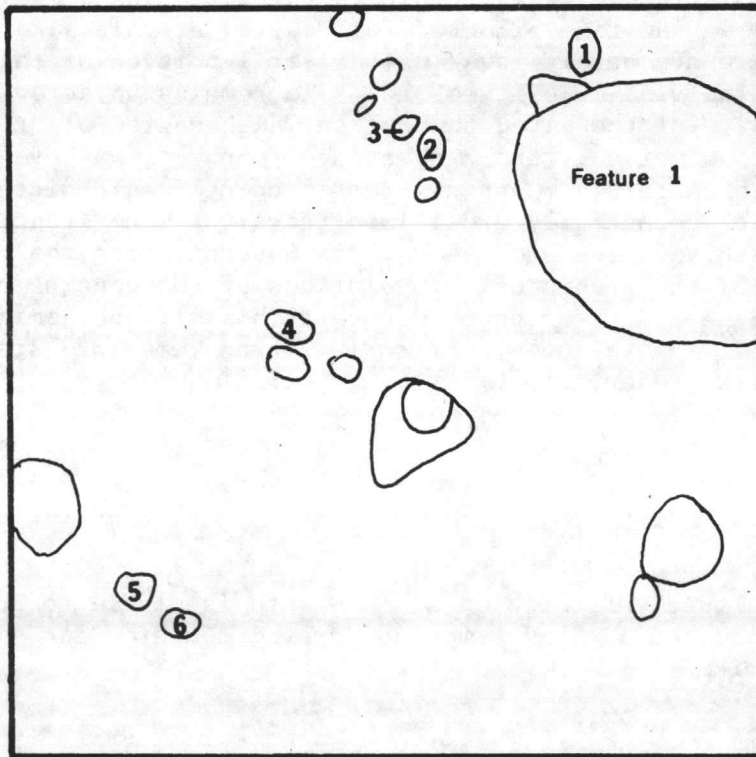
Figure 12

On^v 234

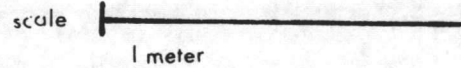
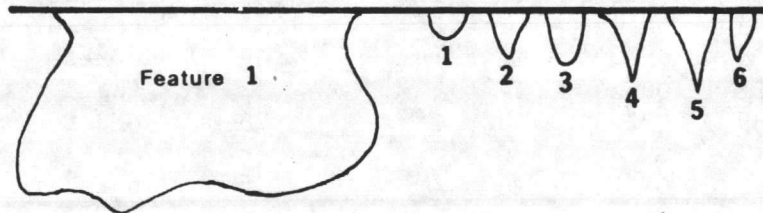
Test 1

Level 2

Plan

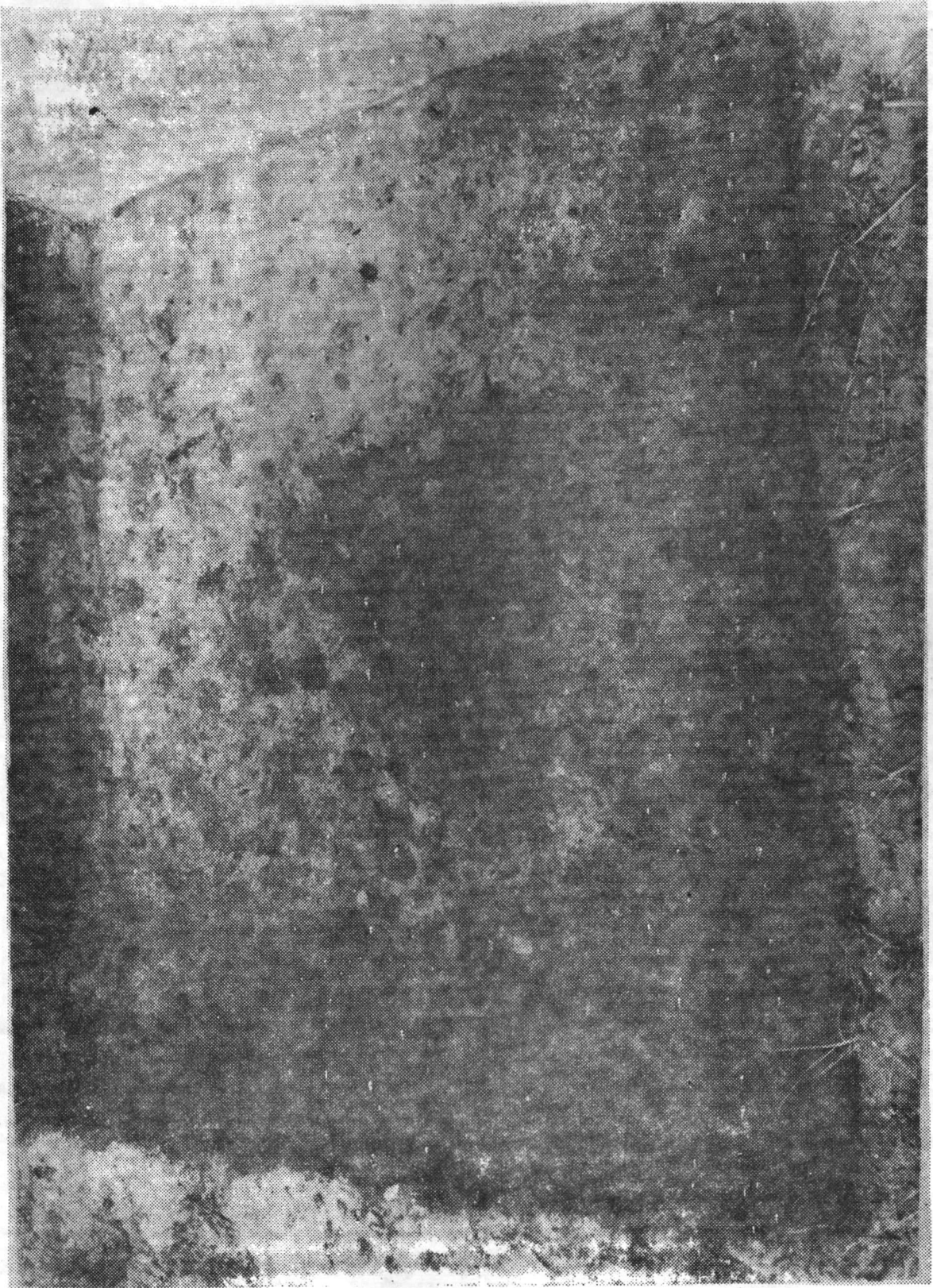


Profile



ON^V234 Test sq. 1, top of level 2. Feature 1. Camera facing north.







117p147	ON ^V 234 - Test 4 Level 2	19	potsherds
117p148	ON ^V 234 - Test 4 "	81	potsherds
117m149	ON ^V 234 - Test 4 "	1	odd rock
117p150	ON ^V 234 - Test 5 Level 1	42	potsherds
117b151	ON ^V 234 - Test 5 Level 1	19	bone
117m152	ON ^V 234 - Test 5 "	4	odd rocks
117p153	ON ^V 234 - Test 5 Level 2	21	potsherds
117b154	ON ^V 234 - Test 5 "	16	bone
117s155	ON ^V 234 - Test 5 "	4	shell
117m156	ON ^V 234 - Test 5 "	4	odd rocks
117p157	ON ^V 234 - Test 5 Level 3	5	potsherds
117p158	ON ^V 234 - Test 6	57	potsherds
117b159	ON ^V 234 - Test 6	4	bones
117s160	ON ^V 234 - Test 6	2	shell
117m161	ON ^V 234 - Test 6	3	odd rock
117p162	ON ^V 234 - Test 7	36	potsherds
117s163	ON ^V 234 - Test 7	2	bone
117s164	ON ^V 234 - Test 7	4	shell
117m165	ON ^V 234 - Test 7	2	odd rock

ON^V240

ON^V240, located at the extremity of Jarrett's Point, was at once the most productive and rewarding site tested, and the most badly damaged. The area today is used for test driving tracked vehicles. As a consequence vast areas of the site have been destroyed and what remains is in imminent danger of destruction.

The site was first noted as promising when it was discovered by the survey conducted by Hekhuis and Loftfield (1978). At that time a large number of potsherds were recovered while at the same time it was noted that there was not an intensive mantle of shell-fish remains covering the site. Shell midden is ubiquitous at sites immediately adjacent to the sounds and lower estuaries along this section of the coast, so the absence of this shell covering identified this site as different in nature from the vast majority of other sites in the vicinity. It was thus assigned a high priority for testing in this survey.

A total of eight two-meter-by-two-meter tests were excavated at the site and eleven cultural features discovered. In no area

of the site was a shell midden visible, but many shells were recovered from the features, many of which were pits filled quite all the way up with shell.

While there is a wide range of ceramic types represented at the site, clay tempered sherds and shell tempered sherds seem evenly divided as majority types. This is true of the fill of the various excavated features as well as the general surface collection.

The soil profile at the site cannot be generalized. Due to the extreme erosion and damage caused by military activity in the area it is impossible to find any extensive areas that are undisturbed. The majority of the features located were discovered in an area which had been so badly eroded that the tops of the features were visible at the ground surface. Test square number one was excavated in a relatively undisturbed portion of the site. It was the typical two-meter-by-two-meter square. The soil profile at this test consisted of an old plow zone of approximately 15 centimeter depth. At the base of this zone a yellow/brown sandy subsoil was encountered. There was one shell-filled pit visible in test one at the top of the subsoil. Labelled feature one, this shallow pit was totally uncovered with the excavation of test number three which was immediately adjacent to test one. Feature one was a shallow pit filled with shell. The shell was entirely oyster and the pit contained no artifacts of any kind.

Test two was excavated in the vicinity of test one and three on top of a small ridge which promised a deeper stratigraphy. The stratigraphy was indeed deeper, but unfortunately the depth was all recent overburden accumulated as part of some earlier military activity. No features were discovered in test two and there was no meaningful stratigraphic separation of artifacts. Under the recent overburden was an old plow zone similar to that encountered in test one. While over 150 potsherds were recovered from this test they were not arranged in any pattern but were randomly dispersed throughout the various levels.

Test four was entirely barren of cultural material. Test five was excavated to subsoil at which point a small discoloration was noted. Labelled feature 2 this turned out to be a very shallow pit filled with a dark organic soil. It contained no diagnostic artifacts, but was definitely a cultural disturbance at the site. A total of 77 potsherds was recovered from this test.

Tests six, seven and eight were contiguous and were located at the extreme edge of a tracked vehicle path. The three squares

were contiguous because of the large number of features located here. Indeed, the tests were excavated in order to expose and excavate the features, the tops of some of which were showing at the ground surface. As can be inferred from the above description, the area was massively damaged and erosion had removed all of the top soil. The pits were in very good preservation considering the damage to the upper soil levels and the large amount of tracked vehicle maneuverings that had occurred directly over them. Rather than discuss these squares in sequence, it would be more productive to discuss the remaining features at the site, which as noted above, were all discovered in these three square.

Feature 4 was a circular shallow pit filled with black sandy soil and shell. It appeared at the ground surface which has been presumed to be the base of the top soil, although this cannot be proven beyond a doubt due to the massive disturbance in the immediate vicinity. No cultural remains were recovered, but once again the size and shape determined that this pit was of a cultural nature.

Feature 5 was probably the most unusual feature ever found in this part of the coast. It also appeared at the top of the ground surface, but unlike any of the other pits seen to date, this feature did not have a dark fill. Instead the fill was a very heavy orange clay which was filled with abundant shell and bone fragments mixed throughout the clay. In parts of this pit a black organic shell midden lay beneath the orange clay and in other portions the pit had very clean white sand.

It is necessary for the author of this report to state that an interpretation of the pit exceeds current insight. The orange clay is common on Jarrett's Point as a deep subsoil. It may have been obtained for the manufacture of pottery by the aboriginal inhabitants, but that does not explain the large amount of shell and bone in the orange clay. An explanation remains a mystery at this time, but the existence of this pit once again demonstrates the extreme importance of this site to understanding the total adaptive strategy of the prehistoric populations of the central coast of North Carolina.

Feature 6 was not seen in its entirety. It appeared as a dark stain on the north edge of test square six. The square north of test six was never excavated. It remains in the ground awaiting further work.

Feature seven was a fairly deep pit located in test square seven. It appeared at the ground surface and had a dark organic

fill. A total of 52 potsherds was recovered from this feature. Of these 3 were tempered with gravel, five with sand, twelve with shell, and twenty-one with clay. It is probable that this feature represents a middle Woodland period occupation identified by the clay tempered ceramics. The sand temper is generally felt to be earlier on the coast and these sherds probably represent accidental inclusion of earlier material that was in the vicinity when the pit was filled. The shell and gravel tempered ceramics are generally thought to be later on the coast. Their presence in the pit could be taken to indicate that the pit was filled during the late Woodland period, with both sand tempered ceramics and clay tempered ceramics as accidental inclusions. It is felt at this time, however, that the shell and gravel tempered ceramics were also accidental inclusions pushed into the pit by heavy vehicular traffic over the pit.

Adequate charcoal for a carbon date was obtained via flotation and this feature may warrant a radio-carbon date at some time in the future.

Feature eight was equally fascinating in that it contained a very large number of bones. Feature eight extended from test seven into test eight and appeared at the ground surface. It was a dark soil fill with a very large number of bones in the fill. These bones have been cleaned as of this date but detailed analysis has not been completed. A total of ninety-six potsherds were recovered from this feature. Six were tempered with gravel, thirteen with clay, and seventy-seven with shell. It is apparent that this pit was utilized during the last Woodland period as evidenced by the gravel and shell tempered sherds being predominant. Again the clay tempered sherds were probably accidental inclusions.

The large amount of bone in the pit makes this a very important pit, and hence a very important site. As noted elsewhere in this report the typical site with shell tempered ceramics predominating consists of a large shell midden. Excavations at ON^V33 just five miles north of Camp Lejeune recovered almost no bone, and there were definitely no pits filled with bone as was the case with feature eight. This indicates that this site is unusual for the area in that it did not have a mantle of shell midden and at least one of the pits produced a massive quantity of bone. This suggests that this site had a function very much different from that of the majority of other sites of its age encountered along the central North Carolina coast.

Feature nine was apparently related to feature five as it

was also an accumulation of orange clay with numerous bone fragments and shell. This feature, however, appeared in test six at the level below that at which feature five appeared. In other words it was deeper in the ground and hence somewhat older. How much older cannot be determined at this time. It is interesting to note that eleven potsherds recovered from this feature were all shell tempered. This feature just faded out into the general orange clay subsoil and was thus no less mysterious than feature five. It is quite possible that this feature was no cultural feature at all but merely a small knob of orange clay subsoil protruding up into a higher soil zone. The cultural material may once again have been pushed into it by heavy vehicle traffic over the area.

Feature 10 was an extension of feature nine.

Feature eleven was a small pit filled with very dark organic stained sand beneath feature eight. While feature eight was a dark fill, it was not as dark as the fill in feature eleven. Feature eleven appeared only after feature eight had been fully excavated and there appeared to be a thin band of subsoil separating feature eight from feature eleven. No cultural materials were recovered from feature eleven but its location once again strongly suggested that it had a cultural origin. Its extreme depth compared to other features at the site suggests that there may be reasonably well preserved stratigraphy at the site.

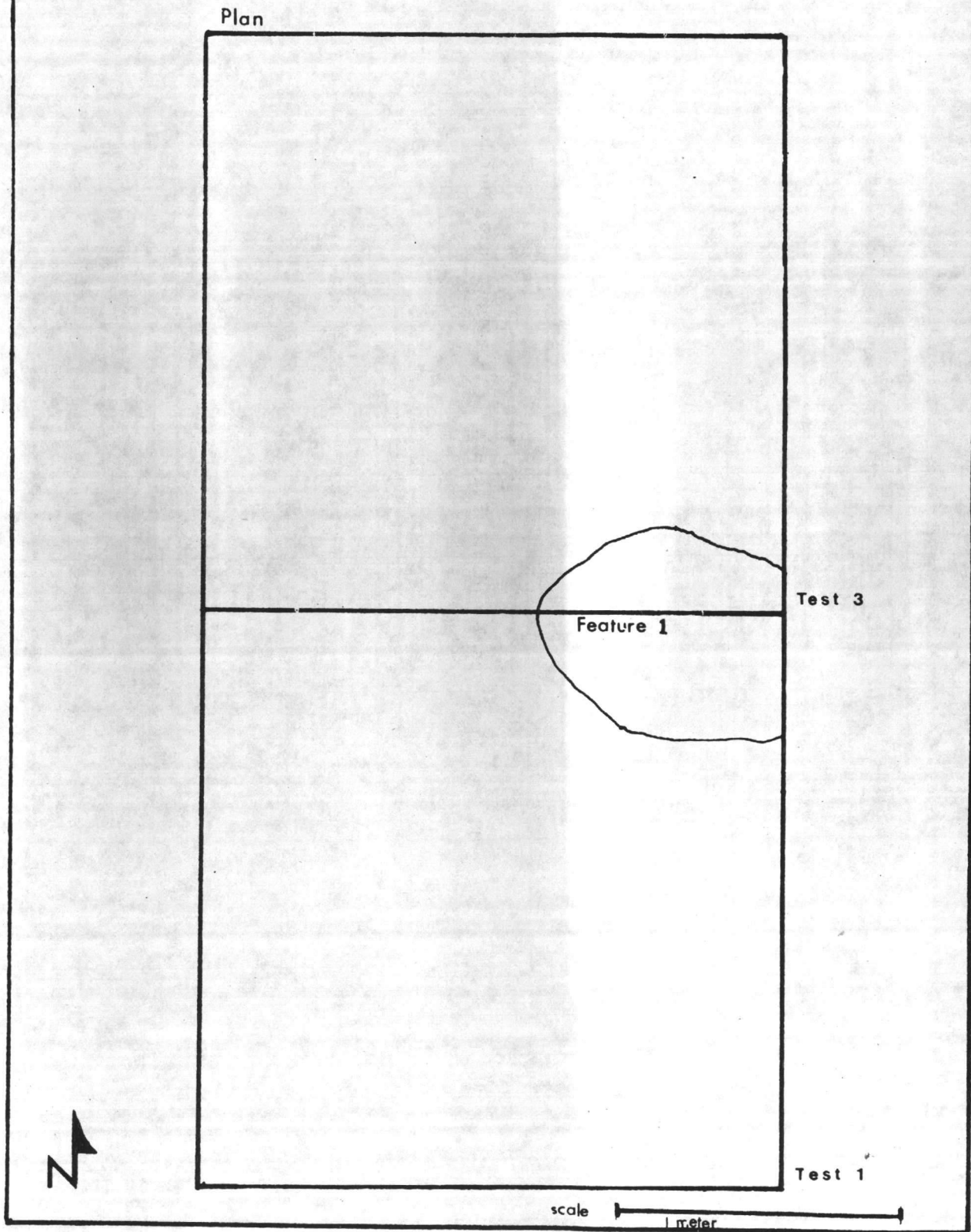
The artifactual evidence from ON^V240 suggests that Middle Woodland and Late Woodland cultural periods may be represented at the site.

In summary ON^V240 remains one of the most interesting sites encountered on Camp Lejeune. Its potential for yielding essential data pertaining to current research questions in the area is very high. It has demonstrated stratigraphy and one of the highest concentration of undisturbed subsurface cultural features so far discovered at the base. Unfortunately its condition is already quite damaged and the potential for further damage is extremely high. It is the recommendation of this report that immediate steps be taken to recover all intact data remaining at this site. It is almost certainly eligible for inclusion on the National Register of Historic Places and definitely deserves mitigation of the on-going adverse impacts to the site. This site ranks as the suggested number one priority of this report.

117p168	ON ^V 240 - Surface	19	potsherd
117p169	ON ^V 240 - Surface	1	Historic sherd

117s170	ON ^V 240 - Surface	2	shells
117m171	ON ^V 240 - Surface	17	odd & flaked rock
117p172	ON ^V 240 - Test 2 Sub- surface	4	potsherds
117p173	ON ^V 240 - Test 2 Disturbed topsoil	94	potsherds
117b174	ON ^V 240 - disturbed topsoil	1	bone
117m175	ON ^V 240 - disturbed topsoil	1	charcoal
117m176	ON ^V 240 - disturbed topsoil	3	odd rocks
117p177	ON ^V 240 - Test 2 Level 2	49	potsherds
117p178	ON ^V 240 - Test 3 Level 1	10	potsherds
117p179	ON ^V 240 - Test 5 Sub- surface	77	potsherds
117s180	ON ^V 240 - Test 5 Sub- surface	3	shells
117m181	ON ^V 240 - Test 5 Sub- surface	6	odd rocks
117s182	ON ^V 240 - Test 6	residue	5 bass shell
117p183	ON ^V 240 - Feature 3	21	potsherds
117m184	ON ^V 240 - Feature 5	soil	sample
117b185	ON ^V 240 - Feature 5	1	bone
117m186	ON ^V 240 - Feature 5	1	flaked rock
117p187	ON ^V 240 - Feature 7	13	potsherds
117b188	ON ^V 240 - Feature 7	1	bone
117m189	ON ^V 240 - Feature 7	2	odd rock
117p190	ON ^V 240 - Feature 7	28	potsherd
117b191	ON ^V 240 - Feature 7	3	bone
117eb192	ON ^V 240 - Feature 7	3	charcoal
117m193	ON ^V 240 - Feature 7	1	odd rock
117p194	ON ^V 240 - Feature 7	11	potsherds
117eb195	ON ^V 240 - Feature 7	bag	charcoal
117eb196	ON ^V 240 - Feature 7 Flotation		
117eb197	ON ^V 240 - Feature 7 (Flotation: Res.)		

Figure 13
On^y 240
Tests 1 & 3
Top of level 3



ON^V240 Test sqs. 1 and 3. Feature 1. Camera facing north.

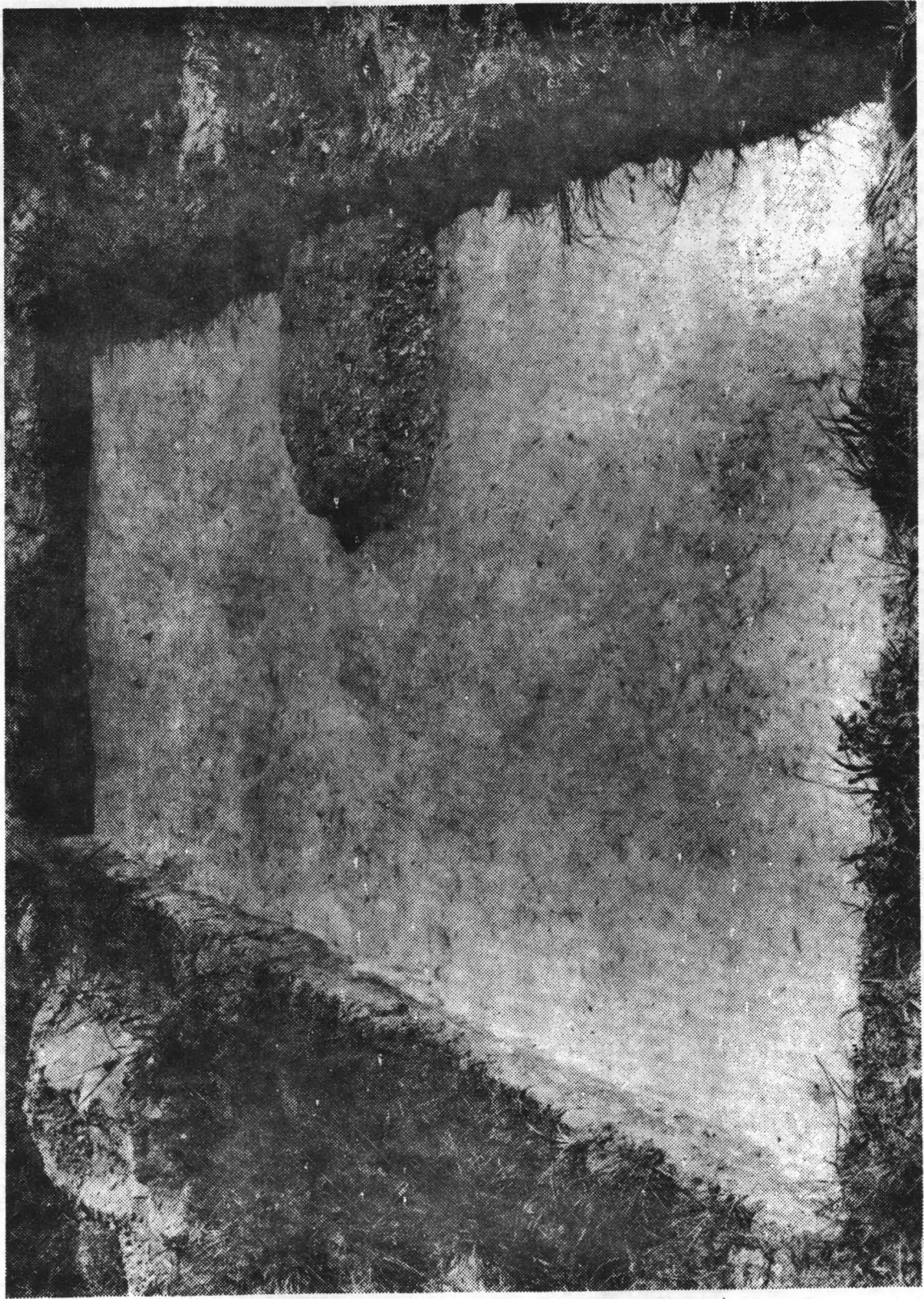




Figure 14
On^v 240
Test 5
Top of level 3

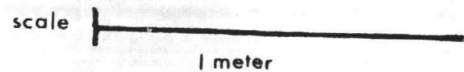
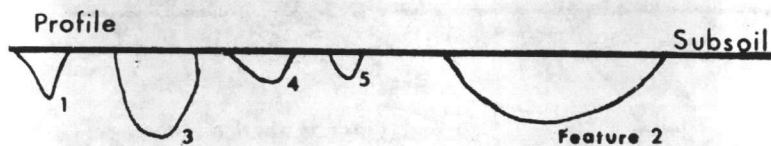
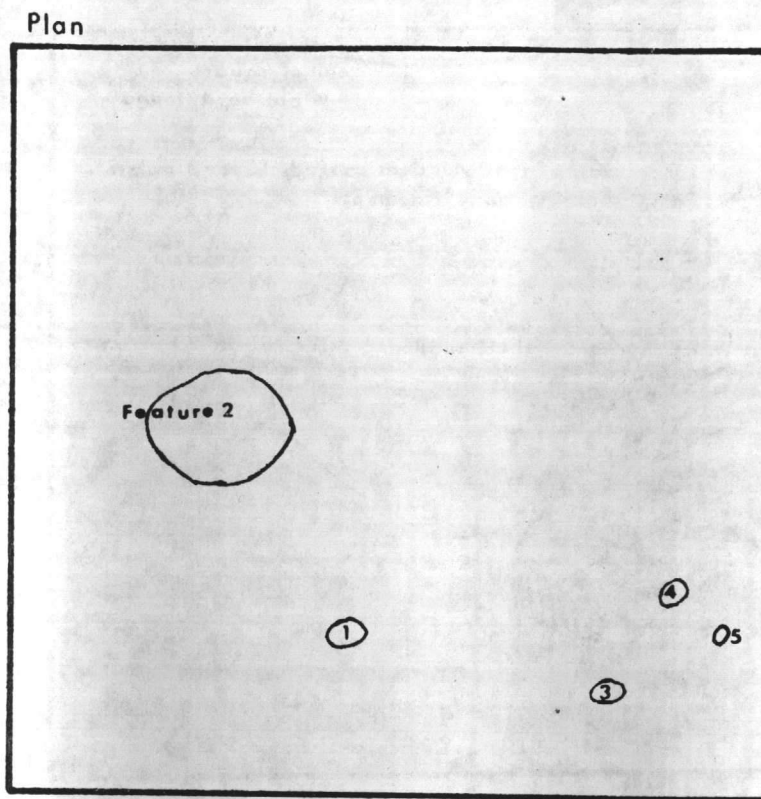
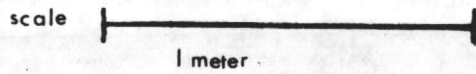
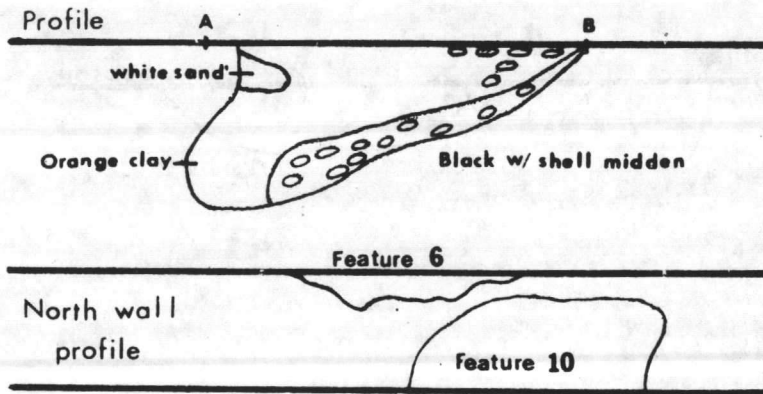
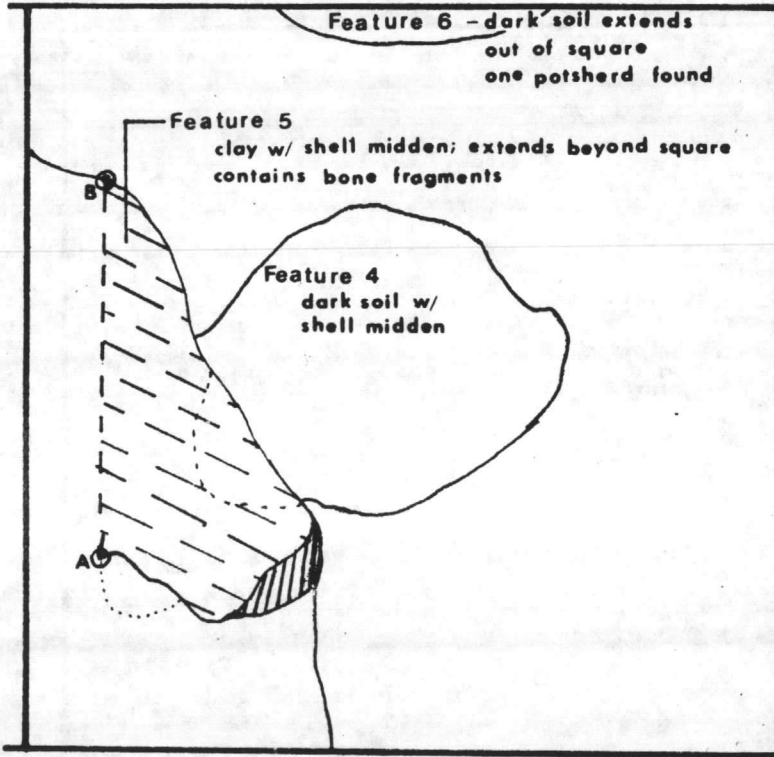


Figure 15
 OnY 240
 Test 6
 Top of level 3

Plan



ON^V240 Test sq. 6 Feature 4 Camera facing west.

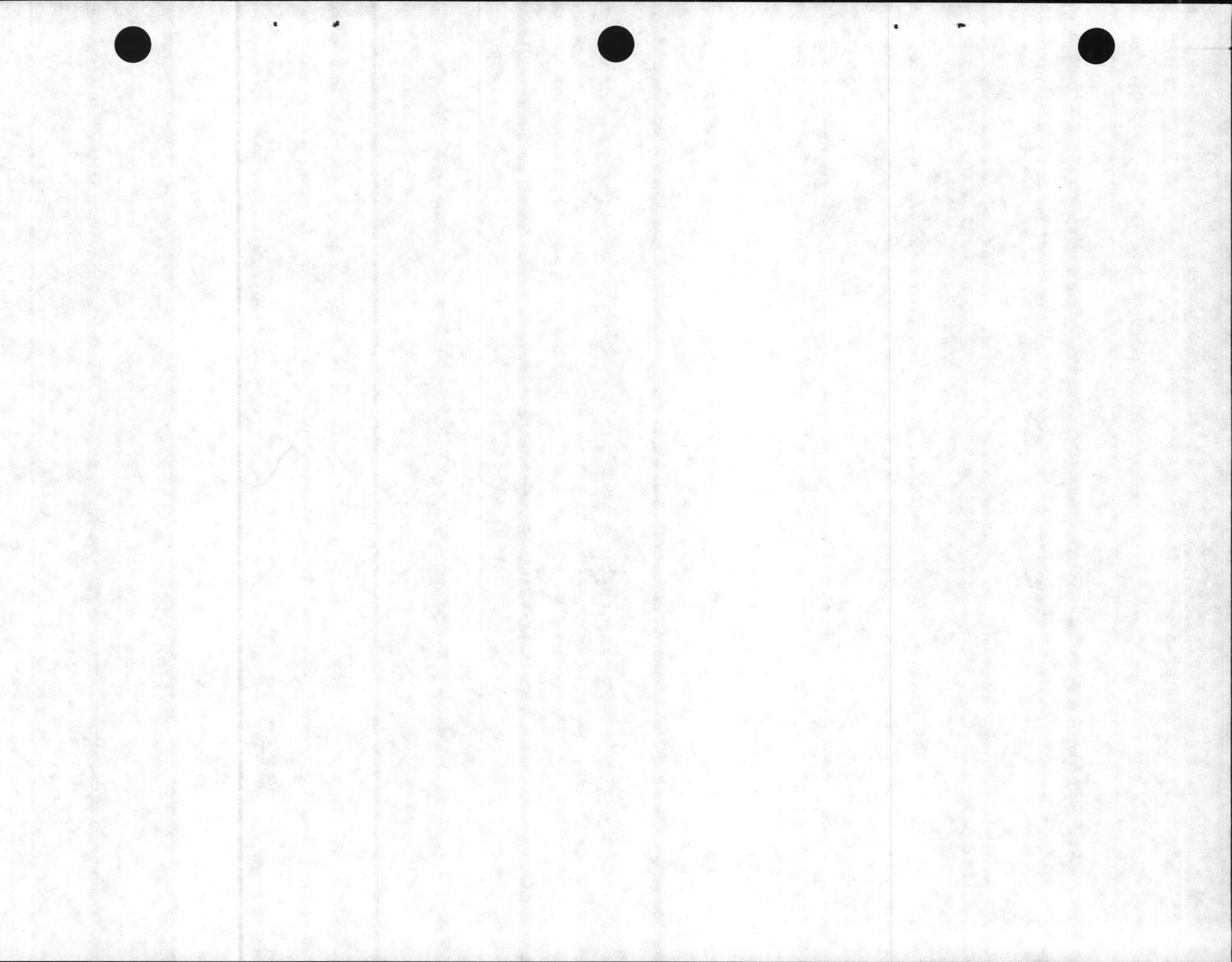






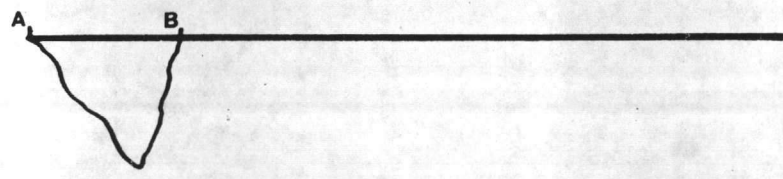
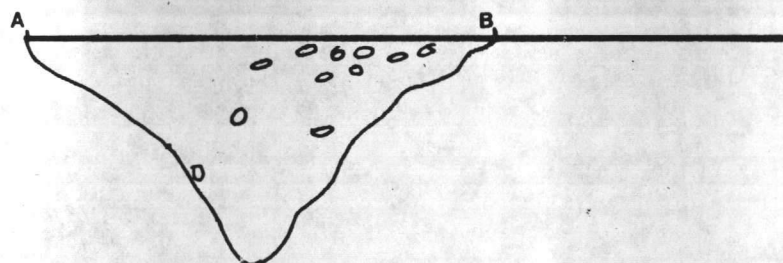
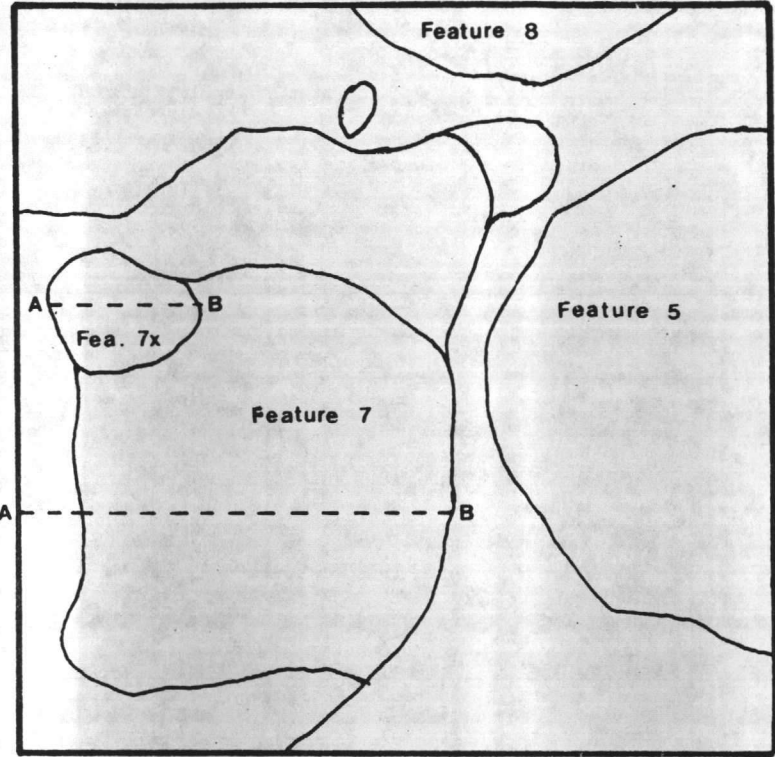
Figure 16

On^y 240

Test 7

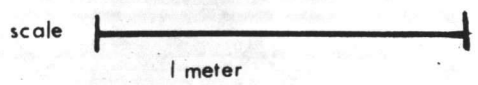
level 3

Plan

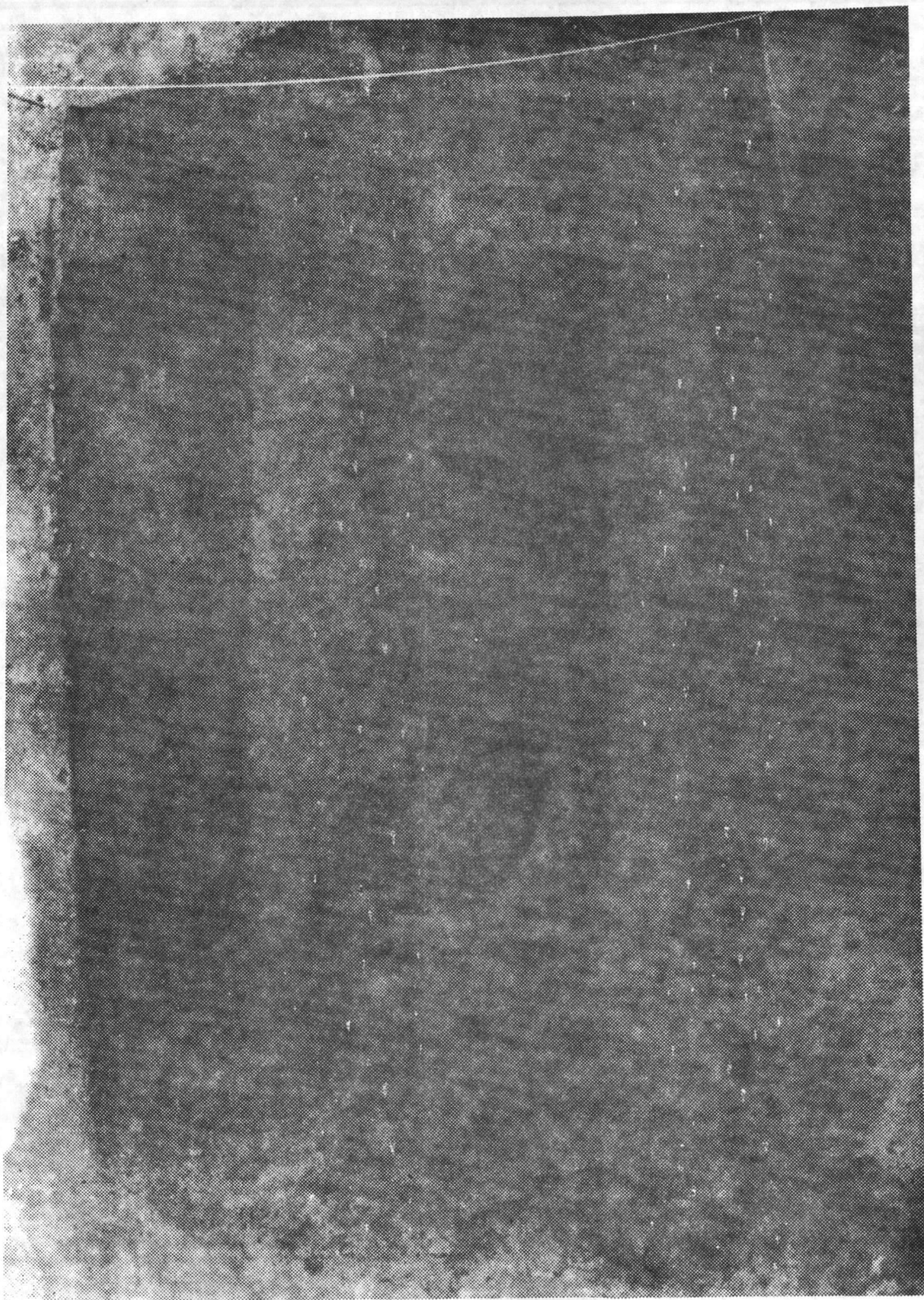


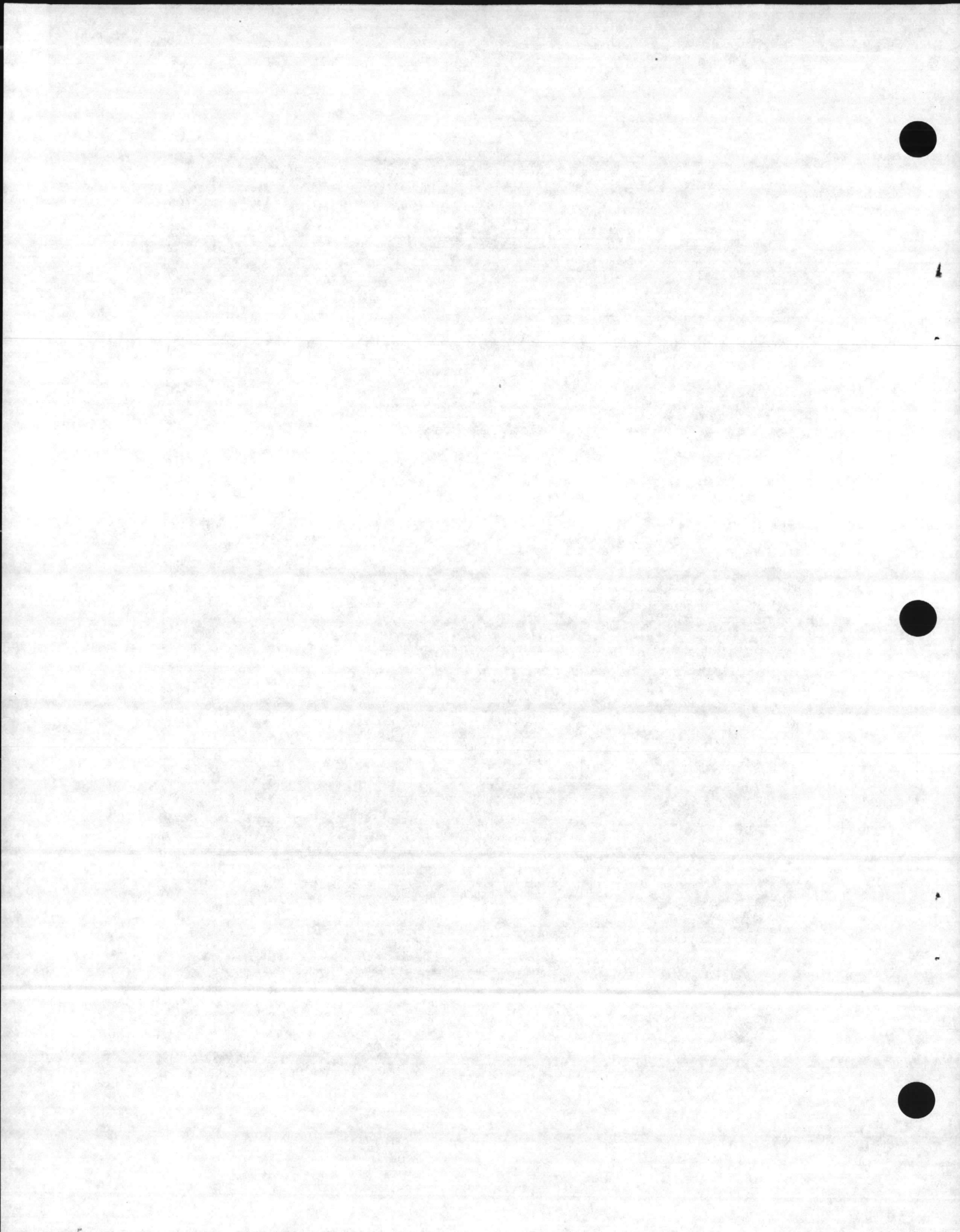
Profile of 7

Profile of 7x



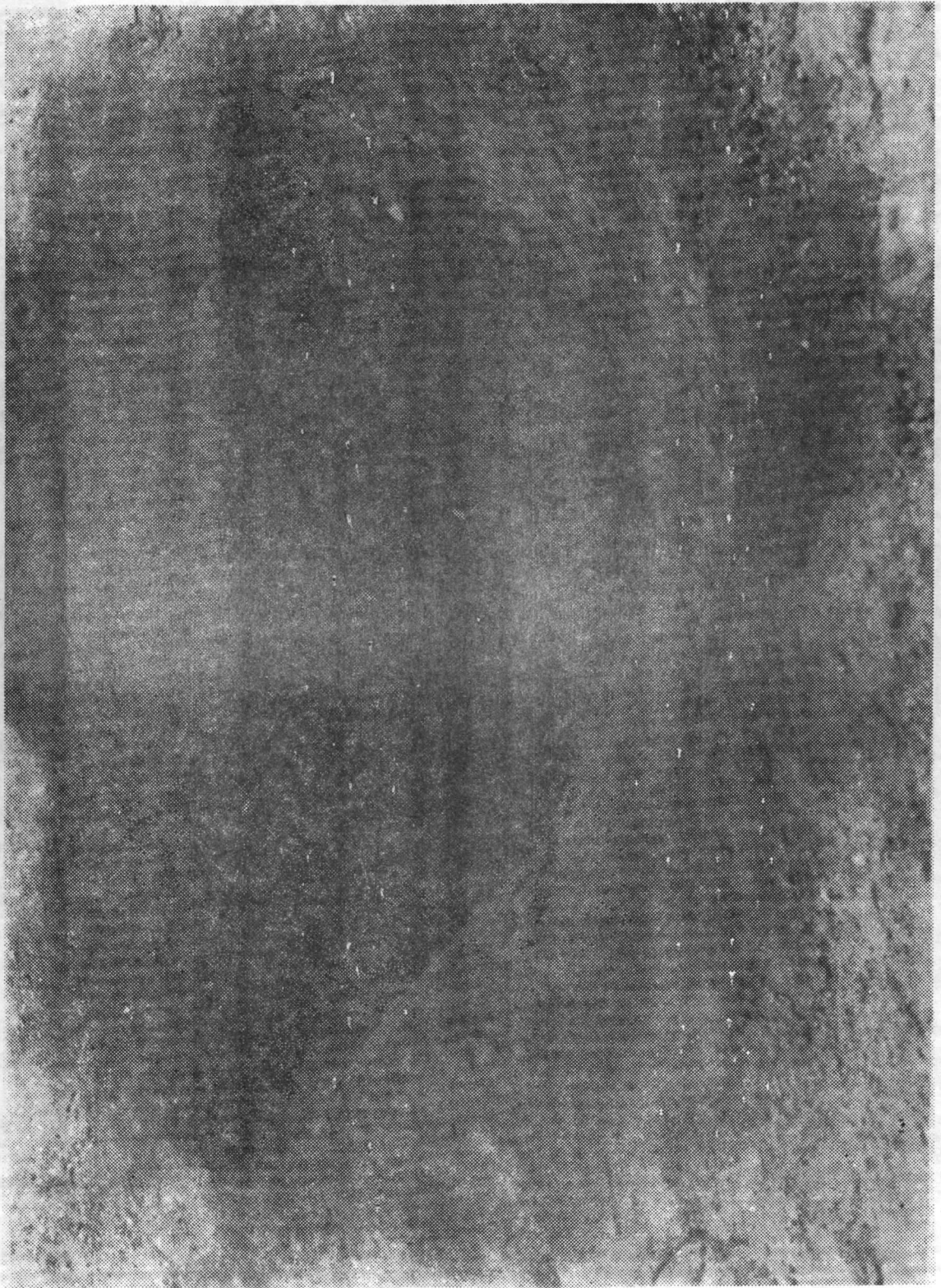
ONV240 Test sq. 7 at subsoil. Feature 7 with west wall profile. Camera facing west.





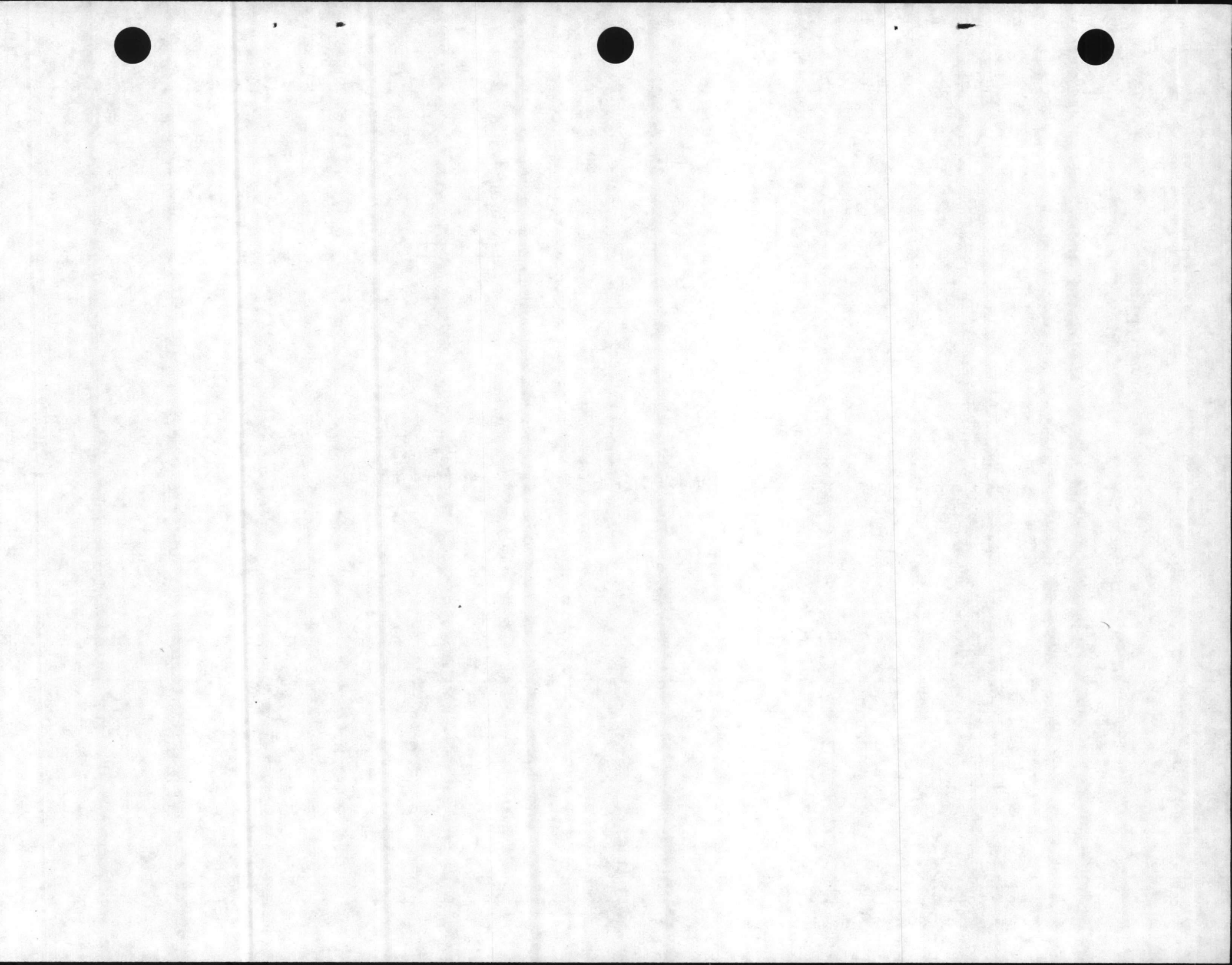
ONV240 Feature 7 Profile. Camera facing south.

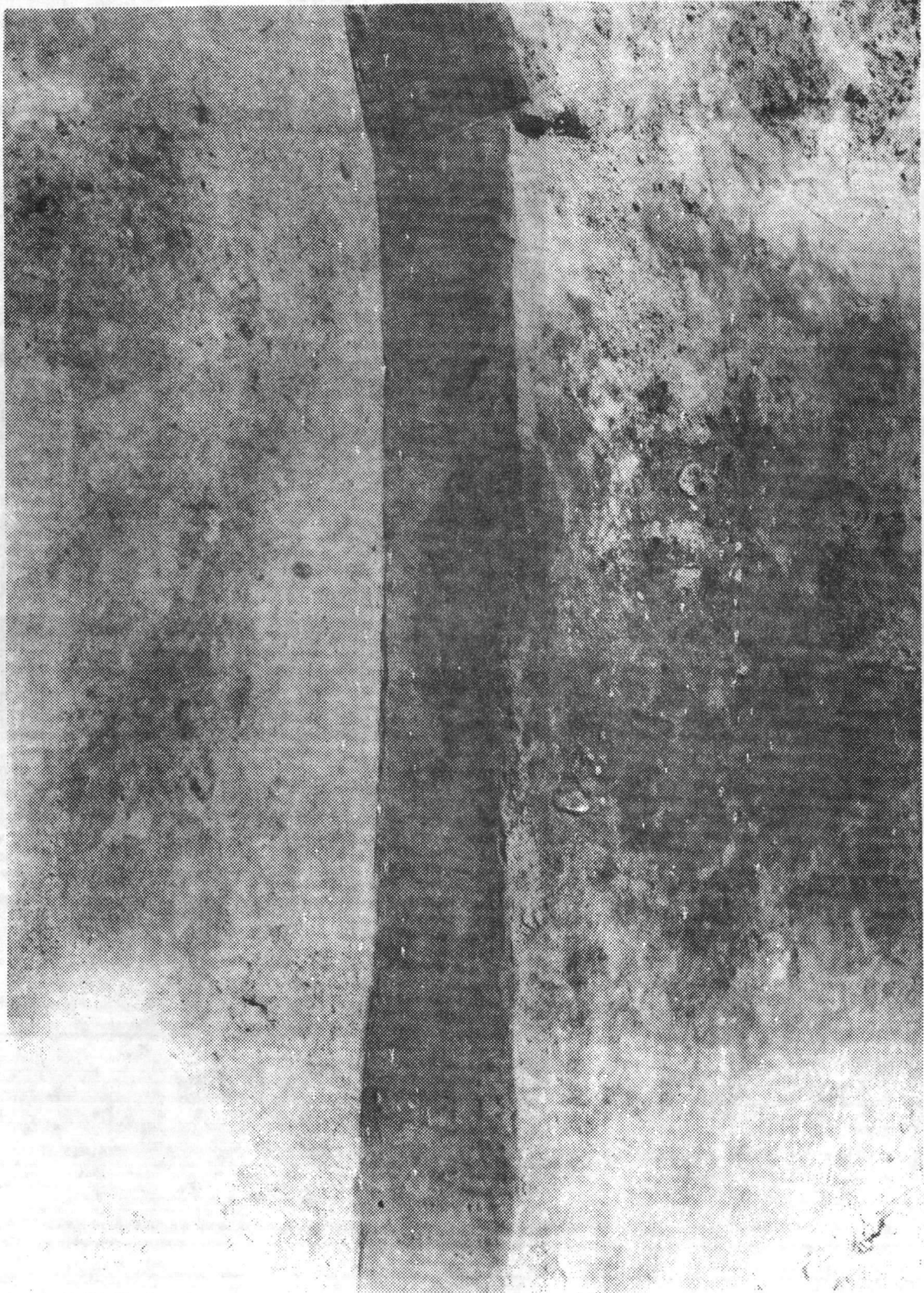






OnV240 Test sq. 7 Feature 8 in north wall profile. Camera facing north.





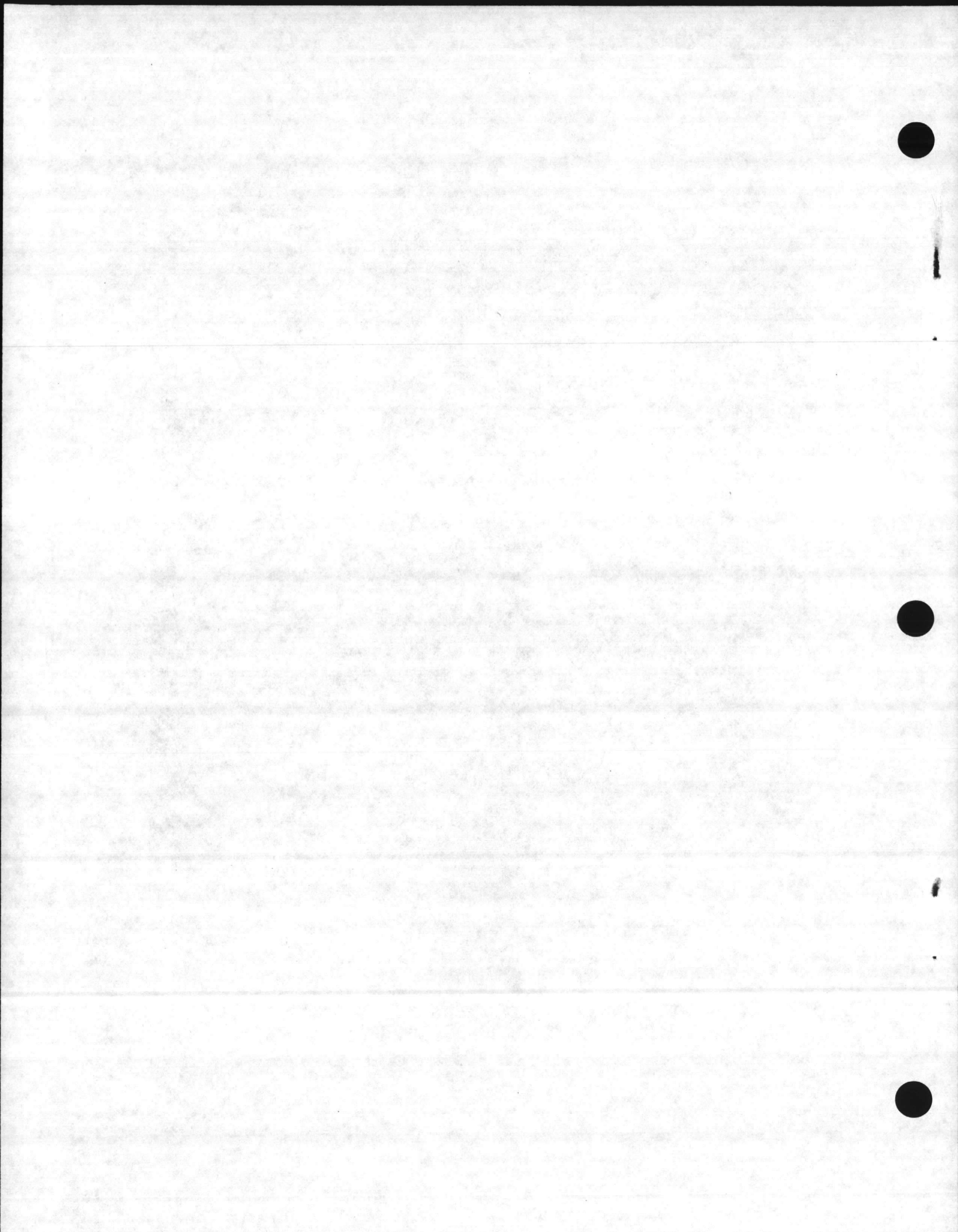


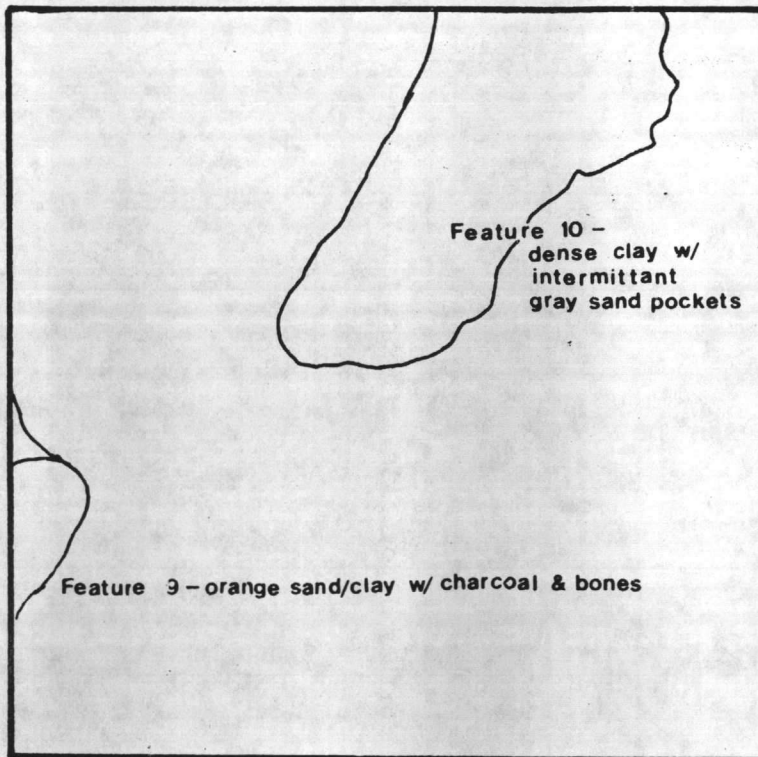
Figure 17

OnY 240

Test 7

level 4

Plan



ON^V240 Feature 10, North wall profile. Camera facing north.

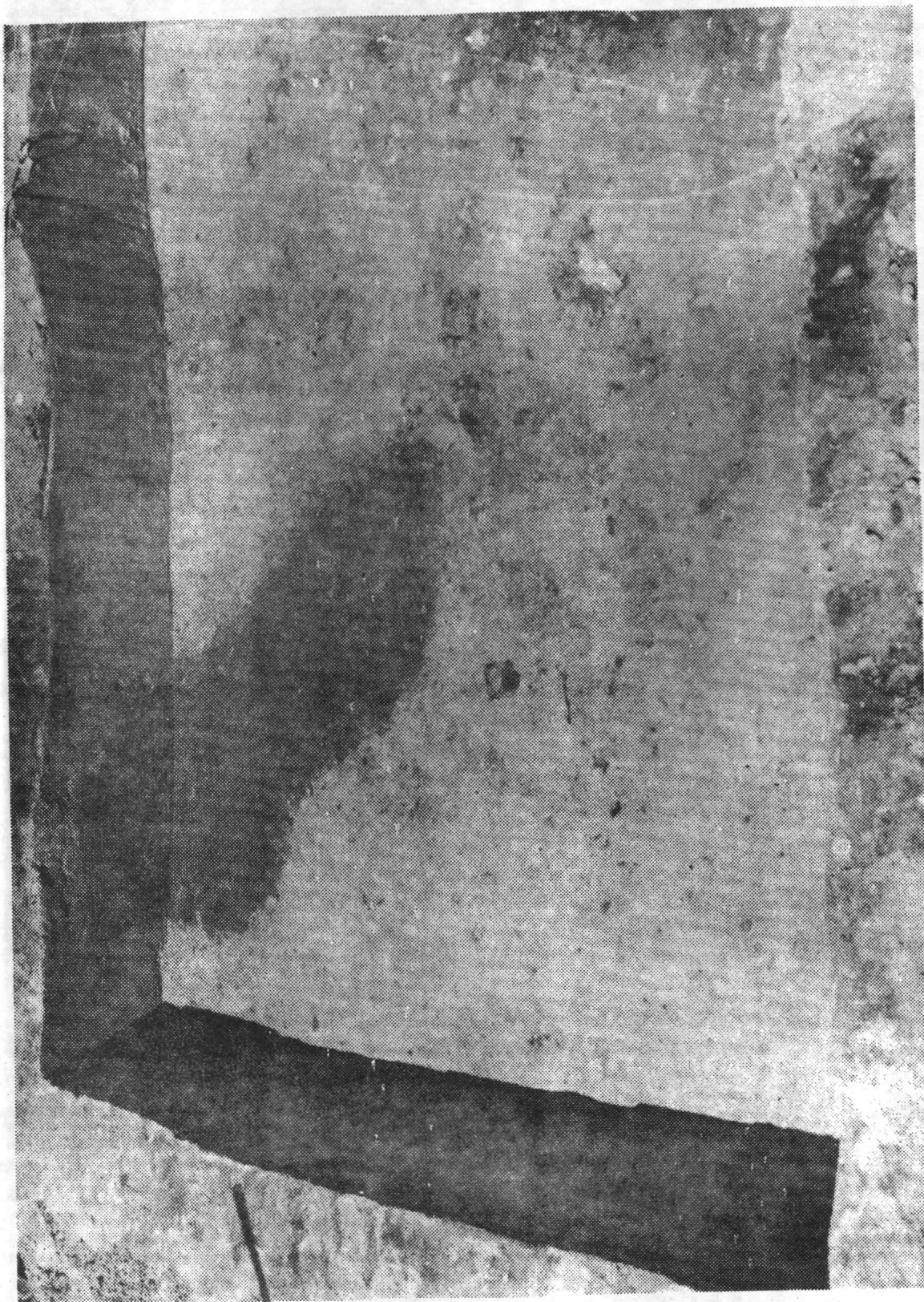




Figure 18
Ony 240
Test 8
Top of level 3

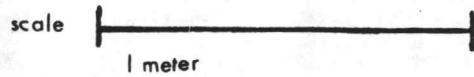
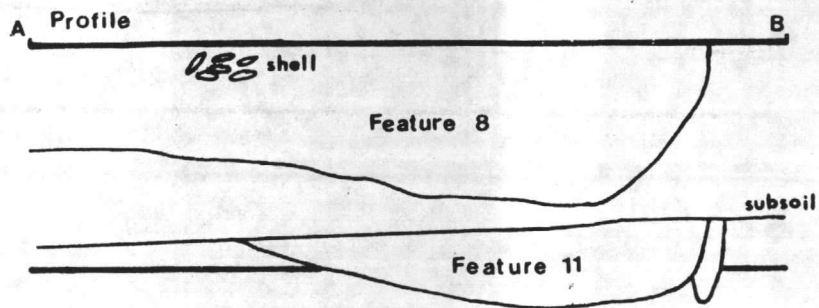
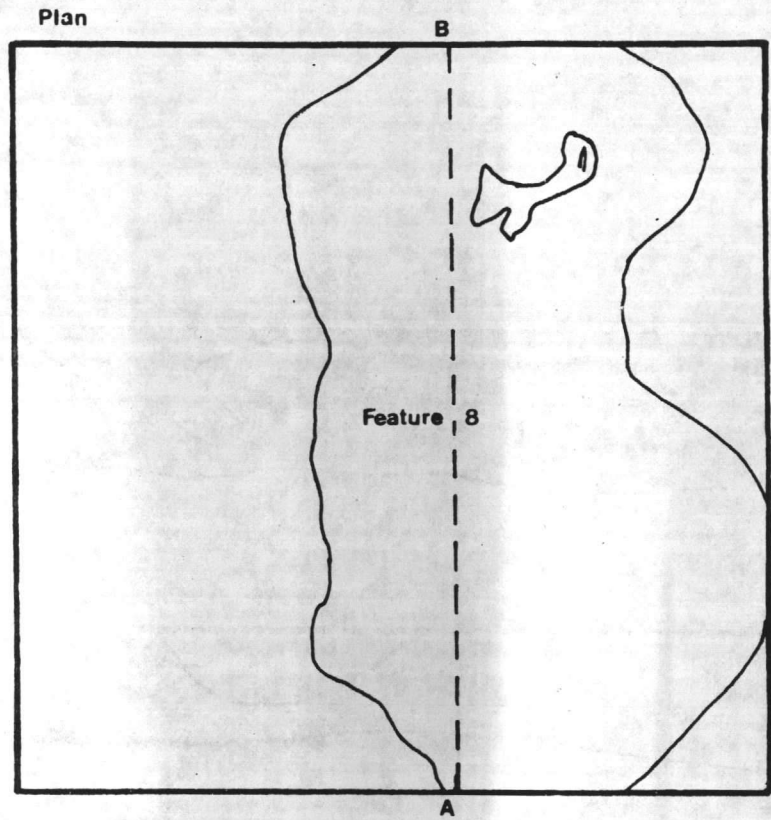
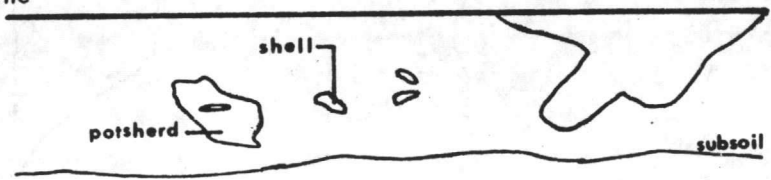


Figure 19

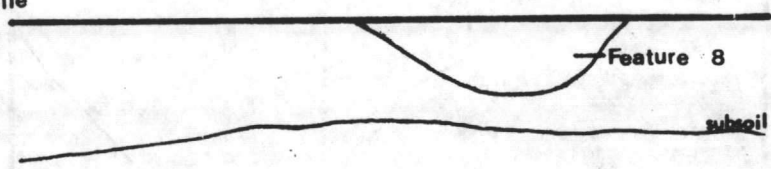
Or 240

Test 7

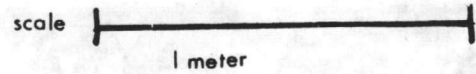
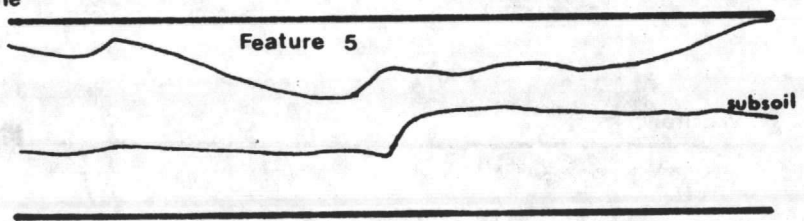
South wall profile



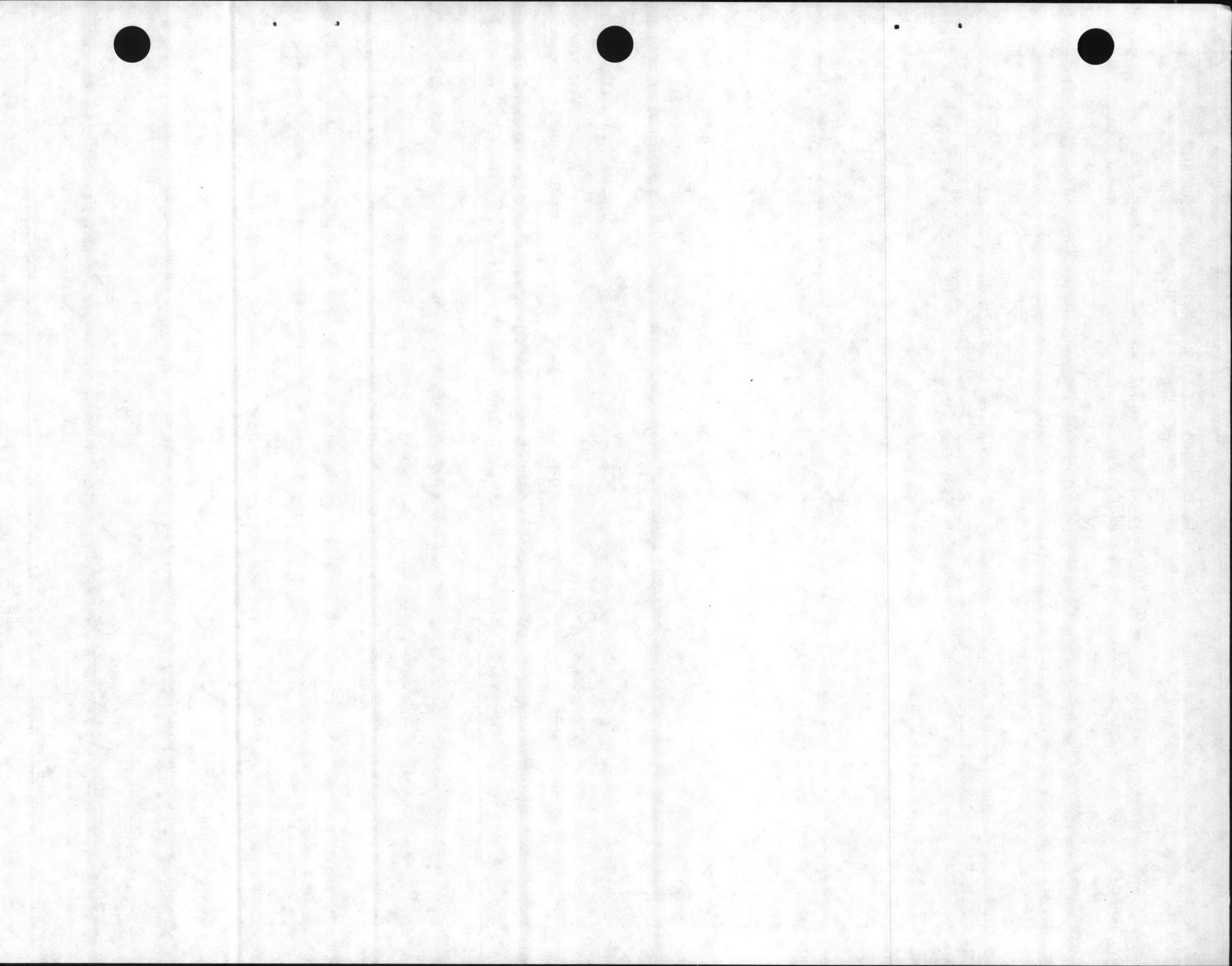
North wall profile

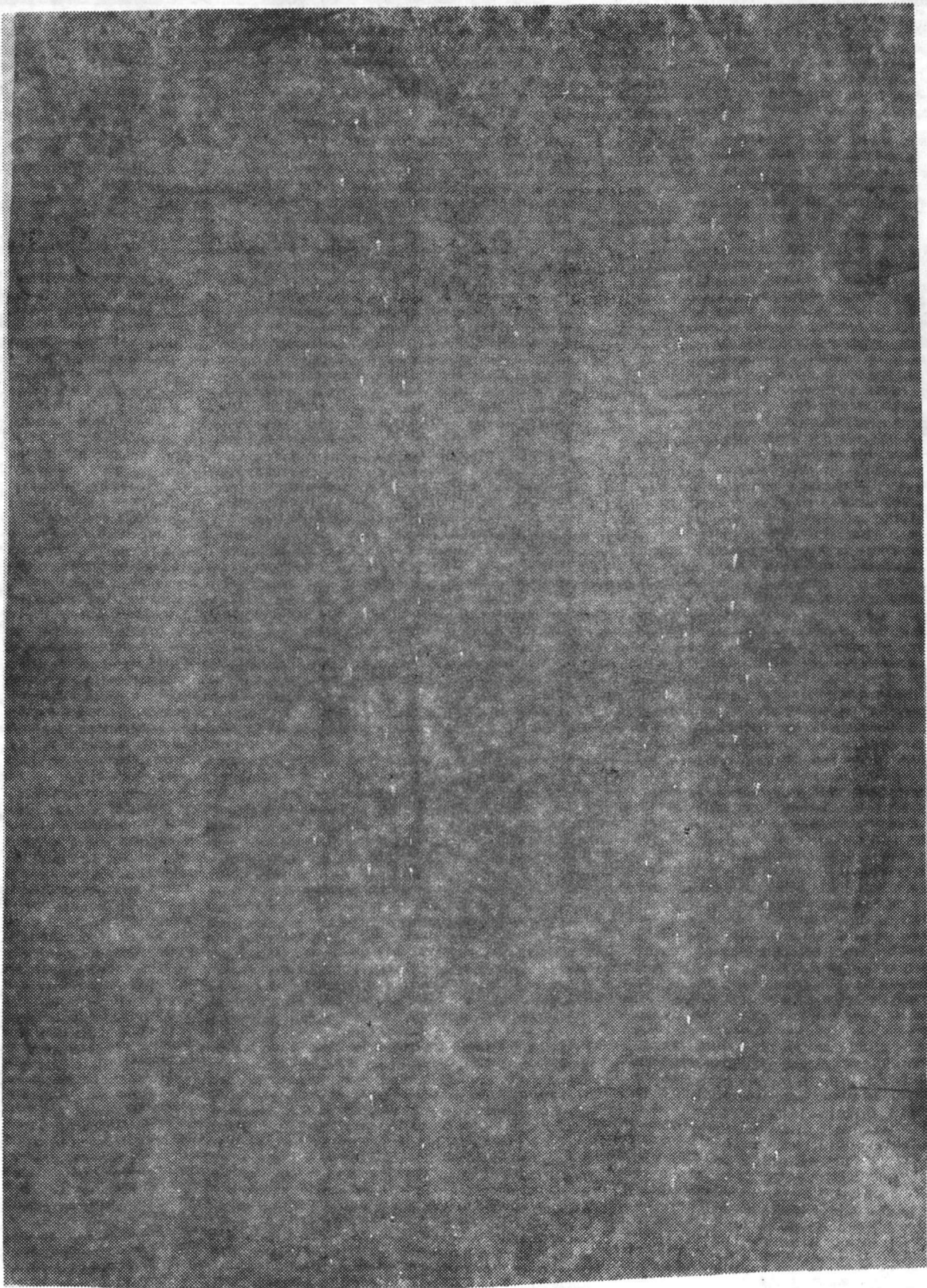


East wall profile



ON^V 240 Test sq. 8 Troweled to subsoil. Camera facing south.







ONV240 Feature 8 with bone partially exposed. Camera facing west.

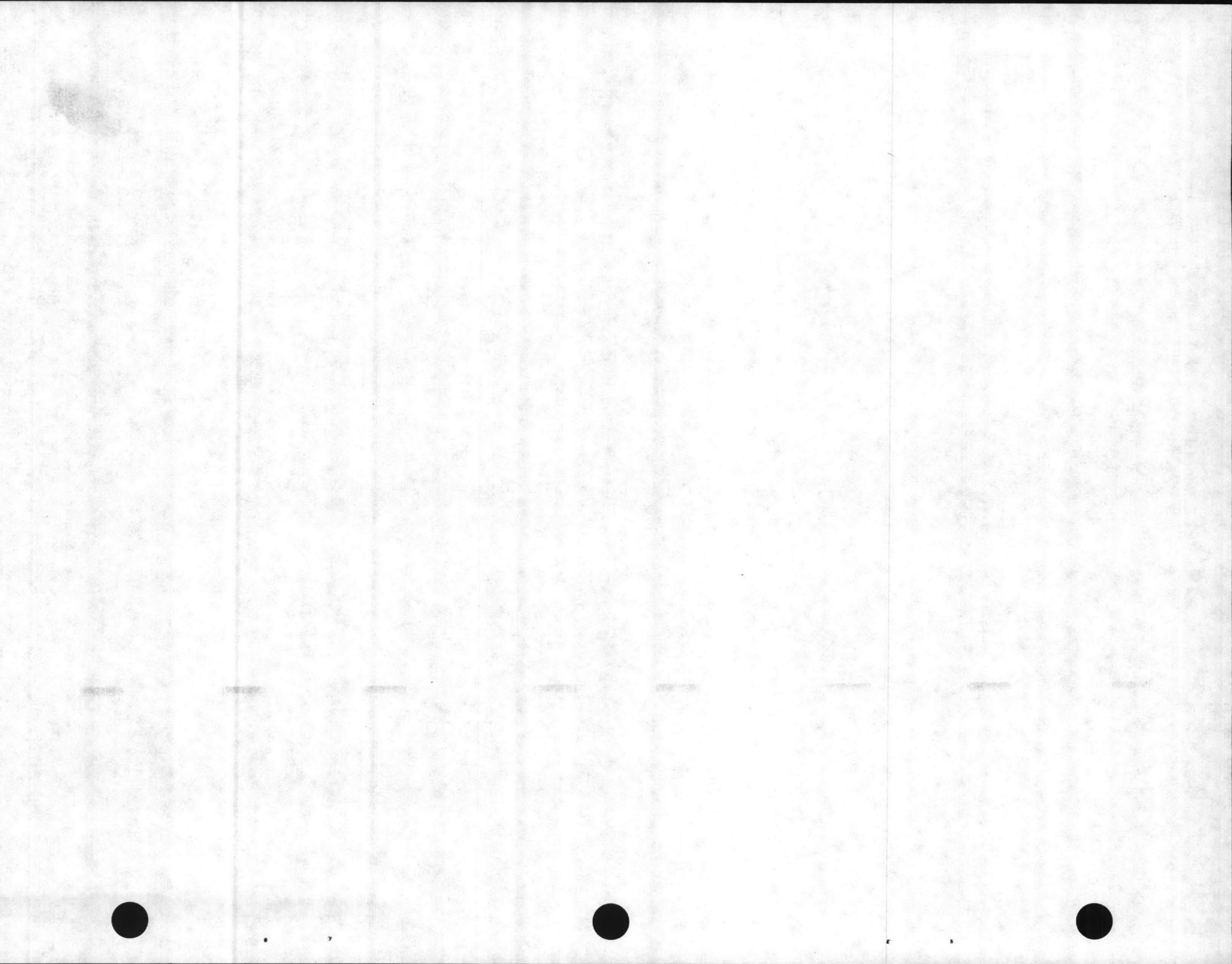






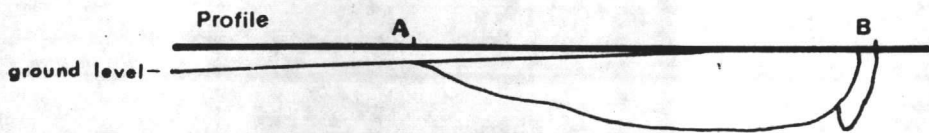
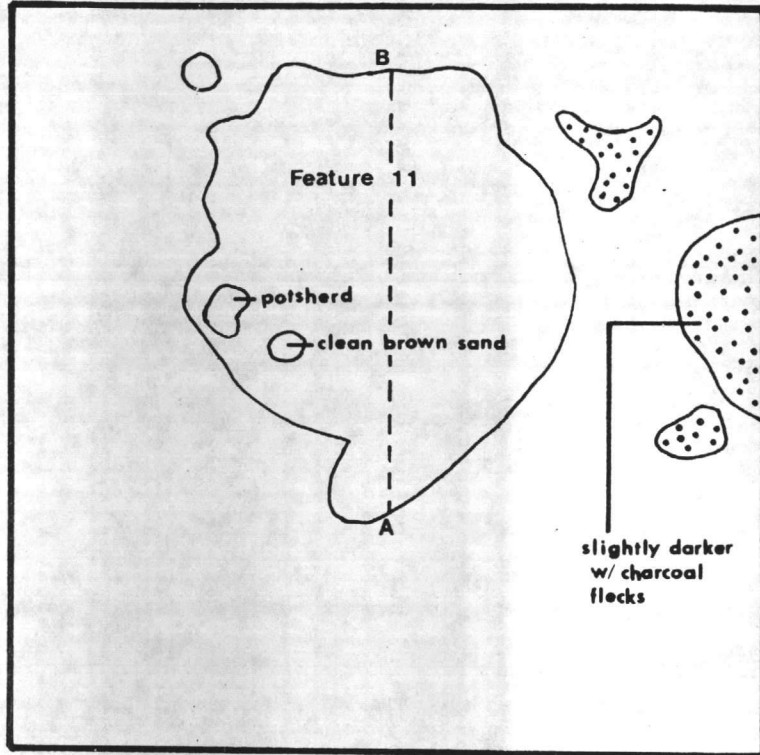
Figure 20

OnY 240

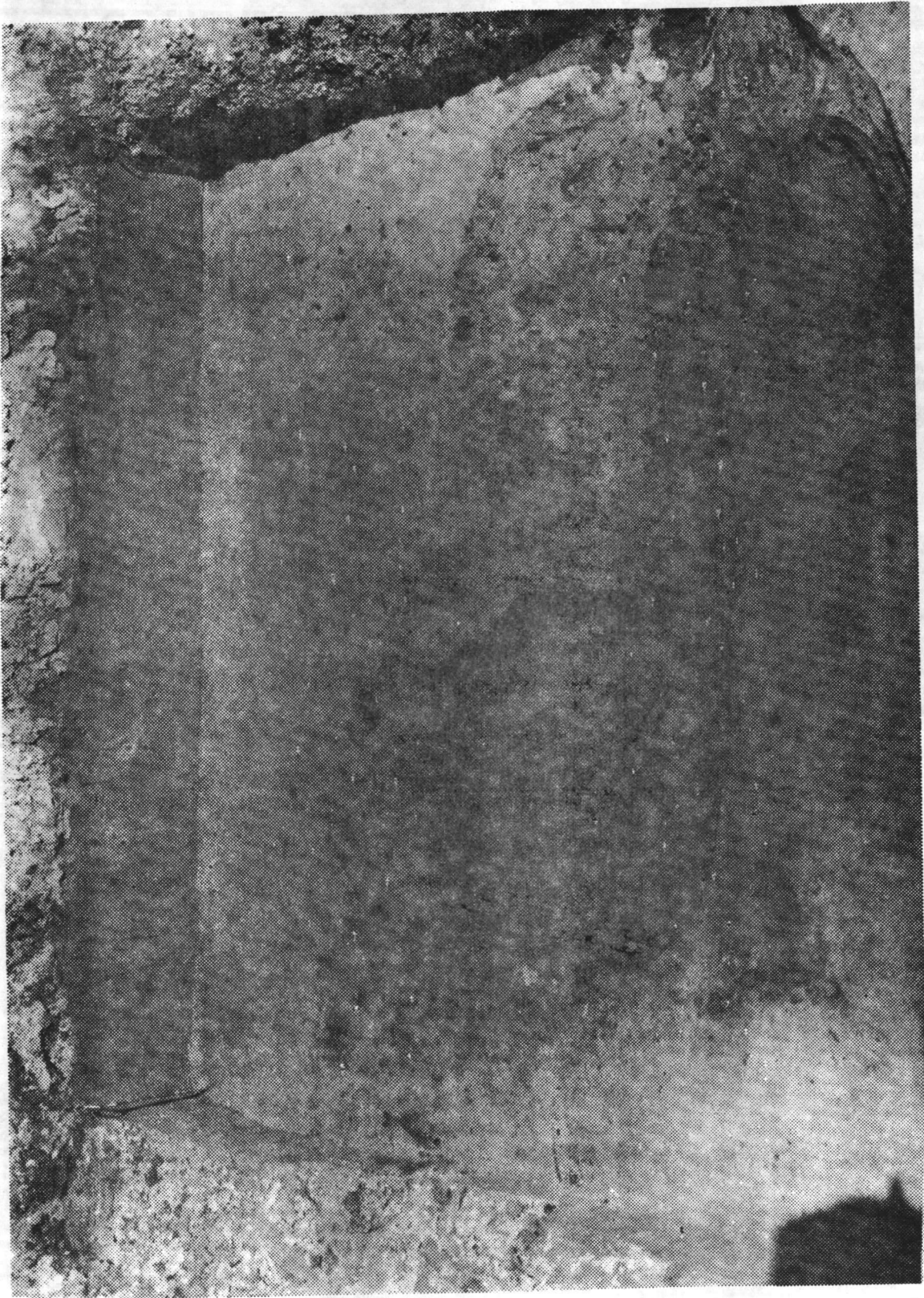
Test 8

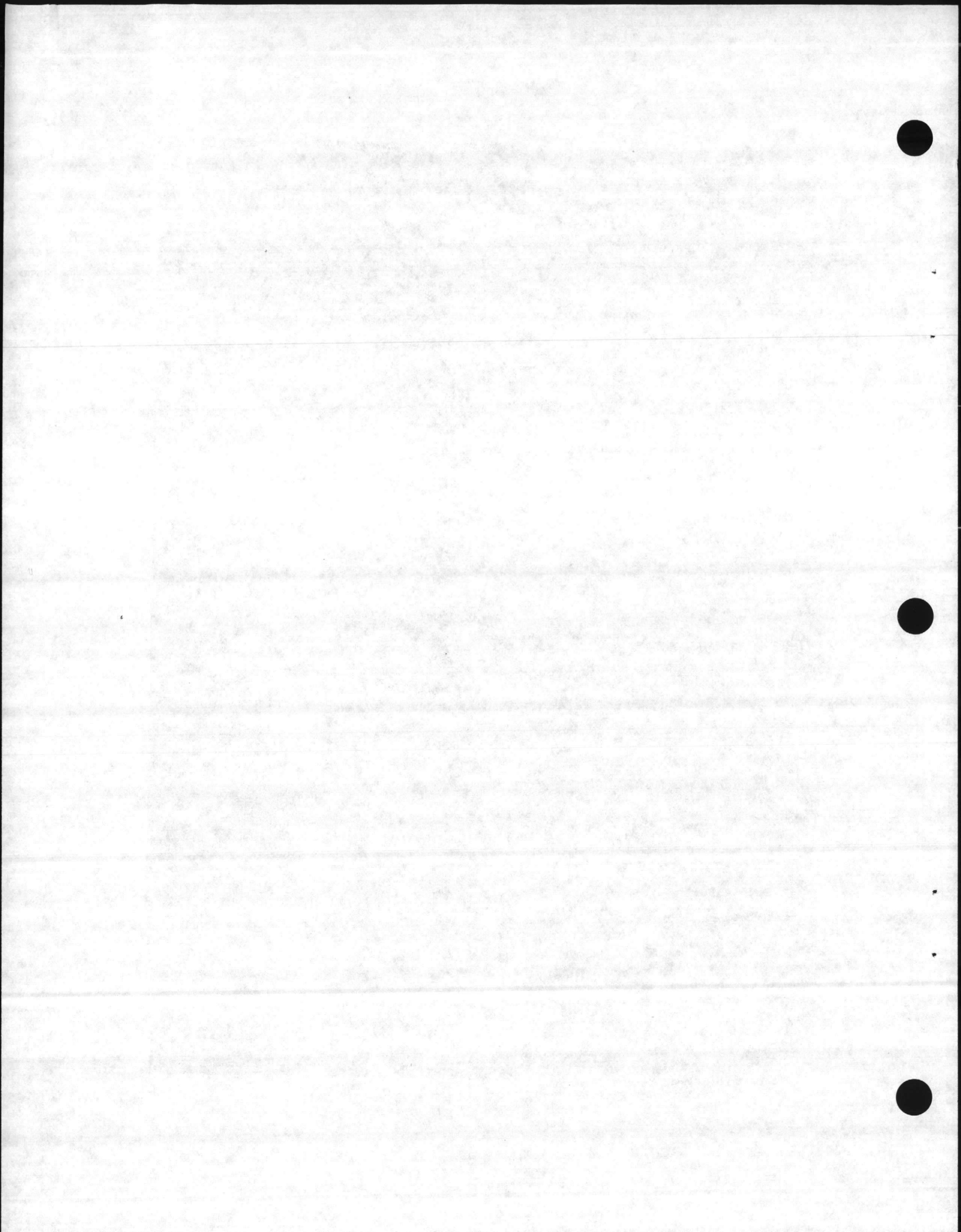
Level 4

Plan

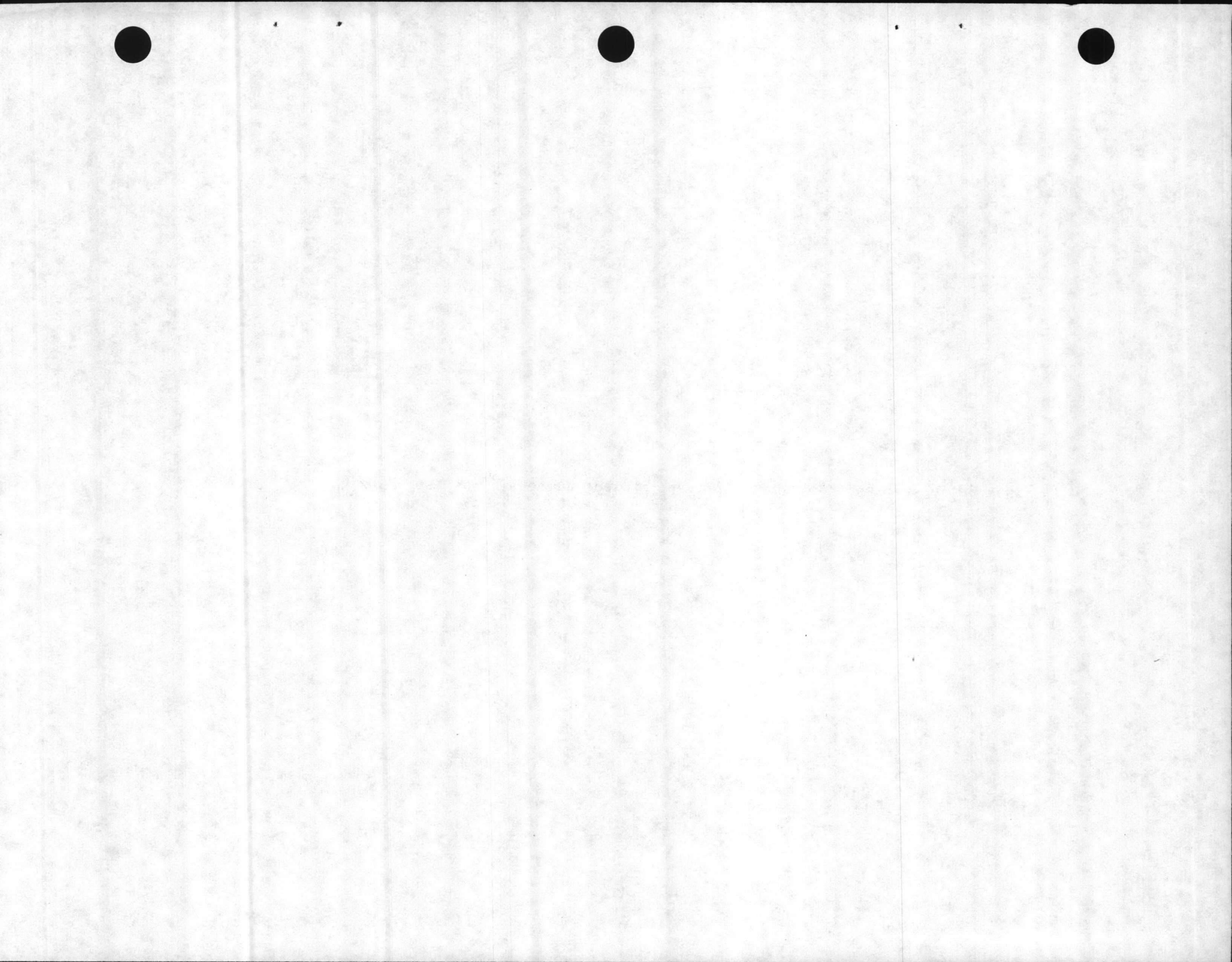


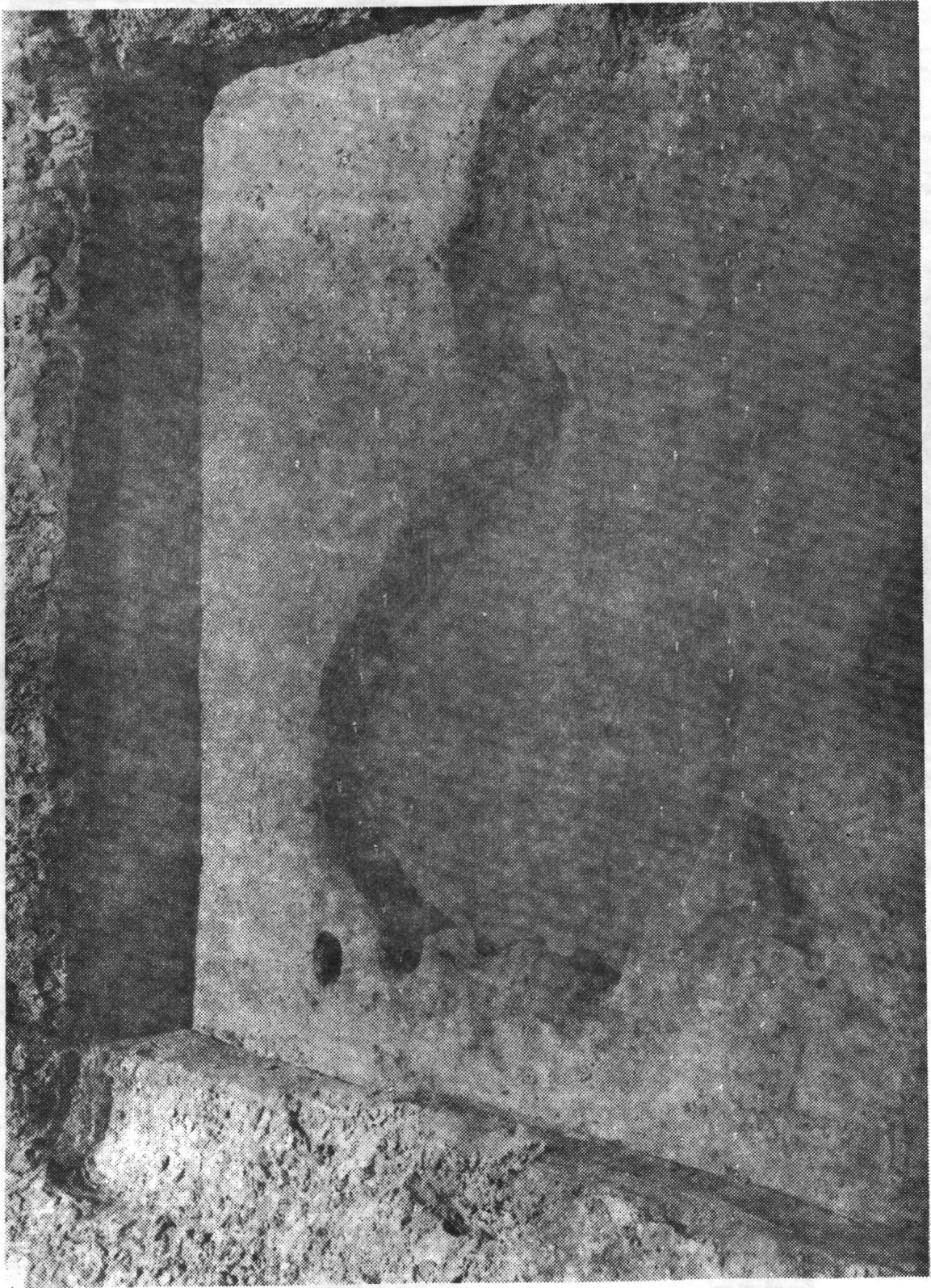
ON^V240 Test sq. 8. Level 2 removed to show outline of feature II. Camera facing west.

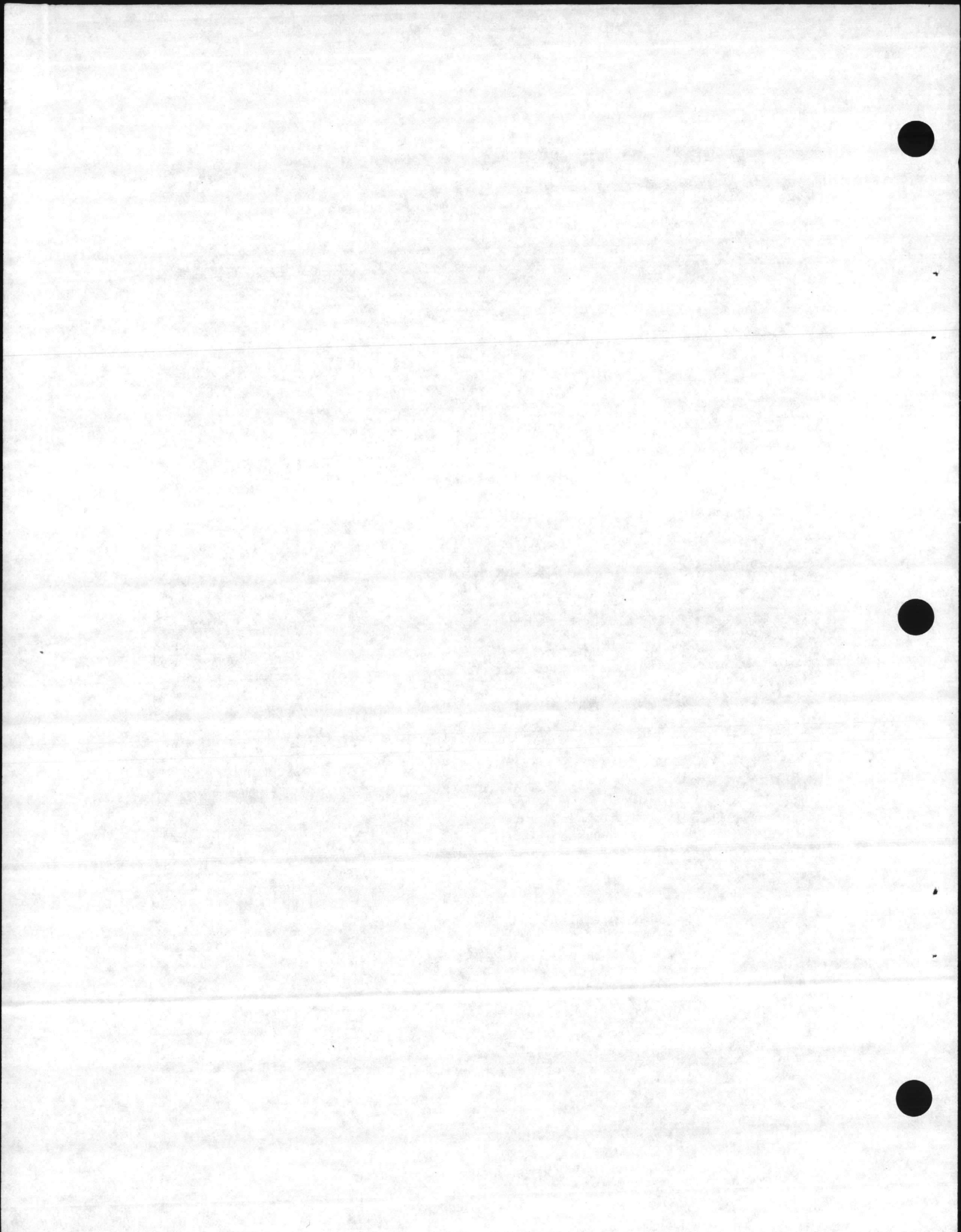




ON^V240 Test sq. 8 showing feature II fully excavated. Camera facing west.







117p198	ON ^V 240 - Feature 8 subsoil	25	potsherds
117p199	ON ^V 240 - Feature 8	88	potsherds
117b200	ON ^V 240 - Feature 8	3	bone
117a201	ON ^V 240 - Feature 8	3	shell
117m202	ON ^V 240 - Feature 8	7	odd & flaked rock
117eb203	ON ^V 240 - Feature 8 flotation		
117eb204	ON ^V 240 - Feature 8 flotation		
117eb205	ON ^V 240 - Feature 8 flotation		
117b206	ON ^V 240 - Feature 8 flotation		bones
117b207	ON ^V 240 - Feature 8 flotation		bones
117p208	ON ^V 240 - Feature 9	11	potsherds
117b209	ON ^V 240 - Feature 9	4	bone
117m210	ON ^V 240 - Feature 9	9	charcoal
117b211	ON ^V 240 - Feature 9	3	bone

ON^V251

Located at Weil Point, the conjunction of French's Creek and New River, this site was the only major occupation located at such a major stream confluence. The site has been seriously damaged by not only past military activity in the area but by the construction of a hunting camp by the Weil family after whom the area is named. In addition shoreline erosion has been extreme. The site consists of a fairly high bluff overlooking the river with prehistoric and historic potsherds and other artifacts scattered over the surface. The ground is currently unvegetated.

Eight two-meter-by-two-meter tests were placed at the site in promising locations but only three tests showed any subsurface cultural deposits intact. Feature number one was located in test number one. The feature consisted of a pit approximately 100 centimeters across by 37 centimeters deep. A total of 286 potsherds were recovered from the pit, all but two of which were shell tempered. Twenty-one kilograms of shell were recovered, all oyster. No other diagnostic artifacts were located in this pit. Potsherds recovered from the regular excavation levels were also predominantly shell tempered.

Feature two was located in test three. It was also a shallow

pit with potsherds and some bone fragments. Of the twelve potsherds recovered in this feature nine were shell temper while three were clay temper. The bones are currently being analyzed.

Feature 3 was also located in test one. It was a shallow dark discoloration in the corner of the square. It was not totally excavated.

Feature 4 was located in test 2. It was a small pit with four potsherds within. It was probably a rodent burrow.

Feature 5 was a discoloration in the corner of test 5. It was probably associated with recent tractor activity in the area as no artifacts were recovered.

Finally feature 6 was located in test 6. It was a typical bowl-shaped pit with surprisingly few artifacts. Four potsherds and one bone fragment were recovered.

The soil at ON^V 251 was typically sandy but contained more clay than did sites located closer to the ocean. The test results show that intact subsurface cultural materials exist and can be recovered. This was the only site located at the confluence of major waterways in the area and was one of the few large sites on a high promontory overlooking the water. Experience at the site over several years suggests that shoreline erosion has been extreme and it is probable that a significant portion of the site has washed into the water of New River. This site is once again one of the few which had shell-tempered ceramics without a major covering of shell midden over the site. Based on the several unique features of the site, namely its location in relation to water confluence, high ground, artifacts distribution, lack of shell, etc. it is felt that this site would probably be eligible for inclusion on the National Register of Historic Places. It is accordingly recommended that immediate steps be taken to preserve this site from further degrading activities.

To date a protective wall of rubble has been placed along the eroding edge of New River which should stabilize erosion. The ground surface has been planted to grass which should check sheet erosion. In addition all military activity should cease in the area and a program of archaeological investigation be undertaken to recover the remaining portion of cultural materials from this site.

It may be noted in passing that this site is the location of Weil's Hunting Lodge. As a consequence there are historic ceram-

ics and other artifacts found at the site but these all date to the twentieth century.

117p212	ON ^V 251 - Surface	56	potsherds
117p213	ON ^V 251 - Surface	4	historic potsherds
117b214	ON ^V 251 - Surface	8	bone
117m215	ON ^V 251 - Surface	2	flakes
117p216	ON ^V 251 - Test 1	64	potsherds
117p217	ON ^V 251 - Test 1	1	historic sherd
117b218	ON ^V 251 - Test 1	12	bone
117m219	ON ^V 251 - Test 1	13	metal & nails
117m220	ON ^V 251 - Test 1	2	glass
117m221	ON ^V 251 - Test 1	12	odd & flaked rock
117m222	ON ^V 251 - Test 1	4	brick
117eb223	ON ^V 251 - Test 1 Flotation		
117p224	ON ^V 251 - Test 2	45	potsherds
117p225	ON ^V 251 - Test 2	2	historic sherds
117m226	ON ^V 251 - Test 2	3	odd rocks
117m227	ON ^V 251 - Test 2	13	glass
117p228	ON ^V 251 - Test 3 Sub-surface	12	potsherds
117m229	ON ^V 251 - Test 3 Sub-surface	3	rocks
117p230	ON ^V 251 - Test 3 Level 1	4	potsherds
117p231	ON ^V 251 - Test 4	8	potsherds
117m232	ON ^V 251 - Test 4	14	rocks
117p233	ON ^V 251 - Test 5	2	potsherds
117p234	ON ^V 251 - Test 5	1	historic sherd
117p235	ON ^V 251 - Feature 1	286	potsherds
117eb236	ON ^V 251 - Feature 1 Flotation		
117s237	ON ^V 251 - Feature 1 Flotation		shells
117m238	ON ^V 251 - Feature 1 Flotation	6	rocks

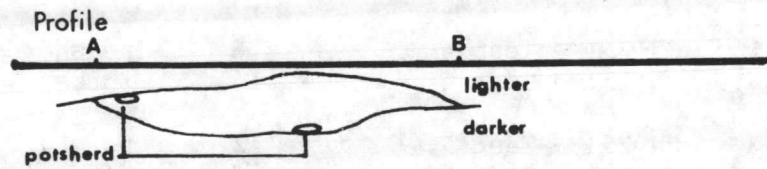
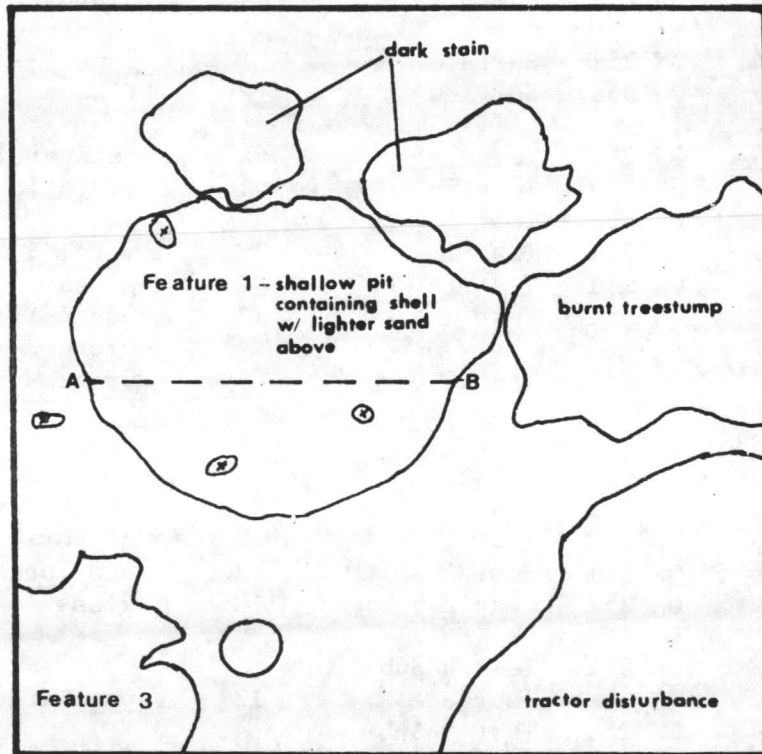
Figure 21

On^y 251

Test 1

Level 2

Plan

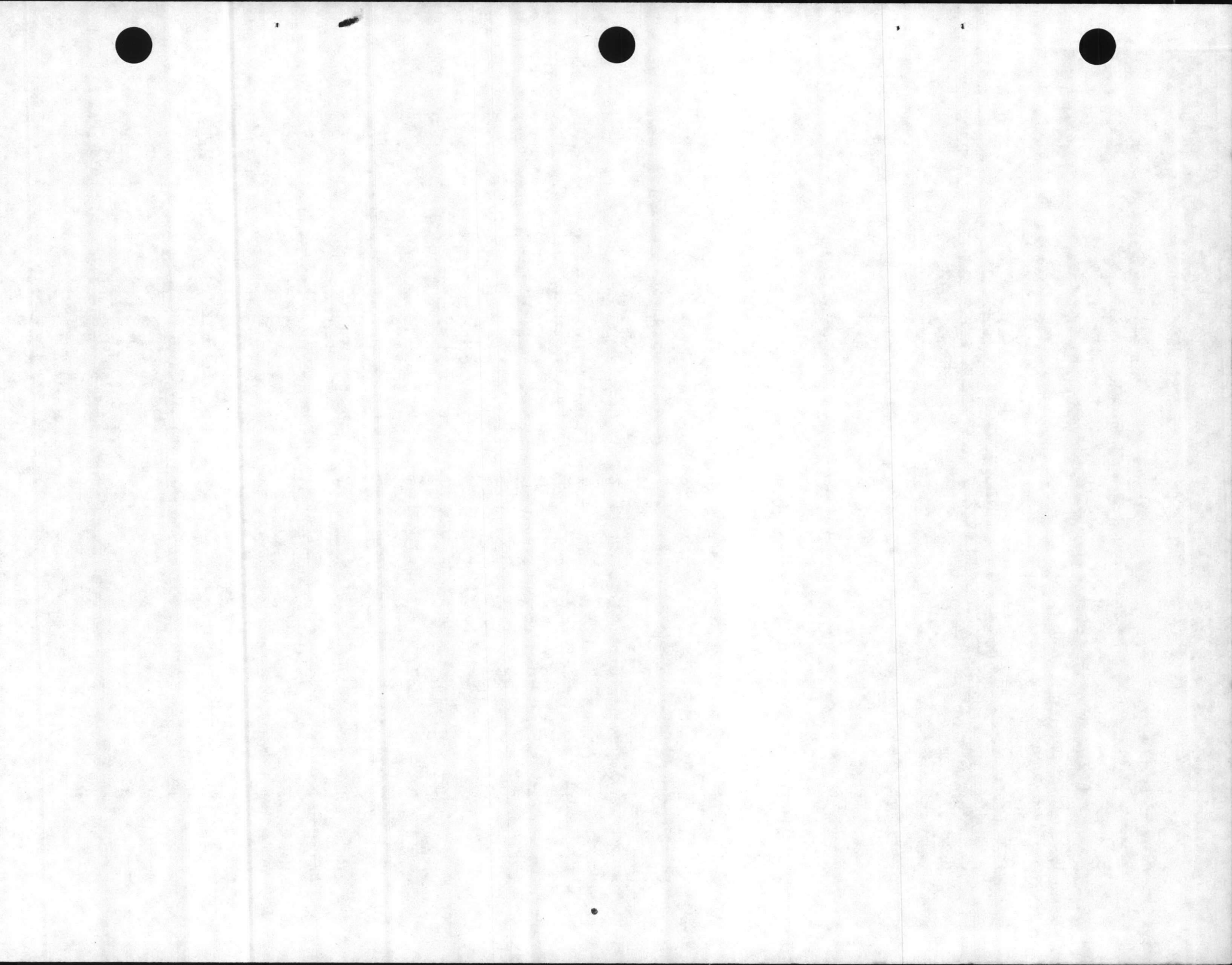


⊗ - potsherds



scale |-----|
1 meter

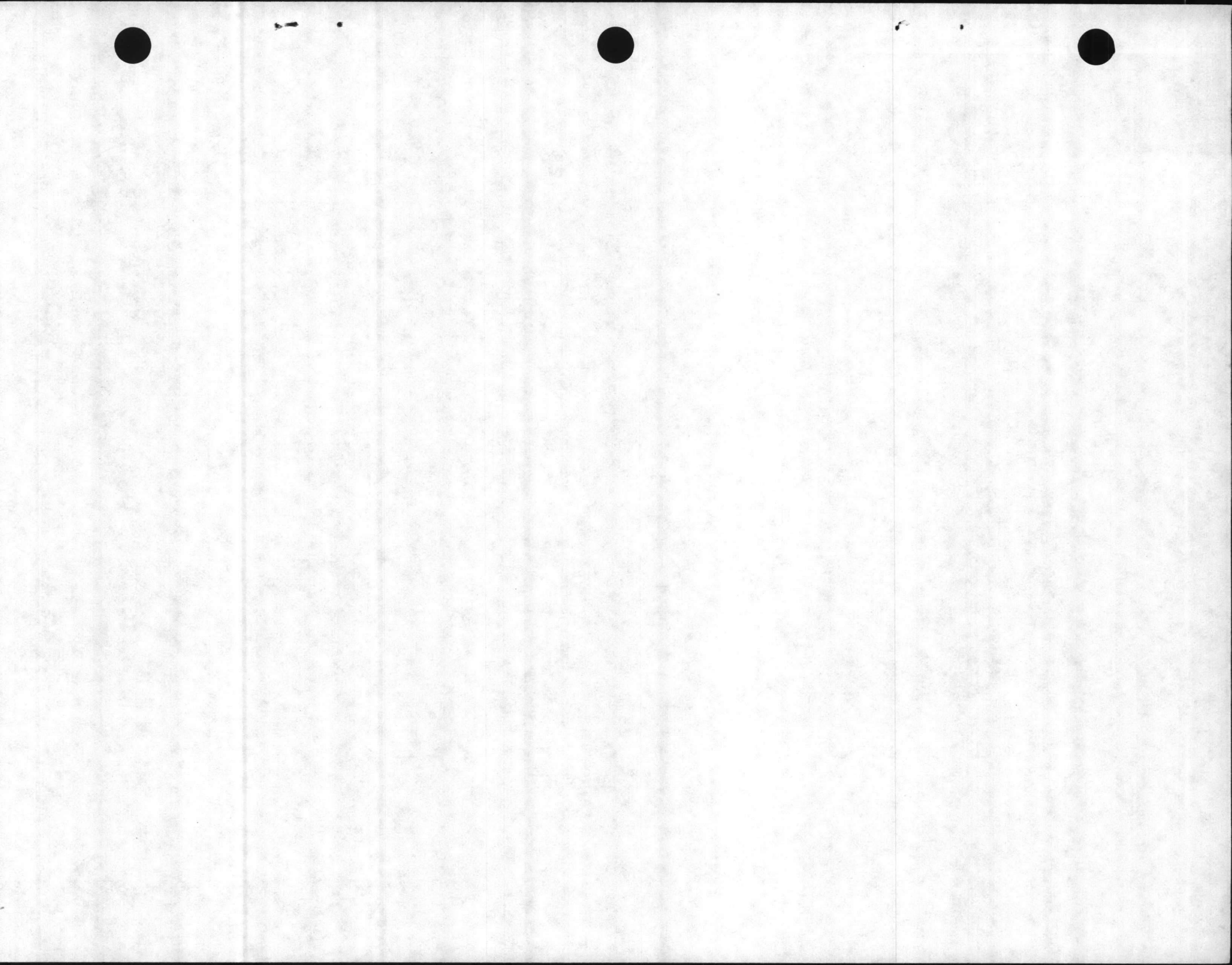
ONV251 Test sq. 1 feature 1, profile. Camera facing northwest.







ONV251 Test sq. 1, feature 1. Camera facing southeast.



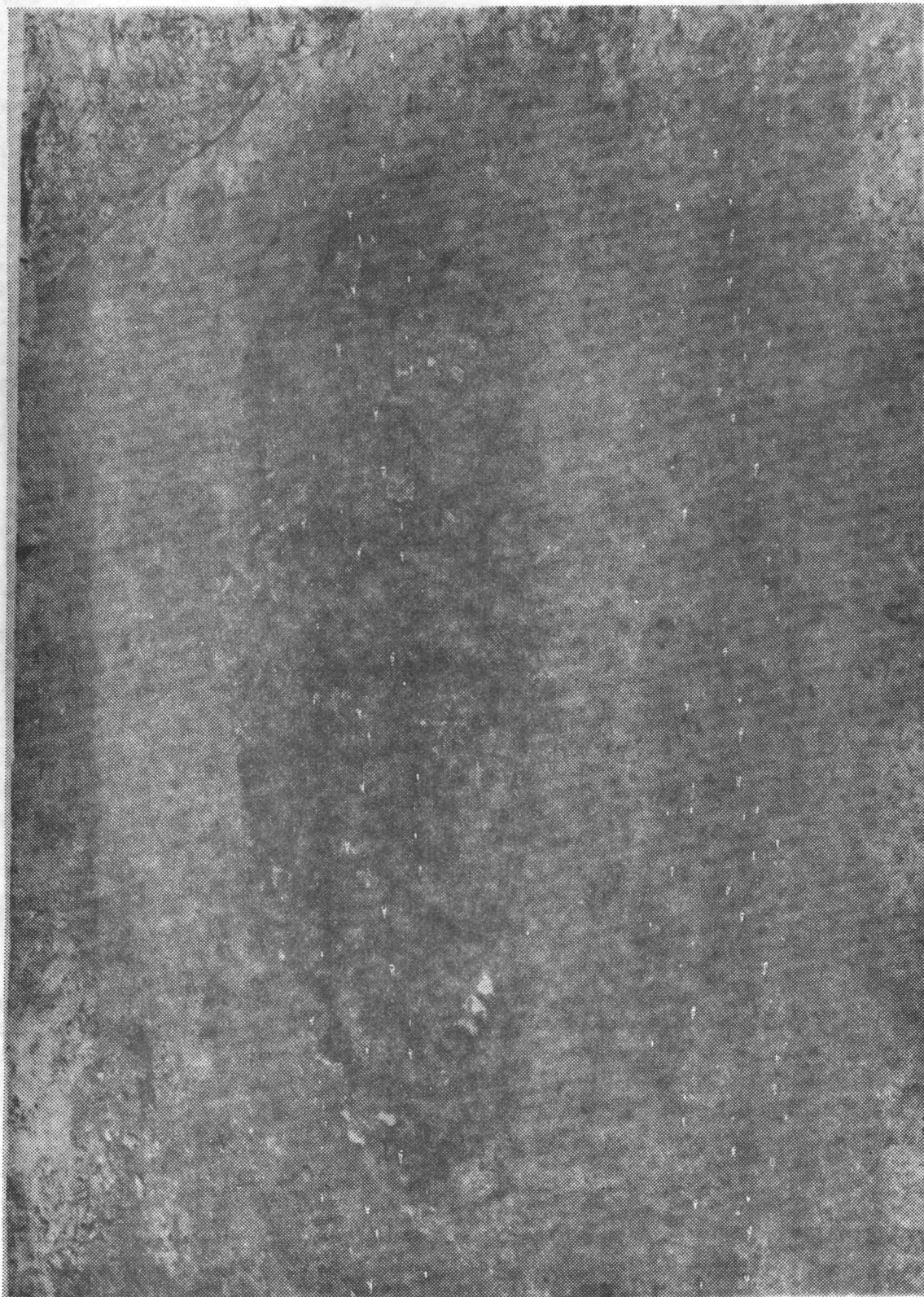
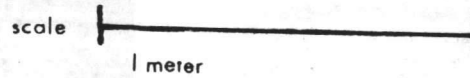
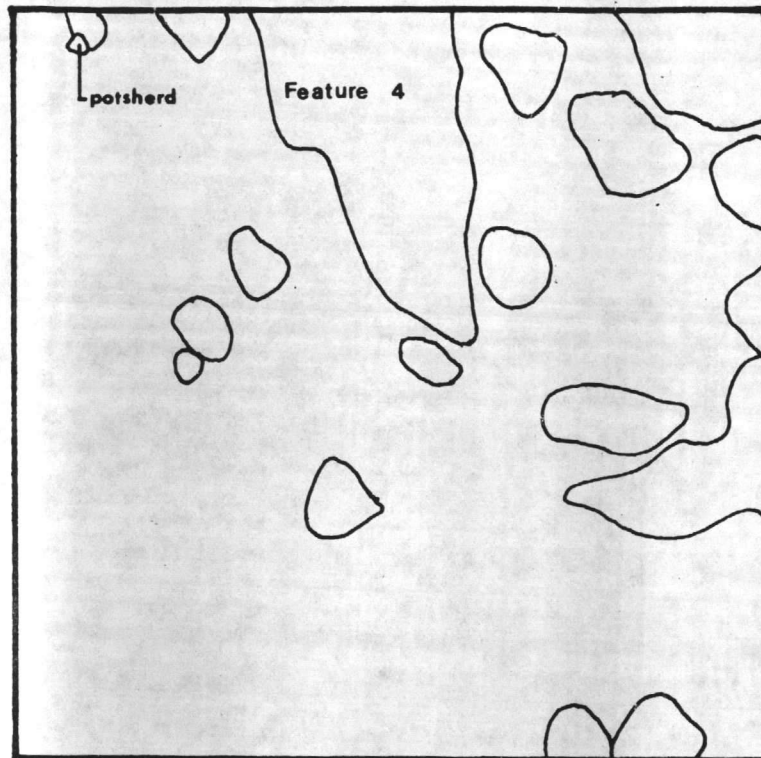




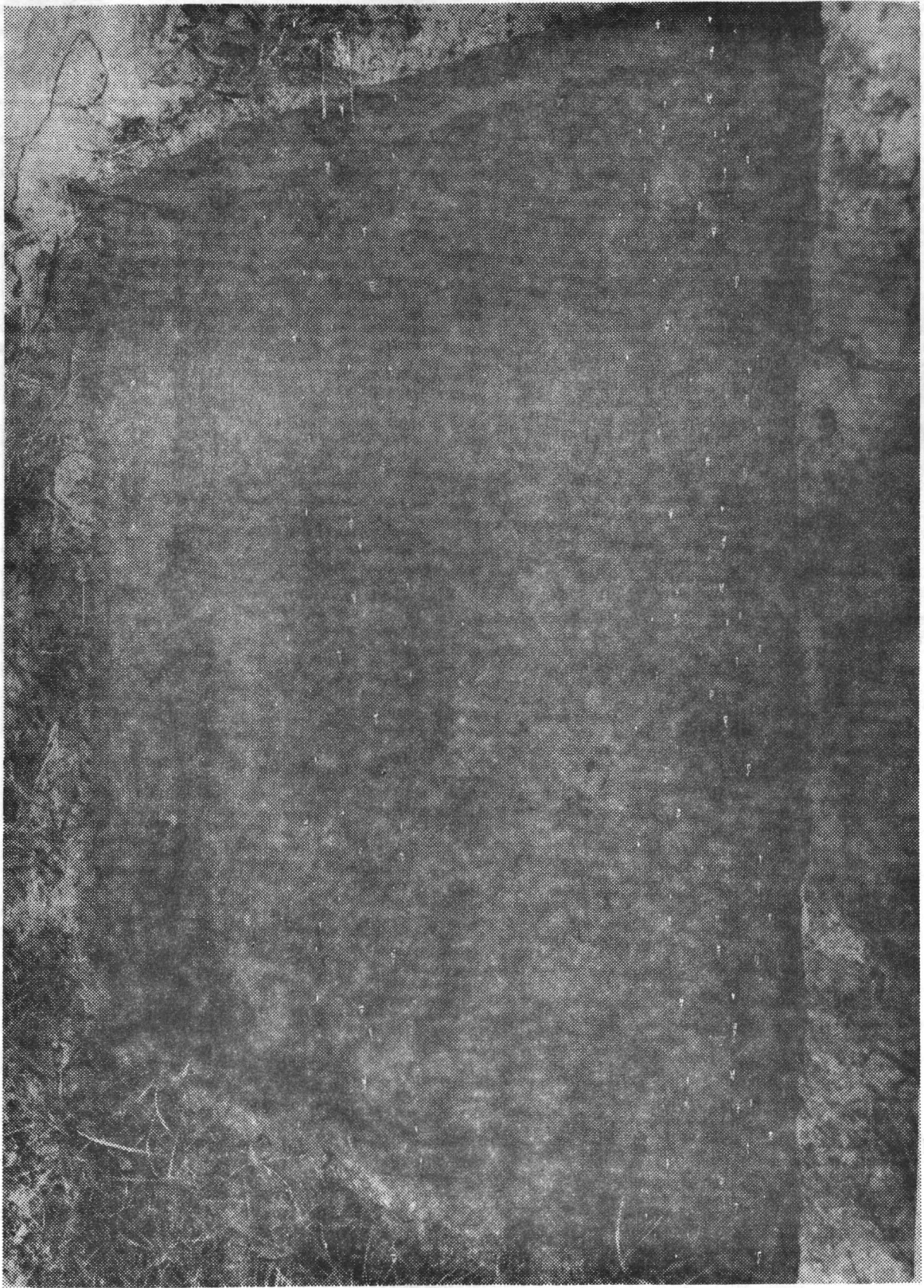
Figure 22

On^y 251

Test 2



ON^V251 Test sq. 2 at subsoil. Camera facing northeast.



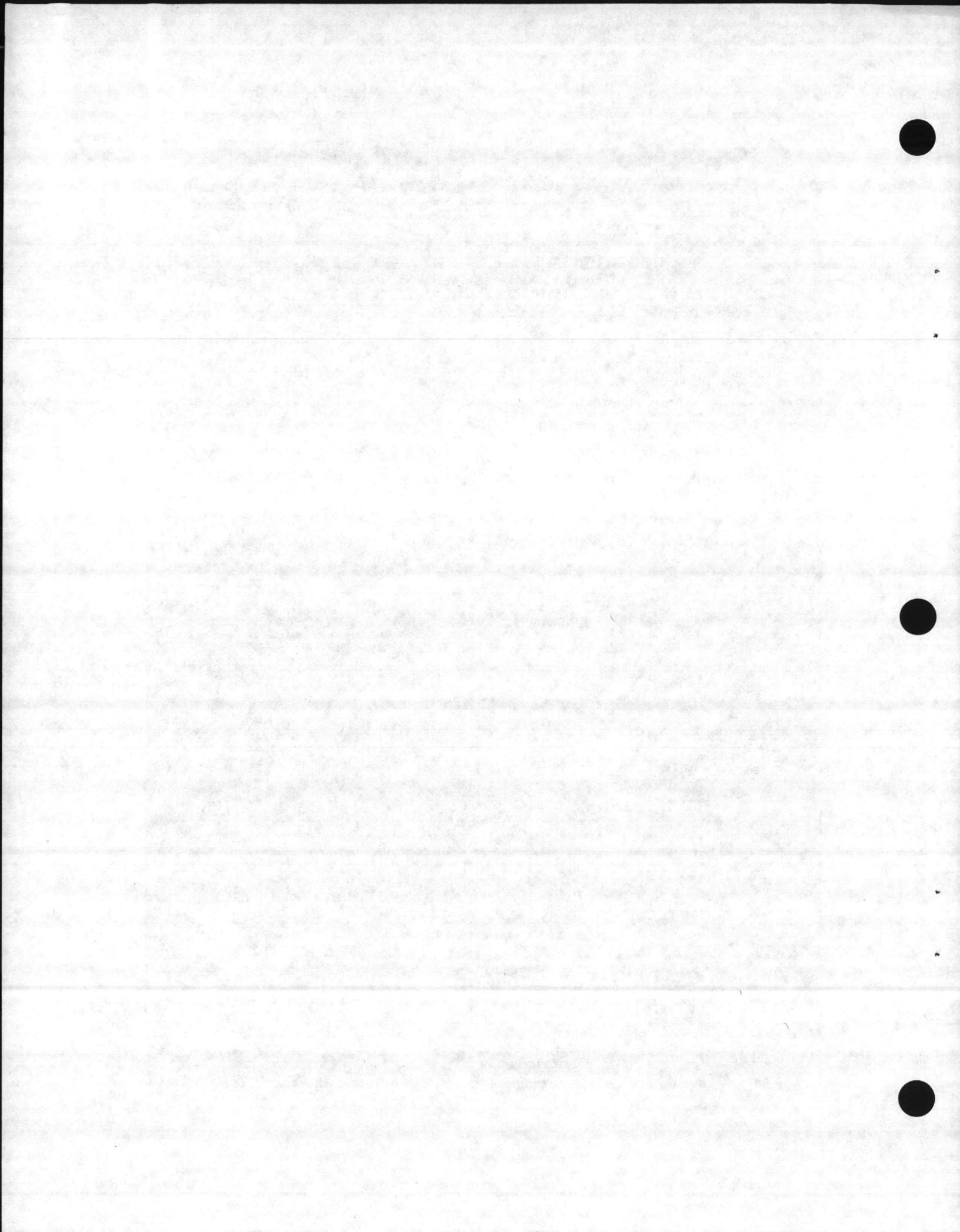
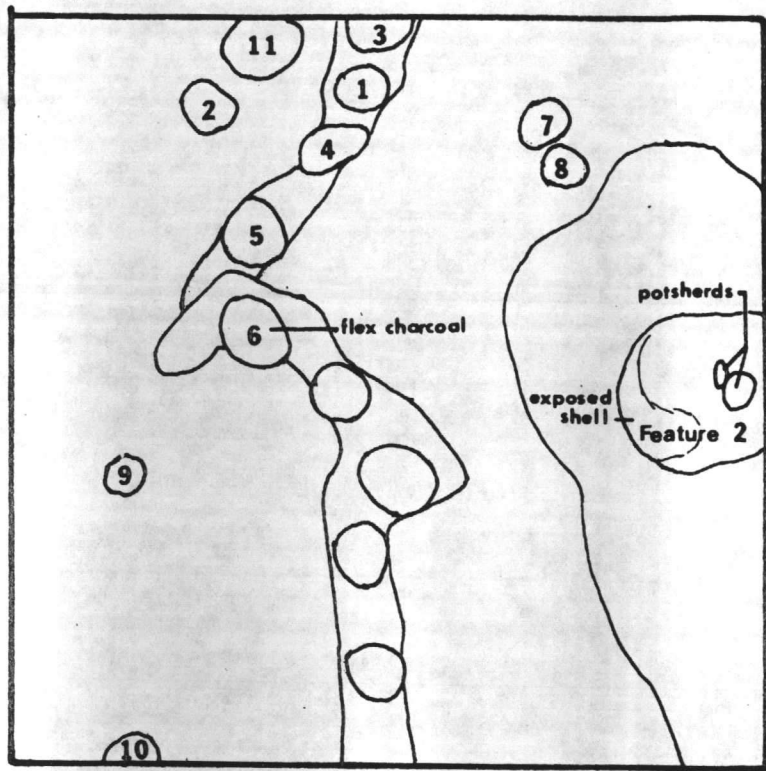


Figure 23

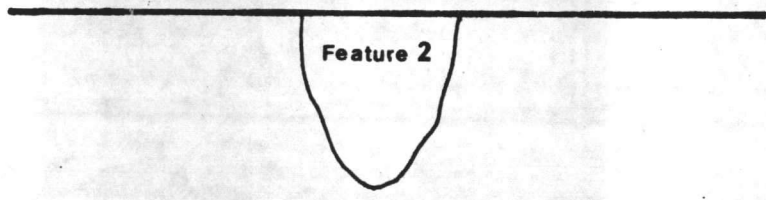
Ony 251

Test 3

Plan



Profile

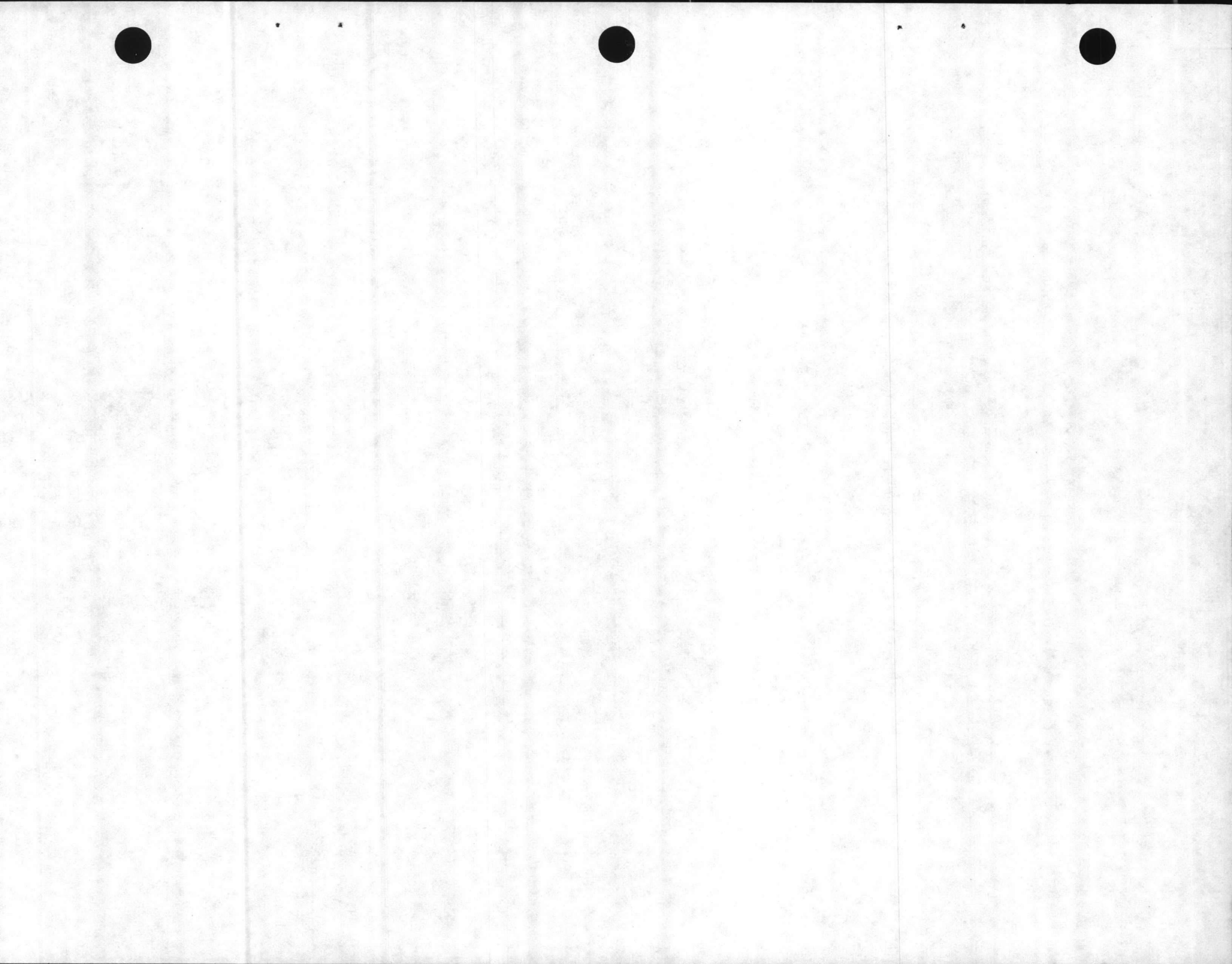


ON^V251 Test sq, 3 with feature 2. Camera facing northeast.





ONV251 Feature 2 profile. Camera facing northeast.



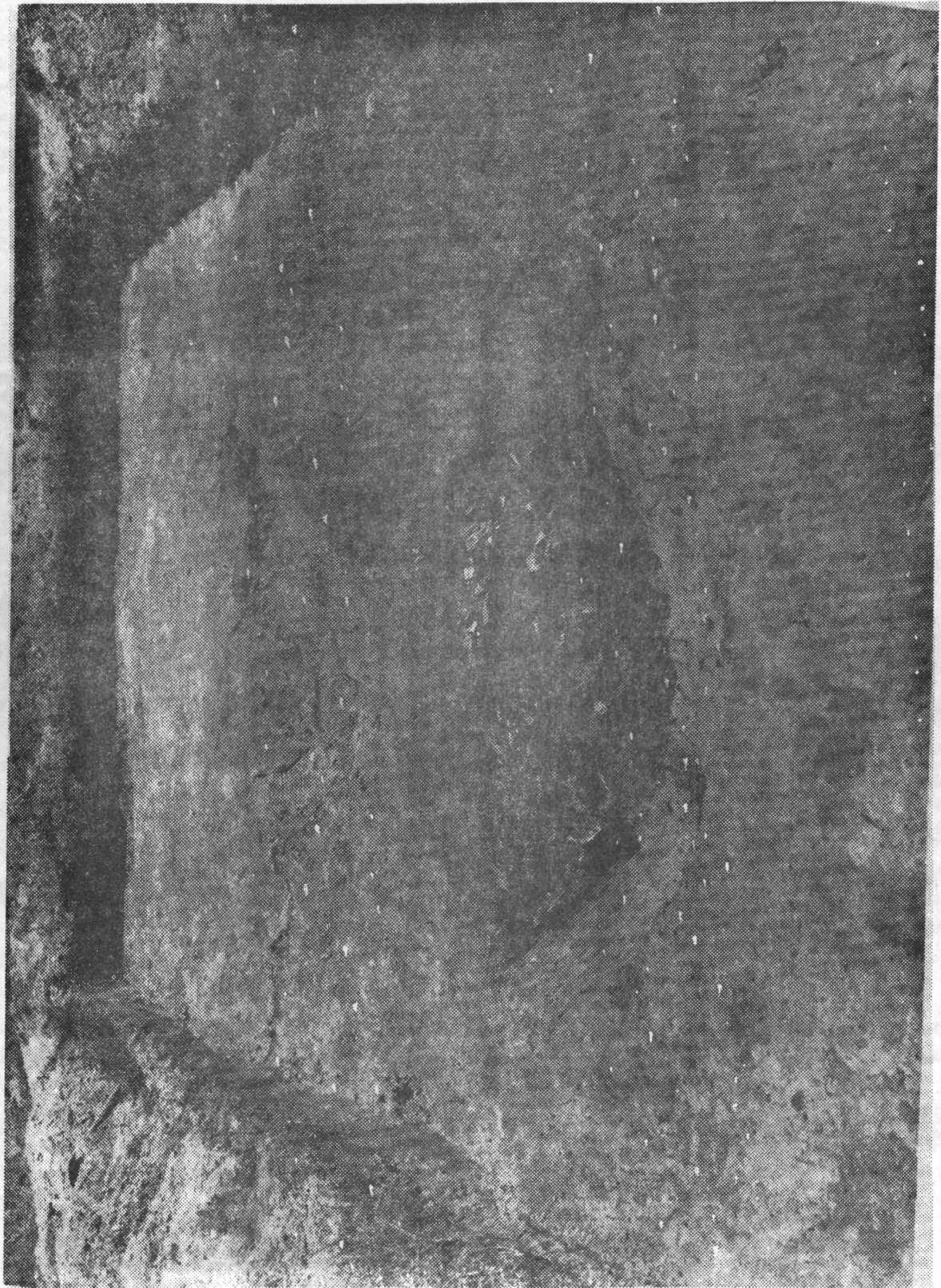


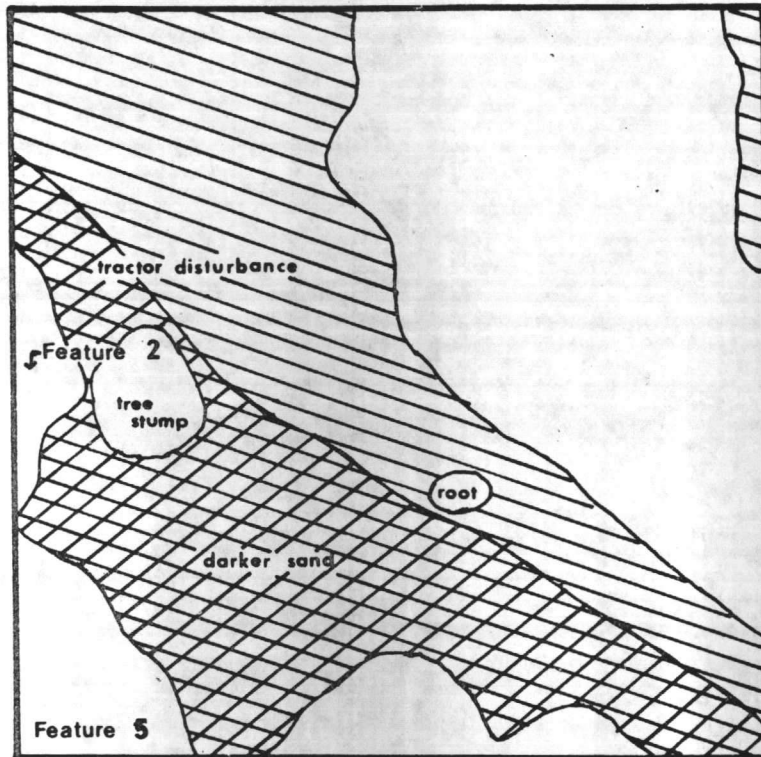


Figure 24

On Y 251

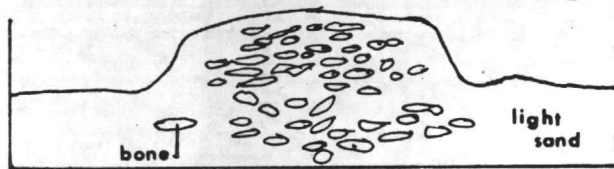
Test 5

Plan



Profile

Feature 2



ON^V251 Test sq. 5 showing feature 2. Camera facing southwest.

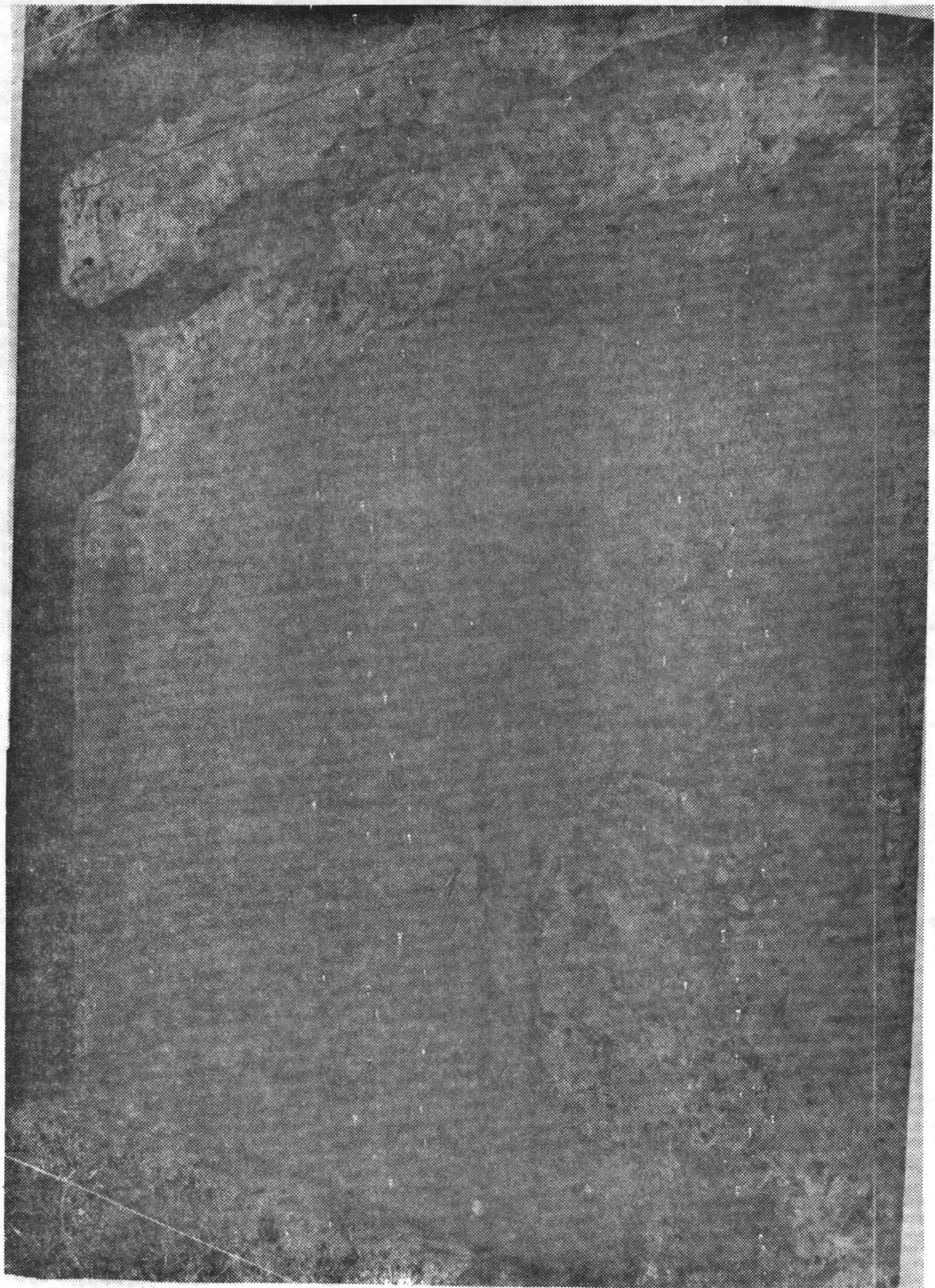


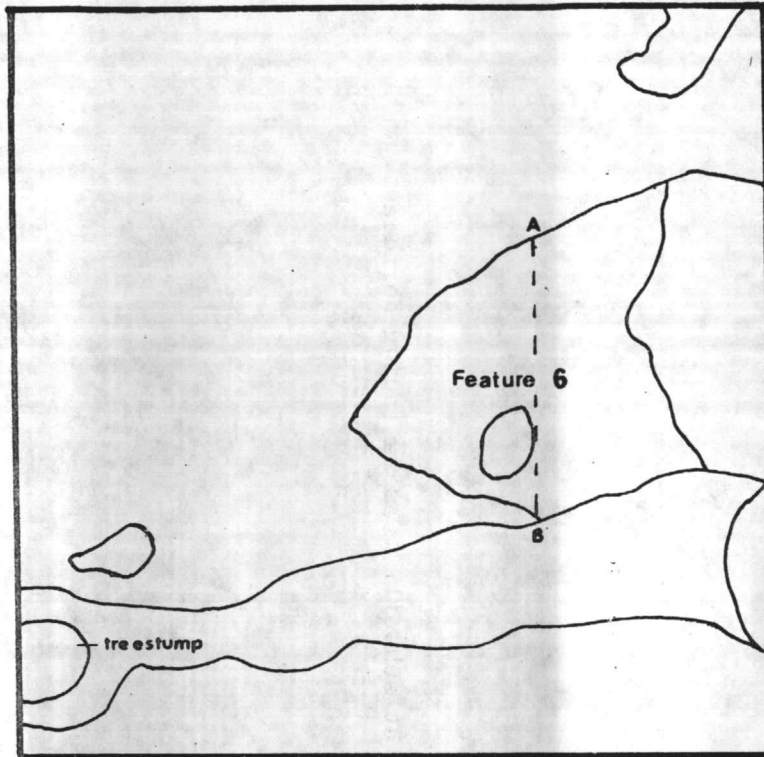


Figure 25

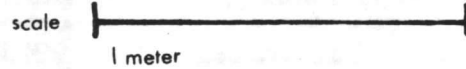
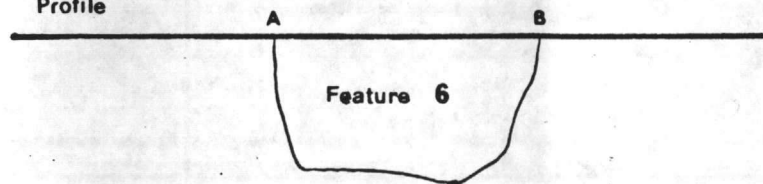
On^y 251

Test 6

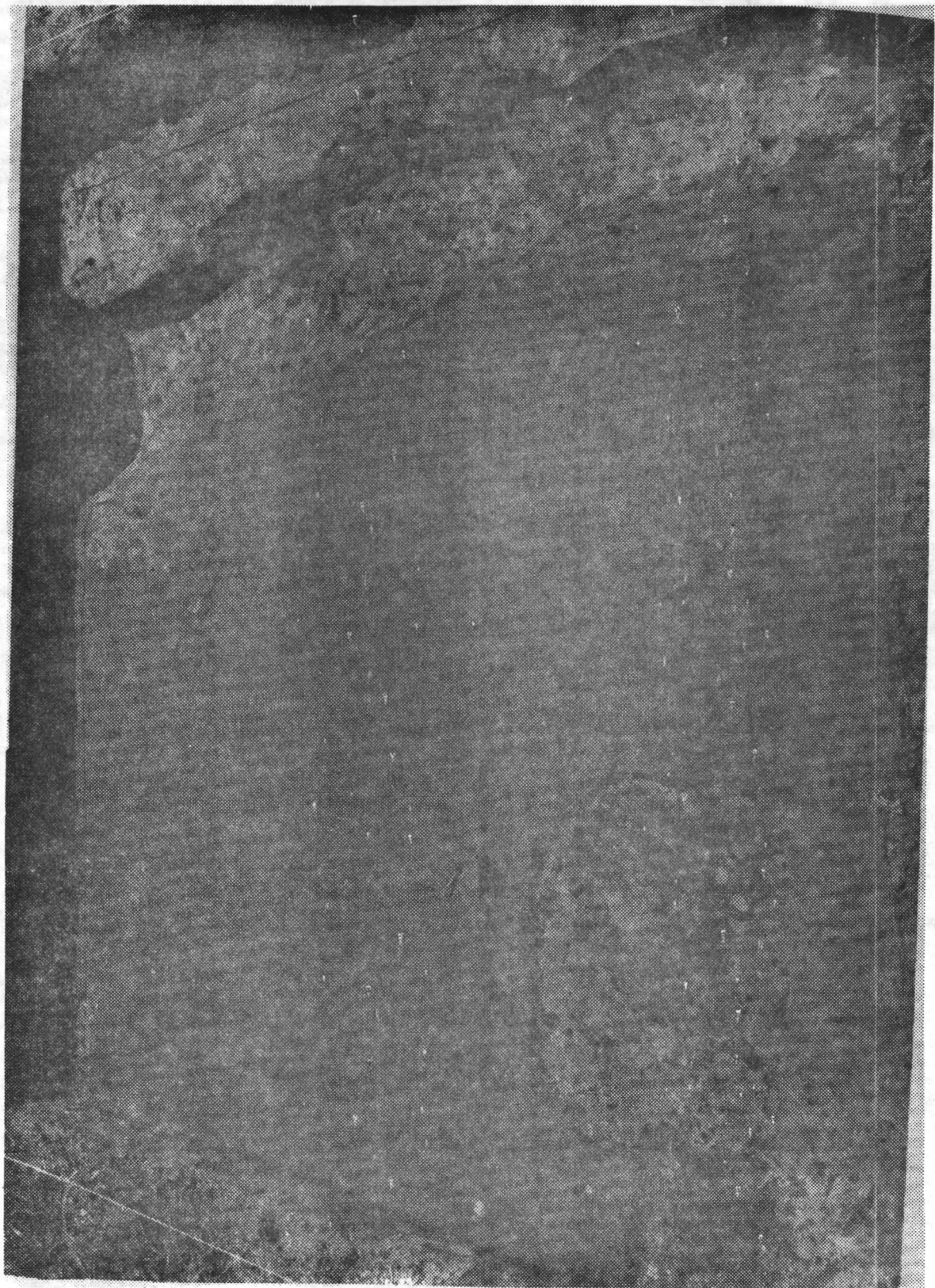
Plan

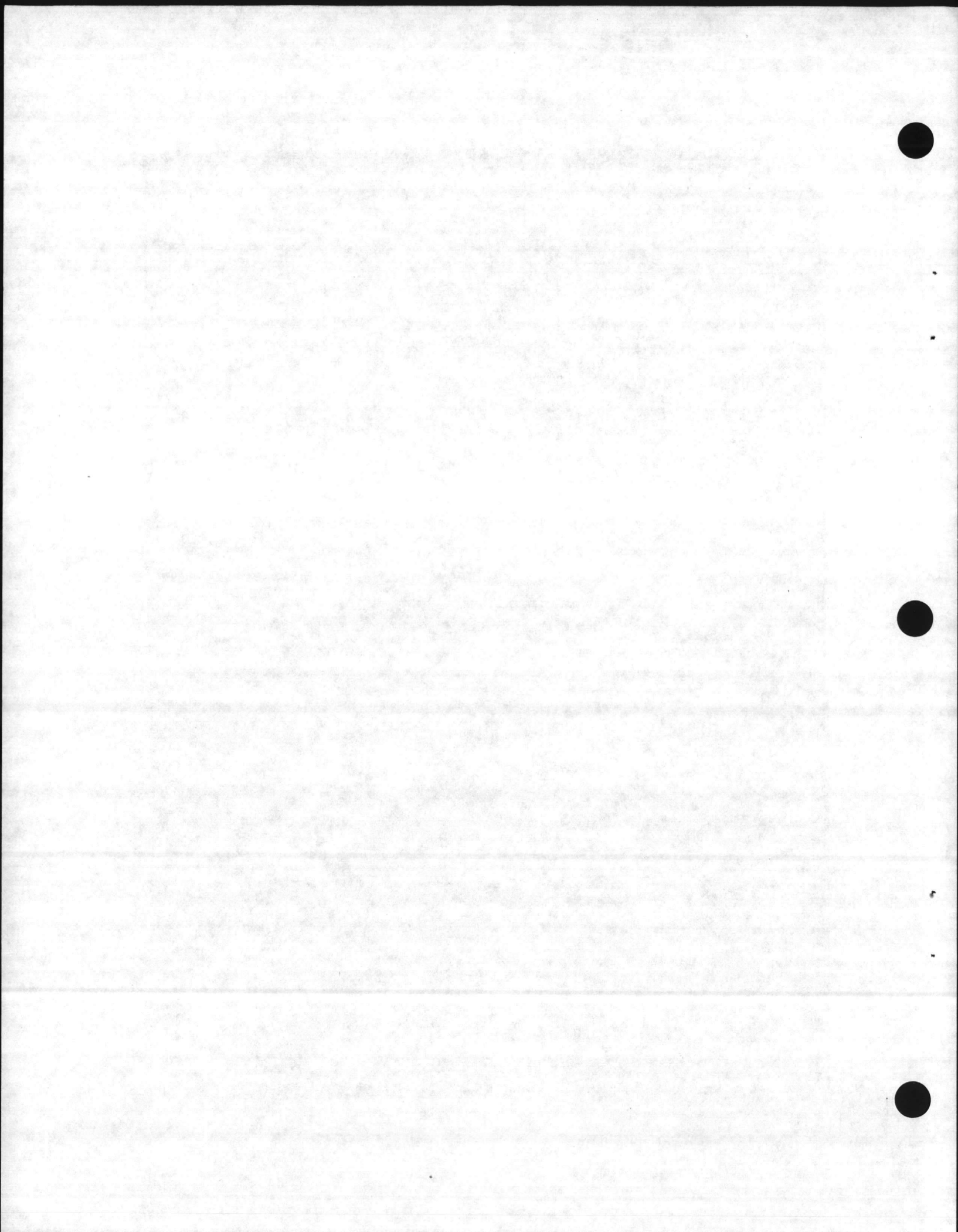


Profile



ON^V251 Test sq, 6 at subsoil. Camera facing northeast.





117p239	ON ^V 251 - Feature 2	12	potsherds
117b240	ON ^V 251 - Feature 2	9	bone
117eb241	ON ^V 251 - Feature 2		
	Flotation		
117s242	ON ^V 251 - Feature 2		
	Flotation	1	shell
117p243	ON ^V 251 - Feature 3	3	potsherds
117b244	ON ^V 251 - Feature 3	4	bone
117m245	ON ^V 251 - Feature 3	1	flake
117p246	ON ^V 251 - Feature 4	4	potsherds
117b247	ON ^V 251 - Feature 4	3	bone
117eb248	ON ^V 251 - Feature 4		charcoal
117p249	ON ^V 251 - Feature 6	4	potsherds
117b250	ON ^V 251 - Feature 6	1	bone

Additional testing:

The three additional sites at which tests were conducted all yielded negative results. At ON^V259 there was evidence on the surface of a Woodland period occupation and a late historic period occupation. The site was selected for testing because of its geophysical position, being on a small freshwater creek, rather than deep salt water or estuary. In addition the surface collection was large and the land contours suggested the possibility of soil deposition and hence preservation of subsurface cultural features. Unfortunately the testing was called off when unexploded ordinance was encountered in the vicinity.

The remaining two sites, ON^V283 and ON^V271 were also selected because of their geophysical position on the Base and comparatively large surface collections. In both cases, however, the soil had been deflated thus erasing any cultural features or stratigraphy which would have made excavation meaningful. In both cases a total of four tests were opened to verify the lack of recoverable materials at the sites.

General Summary: Phase II

The one fact which became most obvious in the testing phase at USMC Camp Lejeune was that most sites are badly damaged. This is not in the least surprising since most prehistoric occupants would have selected sites adjacent to the water's edge since for them water constituted not only transportation but

access to important food resources. The Marine Corps is, of course, the amphibious arm of the military and hence concentrates most of its activity on the same sections of shoreline that were the preferred habitats of the aboriginal populations. In addition to this destructive factor shoreline erosion has removed considerable quantities of prehistoric materials. As a consequence there are only a few sites which warrant protection or stabilization. The most prominent of these is ON^V234 which due to its enormous size has been spared the brunt of the destructive forces. The other sites investigated are already so damaged that protection as a management policy would be rather pointless. In these cases a program of salvage is recommended. These sites include ON^V240 which ranks the highest priority for mitigation, ON^V251 which ranks second in importance for mitigation and ON^V138 which warrants only further testing since no additional evidence of structures was located. ON^V105 was so unproductive and so closely approximated ON^V234 that no recommendation for protection or mitigation of any kind was made. The other sites tested showed no intact cultural evidence and so would not warrant any immediate action.

As was noted in the beginning of this section not all sites deemed worthy of mitigation were examined. Specifically omitted from testing were ON^V71, ON^V230, and ON^V250 which are known to be sites in good preservation. They are, however, located in impact and danger zones and were hence out-of-bounds for this project. The testing phase also generated data which supported earlier observations on sites at the Base. In the past it had been noted that the larger sites and indeed the sites which produced large numbers of artifacts were located in the zone which this survey called the "estuarine." Major sites were associated with either shellfish exploitation, or habitation adjacent to the estuarine waters of the area. This fits well with similar observations made for the central coast of North Carolina in general (Loftfield 1970, 1979). While the larger and more productive sites are apparently located adjacent to salt water this does not mean that NO sites are located inland. Indeed, large numbers of sites are located away from the shoreline of the estuaries and other tidal waters, but these sites have almost completely been small, produced few artifacts, and shown no evidence of either long-term occupation or occupation by large populations. In addition the general lack of soil deposition at most interior site locations has resulted in a loss of recoverable cultural features or intact stratigraphy.

There is also a detectable difference in cultural affiliation of sites located inland as compared with those on the coast itself. Inland sites tend to be earlier in time period than those on salt

water, or perhaps it is better stated that interior sites more rarely exhibit evidence of the Late Woodland shell tempered ceramics. Ceramics, when present at interior sites, tend to be tempered with sand, and with clay. As noted earlier in the report the sand temper is considered Early Woodland in time period while the clay temper is thought to be Middle Woodland.

These early ceramic wares are also found at sites adjacent to the estuarine zone, but they are not predominant. In the estuarine zone shell tempered ceramics are always the predominant ware, statistically overwhelming the earlier types. Finally, geophysical activities within the area encompassed by Camp Lejeune have tended to deflate and thus reduce the significance of sites located in inland positions while cultural activity has tended to build up deposits at estuarine zone sites making them more productive laboratories for further investigation. It is these archaeologically more significant sites that are being most severely impacted by on-going military activity, and hence it is within the estuarine zone that the most immediate demand exists for mitigating activities.

Chapter 7 Recommendations for Further Work

Recommendations for further work fall into several categories based upon the scope of the projected work, implications of existing legal requirements, and the current state of the science in archaeology. The recommendations can be most easily divided into three categories, namely, 1. Plans for Continued Discovery and Recording of Sites, 2. Plans for Protection of Sites Eligible for Inclusion on the National Register of Historic Places, and 3. Plans for Sites Not Eligible for Inclusion on the National Register of Historic Places. As such these recommendations include both prehistoric and historic sites.

Plans for Continued Discovery and Recording of Sites

It must be recognized that the 1980 survey and its antecedent surveys have in no way whatever discovered all the archaeological or historical sites located on Marine Corps Base Camp Lejeune. These surveys were intended to examine certain portions of the Base for purposes of generating a model of site location parameters and were never intended to be thorough and exhaustive. As a consequence there remains a requirement to have an established procedure for recording any archaeological or prehistoric sites that may in the future be located on the Base by Base personnel or their guests or employees or contractors in the course of any activity carried out at the Base. The easiest and most effective method for meeting this obligation would be to follow currently employed procedures. These procedures have been implemented on an informal basis and have included the funnelling of site location data originating on the Base through the Environmental Resources office to personnel at the University of North Carolina at Wilmington. The University personnel have then taken it upon themselves to record these data on appropriate forms and maps, and have forwarded the information to the North Carolina Division of Archives and History or the Research Laboratories of Anthropology at the University of North Carolina at Chapel Hill, both of which are recognized state repositories of site location information. Given the low frequency of site discovery on the Base it would probably not be cost effective to include any archaeological personnel within the Base Environmental Resources Office, although it may be appropriate for one or more of the currently employed personnel to be given some training in recognizing archaeological materials and the laws governing the obligations of the Base towards protecting those materials. This would ensure more adequate protection of archaeological and historical resources on the Base

and would ensure adequate compliance with existing and future laws and executive orders that would affect these resources.

While the current staff and archaeological personnel at the University of North Carolina at Wilmington remain strongly devoted to recording sites at Camp Lejeune and recognize the central North Carolina coast as a major area of research interest, there is no way to guarantee that this relationship will survive for an extended period of time. For that reason, while the existing channel can continue to be utilized as long as it exists, it would benefit the Base to be in stronger position to handle the data and legal requirements connected with historic preservation at the Base by itself.

Plans for Protection of Sites Eligible for Inclusion on the National Register

The strongest obligation of the Marine Corps in regards to historical properties concerns plans for protecting archaeological and historic sites that are considered eligible for inclusion on the National Register of Historic Places. Eligibility for inclusion can be based upon a number of factors which include but are not limited to the research potential of the site, the historical significance of the site, or the architectural or artistic significance of the sight.

Sites located in this survey have been analyzed according to their research potential, historic significance, and architectural and artistic significance. The recommendations contained in this report are only recommendations and do not constitute an actual determination of eligibility for inclusion on the National Register of Historic Places. It is the responsibility of the Base to prepare forms or contract to have the forms prepared requesting a determination of eligibility. These forms must be forwarded through proper channels and the determination made by the Advisory Council on Historic Preservation. If a review channel has not been formalized by the Department of the Navy, a model for this review procedure has been formulated by the Department of the Army and is contained in Technical Manual TM5-801-1.

Once a determination of eligibility has been made then legal requirements protecting and enhancing the resources at eligible sites come into play. Anticipating determinations of eligibility the following recommendations are made for further work at Camp Lejeune.

Three sites, ON^V286, ON^V290 and ON^V294 were discovered

too late in the 1980 survey to be tested. Each of these sites showed sufficient promise of subsurface features and produced sufficient numbers of artifacts to suggest their eligibility for inclusion on the National Register of Historic Places. A definite statement on potential eligibility, however, would be possible only with some testing at the sites. Test excavations at the site could easily be accomplished in a short summer field season, and it is recommended that funds be made available for the necessary testing to be accomplished. Total cost for this testing would range from \$12,000 to \$24,000 depending on contractor.

Wallace Creek Mill Dam (Mumford Mill Dam)

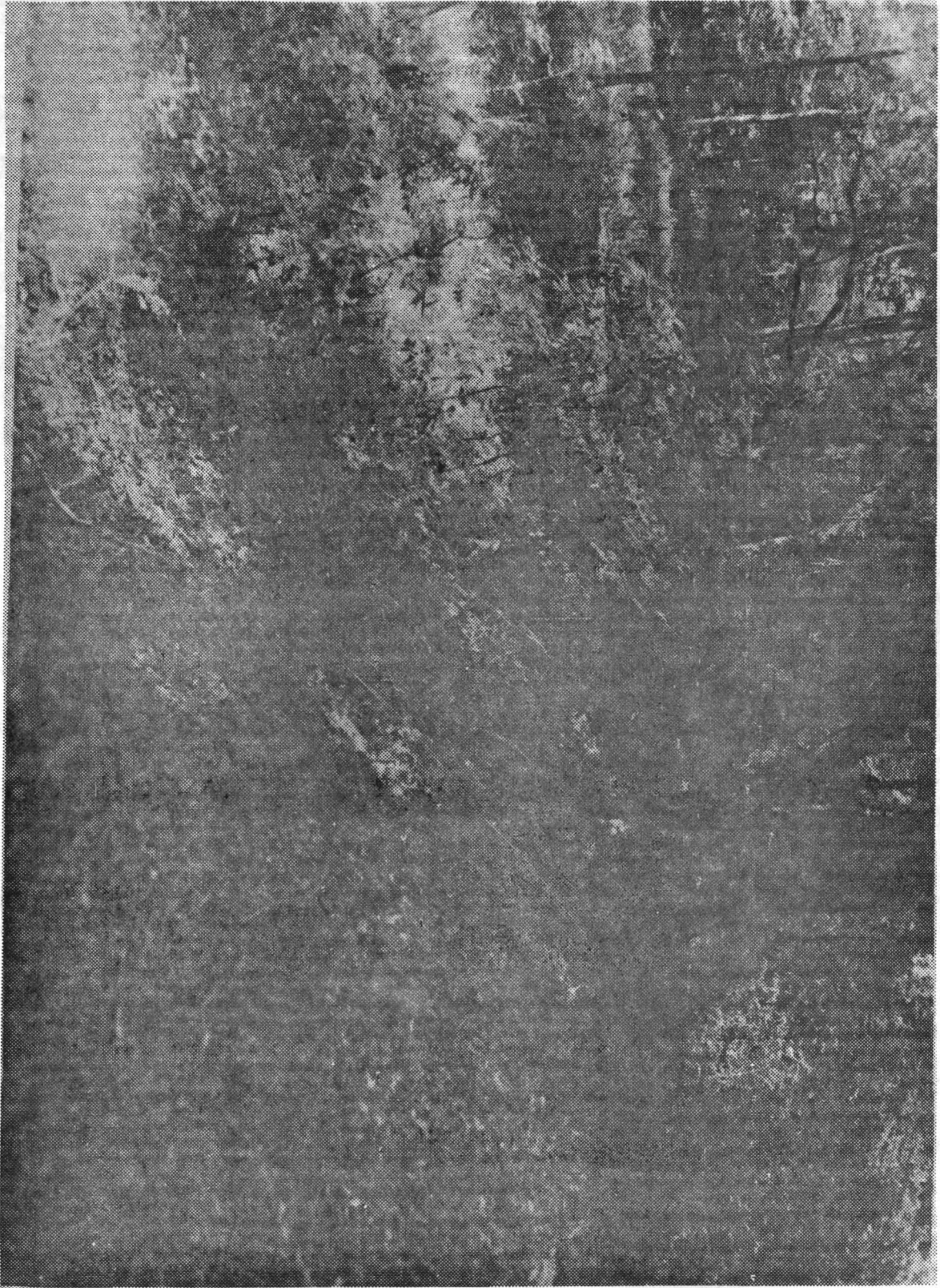
Only two sites at Camp Lejeune had above-ground construction left intact. One of these was the dam at the Mill on Wallace Creek. Originally constructed in the late eighteenth century this dam and mill was in constant use until the nineteen-thirties. The dam is in an excellent state of preservation today but is being degraded by Marine Corps training activities which have included excavation of "fox holes" and small fortifications and gun emplacements. It is recommended that all such training activities in the area surrounding the dam cease and that measures be taken to repair the existing damage and stabilize the dam to prevent further degradation or erosion. This work will not require professional personnel beyond an on-site advisory tour to indicate the areas of damage and recommend steps for mitigating the adverse impacts. Actual ground work can be performed adequately by Base personnel.

The Cray Cemetery

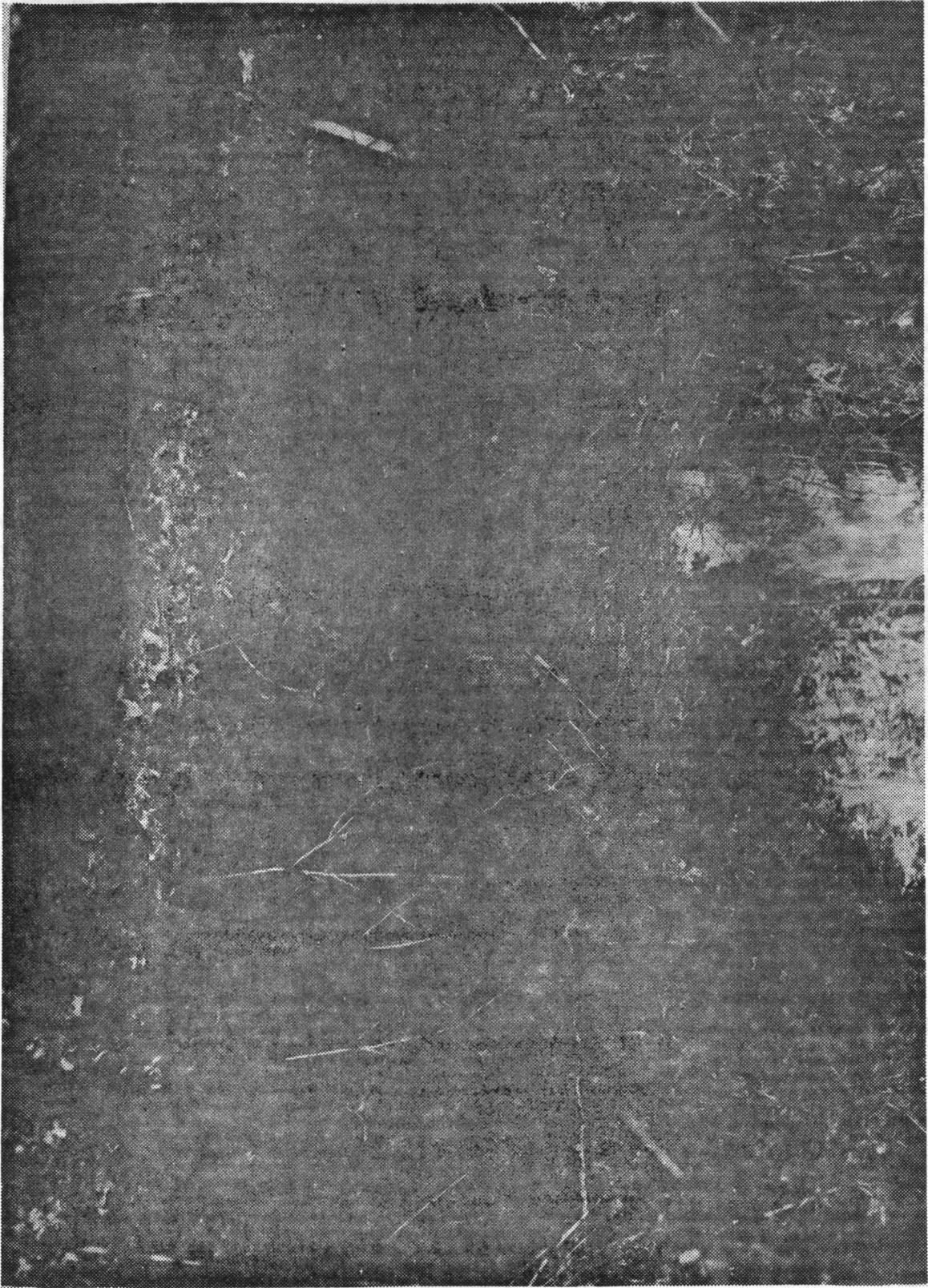
The other site with extant above-ground construction was the Cray Cemetery. Personnel from the Base Environmental Protection Office showed the survey personnel this interesting colonial site. The cemetery was surrounded by a brick wall which had been partially robbed by Base personnel in an earlier period. The cemetery has historical significance at the local and state levels and as an existing evidence of a particular style of architecture. It has been recommended as eligible for the National Register of Historic Places and warrants immediate protection from further degradation. It is recommended that the location of this cemetery be made known and that steps be taken to preclude military activity in the immediate vicinity. This should include provisions that will ensure that no further robbing of bricks occurs.

Mumford Mill dam.











Cray Cemetery.



ONV240 Jarretts Point

The site at Jarretts Point numbered ONV240 is one of the most important sites on the Base in terms of immediate research interests by the archaeological community. It is also the site suffering the most severe on-going damage from use by the Marine Corps for training activities. These activities include a helicopter landing and lifting zone and a tracked vehicle maneuvering area. The site is currently badly damaged with further damage occurring regularly. It is recommended that immediate steps be taken to mitigate the adverse impact to the site by recovering the remaining archaeological data from the ground. When data recovery is complete, the site can be eliminated from those sites eligible for the National Register of Historic Places and future activities by the Marine Corps will not constitute damage to the site.

Mitigation by salvage can be conducted in several ways. It would be possible to excavate the site rather quickly by contracting with a qualified archaeological group to conduct immediate salvage work at the site, the extent and intensity of which would need to be negotiated by the Department of the Navy, the Department of Interior, and the contractor. It is recommended by this investigator that the entire area of concern be uncovered by use of heavy machinery (such as road graders) to expose surviving subsurface features, plot the features and excavate them.

Considering the several areas of concern at ONV240 it is suggested that approximately six months of field work by a six-person crew would adequately recover the existing data. This would then be followed by at least six months of laboratory analysis. Total cost for a project of this scope would fall within a range of \$65,000 to \$120,000 depending on the contractor.

Another possibility for mitigation of this site would be to cease military activity at the site for several summers and allow the excavation to be conducted by personnel from one or more universities that might be interested in the data that would be recovered. While this program would take longer than the program outlines above it would probably have a much lower dollar cost. It is estimated that approaching the site in this fashion would require two summer field seasons and cost approximately \$30,000 to \$60,000 again depending on the contractor.

The third possibility for mitigation at this site would be to eliminate military activity altogether.

Evaluating the above recommendations would lead one to several

conclusions. Only Base personnel can determine the advisability of ceasing military activity at the site altogether, for several years, or for only a short period of time. From an archaeological perspective the option of ceasing military activity altogether is the most desired option. If that is not feasible then the prolonged excavation procedure is preferred as it provides time for reflection and interim analysis of data. The quick salvage is least preferred as it necessitates rapid work with no time for interim analysis or reflection on results.

ON^V 138

This colonial period historic site showed some evidence of intact subsurface features, but the extent of the site could not be determined in the 1980 survey. The site is actively being damaged through erosion caused by maintenance of the landing strip at TLZ Bluebird. It is suggested that serious steps be taken to stabilize the area. Salvage excavation may be in order if this area is to continue to see heavy military activity. The three approaches discussed for ON^V 240, above, may be applied here as well.

Other Eligible Sites

No other sites considered eligible for inclusion on the National Register of Historic Places that were visited in 1980 showed evidence of active degradation by military activities. Indeed, most sites showed that activities were conducted at the sites which tended to stabilize and preserve them. The activities included bulkheading at sites that were actively eroding such as ON^V 251, reforestation such as at ON^V 234, or use as wild-life feed plots. While the use as feed plots does entail some plowing, it is not thought that the plowing activity is actively degrading the sites. The reservation of these feed plot areas from other military activity is a benefit in that site damaging activities are thus precluded.

It is recommended that as long as these enhancement activities are continued at these eligible sites, no additional precautions need be taken in their behalf.

Plans for Sites Not Considered Eligible for Inclusion on the National Register

The Marine Corps is not legally required to protect sites

that are not considered eligible for the National Register of Historic Places. However, if any of these sites can be protected without expenditures of any funds or without compromising any existing programs at the Base, such protection should be extended. This is considered especially important in the case of those eight sites which were considered to be ineligible for the National Register but which seemed to have some potential for future research. These sites are ON^V105, ON^V259, ON^V271, ON^V275, ON^V279, ON^V284 and ON^V291.

Chapter 8
Oak Grove

Oak Grove Marine Corps Base, located near Pollocksville in Jones County, North Carolina serves as an auxiliary landing base for Marine Corps Base Camp Lejeune. As such it was included in the general survey of Camp Lejeune, although it is geographically discontinuous with the main base. Its location is still within the greater physiographic coastal plain, but enjoys a slightly more inland situation. As such there is no direct access to estuarine or marine resources, although the Base does confront the Trent River. It is this river which provides the predominant physiographic feature of the base, the river valley. As is typical of most areas along the coast and indeed further inland as well, the majority of archaeological sites were discovered adjacent to the river which would have served as a primary route of transportation, a source of foods, and of fresh water. The portions of the Base not adjacent to the river have all been seriously damaged by Base activities and construction. As a consequence it is the areas along the river which are archaeologically most sensitive.

The survey methodology at this Base was identical to that employed at Camp Lejeune. Analytical procedures paralleled those employed at Camp Lejeune except that no computer analysis of the results was employed due to the small number of sites and the small total acreage involved. It was simply more cost-effective to handle the data by hand.

The archaeological survey of the Oak Grove outlying landing field revealed eight sites, predictably close to the Trent River. The survey was hampered by the lack of an adequate Base map. Those maps provided were incomplete and outdated so that some locational data is imprecise.

The small percentage of open ground at the Base necessitated shovel testing in many areas with an attendant drop in ground area surveyed. Thus several areas that appeared topographically to be desirable for habitation showed no signs of occupation.

The most productive area of the Base lies along the southern perimeter, within 100 meters of the Trent River. This fact was predictable, given the importance of the rivers on the southeast as means of transportation and as a source of food. Along this stretch of the river the most common topographic situation is one in which knolls rise moderately from an initial steep river bank, leveling off, and then gradually sloping towards the North, or the interior of the base. Usually the knolls achieve their highest

elevation within 50 meters of the river bank, however, there are notable exceptions. At JN^V10 the ground rises gradually from the river, not leveling off until 150 meters inland. JN^V13 and JN^V17 the river bank rises over 10 feet and immediately leveling within 5 meters of the river's edge. There are areas where the initially steep rise is not noted. The river edge at JN^V12 is a cyprus swamp where the ground fails to rise substantially until approximately 20 meters from the river.

No sites were discovered any farther inland than 150 meters from the river though routine tests were conducted in these areas. The survey concentrated primarily on the boundary areas of the base since the interior has been completely disturbed with base facilities.

Site Number JN^V10

This site lies in a field directly south of runway #36 on the Oak Grove Helicopter Landing area of the Base. The field encompasses roughly 1 acre and is transected and accessible by a fire road roughly paralleling the Trent River to the south. The soil consists of a recently plowed sandy loam, with the result that the topsoil has been completely removed. Some reforestation has been completed in the westernmost area of the field. The subsoil, when the natural strata is intact, is a tan sand, now exposed due to disturbance of the area. The field lies at or near the top of a knoll rising evenly from an initially steep river bank, which seems to be characteristic of the Trent River in the southeastern region of the base.

Only prehistoric artifacts were recovered from this site. These include two gravel/sand tempered potsherds, several chipped stones, numerous flakes, and one projectile point tip. A test square on the site recovered more chipped stones and flakes, however, no more ceramic artifacts were recovered. In the test, stratigraphy was not intact and no subsurface features were noted.

117a1	JN ^V 10 - Surface	1	point tip
117p2	JN ^V 10 - Surface	2	potsherds
117m3	JN ^V 10 - Surface	2	flakes
117m4	JN ^V 10 - Surface	8	odd rocks
117m5	JN ^V 10 - Test 2	3	flakes
117m6	JN ^V 10 - Test 2	28	odd rocks

Site Number JN^V11

This site lies approximately 50 meters north of the Trent River and is accessible by a fire road running more or less parallel to the river at the south side of Marine Corps Base Oak Grove and directly south of a taxi strip which parallels runway 36. The site is at the crest of a knoll rising moderately from the river. The area is forested in pine and oak and no disturbance was noted except for the fire road cut which runs east-west. The soil is predominantly sandy with some clay evident in subsurface layers.

Due to dense ground cover a visual survey was impossible. Instead a shovel test was executed revealing 2 flakes, or evidence enough to merit the area as a site.

117m7 JN^V11 - Surface 2 flakes

Site Number JN^V12

This site lies atop a knoll approximately 30 meters north of the Trent River which bounds Marine Corp Base Oak Grove to the South. The site is accessible by a fire road running more or less parallel to the river, and approximately 10 meters east of the intersection of a fire trail, originating almost exactly halfway along runway #27. The knoll rises moderately from a swampy area adjacent to the river. The area is forested in pine and oak and no disturbance was noted except for the fire road cut which runs approximately parallel to the river. The soil is predominantly sandy with some clay evident in subsurface layers.

Due to dense ground cover, a visual survey was impossible. Instead, a shovel test was executed at the crest of the knoll, revealing one chipped stone and 3 flakes.

117m8 JN^V12 - Surface 3 flakes
117m9 JN^V12 - Surface 1 odd rocks

Site Number JN^V13

This site lies atop a knoll rising sharply from the Trent River along the southern perimeter of Marine Corp Base Oak Grove,

approximately 60 meters east of a sharp bend in the river. The area is used as a bivouac area and has received considerable damage due to ground clearing and intrenching, the the larger pines and hardwoods are still intact. Some structures are present, indicating that the area has received a great deal of use by the Marine Corps. The site is accessible by the main fire road running more or less parallel to the river, and lies approximately 150 meters east of the Base Area 2 Camp. Soil is predominantly sandy loam with clay deposits in subsurface layers exposed by the trenches still open in the area.

The visual survey consisted mainly of examining the dirt piles surrounding the numerous trenches, and it was here that the vast majority of artifacts were recovered. Artifact yield in other areas was extremely low due probably to the surface disturbance in the area. Artifacts were all prehistoric and consisted of 2 potsherds, and numerous chipped stones and flakes. This site is potentially important due to its topography, however, massive disturbance to the area may have destroyed a large percent of the site.

117p10	JN ^V 13 - Surface	2	potsherds
117m11	JN ^V 13 - Surface	33	flakes
117m12	JN ^V 13 - Surface	2	odd rocks

JN^V14

To reach this site at Marine Corp Base Oak Grove, turn right at the hunters' check in on the paved right when entering the base. 200 meters down, bear left at the fork and continue on the road until Area 2 camp is reached. The site lies between the Trent River, to the south, and a fire road which is to the north.

JN^V14 is on the first terrace above the river, in a manmade clearing extending 100 meters from water. The soil is of a sandy loam composition and has been subject to light erosion down its gentle slope. The surrounding area is densely covered with vegetation, making visual surveying extremely difficult.

Only prehistoric artifacts were recovered from this particular site. These included numerous flakes, chipped stone and a few potsherds. The ground at this site has been disturbed to a great degree due to topographic changes in setting up the camp and picnic facilities which now occupy the site.

117p13	JN ^V 14 - Area 2 Campsite		
	Surface	17	potsherds

117m14	JN ^V - Surface	1	bottle glass
117m15	JN ^V - Surface	1	flake

JN^V15

JN^V15 is located by moving further west along the same fire trail used to reach JN^V14. It is also bounded to the north by the fire trail and by the Trent River to the south. It lies approximately 50 meters from the river, at the crest of a wooded knoll. The knoll slopes south down to the water and is covered with ground vegetation. The soil is made up of a sandy loam type.

Here again, only prehistoric artifacts were found from the area surveyed. Found were two chipped stones. Considering the limited artifact yield in such a heavily wooded area, there is in all probability, minimal potential for the site, however, due to dense ground cover, a more productive visual survey of the area was impossible.

117m16	JN ^V 15 - Surface	2	odd rocks
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JN^V16

This site lies approximately 400 meters west of the Area 2 camp and is accessible by an overgrown fire trail which leads off the main fire road due south of the south-westernmost tip of the landing strip complex. The site lies atop a large knoll rising moderately from the Trent River, approximately 50 meters south. The area is densely forested in pine and hardwood and visual survey would have been impossible except for intrenchment in the area by the Marine Corps. Otherwise, the area is undisturbed, however, the Marine fighting holes cover a large percentage of the area. The soil is sandy loam with some clay deposits evident in the sub-surface layers.

Only prehistoric artifacts were recovered from this site and no ceramics were found. Artifacts included numerous chipped stones and flakes.

117m17	JN ^V 16 - Surface	33	flakes
117m18	JN ^V 16 - Surface	6	odd rocks

JN^V17

JN^V17 lies on a bluff rising sharply from the Trent River on Marine Corp Base Oak Grove property. It is accessible by a dirt road which forks to the right off the main fire road, due south-

west of landing strip #5. Approximately 125 meters along this road, several trails lead off in the direction of the river and all of these lead to a level clearing adjacent to the river in which JN^V17 is located. The area has been cleared of all natural vegetation and is sowed in grass. It is evident that grading has taken place by dirt mounds along the perimeter of the clearing. Outside the clearing, the area seems undisturbed, leaving the natural strata and vegetation intact.

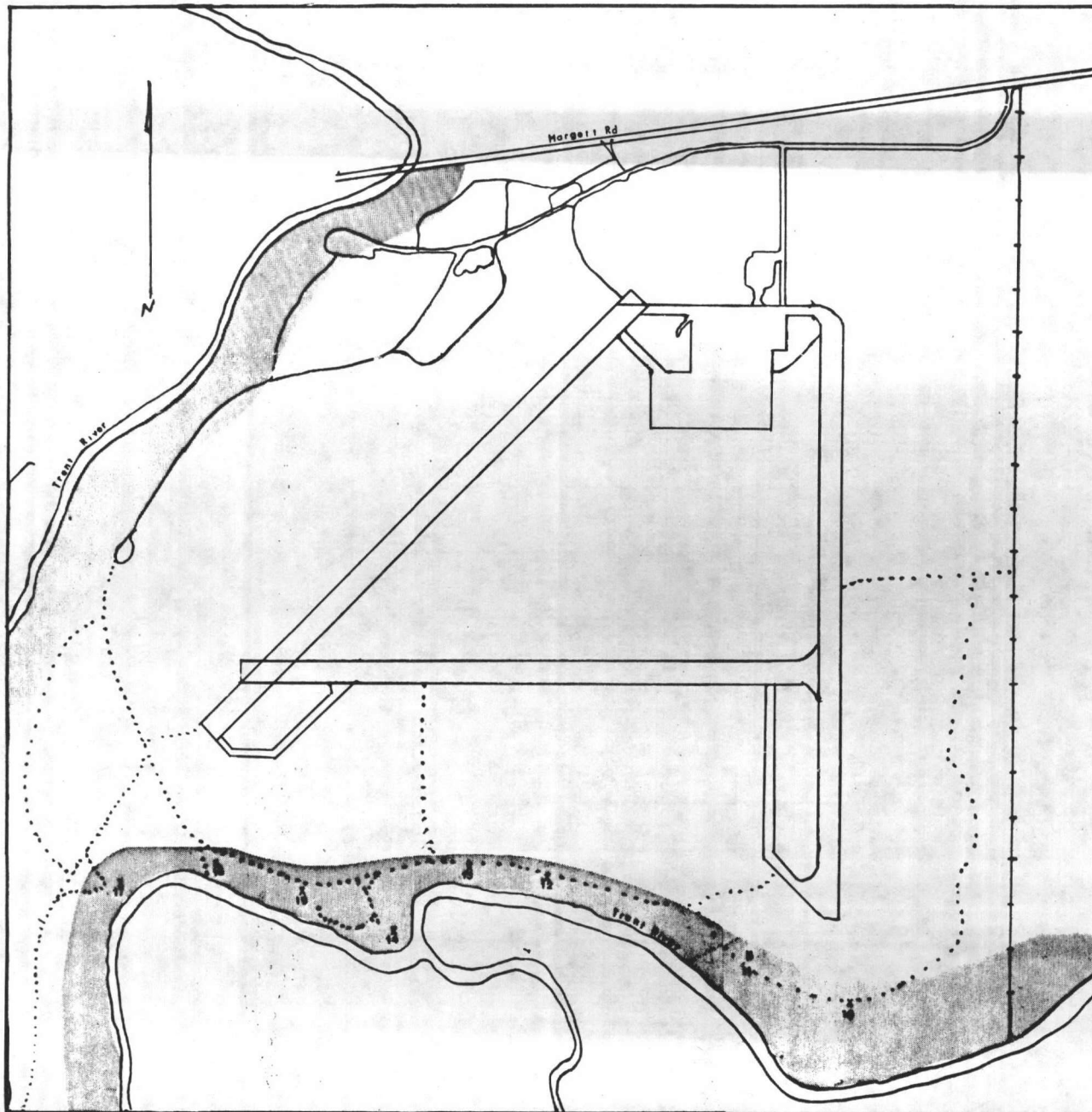
During a visual survey of the clearing, only prehistoric artifacts were recovered, and it was at this site that the highest number of ceramic artifacts were recovered. Also recovered were numerous chipped stones and flakes. Two test pits were dug on the site, one including an eroding gully, and another outside the disturbed area. The test at the gully produced 1 projectile point and a few chipped stones. The test outside the clearing produced many chipped stones and flakes, but neither pit yielded more ceramics.

117p19	JN ^V 17 - Surface	9	potsherds
117m20	JN ^V 17 - Surface	15	flakes
117m21	JN ^V 17 - Surface	7	odd rocks
117m22	JN ^V 17 - Test 1	74	flakes
117m23	JN ^V 17 - Test 1	4	odd rocks
117a24	JN ^V 17 - Test 2 Feature 1-1		point
117m25	JN ^V 17 - Test 2 Feature 1-4		odd rocks

None of the sites located at Marine Corp Base Oak Grove were considered eligible for inclusion on the National Register of Historic Places. They were all either unproductive or damaged. The two sites at which subsurface testing was undertaken showed no evidence of subsurface features or intact stratigraphy. All sites for which a cultural affiliation could be assigned dated to the Middle Woodland cultural period as evidenced by gravel tempered ceramics of the Onslow Series.

Sensitive areas at Oak Grove will follow the same parameters as the sensitive areas at Camp Lejeune.





OAK GROVE AIRFIELD

■ Sensitive Areas
x Sites

scale





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Appendix One
Computer Generated Survey Statistics

ELDIFF BY CULTAFF DIFFERENCE IN SITE AND WATER ELEVATIONS (GROUP) COMBINED CULTURAL AFFILIATION VARS

CULTAFF		CULTURAL AFFILIATION VARS						ROW TOTAL
COUNT	ROW PCT	MIDDLE IRCHAIC	A ARCHAIC UNDET.	EARLY WO ODLAND	MIDDLE W OODLAND	LATE WOOD UNDET.		
COL PCT	TAB PCT	1	2	3	4	5	6	
0		1 16.7 33.3 2.4	1 16.7 100.0 2.4	3 50.0 30.0 7.3	4 66.7 20.0 9.8	2 33.3 9.1 4.9	0 0.0 0.0 0.0	14.6
4		0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 4.5 2.4	0 0.0 0.0 0.0	2.4
5		0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 33.3 20.0 4.9	3 50.0 15.0 7.3	6 100.0 27.3 14.6	0 0.0 0.0 0.0	14.6
6		0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 4.5 2.4	0 0.0 0.0 0.0	2.4
8		0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 5.0 2.4	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2.4
10		2 11.1 66.7 4.9	0 0.0 0.0 0.0	2 11.1 20.0 4.9	9 50.0 45.0 22.0	10 55.6 45.5 24.4	3 16.7 60.0 7.3	43.9
COLUMN TOTAL		7.3	2.4	24.4	48.8	53.7	12.2	100.0

PERCENTS AND TOTALS BASED ON RESPONDENTS
(CONTINUED)

ELDIFF DIFFERENCE IN SITE AND WATER ELEVATIONS
 BY CULTAFF (GROUP) COMBINED CULTURAL AFFILIATION VARS

CULTAFF

ELDIFF	COUNT ROW PCT CUL PCT TAB PCT	CULTAFF						ROW TOTAL
		MIDDLE IRCHAIC	A ARCHAIC UNDET.	EARLY WO ODLAND	MIDDLE W OODLAND	LATE WO DLAND	WOODLAND UNDET.	
		1	2	3	4	5	6	
12	0	0	0	0	0	0	1	1
	0.0	0.0	0.0	0.0	0.0	0.0	100.0	2.4
	0.0	0.0	0.0	0.0	0.0	0.0	20.0	
	0.0	0.0	0.0	0.0	0.0	0.0	2.4	
15	0	0	0	0	0	0	1	1
	0.0	0.0	0.0	0.0	0.0	0.0	100.0	2.4
	0.0	0.0	0.0	0.0	0.0	0.0	20.0	
	0.0	0.0	0.0	0.0	0.0	0.0	2.4	
20	0	0	0	2	1	1	0	3
	0.0	0.0	0.0	66.7	33.3	33.3	0.0	7.3
	0.0	0.0	0.0	20.0	5.0	4.5	0.0	
	0.0	0.0	0.0	4.9	2.4	2.4	0.0	
25	0	0	0	1	1	0	0	2
	0.0	0.0	0.0	50.0	50.0	0.0	0.0	4.9
	0.0	0.0	0.0	10.0	5.0	0.0	0.0	
	0.0	0.0	0.0	2.4	2.4	0.0	0.0	
30	0	0	0	0	1	1	0	1
	0.0	0.0	0.0	0.0	100.0	100.0	0.0	2.4
	0.0	0.0	0.0	0.0	5.0	4.5	0.0	
	0.0	0.0	0.0	0.0	2.4	2.4	0.0	
COLUMN TOTAL		3	1	10	20	22	5	41
		7.3	2.4	24.4	48.8	53.7	12.2	100.0

PERCENTS AND TOTALS BASED ON RESPONDENTS

41 VALID CASES

17 MISSING CASES

WATERE ELEV. OF NEAREST PERM. WATER IN FEET
 BY CULTAFF (GROUP) COMBINED CULTURAL AFFILIATION VARS

		CULTAFF						
COUNT	IMIDDLE	A	ARCHAIC	EARLY WO	MIDDLE W	LATE WO	WOODLAND	ROW
ROW PCT	IRCHAIC	UNDET.	UNDET.	ODLAND	OODLAND	DLAND	UNDET.	TOTAL
COL PCT	1	2	3	4	5	6		
TAB PCT	I	I	I	I	I	I	I	
0	2	0	5	9	14	4		25
	8.0	0.0	20.0	36.0	56.0	16.0		61.0
	66.7	0.0	50.0	45.0	63.6	80.0		
	4.9	0.0	12.2	22.0	34.1	9.8		
5	0	0	1	1	1	0		2
	0.0	0.0	50.0	50.0	50.0	0.0		4.9
	0.0	0.0	10.0	5.0	4.5	0.0		
	0.0	0.0	2.4	2.4	2.4	0.0		
10	1	0	4	9	5	1		11
	9.1	0.0	36.4	81.8	45.5	9.1		26.8
	33.3	0.0	40.0	45.0	22.7	20.0		
	2.4	0.0	9.8	22.0	12.2	2.4		
20	0	0	0	1	1	0		1
	0.0	0.0	0.0	100.0	100.0	0.0		2.4
	0.0	0.0	0.0	5.0	4.5	0.0		
	0.0	0.0	0.0	2.4	2.4	0.0		
30	0	1	0	0	1	0		2
	0.0	50.0	0.0	0.0	0.0	0.0		4.9
	0.0	100.0	0.0	0.0	0.0	50.0		
	0.0	2.4	0.0	0.0	2.4	0.0		
COLUMN TOTAL	3	1	10	20	22	5		41
	7.3	2.4	24.4	48.8	53.7	12.2		100.0

PERCENTS AND TOTALS BASED ON RESPONDENTS

41 VALID CASES

17 MISSING CASES

WATERD DISTANCE TO NEAREST PERM. WATER IN METER
 BY CULTAFF (GROUP) COMBINED CULTURAL AFFILIATION VARS

CULTAFF

WATERD	COUNT	CULTAFF						ROW TOTAL
		1	2	3	4	5	6	
0	0	0	0	0	0	1	0	1
	0.0	0.0	0.0	0.0	0.0	100.0	0.0	2.4
	0.0	0.0	0.0	0.0	0.0	4.5	0.0	
	0.0	0.0	0.0	0.0	0.0	2.4	0.0	
1	0	0	0	0	1	1	0	1
	0.0	0.0	0.0	0.0	100.0	100.0	0.0	2.4
	0.0	0.0	0.0	0.0	5.0	4.5	0.0	
	0.0	0.0	0.0	0.0	2.4	2.4	0.0	
4	0	0	0	0	0	1	0	1
	0.0	0.0	0.0	0.0	0.0	100.0	0.0	2.4
	0.0	0.0	0.0	0.0	0.0	4.5	0.0	
	0.0	0.0	0.0	0.0	0.0	2.4	0.0	
5	0	0	0	0	1	1	1	2
	0.0	0.0	0.0	0.0	50.0	50.0	50.0	4.9
	0.0	0.0	0.0	0.0	5.0	4.5	20.0	
	0.0	0.0	0.0	0.0	2.4	2.4	2.4	
10	0	0	0	1	2	5	0	5
	0.0	0.0	0.0	20.0	40.0	100.0	0.0	12.2
	0.0	0.0	0.0	10.0	10.0	22.7	0.0	
	0.0	0.0	0.0	2.4	4.9	12.2	0.0	
15	0	0	0	0	1	0	0	1
	0.0	0.0	0.0	0.0	100.0	0.0	0.0	2.4
	0.0	0.0	0.0	0.0	5.0	0.0	0.0	
	0.0	0.0	0.0	0.0	2.4	0.0	0.0	
COLUMN TOTAL		3	1	10	20	22	5	41
		7.3	2.4	24.4	48.8	53.7	12.2	100.0

PERCENTS AND TOTALS BASED ON RESPONDENTS

(CONTINUED)

WATERD DISTANCE TO NEAREST PERM. WATER IN METER
 BY CULTAFF (GROUP) COMBINED CULTURAL AFFILIATION VARS

CULTAFF

WATERD	COUNT	CULTAFF						ROW TOTAL
		1	2	3	4	5	6	
20	0	0	0	2	2	2	0	4
	0.0	0.0	0.0	50.0	50.0	50.0	0.0	9.8
	0.0	0.0	20.0	10.0	9.1	0.0	0.0	
	0.0	0.0	4.9	4.9	4.9	0.0	0.0	
25	0	0	1	1	1	1	1	2
	0.0	0.0	50.0	50.0	50.0	50.0	50.0	4.9
	0.0	0.0	10.0	5.0	4.5	20.0	2.4	
	0.0	0.0	2.4	2.4	2.4	2.4	2.4	
30	0	0	1	1	1	0	0	1
	0.0	0.0	100.0	100.0	100.0	0.0	0.0	2.4
	0.0	0.0	10.0	5.0	4.5	0.0	0.0	
	0.0	0.0	2.4	2.4	2.4	0.0	0.0	
40	0	0	1	1	0	0	0	1
	0.0	0.0	100.0	100.0	0.0	0.0	0.0	2.4
	0.0	0.0	10.0	5.0	0.0	0.0	0.0	
	0.0	0.0	2.4	2.4	0.0	0.0	0.0	
50	1	0	1	2	1	0	0	3
	33.3	0.0	33.3	66.7	33.3	0.0	0.0	7.3
	33.3	0.0	10.0	10.0	4.5	0.0	0.0	
	2.4	0.0	2.4	4.9	2.4	0.0	0.0	
60	0	0	0	0	0	1	1	1
	0.0	0.0	0.0	0.0	0.0	100.0	100.0	2.4
	0.0	0.0	0.0	0.0	0.0	20.0	20.0	
	0.0	0.0	0.0	0.0	0.0	2.4	2.4	
COLUMN TOTAL	3	1	10	20	22	5	41	
	7.3	2.4	24.4	48.8	53.7	12.2	100.0	

PERCENTS AND TOTALS BASED ON RESPONDENTS
 (CONTINUED)

WATERD DISTANCE TO NEAREST PERM. WATER IN METER
 BY CULTAFF (GROUP) COMBINED CULTURAL AFFILIATION VARS

WATERD	CULTAFF						ROW TOTAL
	1	2	3	4	5	6	
75	0	0	0	1	0	0	1
	0.0	0.0	0.0	100.0	0.0	0.0	2.4
	0.0	0.0	0.0	5.0	0.0	0.0	
	0.0	0.0	0.0	2.4	0.0	0.0	
100	2	0	1	3	2	2	8
	25.0	0.0	12.5	37.5	25.0	25.0	19.5
	66.7	0.0	10.0	15.0	9.1	40.0	
	4.9	0.0	2.4	7.3	4.9	4.9	
130	0	0	0	0	1	0	1
	0.0	0.0	0.0	0.0	100.0	0.0	2.4
	0.0	0.0	0.0	0.0	4.5	0.0	
	0.0	0.0	0.0	0.0	2.4	0.0	
200	0	1	1	4	4	0	6
	0.0	16.7	16.7	66.7	66.7	0.0	14.6
	0.0	100.0	10.0	20.0	18.2	0.0	
	0.0	2.4	2.4	9.8	9.6	0.0	
325	0	0	1	0	1	0	2
	0.0	0.0	50.0	0.0	50.0	0.0	4.9
	0.0	0.0	10.0	0.0	4.5	0.0	
	0.0	0.0	2.4	0.0	2.4	0.0	
COLUMN TOTAL	3	1	10	20	22	5	41
	7.3	2.4	24.4	48.8	53.7	12.2	100.0

PERCENTS AND TOTALS BASED ON RESPONDENTS

41 VALID CASES

17 MISSING CASES

WATERT TYPE OF NEAREST PERMANENT WATER
 BY CULTAFF (GROUP) COMBINED CULTURAL AFFILIATION VARS

WATERT	CULTAFF						ROW TOTAL	
	COUNT ROW PCT COL PCT TAB PCT	1 IRCHAIC	2 A ARCHAIC UNDET.	3 EARLY WO ODLAND	4 MIDDLE W OODLAND	5 LATE WO DLAND		6 WOODLAND UNDET.
STREAM	2	8.3 66.7 4.9	1 4.2 2.4	1 33.3 19.5	1 14 58.3 34.1	1 11 45.8 26.8	2 8.3 40.0 4.9	24 58.5
SALT WATER	6	5.9 33.3 2.4	0 0.0 0.0	2 11.8 20.0 4.9	6 35.3 30.0 14.6	11 64.7 50.0 26.8	3 17.6 60.0 7.3	17 41.5
COLUMN TOTAL		7.3	2.4	10 24.4	20 48.8	22 53.7	5 12.2	41 100.0

PERCENTS AND TOTALS BASED ON RESPONDENTS

41 VALID CASES

17 MISSING CASES

SITE ELEVATION OF SITE IN FEET
 BY CULTAFF (GROUP) COMBINED CULTURAL AFFILIATION VARS
 CULTAFF

SITEE	COUNT ROW COL TAB	PCT PCT PCT	CULTAFF						ROW TOTAL
			MIDDLE IRCHAIC	A UNDET.	EARLY WOODLAND	MIDDLE WOODLAND	LATE WOODLAND	WOODLAND UNDET.	
			1	2	3	4	5	6	
4			0	0	0	0	1	0	1
			0.0	0.0	0.0	0.0	100.0	0.0	2.4
			0.0	0.0	0.0	0.0	4.5	0.0	
			0.0	0.0	0.0	0.0	2.4	0.0	
5			0	0	2	2	5	0	5
			0.0	0.0	40.0	40.0	100.0	0.0	12.2
			0.0	0.0	20.0	10.0	22.7	0.0	
			0.0	0.0	4.9	4.9	12.2	0.0	
6			0	0	0	0	1	0	1
			0.0	0.0	0.0	0.0	100.0	0.0	2.4
			0.0	0.0	0.0	0.0	4.5	0.0	
			0.0	0.0	0.0	0.0	2.4	0.0	
8			0	0	0	1	0	0	1
			0.0	0.0	0.0	100.0	0.0	0.0	2.4
			0.0	0.0	0.0	5.0	0.0	0.0	
			0.0	0.0	0.0	2.4	0.0	0.0	
10			3	0	4	9	9	2	17
			17.6	0.0	23.5	52.9	52.9	11.8	41.5
			100.0	0.0	40.0	45.0	40.9	40.0	
			7.3	0.0	9.8	22.0	22.0	4.9	
12			0	0	0	0	0	1	1
			0.0	0.0	0.0	0.0	0.0	100.0	2.4
			0.0	0.0	0.0	0.0	0.0	20.0	
			0.0	0.0	0.0	0.0	0.0	2.4	
COLUMN TOTAL			7.3	2.4	10	20	22	5	41
					24.4	48.8	53.7	12.2	100.0

PERCENTS AND TOTALS BASED ON RESPONDENTS
 (CONTINUED)

SITE ELEVATION OF SITE IN FEET
 BY CULTAFF (GROUP) COMBINED CULTURAL AFFILIATION VARS
 CULTAFF

SITEE	COUNT ROW COL TAB	CULTAFF						ROW TOTAL				
		MIDDLE IRCHAIC 1	A ARCHAIC UNDET. 2	EARLY WO ODLAND 3	MIDDLE W OODLAND 4	LATE WO DLAND 5	WOODLAND UNDET. 6					
15	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	100.0 20.0 2.4	2.4				
20	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	37.5 30.0 7.3	3 5	62.5 25.0 12.2	37.5 13.6 7.3	12.5 20.0 2.4	19.5			
25	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0 1	100.0 5.0 2.4	0.0 0.0 0.0	0.0 0.0 0.0	2.4			
30	0.0 0.0 0.0	0.0 0.0 0.0	33.3 100.0 2.4	1 33.3 10.0 2.4	1 33.3 10.0 2.4	1 33.3 25.0 2.4	33.3 4.5 2.4	0.0 0.0 0.0	7.3			
40	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0 1	50.0 5.0 2.4	100.0 9.1 4.9	0.0 0.0 0.0	4.9			
COLUMN TOTAL	3	7.3	2.4	10	24.4	20	48.8	22	53.7	12.2	41	100.0

PERCENTS AND TOTALS BASED ON RESPONDENTS

41 VALID CASES

17 MISSING CASES

TOPOGRAPHIC SITUATION
 BY CULTAFF (GROUP) COMBINED CULTURAL AFFILIATION VARS

TOPOGRAPHIC SITUATION	COUNT	CULTAFF						ROW TOTAL
		MIDDLE A IRCHAIC	ARCHAIC UNDET.	EARLY WO ODLAND	MIDDLE W OODLAND	LATE WO ODLAND	WOODLAND UNDET.	
TOPOGRAPHIC SITUATION	ROW PCT COL PCT TAB PCT	1	2	3	4	5	6	
FLOOD PLAIN	1	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	3 75.0 15.0 7.3	2 50.0 9.1 4.9	0 0.0 0.0	4 9.8
FIRST TERRACE	6	2 7.1 66.7 4.9	1 3.6 100.0 2.4	8 28.6 80.0 19.5	13 46.4 65.0 31.7	15 53.6 68.2 36.6	5 17.9 100.0 12.2	28 68.3
SECOND TERRACE	7	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 33.3 10.0 2.4	2 66.7 10.0 4.9	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 7.3
THIRD TERRACE	8	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 5.0 2.4	1 100.0 4.5 2.4	0 0.0 0.0 0.0	1 2.4
UPLAND-FLATS	11	1 100.0 33.3 2.4	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 4.5 2.4	0 0.0 0.0 0.0	1 2.4
OTHER	99	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 25.0 10.0 2.4	1 25.0 5.0 2.4	3 75.0 13.6 7.3	0 0.0 0.0 0.0	4 9.8
COLUMN TOTAL		3 7.3	1 2.4	10 24.4	20 48.8	22 53.7	5 12.2	41 100.0

PERCENTS AND TOTALS BASED ON RESPONDENTS

41 VALID CASES

17 MISSING CASES

Appendix Two
Photographic Log

PHOTOGRAPHIC DATA

University of North Carolina
WILMINGTON

Site Number _____

Accession Number _____

Camp Lejune - Color

Field No.	File No.	Subject	Date	Direction	Comments
1-1	482	Crew at On ^V 234 Test 1	06-09-80	E	F 55mm
1-2	482dup	" " "	"	E	"
1-3	483	On ^V 234 Feed Plot area	06-09-80	E	F 55mm
1-4	484	On ^V 234 Test 1 Excavated to subsoil (Top of Level 2)	06-09-80	NE	F 55mm
1-5	484dup	" "	"	NE	"
1-6	485	On ^V 234 Test 4 Excavated to subsoil (Top of Level 2)	06-09-80	S	55mm
1-7	485dup	" "	"	S	"
1-8	486	ruined			
1-9	487	On ^V 234 Test 3 Excavated to subsoil (Top of Level 2)	06-10-80	S	55mm
1-10	487dup	" "	" "	S	"
1-11	488	On ^V 234 Test 1 Feature 1 excavated profile	06-11-80	E	55mm
1-12	488dup	" "	"	E	"
1-13	489	On ^V 234 Test 1 Feature 1 excavated profile	06-11-80	N	55mm
1-14	489dup	" "	"	N	"
1-15	490	On ^V 234 Test 1 Feature 1 excavated profile	06-11-80	S	55mm
1-16	490dup	" "	"	S	55mm
1-17	491	On ^V 234 Test 5 Excavated to yellow subsoil Top of Level 3	06-11-80	E	55mm
1-18	491dup	" "	"	E	"
1-19	492	West wall profile, Test #4 On ^V 234 Fully excavated	06-11-80	W	55mm
1-20	492dup	" "	"	W	55mm
2-1	493	On ^V 240 Jarretts point Test sq. #1 & 3; excavated to subsoil; showing feature 1	06-13-80	N	55mm
2-2	493dup	" "	"	N	"

PHOTOGRAPHIC DATA

University of North Carolina
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Site Number _____

Accession Number _____

Camp Lejeune - Color

Field No.	File No.	Subject	Date	Direction	Comments
2-3	494	On ^V 240 Jarretts point Test Sq.#5 excavated to subsoil showing Feature 2	06-13-80	N	55mm
2-4	494dup	" "	"	N	"
2-5	495	On ^V 240 Test Sq.#4 excavated to subsoil	06-13-80	N	55mm
2-6	495dup	" "	"	N	"
2-7	496	On ^V 240 Jarretts point Test 5 excavated to yellow subsoil	06-14-80	S	55mm
2-8	492dup	" "	"	S	"
2-9	497	On ^V 240 Jarretts point Test 6 Feature	06-15-80	W	55mm
2-10	497dup	" "	"	W	"
2-11	498	On ^V 240 Jarretts point Test 2 showing burned tree stump; top of yellow subsoil	06-15-80	W	55mm
2-12	498dup	" "	"	W	"
2-13	499	On ^V 240 Jarretts point Test 2 W. profile	06-15-80	W	55mm
2-14	499dup	" "	"	W	"
2-15	500	On ^V 240 Jarretts point Test 7 traweled at subsoil	06-15-80	N	55mm
2-16	500dup	" "	"	N	"
2-17	501	On ^V 240 Jarretts point Test 8 traweled to subsoil	06-15-80	S	55mm
2-18	501dup	" "	"	S	"
2-19	502	On ^V 240 Jarretts point Feature 7 profile	06-16-80	S	55mm
2-20	502dup	" "	"	S	"
2-21	S,2A	On ^V 240 Feature 8			

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Camp Lejune - Color

Field No.	File No.	Subject	Date	Direction	Comments
3-1	503	Feature 7 On ^V 240 Jarretts point to subsoil showing excavated feature and West wall profile	06-19-80	W	55mm
3-2	503dup	" "	"	W	"
3-3	504	Test 7 On ^V 240 Jarretts point to subsoil showing excavated feature 7 and East wall	06-19-80	E	55mm
3-4	504dup	" "	"	E	"
3-5	505	Test 8 On ^V 240 Jarretts point feature 8 partial excavation showing bones	06-19-80	W	55mm
3-6	505dup	" "	"	W	"
3-7	506	On ^V 240 Jarretts point Test 6 feature 5 profile	06-19-80	W	55mm
3-8	506dup	" "	"	W	"
3-9	507	On ^V 240 Feature 10, North wall profile, excavated to subsoil	06-20-80	N	55mm
3-10	507dup	" "	"	N	"
3-11	508	On ^V 240 Test 7 Feature 8 in North wall profile	05-20-80	N	55mm
3-12	508dup	" "	"	N	"
3-13	509	On ^V 240 Test 7 & 6 showing feature 9 to excavated to subsoil and partial South wall of Test 7	06-20-80	S	55mm
3-14	509dup	" "	"	S	"
3-15	510	On ^V 240 Test 8 Feature 8, West wall profile of Pit	06-24-80	W	55mm
3-16	510dup	" "	"	W	"
3-17	511	On ^V 240 Jarretts point Test 8 Feature 11 profile showing remnants of feature 8 above after extensive flood damage	06-28-80	W	55mm
3-18	511dup	" "	"	W	"
3-19	512	On ^V 240 Jarretts point Test 8 Level 2 removed to show outline of Feature 11	06-30-80	W	55mm
3-20	512dup	" "	"	W	"

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Camp Lejune - Color

Field No.	File No.	Subject	Date	Direction	Comments
3-21	513	On ^V Jarretts Point, Test 8 showing profile of Feature 11	06-30-80	W	55mm
3-22	513dup	" (ruined & missing)	"	W	"
4-1	514	Amtracks			
4-2	514dup	"			
4-3	515	On ^V 240 Jarretts point Test 8 showing completely excavated Feature 11	06-30-80	W	55mm
4-4	515dup	" "	"	W	"
4-5	516	On ^V 251 Weil Point Test 1 Feature 1	07-10-80	SE	55mm
4-6	516dup	" "	"	SE	"
4-7	517	On ^V 251 Weil Point Test 3 feature 2	07-10-80	NE	55mm
4-8	517dup	" "	"	NE	"
4-9	518	On ^V 251 Feature 1 Test 1 profile	07-11-80	NW	55mm
4-10	518dup	" "	"	NW	"
4-11	519	On ^V 251 Test 1 showing fully excavated Feature 1	07-11-80	NW	55mm
4-12	519dup	" "	"	NW	"
4-13	520	On ^V 251 Test 1 showing profile of Feature 3	07-14-80	SW	55mm
4-14	520dup	" "	"	SW	"
4-15	521	On ^V 251 showing test 5 adjacent to Test 3 and also containing Feature 3	07-14-80	SW	55mm (f/16 at 1/15 sec.)
4-16	521dup	" "	"	SW	"
4-17	522	On ^V 251 showing Test 2	07-15-80	NW	55mm
4-18	522dup	" "	"	NW	"
4-19	523	Shadow crew - Candy, Mary, Mike, Larry	07-15-80	NW	55mm

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Camp Lejune - Color

Field No.	File No.	Subject	Date	Direction	Comments
4-20	524	On ^V 251 showing Feature 2 profile	07-15-80	NW	55mm
4-21	524dup	" "	"	NW	"
5-1	525	On ^V 251 Test 2 completely excavated	07-16-80	NW	55mm
5-2	525dup	" "	"	NW	"
5-3	526	On ^V 251 Feature 2 fully excavated	07-16-80	SE	55mm
5-4	526dup	" "	"	SE	"
5-5	527	On ^V 251 Feature 5 showing profile	07-16-80	SE	55mm
5-6	527dup	" "	"	SE	"
5-7	528	On ^V 251 Test 6	07-16-80	NE	55mm
5-8	528dup	" "	"	NE	"
5-9	529	On ^V 105 Bluebird Site (temp) Test 1	07-17-80	S	55mm
5-10	529dup	" "	"	S	"
5-11	530	On ^V 105 Bluebird site (temp) Test 3	07-17-80	NW	55mm
5-12	530dup	" "	"	NW	"
5-13	531	On ^V 105 Bluebird site (temp) Test 2	07-17-80	E	55mm
5-14	531dup	" "	"	E	"
5-15	532	TLZ Bluebird - Historic Pit On ^V 138 prior to beginning excavation	07-21-80	NW	
5-16	532dup	" "	"	NW	
5-17	532dup	" "	"	NW	
5-18	532dup	" "	"	NW	
5-19	533	On ^V 138 TLZ Bluebird - Historic site - Pit excavated recent overburden to top of plow zone (profile)	07-22-80	NW	
5-20	533dup	" "	"	NW	

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Site Number _____

Accession Number _____

Camp Lejeune - Color

Field No.	File No.	Subject	Date	Direction	Comments
6-1	534	On ^V 138 TLZ Bluebird - Historic Site - Pit Top of Level 3-subsoil-troweled to show pit outline	07-23-80	SW	
6-2	534dup	" "	"	SW	
6-3	535	On ^V 138 TLZ Bluebird Historic Site Pit fully excavated	07-24-80	SW	
6-4	535dup	" "	"	SW	
6-5	536	On ^V 105 Test Sq., #2	07-28-80	N	
6-6	536dup	" "	"	N	
6-7	537	On ^V 105 Test Sq., #1	07-28-80	N	Top of subsoil
6-8	537dup	" "	"	N	
6-9	538	On ^V 105 Test Sq., #3	07-29-80	E	
6-10	538dup	" "	"	E	
6-11	539	On ^V 105 Test Sq., #5	07-31-80	pretty much N	
6-12	539dup	" "	"	"	
6-13	540	On ^V 105 Test Sq., 4	07-31-80	N	Top of subsoil
6-14	540dup	" "	"	N	
6-15	541	On ^V 105 Test 6	07-31-80	N	Top of subsoil
6-16	541dup	" "	"	N	"
6-17	542	On ^V 105 Test 7	08-01-80	N	Top of subsoil
6-18	542dup	" "	"	N	"
6-19	543	On ^V 105 Test Sq. 4	08-01-80	N	Top of subsoil
6-20	543dup	" "	"	N	"
7-1	544	Cray Cemetery			
7-2	544dup	"			
7-3	545	Cray Cemetery			
7-4	545dup	"			
7-5	545dup	"			
7-6	546	Cray Cemetery			
7-7	546dup	"			
7-8	547	Cray Cemetery			
7-9	548	"			
7-10	548dup	Cray Cemetery			

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Site Number _____

Accession Number _____

Camp Lejune - Color

Field No.	File No.	Subject	Date	Direction	Comments
7-11	549	On ^v 240 General			
7-12	550	On ^v 240 General			
7-13	551	On ^v 240 General			
7-14	551dup	"			
7-15	552	Mumford Mill Dam & damage			
7-16	553	"			
7-17	554	Mumford Mill Dam & damage			
7-18	554dup	"			
7-19	555	Mumford Mill Dam & damage			
7-20	556	Mumford Mill Dam & damage			

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Site Number _____

Accession Number _____

Camp Legeune - Black & White

Field No.	File No.	Subject	Date	Direction	Comments
1	370	On ^V 234 Test 1 Excavate to subsoil Top of Level 2	06-09-80	N	
2	370dup	" " " "	"	N	
3	371	On ^V 234 Test 4 Excavate to subsoil Top of Level 2	06-09-80	S	
4	371dup	" " " "	"	S	
5	372	On ^V 234 Test 3 Excavate to subsoil Top of Level 2	06-10-80	S	
6	372dup	" " " "	"	S	
7	373	On ^V 234 Test 1, Feature 1 Excavate profile	06-11-80	E	
8	373dup	" " " "	"	E	
9	374	On ^V 234 Test 5 Excavate to yellow subsoil, Top of Layer 3	06-11-80	E	
10	374dup	" " " "	"	E	
11	375	On ^V 234 Test 4, West wall profile fully excavated	06-11-80	W	
12	375dup	" " " "	"	W	
13	376	On ^V 240 Jarretts point Test Square # 1 & 3; excavate to subsoil; showing Feature 1	06-13-80	N	
14	376dup	" " " "	"	N	
15	377	On ^V 240 Test 5; to top of subsoil showing Feature 2	06-13-80	N	
16	377dup	" " " "	"	N	
17	378	Test Square 4, to top of subsoil On ^V 240	06-13-80	N	
18	378dup	" " " "	" "	N	
19	379	On ^V 240 Jarretts point; excavate to yellow subsoil Test #5	06-14-80	S	
20	379dup	" " " "	"	S	
21	380	On ^V 240 Jarretts point Test 6 Feature	06-15-80	W	
22	380dup	" " " "	"	W	

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Site Number _____

Accession Number _____

Camp Lejune - B & W

Field No.	File No.	Subject	Date	Direction	Comments
23	381	On ^V 240 Jarretts point Test 2 excavate to yellow subsoil showing burned tree stump	06-15-80	W	
24	381dup	" "	"	W	
25	382	On ^V 240 Jarretts point Test 7 troweled at subsoil	06-15-80	N	
26	382dup	" "	"	N	
27	383	On ^V 240 Jarretts point Test 8 troweled at subsoil	06-15-80	S	
28	383dup	" "	"	S	
29	384	On ^V 240 Jarretts Point Feature 7 Profile	06-16-80	S	
30	384dup	" "	"	S	
31	385	On ^V 240 Jarretts point Feature 8 partial bone excavation	06-17-80	W	
32	385dup	" "	"	W	
33	386	On ^V 240 Jarretts point Test 7, troweled to subsoil, excavated feature 7 to subsoil showing West Wall profile	06-19-80	W	
34	386dup	" "	"	W	
35	387	On ^V 240, Test 7, Feature 7, to subsoil showing excavated feature 7 & East Wall profile	06-19-80	E	This test square has a pit present on the East Wall adjoining Test 6
36	387dup	" "	"	E	
37	388	On ^V 240 Jarretts point Feature 5 Test 6 profile	06-19-80	W	
38	388dup	" "	"	W	
39	389	On ^V 240 Feature 10 North Wall profile, excavated to subsoil	06-19-80	N	
40	389dup	" "	"	N	

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University of North Carolina
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Accession Number _____

Camp Lejune - B & W

Field No.	File No.	Subject	Date	Direction	Comments
41	390	On ^V 240 Test 7, Feature 8 in North Wall Profile	06-19-80	N	
42	390dup	" "	"	N	
43	391	On ^V 240 Partial test 7 & 6 showing feature 9 to excavate subsoil and partial South wall profile in Test 7	06-19-80	S	
44	391dup	" "	"	S	
45	392	On ^V 240 Test 8, Feature 8, West wall profile of pit	06-24-80	W	
46	392dup	" "	"	W	
47	393	On ^V 240 Jarretts point Test 8 Feature 11 profile showing remnants of feature 8 above after extensive flood damage	06-28-80	W	
48	393dup	" "	"	W	
49	394	On ^V 240 Jarretts point Test 8 Level 2 Removed to show outline of Feature 11	06-30-80	W	
50	394dup	" "	"	W	
51	395	On ^V 240 Jarretts point Test 8 showing profile of Feature 11	06-30-80	W	
52	395dup	" "	"	W	
53	396	On ^V 240 Jarretts point showing fully excavated Feature 11 Test 8	06-30-80	W	
54	396dup	" "	"		
55	397	On ^V 251 Weil point showing Test 1 Feature 1	07-10-80	SE	
56	397dup	" "	"	SE	
57	398	On ^V 251 Weil point Test 3 Feature 2	07-10-80	NE	
58	398dup	" "	"	NE	
59	399	On ^V 251 Test 1 Feature 1 profile	07-11-80	NW	
60	399dup	" "	"	NW	
61	400	On ^V 251 Test 1 Feature 1 showing completely excavated Feature 1	07-11-80	NW	
62	400dup	" "	"	NW	

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Accession Number _____

Camp Lejune B & W

Field No.	File No.	Subject	Date	Direction	Comments
63	401	On ^V 251 Test 1 Feature 3 profile	07-14-80	SW	
64	401dup	" "	"	SW	
65	402	On ^V 251 Test 5 adjacent to Test 3 showing Feature 2	07-14-80	SW	
66	402dup	" "	"	SW	
67	403	On ^V 251 Test 2	07-15-80	NE	
68	403dup	" "	"	NE	
69	404	On ^V 251 showing profile of Feature 2	07-15-80	NE	
70	404dup	" "	"	NE	
71	405	On ^V 251 Test 2 completely excavated	07-16-80	NE	
72	405dup	" "	"	NE	
73	406	On ^V 251 Feature 2 Fully excavated	07-16-80	E	
74	406dup	" "	"	E	
75	407	On ^V 251 Feature 5 showing profile	07-16-80	SE	
76	407dup	" "	"	SE	
77	408	On ^V 251 Test 6	07-16-80	NE	
78	408dup	" "	"	NE	
79	409	On ^V 89 Bluebird site (Temp) Test 1	07-17-80	S	
80	409dup	" "	"	S	
81	410	On ^V 89 Bluebird site (Temp) Test 3	07-17-80	NW	
82	410dup	" "	"	NW	
83	411	On ^V 89 Temp. Test 2	07-17-80	E	
84	411dup	" "	"	E	
85	412	Bluebird-On ^V 89 Site Pit.-profile after excavated recent overburden to top of old plow zone	07-22-80	NW	
86	412dup	" "	"	NW	

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Accession Number _____

Camp Lejune - B & W cont.

Field No.	File No.	Subject	Date	Direction	Comments
87	113	Bluebird On ^V 89 Historic site pit - top of Level 3 Subsoil- troweled to show pit outline	07-23-80	SE	
88	413dup	" "	"	SE	
89	414	TLZ Bluebird Historic Site pit fully excavated On ^V 89	07-24-80	SE	
90	414dup	" "	"	SE	
91	415	On ^V 105 Test Sq.#2	07-28-80	N	
92	415dup	" "	"	N	
93	416	On ^V 105 Test Sq.#1	07-28-80	N	Top of subsoil
94	416dup	" "	"	N	"
95	416dup	" "	"	N	"
96	417	On ^V 105 Test Sq.#3	07-29-80	E	Top of subsoil
97	417dup	" "	"	E	"
98	418	On ^V 105 Test Sq.#5	07-31-80	N	Top of subsoil
99	418dup	" "	"	N	"
100	419	On ^V 105 Test Sq.#4	07-31-80	N	Top of subsoil
101	419dup	" "	"	N	"
102	420	On ^V 105 Test 6	07-31-80	N	Top of subsoil
103	420dup	" "	"	N	"
104	421	On ^V 105 Test 7	08-01-80	N	Top of subsoil
105	421dup	" "	"	N	"
106	422	Cray Cemetery			
107	422dup	"			
108	422dup	"			
109	422dup	"			
110	422dup	"			
111	422dup	"			
112 --	423	On ^V 240 General			
115	423dup	"			
116 --	424	Mumford Mill Dam			
121	424dup	"			

ADDENDUM

1981

During May and June of 1981 field work on the Came Lejeune Survey was continued so that three additional sites might be tested and one site re-tested. The three sites selected for testing (On^V286, 290, and 294) had high sherd counts in the surface collection. The one site considered for re-testing (On^V283) had an extremely high sherd count. On^V283, 286, and were located west of New River adjacent to small freshwater streams. The location adjacent to a freshwater stream is considered a prime location in the piedmont and mountain regions of the state, but seems to be of lesser importance on the coast. The freshwater stream location seems to be of greater importance in the early and middle woodland periods, perhaps reflecting an adaptive strategy similar to the interior portions of the state. The sherd collections from the three sites above-mentioned were high in early and middle woodland period ceramics. This type content combined with their relatively high sherd counts suggested that these sites might have contained recoverable archaeological materials of the early or middle woodland period. They were accordingly chosen for testing.

The remaining site, On^V294, had a high sherd count, early and middle woodland ceramics and was located on what is today a salt water estuary west of New River. It was surmised that in the period beginning approximately 3000 years ago and ending approximately 1000 years ago the estuary may have been a freshwater stream. The site was thus chosen for testing.

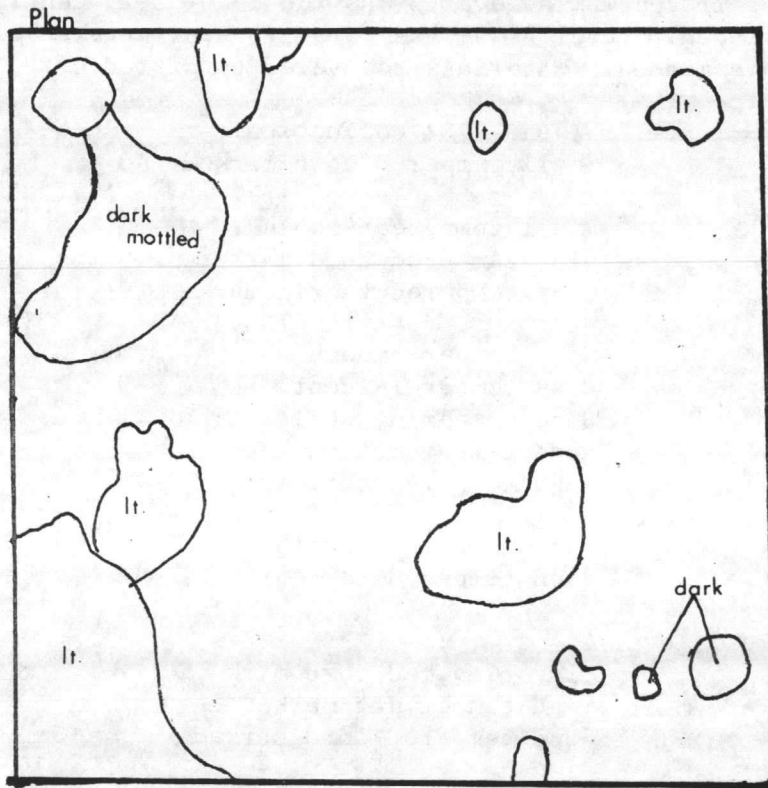
On^V283

This site was chosen to be re-tested because of its geographical location, its sherd-type content and the extremely high sherd count from the surface collection. Of all sites located adjacent to a freshwater stream and having early to middle woodland ceramics (sand and clay temper) this site had the highest sherd count. Four tests were made during the 1980 season with negative results, but it was thought that perhaps the tests had missed significant deposits at the site. The 1980 tests were all conducted in the open and formerly plowed sector of the site. In 1981 it was decided to try a test in the unplowed portion of the site immediately adjacent to the tree-line. Two tests 2 meters by 2 meters on a side were opened. Even though the tests were placed outside of the currently plowed area at the site the soil profile showed evidence of past plowing, albeit of a much shallower depth. In addition, however, an undisturbed zone of approximately 25 centimeters was encountered beneath the plow zone in square 5.

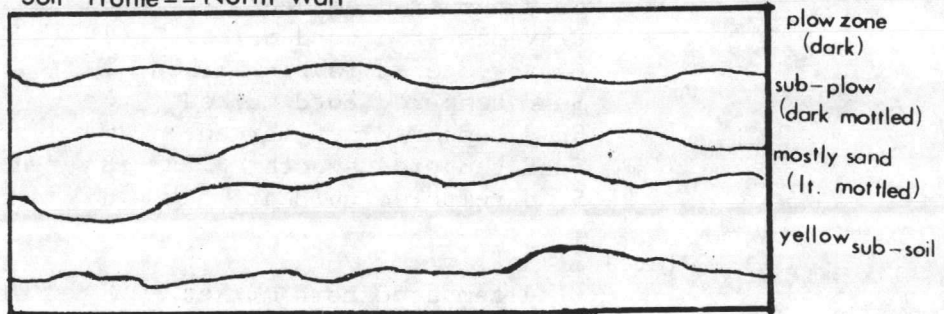
In square 5 excavation level 1 corresponded to the plow zone. Level 2 was the upper 5-15 centimeters of of the undisturbed midden while level 3 was the lower 5-15 centimeters of the midden. Level 4 was the first 25 centimeters below the visible midden. Materials recovered consisted of

Surface	(June 1981 collection)		
	Shell tempered cord marked	3	
			4
	Shell tempered smooth	1	
	Clay tempered cord marked	9	
	Clay tempered fabric mark	9	
			31
	Clay temper smooth	4	
	Clay temper inident	9	
	Sand tempered fabric mark	7	
	Sand temper net marked	4	
	Sand tempered cord marked	20	
			58
	Sand tempered smooth	11	
	Sand tempered unident	16	
Square 5 level 1			
	Clay tempered cord mark	8	8
	Sand temper net marked	3	
	Sand tempered cord marked	4	
			15
	Sand tempered smooth	5	
	Sand tempered unident	3	
level 2			
	Clay tempered smooth	3	
	Clay tempered cord marked	3	8
	Clay tempered fabric marked	2	
	Sand tempered cord marked	4	
	Sand tempered net marked	26	
	Sand tempered smooth	8	46
	Sand tempered unident	8	
level 3			
	Clay tempered cord marked	8	8
	Sand tempered net marked	19	
	Sand tempered cord marked	2	
			57
	Sand tempered smooth	25	
	Sand tempered unident	11	

Figure A-1
On V 283
Test 5
level 1



Soil Profile -- North Wall



level 4

Clay tempered cord marked	1	1
Sand tempered smooth	2	2

Feature 1

Clay tempered cord marked	1
---------------------------	---

From the above catalogue it can be seen that there is no reliable separation of types through the soil profile. This lack of separation would suggest that there may not be intact stratigraphy at the site. The presence of the visible midden, however, with its large sized sherds strongly suggests that the site has real research potential.

The small feature noted in the square 5 (labelled "dark mottled" in the drawing) was in all probability a recent rodent disturbance. No other features were noted in the square.

Test 6 was entirely lacking in artifacts. This site is definitely considered eligible for inclusion on the National Register of Historic Places and steps should be taken to preserve it or salvage the archaeological materials present. Its current use as forest and feed plot ensure its safety for the immediate future.

ON^V286

Although a large number of potsherds was recovered from On^V286 during the 1980 field season the site was located too late in the season to permit testing. As a consequence the site was revisited for purposes of testing in the 1981 field season. A total of four tests, each two meters by two meters on a side were opened and excavated to sterile sub-soil. Two tests were completely vacant, producing no artifacts whatsoever. Only in squares one and two (the first two squares excavated) were any artifacts recovered. The results of those productive tests were encouraging.

In test square 1 four arbitrary levels of 16 centimeters each (the depth of the plow zone) were excavated. Ceramics were recovered in only the first two of these levels. From level 1 were recovered 3 pieces of shell tempered ceramic (of late woodland period). This ceramic had an unidentifiable surface finish but was very thick. This thick shell-tempered ceramic type is thought to be the earliest shell tempered ceramic on the coast but exact dates are not known at this time. It has been

recovered from a number of sites in Carteret, Onslow, and Pender counties, and has been found at stratigraphically below the thinner, more common shell tempered ceramic known as White Oak in the central coast. This author found the thick shell tempered ware below the thinner shell tempered ware at Cr^V16 near the White Oak River, and at On^V33 a few miles north of Camp Lejeune, (Loftfield 1976, and 1979).

Also found in Level 1 of test square 1 at On^V283 were 17 fabric marked sand tempered sherds, 8 cord marked sand tempered sherds, 7 smooth finished sand tempered sherds, and 5 sand tempered sherds of unidentifiable surface finish. This sand tempered ware, called New River in the central coastal area, is thought to be early woodland in time but its exact dates are currently unknown.

In level 2 there were recovered 1 sherd of clay temper (middle woodland) and 4 pieces of fabric marked sand tempered pottery. The distribution of ceramics in square 1 indicates little evidence for meaningful stratigraphy at the site. No sub-surface features of any kind were encountered which with the lack of stratigraphy indicates little significance to the site. No archaeological materials were recovered from levels three and four.

In square 2, however, there was a more promising result. Again no features of any kind were noted, but ceramics were recovered from all four excavation levels. In level 1 (the plow zone) there were recovered 5 pieces of clay tempered cord marked pottery and 1 piece of fabric marked sand tempered pottery. In addition there were 8 pieces of sand tempered ceramic with surfaces too eroded to determine surface finish.

Level 2, a dark sandy loam undisturbed Midden Level, produced 1 piece of clay tempered ceramic (cord marked) and 1 piece of fabric marked sand temper, 3 pieces of cord marked sand temper, and 13 pieces of sand tempered ceramic with surfaces too eroded to identify. Level 3, a rather reddish sandy layer also thought to be undisturbed midden, had 1 piece of cord marked clay tempered pottery, 1 piece of fabric marked sand tempered ceramic, and 7 pieces of sand tempered ceramic too eroded to identify. Level 4, the upper 20 centimeters of yellow sandy clay subsoil, had 1 piece of cord marked clay tempered pottery, 1 piece of clay tempered ceramic too eroded to identify, 4 pieces of net marked sand tempered pottery, 2 pieces of fabric marked sand tempered pottery, 4 pieces of smooth finished sand

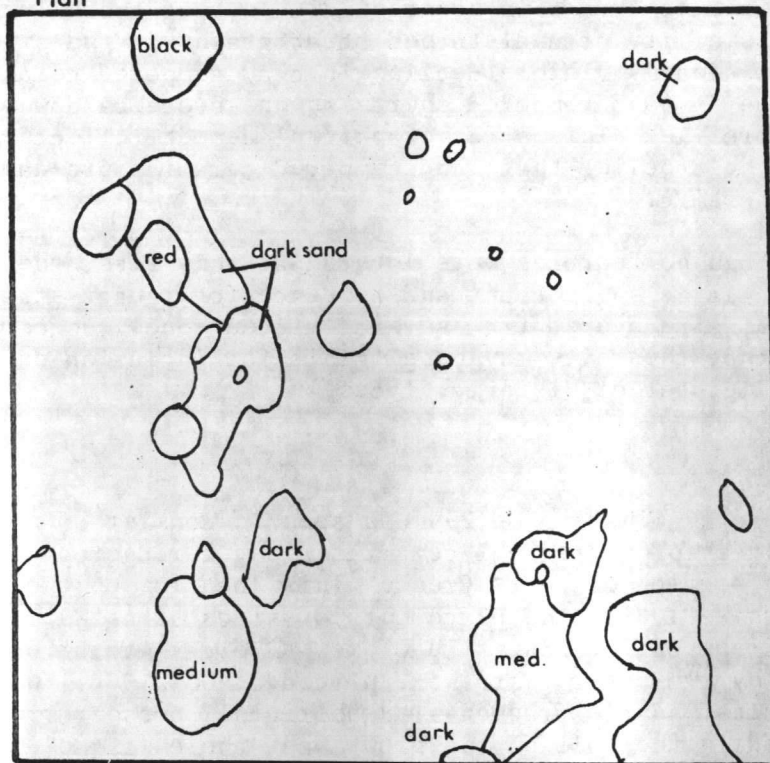
Figure A - 2

On^y 286

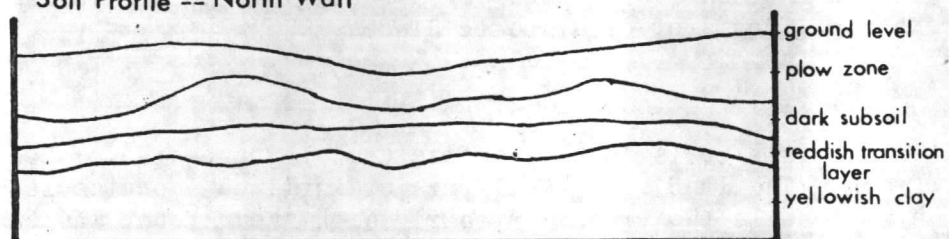
Test 3

Level 1

Plan



Soil Profile -- North Wall



tempered pottery, and 2 pieces of sand tempered pottery too eroded to identify.

The results from this square indicate that there is a strong possibility of undisturbed stratigraphy at the site. There is a clearly visible decline in clay tempered ceramic and an increase in sand tempered sherds as one proceeds downward in the soil profile. This stratigraphic placement reflects the currently held belief that sand tempered ceramics pre-date clay tempered ceramic.

Although no features were located at this site, the presence of a large sherd count and evidence for intact stratigraphy with ceramics recovered from several midden zones suggests very strongly that this site may be eligible for inclusion on the National Register of Historic Places.

On^V290

Upon re-examination On^V290 was seen to consist of numerous small scatters of aboriginal ceramics along a ridgetop overlooking the middle section of Lewis Creek. This location on the creek corresponds well with the placements of sites along Wallace Creek and Duck Creek on the east side of New River. A total of five two-meter by two-meter tests were placed at On^V290 all with negative results. While fragments of aboriginal potsherds were encountered in the fill of the plow zone, there was no evidence for sub-surface features or intact midden. The tests were spaced over a length of approximately 1/4 mile along the ridge top, with some placed over 100 meters back from the ridge, some on the ridge, and one part way down the slope face.

Based upon the negative results of the tests it is recommended that On^V290 is probably not eligible for inclusion on the National Register of Historic Places.

On^V294

This site is located on the Camp Lejeune side of Everett's Creek. The land is a gently rising knoll on a peninsula formed by a bend in the creek. A fairly high sherd count was encountered by the survey of 1980 although no central locus of material could be identified. In 1981 a total of four two-meter by two-meter tests were excavated to sterile subsoil. All tests were negative with very few sherds and no subsurface features of any kind located. It is thought that the site was an extremely ephemeral occupation. The lack of any significant materials recovered by

Figure A-3

On Y 290

Test 1

Level 2

Plan

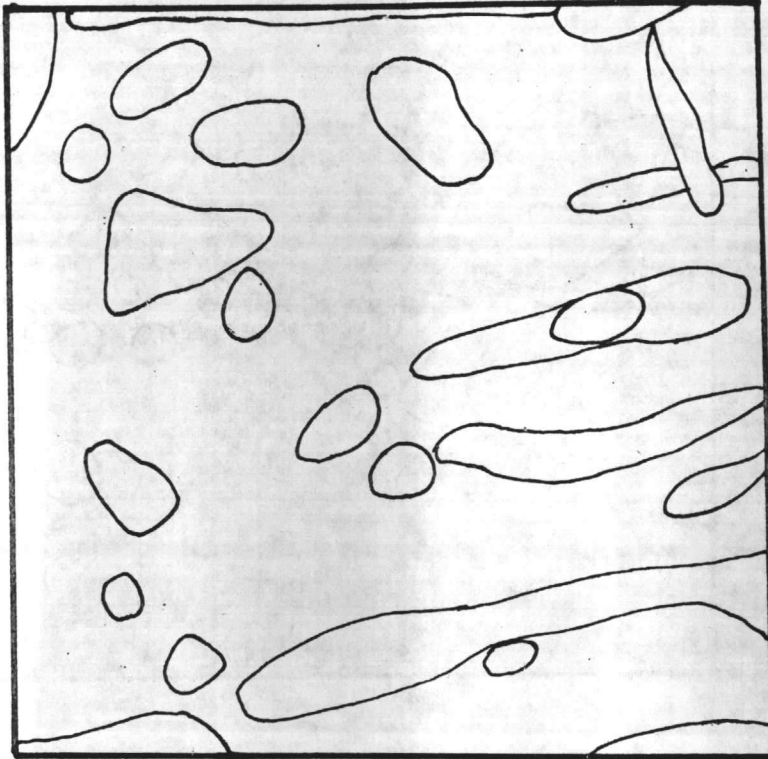


Figure A - 4

On^v 290

Test 3

Level 3

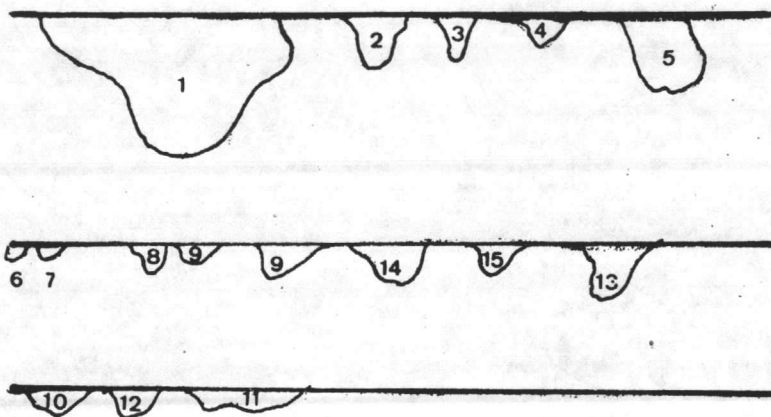
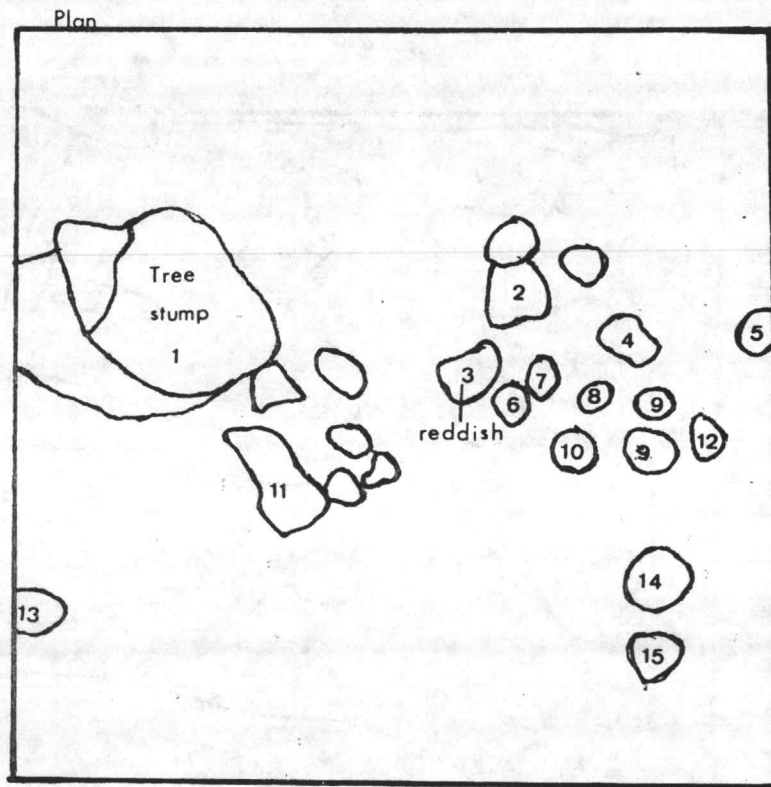


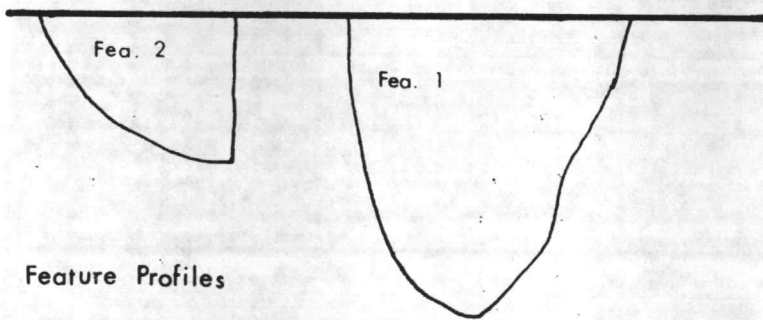
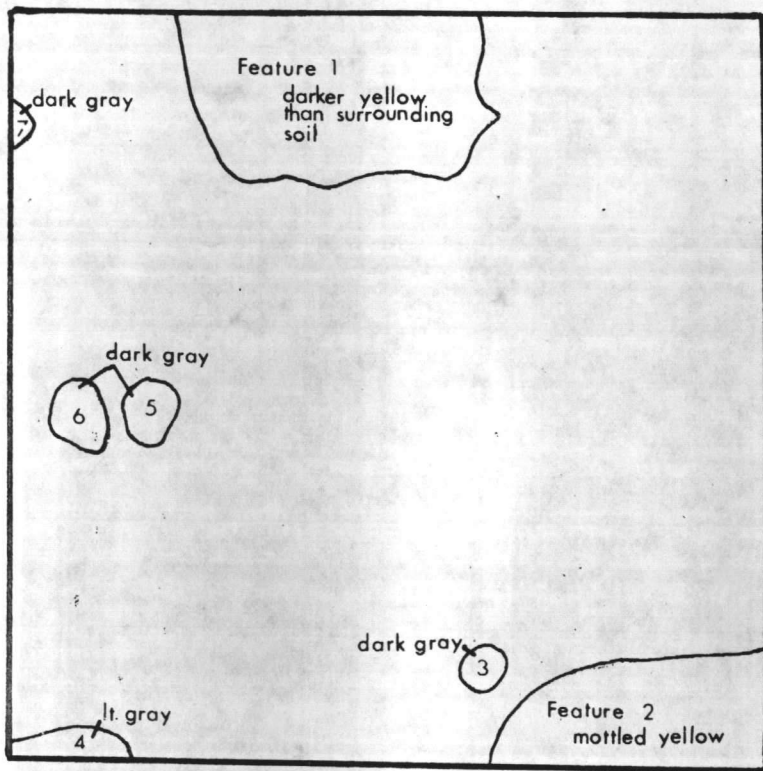
Figure A - 5

OnY 290

Test 1

Level 3

Plan



the testing indicates that On^V294 is not eligible for inclusion on the National Register of Historic Places.



