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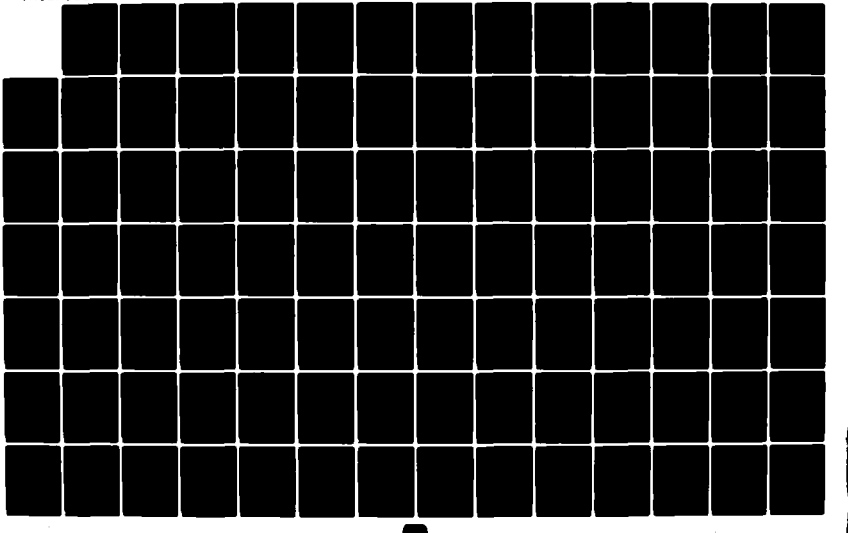

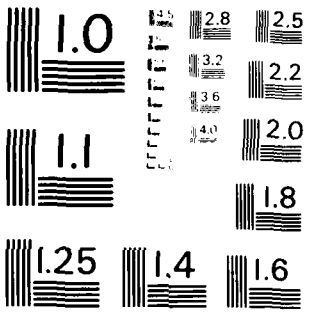

Report No. 6
August 6, 1984

An Archeological Overview and Management Plan for the Louisiana Army Ammunition Plant, Bossier and Webster Parishes, Louisiana

Under Contract CX-5000-3-0771
with the

National Park Service
U.S. Department of the Interior
Atlanta, Georgia 30303

for the
U.S. Army Materiel Development and
Readiness Command

by

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16. Abstract (Limit: 200 words)

The Louisiana Army Ammunition Plant (AAP) is a 14,974-acre facility situated in northwest Louisiana, west of Minden, in the parishes of Bossier and Webster. It is a government-owned, contractor-operated facility under the jurisdiction of ARRCOM, a DARCOM sub-command. The function of the facility is to load, assemble, and pack ammunition items, as well as to manufacture metal ammunition pieces. A previous cultural resource survey conducted on the AAP recorded one cemetery (the Allen Town cemetery, probably associated with the community of Allen Town), and some scattered, isolated prehistoric artifacts, possibly dated to the Late Archaic. Facility elevational surfaces are suitable to lengthy human habitation, and occupation from possibly as early as Paleo-Indian to recent historic is probable. Known cemeteries from the 1800s exist on the AAP, and are fenced and maintained by facility personnel. No sites are known on the AAP that are on or are determined eligible for the National Register of Historic Places. Land disturbance on the facility has been in the form of agriculture, timbering, facility construction and maintenance activites, and an on-going silvicultural program. To bring the Louisiana AAP into general compliance with the National Historic Preservation Act and Army regulations AR 420-40, formulation of a facility Historic Preservation Plan is recommended. This should be developed by the facility in consultation with the Louisiana SHPO and the ACHP. Recommended management steps include archival research, field checking of potential site location, and a sample survey of the AAP's undisturbed areas.

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MANAGEMENT SUMMARY

This study is based on the need for the Louisiana Army Ammunition Plant (AAP) to be in compliance with federal laws and regulations that mandate cultural resources compliance on DARCOM facilities. These laws are briefly reviewed. A corpus of data concerning the physical setting and cultural background on the facility is presented, providing baseline information useful for assessing the status and kinds of program needed for the facility.

The facility is situated in an area believed to be a part of the Red River floodplain. Upland surfaces are Montgomery and Prairie terrace remnants (deposited during the Middle Pleistocene) that have been cut by modern drainages: Bayou Dorcheat, Boone Creek, Caney Branch, and Clarke Bayou. Due to stream action, portions of the terraces have been cut creating colluvial slumps; modern alluvium has been deposited in the active floodplains. The area is generally one of adequate water and moderate climate. Floral assemblages include pine, pine/hardwood, and bottomland species. The faunal resource base is abundant and may include as many as 45 species of mammals. In general, the paleoenvironment has not changed in the past 11,000 years.

Prehistoric occupation may have begun in the Louisiana AAP area during Paleo-Indian times; however, evidence of these and the succeeding Archaic population of northern Louisiana are not well documented. Elements of Post-Archaic Mississippi alluvial valley culture (Bellevue and Troyville phases, Coles Creek period) follow. These are succeeded by the Caddoan Culture. Both historic Caddoan and Choctaw are documented in the region.

Euroamerican settlement did not begin in the study area until the 1830s. The historic pattern of small farms and villages persisted there until 1941 when the AAP acreage was purchased by the U. S. Government.

In assessing the cultural resources data gaps, it is suggested that the study area can be usefully viewed in three contour units: (1) above 200 feet AMSL, (2) 200-160 feet AMSL, and (3) below 160 feet AMSL. Although the earliest sites are likely to be found above 200 feet AMSL, these are expected to be disturbed. However, the potential for buried prehistoric sites below 160 feet AMSL is good. Possible steamboat remains may exist between 160 and 140 feet on the Bayou Dorcheat floodplain. Remnants of the historic communities of Allen Town and Overton may be located on or immediately adjacent to the Louisiana facility; historic cemeteries are known to exist on the facility and are currenty fenced and maintained by AAP personnel.

One recent cultural resources survey has been conducted on "selected locations" on the facility property. A historic cemetery and scattered, isolated prehistoric artifacts, possibly dating to the Late Archaic, were recorded.

For the on-going silvicultural programs and planned expansion to be in compliance with the National Historic Preservation Act and AR 420-40, formulation and implementation of a facility Historic Preservation Plan is recommended. This should be developed by the facility in consultation with (and with review and concurrence by) the Louisiana State Historic Preservation Office and the Advisory Council on Historic Preservation. A brief scope of work with tasks (archival research, field review of the potential sites, and sample survey of undisturbed portions of the facility) and baseline budget for contracted cultural resource management services to develop that Plan are presented for review. Such a contract is estimated to cost between $24,800 and $31,000 in baseline FY84 dollars (without fee, general and administrative costs). These should aid in guiding the facility to a positive compliance position.

A-1

PREPARERS AND QUALIFICATIONS

Dr. Heartfield is primarily responsible for preparation of the manuscript. She visited the facility with Tony Dieste and was involved in all phases of research and data assessment. She has been president of Heartfield, Price and Greene Inc., since its inception in 1975. Dr. Heartfield has a BS in Biology from Lamar State College of Technology and an MA (University of Texas at Austin) and PhD (Washington State University) in Anthropology. She has managed and conducted cultural resources projects for federal and state agencies and private firms. She is well versed in federal and state cultural resources and environmental regulations and is well qualified to provide management expertise for cultural resources permitting. Dr. Heartfield has completed work in Louisiana, Texas, Arkansas, Mississippi, Washington, and Alaska.

Tony Dieste visited the facility with Dr. Heartfield, conducted records search among parish courthouses, and compiled major portions of the manuscript, contributing to every chapter. He has a BA in Anthropology from the University of Texas and approximately four years of field experience in Louisiana, Arkansas, Texas and Mexico. Mr. Dieste has been with Heartfield, Price and Greene, Inc. for approximately four years and has functioned successfully in project management and report preparation.

William E. Moore conducted records search for the cultural resources portions of the study, gathering all of the prehistoric information and much of the historic material. He has a BA in Geography and an MA in English from Sam Houston State University in Huntsville, Texas, and an MA in Anthropology from Texas A&M University. He brings to the project archival skills as well as a strong writing capability. His varied degrees have prepared him for interpretive studies of human populations as they relate to the landscape and environment. He has recently completed overviews of the Pearl River Basin in Mississippi and Louisiana, a four-county area in northwest Texas, and the area of north Louisiana which includes the Kisatchie National Forest.

Edward L. Beene compiled the biological data and contributed insights about the association of those data with the cultural resources information. He hasa BS in Zoology from Northeast Louisiana University and has completed the master's level course requirements at Texas A&M University for a Wildlife and Fisheries Sciences, Marine Biology MS. Mr. Beene has a broad background in faunal analysis and preparation of environmental overviews. He has successfully completed projects in Texas, Oklahoma, Louisiana, Georgia, Missouri and Oregon.

Gary L. Stringer is an earth scientist holding both a BS and MS in Geology from Northeast Louisiana University He has experience as a micropaleontologist/biostratigrapher and is a nationally recognized otolith specialist. Mr. Stringer compiled the data on the physical setting of the Louisiana AAP and contributed to the interpretation of these data relative to the cultural resources potential on the facility.

ACKNOWLEDGEMENTS

A number of individuals have been extremely generous with their time and have been cooperative throughout the preparation of this report. Mr. R. J. Tweedy, Facility Engineer on the Louisiana Army Ammunition Plant, made available much information and many publications regarding the facility history, missions, and environmental setting. Mr. Tweedy was also a very interested and knowledgeable guide over the acreage. He drove Tony Dieste and Dr. Lorraine Heartfield to the cemetery locations and various portions of the facility. A second tour of the facility was given by Mr. Nuel C. Cox, assistant forester. He provided valuable information regarding the silvicultural program, past land use patterns, construction techniques on the property, presently inactive landfill borrow areas, and potential early historic site locations. Mr. Jake Hortman, Facility Engineering Division, provided information on proposed future construction projects and scheduling information. Mr. W. M. Shepherd, Facility Engineering Division, made available the 1941 pre-acquisition aerial photograph of the property and pre-acquisition property ownership maps. Mr. Chandler and Jessie W. Jones, Facility Maintenance Department, were very enthusiastic and interested in the project. They provided valuable insight into potential historic site locations and early road systems through the facility acreage.

Numerous people and agencies provided information concerning early map coverage of the project area. All deserve recognition for their efforts. Ms. Mable Pretzer of the National Cartographic Information Center, Rolla, Missouri, checked for early USGS maps. Ms. Jeanne Young, Cartographic Archives Division, National Archives and Records Service, Washington DC, searched the Archives holdings for pertinent early maps. Mr. Warren Cockhrem of the State Soil Conservation Survey Office, Alexandria, Louisiana, provided information on early soil surveys for Webster and Bossier parishes. Ms. Barbara Smith of the Webster Parish Public Library in Minden, and Mrs. Stephens of the Bossier Parish Library in Benton, provided early maps of the project area and early parish historical accounts. Ms. Sheila Lewis, Vicksburg Corps of Engineers, provided very helpful information regarding the availability of early maps for the area. Dr. Wayne Hudnell, Louisiana State University Map Archives Department, checked the university holdings for information pertinent to the project.

Additional thanks go to Dr. Mark R. Barnes, NPS, SERO; Mr. Robert B. DeBlieux, Louisiana SHPO, and Ms. Mary Lee Jefferson, NPS, WASO, for their review of the first draft; and Ms. Susan Cleveland, Contracting Officer, NPS, SERO.

Final report production, including graphics, has been completed by Woodward-Clyde Consultants, with editorial review (particularly of management recommendations) and text preparation completed by Dr. Ruthann Knudson, Ms. Betty Schmucker, and Mr. Charles McNutt, Jr.

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FOREWORD

As a federal agency with large public land holdings, the U. S. Army is responsible for the stewardship of a variety of natural and cultural resources that are part of its installations' landscapes. The Army's Materiel Development and Readiness Command (DARCOM) presently manages a nationwide network of 65 installations and 101 subinstallations and separate units, which range in size from one acre to over one million acres. As part of its programs of environmental and property management, DARCOM has requested that the U. S. Department of the Interior's National Park Service provide technical guidance to develop programs for managing installation cultural resources.

NPS is thus conducting the DARCOM Historical/Archeological Survey (DHAS), which has two major disciplinary elements. The architectural review and planning function is being directed by the Service's Historic American Buildings Survey (HABS), while the prehistoric and historic archeological resource assessment and planning function is the responsibility of the Service's Interagency Resource Division (IRD). IRD has contracted with Woodward-Clyde Consultants (WCC) for the development of guidelines for the DARCOM archeological management planning effort, and for the completion of 41 overviews and plans throughout the United States. WCC has in turn subcontracted the technical studies to several regional subcontractors, with final editorial review of reports and preparation of text and illustrations handled by WCC.

This overview and recommended management plan for the archeological resources of the Louisiana Army Ammunition Plant was prepared by Heartfield, Price, and Greene, Inc., of Monroe, LA, under subcontract to WCC. It follows the guidance of "A Work Plan for the Development of Archeological Overviews and Management Plans for Selected U. S. Department of the Army DARCOM Facilities," prepared by Ruthann Knudson, David J. Fee, and Steven E. James as Report No. 1 under the WCC DARCOM contract. A complete list of DHAS project reports is available from the National Park Service, Washington, DC.

The DHAS program marks a significant threshold in American cultural resource management. It provides guidance that is nationally applicable, is appropriately directed to meeting DARCOM resource management needs within the context of the Army's military mission, and is developed in complement to the state Resources Protection Planning Process (the RP3

process, through State Historic Preservation Offices). All of us participating in this effort, particularly in the development of this report, are pleased to have had this opportunity. Woodward-Clyde Consultants appreciates the technical and contractual guidance provided by the National Park Service in this effort, from the Atlanta and Washington, DC offices and also from other specialists in NPS regional offices in Philadelphia, Denver, and San Francisco, and the Louisiana SHPO and staff.

Woodward-Clyde Consultants — Ruthann Knudson

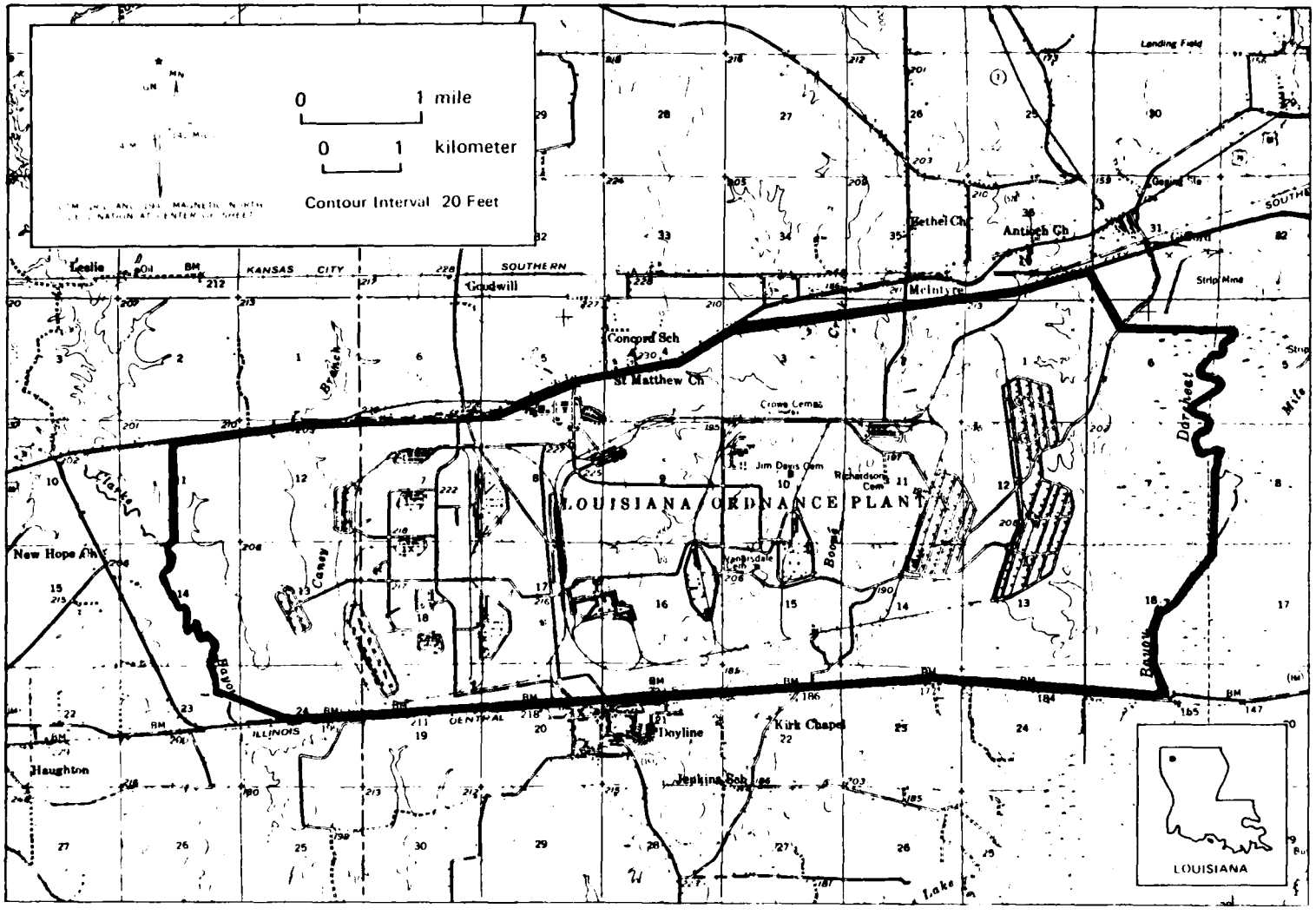
1.0
INTRODUCTION

The following report is an overview of and recommended management plan for the prehistoric and historic archeological resources that are presently known or likely to occur on the Louisiana Army Ammunition Plant in Webster Parish, Louisiana (Figure 1-1). This facility is an installation of the U. S. Department of the Army DARCOM (Materiel Development and Readiness) Command, which as a reservation of public land has responsibilities for the stewardship of the cultural resources that are located on it. The assessments and recommendations reported here are part of a larger command-wide cultural resource management program (the DARCOM Historical/Archeological Survey, or DHAS), which is being conducted for DARCOM by the U. S. Department of the Interior's National Park Service (NPS). The following is that portion of the facility-specific survey that is focused on the prehistoric and historic resource base of the Louisiana Army Ammunition Plant (AAP), and was developed in accordance with the Level B requirements of the project work plan (Knudson, Fee, and James 1983). A companion historic architectural study is in preparation by NPS's Historic American Buildings Survey (HABS), but is not yet available (William Brenner, personal communication 1984).

1.1 PURPOSE AND NEED

A corpus of Federal laws and regulations mandate cultural resources management on DARCOM facilities. Briefly these are:

- The National Historic Preservation Act of 1966 as amended (80 Stat. 915, 94 Stat. 2987; 16 USC 470), with requirements to,
  - inventory, evaluate, and where appropriate nominate to the National Register of Historic Places all archeological properties under agency ownership or control (Sec. 110(a)(2))
  - prior to the approval of any ground-disturbing undertaking, take into account the project's effect on any National Register-listed or eligible property; afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed project (Sec. 106)
  - complete an appropriate data recovery program on an eligible or listed National Register archeological site prior to its being heavily damaged or destroyed (Sec. 110(b), as reported by the House Committee on Interior and Insular Affairs [96th Congress, 2nd Session, House Report No. 96-1457, p. 36-37])



Note Base map is the USGS Minden, LA, 1 62,500 topographic Sheet (1947)

Figure 1-1. MAP OF THE GENERAL VICINITY OF THE LOUISIANA ARMY AMMUNITION PLANT

- Executive Order 11593 (36 FR 8921), whose requirements for inventory, evaluation, and nomination, and for the recovery of property information before site demolition, are codified in the 1980 amended National Historic Preservation Act

- The Archeological and Historic Preservation Act of 1974 (88 Stat. 174, 16 USC 469), which requires that notice of an agency project that will destroy a significant archeological site be provided to the Secretary of the Interior; either the Secretary or the notifying agency may support survey or data recovery programs to preserve the resource's information values

- The Archeological Resources Protection Act of 1979 (93 Stat. 721, 16 USC 470aa; this supersedes the Antiquities Act of 1906 [93 Stat. 225, 16 USC 432-43]), with provisions that effectively mean that:

  - The Secretary of the Army may issue excavation permits for archeological resources on DARCOM lands (Sec. 4)

  - No one can damage an archeological resource on DARCOM lands without a permit, or suffer criminal (Sec. 6) or civil penalties (Sec. 7)

- 36 CFR 800, "Protection of Historic and Cultural Properties" (44 FR 6068, as amended in May 1982); these regulations from the Advisory Council on Historic Preservation set forth procedures for compliance with Section 106 of the National Historic Preservation Act

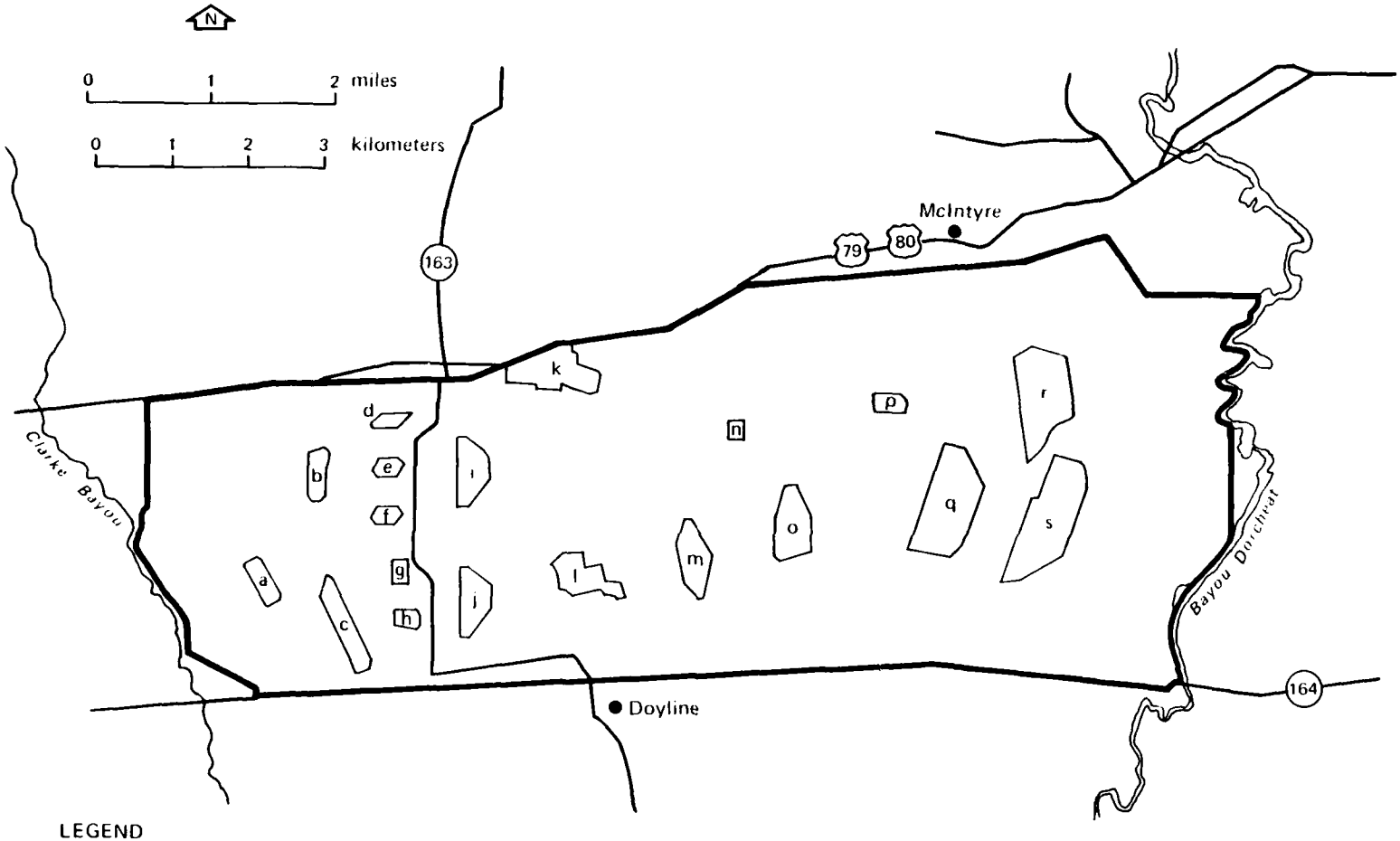
- Regulations from the Department of the Interior setting forth procedures for determining site eligibility for the National Register of Historic Places (36 CFR 60, 36 CFR 63), and standards for data recovery (proposed 36 CFR 66)

- Guidance from the U.S. Department of the Army as to procedures and standards for the preservation of historic properties (32 CFR 650.181-650.193; Technical Manual 5-801-1; Technical Note 78-17; Army Regulation 420-40), and for implementing the Archaeological Resources Protection Act (32 CFR 229)

These procedures should be integrated with planning and management to insure continuous compliance during operations and management at each facility. This can best be achieved by an understanding of the procedures implied by the regulations and an awareness of the cultural resources potential at each facility.

1.2 THE LOUISIANA ARMY AMMUNITION PLANT

The Louisiana Army Ammunition Plant (AAP) is located in northwest Louisiana, approximately five miles southwest of Minden, Louisiana, and occupies portions of southeastern Bossier Parish and southwestern Webster Parish (Figures 1-1, 1-2).



LEGEND

- a Storage Igloo
- b Storage Igloo
- c Storage Warehouse
- d Warehouse
- e Component Assembly Line
- f Bomb Assembly Line
- g Charge Load Line
- h Fuze Load Line
- i Minor Caliber Load Line (north)
- j Minor Caliber Load Line (south)
- k Facility Administration Area
- l Heavy Duty Shell Loading Line
- m Mine Loading Line
- n Salvage Yard
- o Mine Load Line (inactive)
- p Inert Storage Warehouse
- q Storage Igloo
- r Storage Igloo
- s Storage Igloo

Figure 1-2. MASTER BASE MAP OF THE LOUISIANA AMMUNITION PLANT

The Government acquired a 15,868 acre site in 1941 for the location of the proposed facility. Seven tracts of land of various sizes within the original acquired acreage have been transferred since that time, decreasing the plant by 894 acres to its present size of 14,974 acres.

On July 3, 1941, a contract was awarded to the Silas Mason Company of New York by the War Department for the design, construction, and operation of the Louisiana Ordnance Plant. (The designation Louisiana Ordnance Plant was changed to Louisiana Army Ammunition Plant in 1963.)

The original plant lay-out was developed largely through the use of maps prepared from aerial photographs of the proposed plant site. This lay-out was approved and construction of the plant began on July 14, 1941. Clearing and grading for railroad, utilities and building areas were begun at once, and temporary field offices were set up in various buildings that had been evacuated by former residents (Louisiana Army Ammunition Plant 1981).

The Louisiana AAP is a Government-owned contractor-operated military installation under the jurisdiction of the Commander, U.S. Army Armament Material Readiness Command (ARRCOM). The primary mission or function of the facility is to load, assemble, and pack ammunition items, and to manufacture ammunition metal pieces.

Building placement and location on the facility are determined by Quantity Distance (QD) criteria that establish the relative positioning of all structures, depending on the type and nature of the explosive material being stored or manufactured in any given building. The application of these criteria has generally resulted in a relatively even distribution of structures over the surface of the entire base without concentration in any one area.

The general work areas on the Louisiana AAP at present are depicted in Figure 1-2.

1.3 SUMMARY OF PREVIOUS ARCHEOLOGICAL WORK CONDUCTED ON THE LOUISIANA ARMY AMMUNITION PLANT

Inspection of the archeological literature and mitigation reports maintained by the Department of Culture, Recreation and Tourism, Division of Archeology and Historic Preservation (State Archeologist's Office), Baton Rouge, LA, indicated that no previous archeological investigations have been conducted within the facility. However, a cultural resources survey of "selected locations" (350 wooded acres) on the Louisiana AAP was recently conducted, and the report filed with the U. S. Army Corps of Engineers, Fort Worth District (Bennett 1984) (see Appendix B).

1.4 THE SOCIOCULTURAL CONTEXT OF THE ARCHEOLOGICAL RESOURCES ON THE LOUISIANA ARMY AMMUNITION PLANT

The major value of any prehistoric archeological resources that may be retained on the Louisiana AAP is in their ability to yield scientific

information--the community concerned about their preservation is thus more focused on scientific researchers. There are at present no readily identifiable ties of any modern Native American descendants to the prehistoric inhabitants of the AAP, though the Caddo Indians may have some concerns about the ethnohistoric resources of the area.

The local Euroamerican and Black community with ties to the farming families dispossessed by the AAP development may value any historic archeological materials found there because of their familial associations. At present they have not expressed concern about the resources. The Louisiana State Historic Preservation Officer is concerned about the historic values of the nineteenth and early twentieth century archeological materials, as possible indicators of otherwise undocumented information about historic land use, community development, and other regional issues.

2.0

AN OVERVIEW OF THE CULTURAL AND RELEVANT NATURAL HISTORY OF THE LOUISIANA ARMY AMMUNITION PLANT

2.1 THE PHYSICAL ENVIRONMENT

2.1.1 Earth Resources

The facility location lies within the Gulf Coastal Plain Province of North America. The Gulf Coastal Plain province is a segment of a Mesozoic-Cenozoic coastal geosyncline (Murray 1960). The top surface of the strata possesses an overall slope toward the Gulf of Mexico. All exposed sediments in the study area are Pleistocene or Holocene in age (American Association of Petroleum Geologists 1975). Pleistocene sediments are the major deposits with Recent alluvium being found near drainageways such as Bayou Dorcheat, Boone Creek, Caney Branch and Clarke Bayou (Martin et al. 1954). The Pleistocene sediments consist mainly of Middle Pleistocene Montgomery and Prairie terrace deposits. The Montgomery sediments consist of basal sands and gravels upgrading into sandy silts, silts and clays, and occasionally into calcareous clays. The Prairie sediments range from basal sands and gravels through silts to dark red calcareous clays (Martin et al. 1954). The Recent alluvium is material derived from surrounding Tertiary and Pleistocene deposits and is typically composed of sands and gravels overlain by silts and clays.

The Pleistocene sediments and Recent alluvium provide ample material (gravels) for stone tool making by prehistoric people. Historical and modern use of these gravels (Woodward and Gueno 1941) is well documented and clay has been readily available (Whittemore 1927) from prehistoric to modern times.

The physiography of the facility area is characterized as slightly rolling prairie. This is probably a reflection of an ancient Red River floodplain (Martin et al. 1954). The central portion of the AAP is the highest (225 feet above mean sea level/AMSL) and lowest part of the area is on the eastern boundary along Bayou Dorcheat (below 160 feet AMSL). Relief is nearly level to strongly sloping throughout the AAP, which generally slopes gently southward (Soil Conservation Service 1962).

Four soil associations are found on the Louisiana AAP: Acadia-Wrightsville (nearly level to gently sloping silty soils with clayey subsoils), Ora-Savannah-Shubuta (gently sloping to strongly sloping loamy soils), Stough-Myatt (nearly level to depressed silty soils), and Muskogee (silty soils with clayey subsoils) (Soil Conservation Service 1971). These soils are suitable mostly for woodland, pasture and small

areas of cropland. Major limiting factors to farming these soils are wetness, erosion, and clay subsoil.

2.1.2 Water Resources

Natural drainage is generally southward, and the drainage system is well developed (Soil Conservation Service 1962). However, there are many flat, slowly drained areas present.

Major water resources on the facility include Bayou Dorcheat, Boone Creek, Caney Branch and Clarke Bayou. Bayou Dorcheat, located on the eastern boundary of the AAP, represents the major drainageway (U. S. Geological Survey 1947) and was dammed to create Lake Bisteneau. The northern margin of the lake lies approximately two miles south of the facility. The floodplain of Bayou Dorcheat within the facility property is approximately two miles in width and is characterized by narrow natural levees and numerous sloughs, cutoffs and oxbow lakes (Martin et al. 1954). The Bayou Dorcheat floodplain is frequently inundated.

The central portion of the AAP is drained by Boone Creek. The floodplain is approximately 1/8 to ½ mile wide. Several intermittent streams drain into Boone Creek, which in turn empties into Lake Bisteneau (Bayou Dorcheat) approximately one mile south of the AAP.

The western portion of the facility is drained by Caney Branch and Clarke Bayou. Caney Branch, an intermittent stream with a ¼-mile wide floodplain, is located approximately one mile east of Clarke Bayou and joins that Bayou approximately ¼ mile south of the facility boundary (U. S. Geological Survey 1947). Clarke Bayou is on the AAP's western boundary and its alluvial plain is approximately ½ to ¼ mile wide. Clarke Bayou drains into Prairie Bayou, which flows into Bayou Dorcheat approximately six miles south of the facility.

All of these streams provide a reliable water supply and associated bottomland habitat. Bayou Dorcheat is the most developed stream with an excellent marsh habitat. Further, it was a navigable waterway prior to its damming in 1938.

2.1.3 Modern Climate

The climate of the area is determined by three major factors: the proximity of the warm Gulf of Mexico waters, the large land mass to the north, and the subtropical latitude. No major climatic changes are believed to have occurred in the area during the last several thousand years, and an environment similar to the present may have existed for the last 5000 years (Burden et al.1978).

Bright sunshine and high temperatures are usual in the summer, and cool, cloudy, wet weather followed by clear, cold weather is typical in the winter (Soil Conservation Service 1962). Temperature changes are sometimes extreme although the average temperatures are quite compatible for human occupation. On an average, temperatures of 90 ° F. or higher occur 103 days a year (Soil Conservation Service 1962). Temperatures of

32 ° F. or lower occur on an average of 43 days a year. The relative humidity is quite high (60 percent or more humidity 72 percent of the time). There is average frost-free period of approximately 220 days a year.

Precipitation is more than ample to replenish local water tables and provide surface bodies of water. Supplies of freshwater would have been readily available for prehistoric use. Precipitation averages about 50 inches per year with recorded extremes of approximately 30 and 80 inches respectively (Soil Conservation Service 1962).

The prevailing wind pattern is southerly in the summer with occasional westerly and northerly winds. In the winter the prevailing winds alternate between warm, moist southern winds and dry, cold northern winds. Major weather disturbances include a tornado once every six years, damaging windstorms once every three years, and measureable snowfall in three winters out of four.

2.1.4 Plant Resources

Generally, flora in the facility (Table 2-1) include pine, pine/hardwood and bottomland species. Forest presettlement vegetation most likely consisted of the same species found today. However, modern dominant species have shifted in the pine forests due to lumbering pressure and land management practices.

Pine forests occur on the highest elevations in sandy, acidic soils. As the elevation decreases, hardwoods become dominants. Higher soil moisture context reduces the number of pines and changes the hardwood dominants. When soils become periodically to permanently saturated, bottomland timber becomes the dominant forest type.

Prehistoric sites are likely to occur on Pleistocene terraces and natural levees overlooking floodplains. These features are centrally located in respect to pine hardwood and bottomland forests and provided maximum habitat exploitation. Pine forests provide good historic settlement areas as they do not flood, are somewhat devoid of undergrowth, and exhibit a flat surface. Further, they are the areas most suitable for small non-mechanized farming.

Available vegetal food sources vary from small amounts of foodstuffs in pine forests to prodigious amounts in bottomlands and hardwood-dominated pine/hardwood forests. Major sources of food stuffs may be categorized as nuts, berries, and miscellaneous items. Dominant hardwoods produce nuts such as acorns and hickories. Blueberries, blackberries, grapes, persimmons, plums, and cherries are available in hardwood areas. Various tubers are found in the pine/hardwood areas. Medicinal plants of various types are common in the floral assemblage.

2.1.5 Animal Resources

Although both prehistoric and early historic populations depend on faunal resources, these resources were of secondary importance to historic settlers. The most prolific areas for game are those dominated by

Table 2-1. FOREST VEGETATION ON THE LOUISIANA AAP

Forest Type	Dominant Vegetation	Sub-dominant Vegetation
Pine	Longleaf, loblolly and shortleaf pines	Bluejack, blackjack, red, post and water oaks; black and mackernut, hickories; sweetgum; flowering dogwood; red maple; yaupon; wax myrtle; beauty berry; arrowwood; blueberries
Pine Hardwood	Loblolly, shortleaf pines; red, post white, blackjack, water, willow oaks; black, mackernut hickories; sweetgum; tupelogum	Flowering dogwood; blueberries; persimmon; shining sumac; sassafras; wax myrtle; red maple; yaupon; deciduous, American hollies; blackberries; briars
Bottomlands[a] (Stream)	Birch; white, post, water, willow, nuttal, cherrybark, swamp chestnut oaks; water elm; ash; bitter pecan; southern magnolia; blue beech; hawthorns; beauty berry; grapes; rattani	
Bottomlands	Red maple; water hickory; tupelogum; overcup; willow; swamp chestnut oaks; black willow; bald cypress	Similar to shrubs and vines of stream bottomlands

SOURCE: Allen 1972.

[a] The definition of dominant vs. sub-dominant vegetation within this forest type is dependent on the local moisture content of the soil.

hardwoods. Forests provided cover, food and reproductive areas for some animals. Invertebrates of all types are abundant with various types of mollusks (bivalve and gastropods) and crustaceans known to have been used by southeastern tribes (Swanton 1946). In addition, approximately 85 species of fishes are found in the region. Economically important families including gars, suckers, catfishes, and sunfishes, and drums were available for both prehistoric and historic populations.

Approximately 25 species of amphibians may occur in the area (Conant 1958). Only the true frogs are valued for economic or dietary use today. Approximately 50 species of reptiles are thought to occur in the facility vicinity (Conant 1958). The families Colubridae and Viperdae are of modern economic importance because of their diet of mice and rats. The Elapidae and Viperidae both possess venomous bites. The wide variety of turtles, turtle eggs, and alligators were probably used by Native Americans in the study area.

Some 175 species may occur in the facility environs (Lowery 1974). Geese, ducks, cranes, and thrushes, are most numerous in the late fall and early winter. These surely provided a vast seasonally available resource for prehistoric people. They have always been a source of food and sport for the historic population. Resident birds such as turkeys, doves and pigeons would have been available the year round.

Approximately 45 species of wild mammals occur in the region today (Lowery 1974). Swanton (1946) states that deer, squirrels, and rabbits provided staple meat supplies for Southeast Indians. This is undoubtedly true for early Euroamerican settlers as well. Other mammal food resources include bears, opossums, and raccoons. Mustelids and beavers provided a basis for trade between Indians, trappers, and fur dealers. Rabbits, beavers, raccoons, weasels, and minks provided valuable furs for trappers.

In summary, the fauna in the study area provided many daily needs for prehistoric populations. Fauna also provided shelter, clothing, and a means of monetary exchange. Tools were made from bone and antler. Feather and various skins were used for decoration.

2.1.6 Paleoenvironment

Environmental characteristics in the region have changed little since the hypothesized human entry into the area (±11,000 BP). Table 2-2 provides an outline of environmental changes in the Southeast. General studies by Dillon (1956), palynological studies by Flint (1963), floral studies by Brown (1938), and faunal studies by Slaughter (1967) indicate little change in temperature and precipitation ranges during the Recent period.

The ancestral forest (located in the Piedmont) of present-day vegetation was a remnant of an enormous Miocene deciduous forest (Harshberger 1958). As the glaciers retreated, the ancestral forest migrated to the west. Relic populations of the boreal forest vegetation remained in Louisiana (Fisk 1944). Table 2-3 shows Harshberger's order of invasion.

Table 2-2. SUMMARY OF THE ENVIRONMENTAL HISTORY OF THE AREA OF THE LOUISIANA AAP AND THE SOUTHEASTERN U. S. IN GENERAL

Dates[a]	Environment and Vegetation
475 BP to present	Little Ice Age; post-sixteenth century glacial advance
3000 to 475 BP	Colder in northern latitudes until 600 BC (1360 BP)
4000 to 3000 BP	Sea level at minus 1.5 meters
7000 to 4000 BP	Sea level at minus 2 meters, water table estimated 12 m below present; longleaf forest predominant on upland sites (presumably with wildfire); rising water tables result in cypress swamps and bayheads, beech (Fagus) also becomes abundant for first time; essentially modern environments continue until present day, with sclerophyllous oak forest, scrub or savannah with patches of bluestem prairie, some sage (Artemesia)
8500 to 7000 BP	Sea level stops rapid rise, begins steady but slower rise; no critical evidence of time of megafauna extinction, and sites in Florida give improbably young date of 2040 BP
9000 to 8500 BP	Paleo-Indian Clovis points present in Suwannee and Santa Fe Valley (southwest U. S. Clovis points date 12,000 to 11,000 BP)
9000 BP	Hypsithermal of Deevey and Flint begins 9000 BP, lasts until 2500 BP. Spalling ends, silt deposition begins in Russell Cave, AL (Hack 1969)
Holocene	Youngest zone of pollen has oak, chestnut, sweet gum and blackgum representing the modern somewhat xeric forest; pine apparently confined to sandstone bluffs
9520 to 9000 BP	Jack pine-spruce followed immediately by hemlock (Tsuga); oak-hickory forest climate drier than present in Florida (Edward Deevey, personal communication 1983)
10,000 to 9520 BP	Driest time begins and lasts until 6000 BP; first evidence of human occupation of Florida
10,500 to 10,000 BP	Mesic forest: beech (Fagus) 10% 20%, hornbeam (Ostrya) 6%, butternut (Juglans cinerea) 1%, spruce (Picea) 2%-3%, pine (Pinus) 20%; oak and hickory next most important deciduous trees; no modern analogues for this forest
11,000 to 10,500 BP	Acceleration of warming process; megafauna intact in Southeast
14,000 to 11,000 BP	Abrupt decimation of boreal forest between 14,000 and 11,000 BP; sea level begins rapid rise (Watts 1971)
19,520 to 14,000 BP	Full Glacial forest: pine (some Pinus banksiana and P. resinosa [red pine]) 25% 45%, oak 30%-40%, hickory and chestnut present, spruce (Picea) 1% 2%; top of Pigeon Mountain is presumed bare, with pollen transport from valley coniferous and deciduous forests

SOURCE: Wharton 1978.

[a] BP = before present, with a present baseline of AD 1950.

Table 2-3. HARSHBERGER'S (1958) ORDER OF FLORAL INVASION

Wind-carried Seeds	Animal-carried Seeds
Picea alba (= P. canadensis) (white spruce), farthest north	Quercus rubra (red oak)
Picea nigra (= P. mariana) (black spruce), farthest north	Fagus americana (American buck)
Larix americana (= P. laricina) (spruce)	Castanea americana (= dentata) (chestnut)
Populus balsamifera (cottonwood)	Juglans nigra (black walnut)
Populus tremuloides (quaking aspen)	
Betula papyrifera (paper birch)	
Abies balsamea (balsam fir)	
Pinus strobus (white pine)	
Thuja occidentalis (eastern arborvitae)	
Ulmus americana (American elm)	
Acer saccharum (sugar maple)	
Tsuga canadensis (Canada hemlock)	

With the exception of chestnuts (Castanea), which have been killed by the Chestnut Blight, the migratory forest continued the same genera that are present today. These genera include oak (Quercus), ashs (Fraxinus), and hickory (Carya) (Harshberger 1958). It is believed that the understory of the migratory forest also resembled the present-day vegetation.

There were three genera of elephants, six genera of giant edentates, 15 genera of ungulates and various giant rodents and carnivores north of Mexico (Mossimann and Martin 1975). Many of these were forest denizens and occurred in what is today northern Louisiana. Simpson (1945) indicates that the genus Tapirus (tapirs) occurred in the study area. Mossiman and Martin (1975) state that four genera of giant ground sloths were present in the United States, including Megatherium. It is probable that these forms existed in the facility vicinity. Simpson (1941) stated that three large felines also inhabited the area, including puma (Felis concolour), jaguar (Panthera onca), and giant jaguar (Panthera atrox). By approximately 15,000 BP the large megafauna had given way to the faunal species of modern times (Brain 1971).

2.2 THE CULTURAL ENVIRONMENT

The cultural chronology of the facility and its environs is shown in Table 2-4. The prehistory of the Red River Valley in Louisiana has been recently summarized by Neuman (1970), Gulf South Research Institute (1974), and Neitzel and Perry (1978).

2.2.1 Prehistory

Paleo-Indian Era (12,000 to 6000 BC). The Paleo-Indian era represents the earliest clearly defined archeological evidence of human habitation of North America. The subsistence system of eastern Paleo-Indians was probably based on a wide variety of terrestrial and aquatic resources. Archeological evidence suggests a semi-nomadic or seasonal movement of small extended family or multi-family units between short-term camps.

In Louisiana this early era is known primarily from surface collections of Paleo-Indian points such as Clovis, Meserve, Quad, and Angostura (Gagliano and Gregory 1965). Finds in northwest Louisiana have been located on older Pleistocene land forms (terraces) that, unlike the geologically younger floodplain deposits, have not been subjected to large amounts of recent deposition (Neitzel and Perry 1978). The terrace deposits comprising the upland portions of the Louisiana AAP might retain Paleo-Indian materials.

Archaic Era (6000 BC to AD 100). This was a time of great change and continued human adaptation to the warmer post-Pleistocene environment. As Pleistocene megafauna became extinct, human subsistence patterns shifted toward a greater dependence on the wide variety of available woodland and riverine resources. Archeological evidence indicates that the pattern of resource exploitation shifted to that of seasonal rounds or trips to procure small animals (such as deer) and gather wild plant foods.

Table 2-4. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF THE LOUISIANA AAP

Cultural Unit					
Tradition	Period or Phase	Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
American	Military Reservation	AD 1941 to present	Plant design and construction; non-random building distribution determined by Quantity Distance (QD) criteria	Load, assemble and pack ammunition items; manufacture ammunition metal pieces	Metal and brick buildings or structural components; clear glass; aluminum and metal alloys
	Farm and Lumber	AD 1900 to 1941	Family farms along roads and trails; towns built along roads, railroads and waterways; farm buildings generally located above flood stage at 200 to 220' AMSL	General farming, some share cropping and lumbering; cotton farming in the earlier portion of the period. Start of extensive animal husbandry	Log and frame barn buildings; metal nails round and square, brick and stone building foundations; wells on the uplands; manganese and clear glass, stoneware, whiteware, china and glass ware, yellow glass.
	Settlement	AD 1865 to 1900	Small farmsteads mostly on a subsistence level. Some old farms abandoned. Beginning of railroads and small railroad towns with associated logging	Subsistence farming and some lumber and cotton. Railroads beginning and steamboating on Bayou Dorcheat ending	As above. Early part of period only square nails. Glass either manganese or colored.
	Civil War	AD 1860 to 1865	Small and large farms. Some settlement in the bottoms. Infrequent towns along roads	General and specialized farming (particularly cotton). Slaves provide labor in many cases. Reactivation of Lake Bisteneau salt works. Steamboat transportation paramount for outside transportation	Log and frame buildings. Square nails, brick and stone foundations. Steamboat landings. Salt works remains at Lake Bisteneau. Other as above but glass rare and colored. Some possibility of war time accoutrements.
	Homestead Claims	AD 1830 to 1860	Small farms widely scattered. Later in period some large holdings with elaborate houses. Towns at crossroads of trails and roads	Subsistence farming, slash-and-burn. Older farmsteads larger with cotton a cash crop. Slave labor used. Farm products supplemented with hunting and gathering. Steamboats provide method of transportation	Log and later frame houses. Brick and rock foundation. Some colored glass square nails only, relict use of creamwares, whiteware and ironstone.
	Frontier	AD 1803 to 1830	Small clearings with associated log buildings. No real towns, villages or settlements. Trails, no roads. Population sparse	Subsistence farming slash-and-burn agriculture. Hunting and gathering important	Log houses, rock foundations, some stoneware, some whiteware, black glass, predominance of ceramics of English manufacture (stonewares and creamwares). Square nails became popular. Absence of whiteware and ironstone

Table 2-4. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF THE LOUISIANA AAP (continued)

Cultural Unit					
Tradition	Period or Phase	Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
Colonial	Spanish	AD 1762 to 1803	Settlement and immigration to Louisiana colony encouraged by Spanish. Population growth. Continuing settlement in alluvial valleys and not highland interior. Large land grants given	Predominantly agricultural with animal husbandry important	Few remains of period anticipated; possible some Spanish or Mexican Mojolica wares (tin or enameled earthenwares), wrought nails, hand-blown glass
	French	AD 1713 to 1762	Louisiana largely unsettled during most of the period; colonial exploration. Settlement in alluvial valleys, not highland interior	Subsistence agriculture and some hunting and gathering; trading with local Indian populations very important	Bousillage construction; French faience; hand blow glass (black); wrought nails; possibly French soft-paste porcelains; possibly Mexican Mojolica
	Exploration	AD 1540 to 1713	Red River Valley remained largely unknown until French Colonial period; early exploration by De Soto, La Salle, and Tonti; encounters with historic Indian groups	Hunting and gathering; trading and bartering	No artifacts dating from this period are known to occur in northwestern Louisiana. However, occasional European beads, etc., located at aboriginal sites would indicate initial European contact from the period
Historic Indian	Choctaw	ca. AD 1790 to 1860	Villages located near major waterways with land suited to agriculture (especially maize)	Agriculture supplemented by hunting, gathering and fishing; bartering with Europeans	Cannot be isolated from other contemporaneous cultures
	Caddo V	AD 1700 to 1850	Small populations organized on band level; hamlets and small villages of a few acres in floodplain areas	Trade between Caddo, French and Spanish of hides, bow wood, livestock, salt; hunting and gathering; small-scale agriculture	European trade goods (metal and beads); Natchitoches Engraved ceramics. Salt trade with other tribes
	Caddo IV	AD 1500 to 1700	Non-randomly placed mound centers as community focal points for sedentary villages and hamlets; sites located primarily on natural levees and near streams in larger alluvial valleys	Agriculture, hunting and gathering; trading of salt	Wattle impressed daub; primary extended burials; shell-tempered and neck-banded pottery; truncated mounds; arrow points in association with pottery; salt trade with other tribes

Table 2-4. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF THE LOUISIANA AAP (continued)

Cultural Unit					
Tradition	Period or Phase	Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
Post Archaic	Caddo III	AD 1400 to 1500	Decline in mound construction; sites generally located in uplands along major drainages and consist of villages and cemeteries; oval house patterns	Agriculture, and decline in trading, hunting and gathering	Wattle-and-daub structures. Remains of simple utilitarian vessels and predominance of grog tempering; diagnostic ceramics include Pease Brush-Incised, Sinner Punctate, Maddox Engraved and Brushed, Belcher Ridged, Alba and Basset arrow points and Gary dart points
	Caddo II	AD 1200 to 1400	Construction of mound complexes on alluvial plains and increased social complexity; rectangular house plans	Hunting, gathering, and agriculture	Copper and shell gorgets; effigy pipes; shell bowls; copper items; stone hoes; distinctive pottery types
	Caddo I	AD 800 to 1200	Scattered farmsteads, hamlets and villages in areas suitable for agriculture; separate mortuary areas with accretional burial mounds; square house plans with centerposts and fireplaces	Agriculture, hunting, and gathering	Coles Creek pottery types; human effigy pipes, petaloid celts; copper sheeting; conch shells; Gary, Marshall, Marcos and Scallorn type points; grinding stones; clay-tempered pottery; ceramic bottles and carinated bowls
	Coles Creek	AD 700 to 1000	Overlap with Caddo I not completely understood; a few sites of the period located in uplands; renewal of mound building; mounds designed for building substructures rather than burial mounds; small villages and hamlets predominate; population increases	Introduction of flint, maize, agriculture; emphasis on hunting and gathering	Pure Coles Creek artifact types difficult to isolate; circular house plans; 2 or 3 flat-topped pyramidal mounds arranged and punctuated pottery types; Gary dart points; Alba and Scallorn arrow points; Coles Creek Incised pottery
Post Archaic	Troyville	AD 500 to 700	Seasonally occupied sites located in both upland and floodplain environments	Bow and arrow introduced and increased hunting efficiency; maize cultivation introduced; continued plant gathering	Appearance of arrow points in the archeological record; cord-marked and red slipped pottery popular; decline in burial mound construction
	Bellevue	AD 100 to 500	Seasonally occupied camps in both upland and floodplain situations	Hunting, gathering, fishing	Grog or sand-tempered pottery (generally undecorated); low or truncated mounds containing flexed burials and cremations

Table 2-4. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF THE LOUISIANA AAP (concluded)

Cultural Unit					
Tradition	Period or Phase	Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
Archaic	Late, Middle, Early	6000 BC to AD 100	Adaptation to post-Pleistocene environment; seasonal migrations of small bands with more permanent settlement near end of period; seasonally occupied, resource-specific base camps in both uplands and lowlands	seasonal exploitation (hunting, gathering, and fishing) of a variety of geographical and environmental ecosystems; increased subsistence efficiency and diversity indicated by technological advances (ground stone tools; mano and metate; introduction of atlatl); horticulture and incipient agriculture by the end of the period	Absence of pottery and presence of dart points; atlatl weights; ground stone tools (adze, mano and metate)
Paleo-Indian		12000 to 6000 BC	Semi-nomadic or seasonal movement of small extended family or multi-family units over wide areas between short-term camps sites in upland terrace situations	Hunting of megafauna such as mammoth with a shift to dependence on local flora and fauna when Pleistocene extinctions occurred	Lanceolate dart point types including Clovis, Meserve, Quad, Scottsbluff, and Angostura

The apparent increased efficiency of hunting and gathering led to more stable, permanent settlement and technological advances such as the production of ground stone adzes, manos, and metates. Beads, gorgets, and plummets also are more frequently found in deposits of this period than in Paleo-Indian sites.

Muller (1978: 286-287) has suggested that Archaic sites demonstrate the presence of small groups or bands, and that a small band social organization would have allowed any given group to react quickly to the variation in local food resource availability. As populations increased throughout Archaic times, however, increasing pressure would have been placed on those groups with restricted mobility to develop local resources subject to less annual variation. In addition, the efficiency of exchange and distribution of goods (i.e., trade network) as well as improved storage systems would have to be developed.

The remains of Archaic campsites might be found on the Louisiana AAP. These would most likely be situated on upland terrace deposits and represent temporary resource exploitation of the wooded environment.

Post-Archaic Era (AD 100 to 1850). The Post-Archaic era is recognized archeologically by the appearance of pottery, evidence of horticulture, and the introduction of the bow and arrow. Unfortunately, these traits appear at different times in different areas (Haag 1971). A shift toward greater sedentism is indicated by the appearance of semi-permanent or permanent village and hamlet sites. The Post-Archaic era has been divided into a number of cultural periods largely defined on the basis of pottery manufacturing techniques, styles and decorative treatments.

The earliest Post-Archaic components recognized in the vicinity of the study area appear to be part of a broad interaction phenomenon embracing contemporary outlines in the Mississippi Alluvial Valley and, more generally, throughout eastern North America. These are outlined in Table 2-4.

Bellevue Phase (AD 100-500). Peoples of the Bellevue Phase fished, hunted, and gathered wild plants, seasonally migrating to exploit the available plant and animal resources in both upland and lowland areas. Seasonally occupied campsites are typical of this phase, and they occur in both uplands and lowlands and often contain low burial mounds.

Sites of this phase might be found on the Louisiana AAP. The presence of four drainages within the facility might have provided Bellevue people with an abundance of fish as well as water fowl, and the associated bottoms might have provided many species of wild game and plants. Most likely site locations are along the east and west margins of the AAP on the terraces overlooking Clarke Bayou and Bayou Dorcheat.

Troyville Period (AD 400 to 700). During this period, in addition to continued reliance on hunting, fishing, and plant gathering, the bow and arrow was introduced and maize agriculture was also practiced (Louisiana State Historic Preservation Office 1981). This period is represented by

an increase in the number and distribution of sites, indicative of greater hunting efficiency associated with the introduction of the bow and arrow. Agriculture also resulted in greater subsistence efficiency and productivity.

Although sites of this phase may be located on either Louisiana AAP uplands or lowlands, they are more likely found in upland areas and to consist of small, seasonally occupied hunting campsites. Sites of this phase may also be located in Clarke Bayou and Bayou Dorcheat, and again to be the remains of small camps rather than permanent or semi-permanent villages or hamlets. This is because the relatively narrow bayou floodplains would limit the amount of agricultural area.

Coles Creek Period (AD 750 to 1000). This was an apparent period of expansion based on a secure maize agriculture economy, although hunting and gathering continued to supplement the diet. A dispersed settlement pattern of small villages and seasonally occupied camps is indicated (Louisiana State Historic Preservation Office 1981). Sites were generally located on natural stream levees suitable for agriculture, especially those along old cutoffs and inactive channels.

The floodplain of Bayou Dorcheat exhibits topographic features that were preferred by Coles Creek people, and thus sites of this phase may be located on the Louisiana AAP. Coles Creek sites are not likely to occur in other AAP areas.

Caddo I Period (AD 800 to 1200). This culture appears to be derived from the preceeding Coles Creek Phase, as artifacts from the two periods have been found in the same village sites and in different construction stages in the same mound (Louisiana State Historic Preservation Office 1981). The period is characterized by intensive maize-beans-squash horticulture or agriculture and sedentism. This is reflected in scattered farmstead, hamlet, and village sites concentrated on larger flood plains that are suitable for agriculture.

The Bayou Dorcheat floodplain may contain Caddo I sites, but it is unlikely that contemporary sites will be located elsewhere on the AAP.

Caddo II-III Period (AD 1200 to 1500). Although this was a time of general Caddoan fluorescence, this was not true in Louisiana where there was apparently, a reversal to simpler lifeways; this is evidenced by a significant decline in mound construction during this period (Heartfield, Price and Greene, Inc. 1983).

Caddo II-III subsistence was apparently focused on the cultivation of maize, beans and squash, augmented by hunting, fishing, and wild food plant gathering. Settlements of permanent to semi-permanent small hamlets and family homesteads became more dispersed and spread out along small streams bottoms and lakeshores away from the major riverine valleys, although upland settlements and creek bottom locations on the edges of major floodplains are also common (Gregory 1980).

Given the more random settlement pattern, Caddo II-III sites may occur in all areas of the AAP though they are most likely along the major drainages. Site types will consist primarily of mounds with associated midden deposits, reflecting the sedentary nature of these peoples.

2.2.2 Ethnohistory

Caddo IV Phase (AD 1500 to 1700). Although this period saw the first contact between the indigenous Caddo and Euroamericans, there is no known evidence of such interaction on AAP lands.

Caddo IV subsistence continued to revolve around the cultivation of maize, beans and squash, and hunting and gathering remained important. Webb (1959) describes Caddo IV mound centers as community focal points for associated, sedentary agricultural villages and hamlets. Most of the known settlements are located on natural levees. Caddo IV sites are less randomly distributed than those of previous periods, and the larger sites are situated in alluvial valleys (Keller 1982). Upland hamlet occupation continued during this phase.

Sites of this phase may be located in the upland interior of the Louisiana AAP as well as the Bayou Dorcheat floodplain. Caddo IV people carried on a regular trade in salt with neighboring groups and were one of the leading suppliers of salt to other groups west of the Mississippi River (Cook 1965). Given the close proximity to the AAP of the Bisteneau Salt Works (16WE2), located two miles south of the facility at the head of Lake Bisteneau, there is a significant possibility that Caddo IV sites occur on the AAP.

Caddo V Phase (AD 1700 to 1850). This phase is typified by frequent interaction with Euroamericans (French and Spanish) as evidenced by the presence of European goods at several sites of this phase in northern Louisiana and southern Arkansas. The increased interaction resulted in an indigenous subsistence system based largely on trade, although small-scale agriculture and hunting/gathering continued. Most Caddo V sites reflect a small population, perhaps organized on a band level. Sites are generally hamlets or villages a few acres in size with an associated cemetery (Gregory 1980), concentrated on floodplains. The Caddo occupation of Louisiana ended in 1835 when they sold their lands to the Government and were removed to Texas.

Various commodities such as hides, bowwood (Osage orange [Toxylon pomiferum]), livestock, slaves, and European goods were valued trade items, although salt was probably most important (Gregory 1980). Given the proximity of the Lake Bisteneau Salt Works to the AAP, Caddo V sites dating to this time and associated with salt procurement may be expected in the Bayou Dorcheat floodplain and first terrace (Prairie terrace deposits) above the floodplain.

Choctaw Phase (AD 1850-AD 1790). At European contact, the Choctaw were one of the largest of the Southeastern tribes. The Choctaw have been

described as the preeminent agriculturists of the Southeastern tribes (Hodge 1907). Major crops included maize, tobacco, sweet potato, melons, and sunflower. Trading, animal husbandry, and hunting were also important. The Choctaw were less dependent on animal foods than most of their neighbors and made more use of small animals, particularly squirrels (Swanton 1946). They originally used northern Louisiana for hunting, but some groups had moved west from their homes east of the Mississippi River as early as 1763 and by 1820 several villages were known to exist in Caddo Country (Cook 1965).

Swanton (1931) has provided the most complete description of Choctaw social organization. The most important social units were exogamous subdivisions called iksas and each town was composed of several of these.

A Choctaw village is reported to have been located south of the Lake Bisteneau dam (approximately 16 miles south of the Louisiana AAP) and another on land owned by Colonel John Kimbell in Claiborne Parish (Harris and Hulse 1886). Although sites dating to this period may occur on the facility, the absence of diagnostic artifacts will make identification of the sites as "Choctaw" difficult.

2.2.3 History

European Exploration (AD 1540 to 1713). Europeans first visited northwest Louisiana in 1542 when Hernando De Soto's expedition traveled down the Mississippi River, and they were followed by the French expeditions of Sieur de La Salle and Henri de Tonti (Commercial National Bank of Shreveport 1979: 8). These contacts with the area were exploratory and no settlement was undertaken in the region.

Only scattered and isolated archeological remains of this period could be expected to be found, and then only in those areas known to have been traversed by European explorers.(particularly along the major rivers such as the Red). The Louisiana AAP appears to be out of the major lines of exploration.

Colonial Era (AD 1803 to 1713).

French. The first French settlement in northwest Louisiana was made at the site of present day Natchitoches in 1713 with the establishment of Fort St. Jean Baptiste (Commercial National Bank of Shreveport 1979:9). Other French settlements were established along the nearby rivers and streams, as the French preferred the wide alluvial river lands and seldom settled in the uplands (Cook 1965: 16, 23). Thus, no evidence of French colonization has been located or would be expected to occur on the facility.

Spanish. Spanish colonization initially took place at Los Adaes near present day Robeline, Louisiana, in 1720 (Gregory 1973: 13). Until cessation of Louisiana to Spain by the French in 1762, no other Spanish settlements were established in the area. The Spanish settlement closest to the Louisiana AAP was Bayou Pierre some 50 miles to the southwest. It is

unlikely that cultural remains of this period will be found on the facility as no known Spanish activity took place there.

Frontier Period.

Hunters and Farmers (AD 1803 to 1830). All known settlement during this period occurred beyond the facility boundary. The first settlers in the area were Isaac Alden and Richard Fields who settled in 1811 east of present day community of Meridian (Anonymous 1890: 380). During the following years, more settlers arrived but none appears to have settled in the area of the facility. No roads crossed the area; the main roads were one built in 1827 from Fort Jessup to Fort Towson (running east of the AAP), and one built in 1829 from Russellville to Minden (lying northeast of the facility). Although settlers may have hunted the present-day AAP lands, no evidence of their activity has been found and it is unlikely that any will.

Settlement Period.

Homestead Claims (AD 1930-AD 1861). Most of the public lands in the area of the facility were claimed between 1830 and 1861 (Table 2-5). Claims within the AAP all date from this period, the earliest being in 1836 and the latest in 1863; most of these were made between 1848 and 1850.

Section 5, T18N, R9W was claimed by Newitt (Newton), Drew and David C. Pratt in 1837. Drew started a grist and saw mill on his claim, around which grew the town of Overton (Anonymous 1890:657). This town was located near the place on Bayou Dorcheat known as the Minden Lower Landing (Harris and Hulse 1886:19). Overton became the first parish seat of Webster Parish in 1836. Due to Overton's unhealthy location and flooding, the parish seat was moved to Athens in 1846 (Harris and Hulse 1886:20). Overton was completely abandoned shortly thereafter; remains of the town might be present in those areas of section 5, T18N, R9W that lie within the facility.

Nineteenth century land claims were for small acreages (40 to 160 acres) and were settled as homesteads. Clearing was done by slash and burn. By the 1880s repeated planting had exhausted thousands of acres of cropland soils and areas once under cultivation were allowed to naturally revegetate (timber), wash away by unchecked erosion, or were covered in young pine that occurred naturally as secondary growth (Harris and Hulse 1886:40).

Archeological remains of this period that might be found on the AAP include scatters of domestic refuse (ceramics, glass, metal) associated with now-removed house locations, artificial terraces on the steeper slopes, and some old homestead remnants such as wells, wall bases or foundational remains, fencing, and brick from collapsed chimneys.

Civil War (AD 1860 to 1865). The Civil War slowed the rate of settlement in the area. Economic prosperity was curtailed and a lack of labor left many fields fallow and sometimes allowed to grow up in timber.

Table 2-5. HISTORIC LAND CLAIMS ESTABLISHED ON THE LOUISIANA AAP[a]

Date	Number of Sections Claimed	Annual Percentage
1836	8	2.0
1837	1	2.5
1839	1	2.5
1844	1	2.5
1847	2	5
1848	7	17.5
1849	2	5
1850	10	25
1851	2	5
1853	1	2.5
1855	2	5
1859	1	2.5
1860	1	2.5
1863	1	2.5
Total	40	100.0

[a] Information obtained from the U. S. Land Entry books maintained in the Bossier Parish Courthouse, Benton, LA; and the Webster Parish Courthouse, Minden, LA.

The major Civil War activity in the area was the reopening of the salt works at the north end of Lake Bisteneau (Cook 1963) just a short distance south of the present AAP boundaries . These works were one of three major sources of salt for the Confederacy and their operation introduced a temporary outside population into the area. It is unlikely that these people left any permanent imprint on facility lands, though some of the burials in the facility cemeteries may be these laborers.

Post-Civil War (AD 1865 to 1900). This was a period of change for the area. The end of slavery brought share cropping and the resultant scatter of small homesteads throughout the South. Farmsites will be found along the old roads and trails in the study area, particularly in the relatively elevated central section of the facility.

On the southern AAP border, the building of the U.S. and P. Railroad sounded the death knell for steamboat travel along Bayou Dorcheat (which forms the eastern boundary of the facility). This occurred in 1883 and 1884 when the merchants of Minden agreed to do all their shipping by way of the railroad (Harris and Hulse 1886). Remains of the steamboat landings might be found along the course of Bayou Dorcheat (Huber 1959). The Lower Minden Landing, was located on the east bank of Bayou Dorcheat and opposite the facility.

The cemeteries on the facility appear to date from the Post-Civil War period with the earliest markers dating from the 1860s. These appear to be family plots. The exception may be the Allen Town Cemetery located in Section 11, T18N, R11N, which may be associated with the early 1820s settlement called Allen Town that may have extended into the northwestern corner of the AAP. The distribution of the cemeteries indicates that settlement was concentrated in the central portion of the facility, with none occurring in the relatively low-lying east and west margins.

Modern Period.

Farm and Lumber Sub-Period (AD 1900 to 1941). Throughout this period scattered homesteads existed throughout the facility acreage. The existing remains of these will generally be found along the early twentieth century road network . Most settlement was located in the higher elevations, generally above 180 feet AMSL, rather than in the low-lying portions of the facility acreage. The lower areas were timbered during this period. No mention is made in the archival literature of lumbering activities on the facility and any that occurred would appear to have been small in scale, leaving no evidence of this activity today.

Military Reservation Sub-Period (AD 1941 to the present). In 1941, the area occupied by the facility was obtained by the U.S. Government. The structures built during this period are extant today and are fully documented by plans and drawings maintained by the U.S. Army.

2.3 ARCHEOLOGICAL RESEARCH DIRECTIONS

Little in the way of systematic cultural resources surveys or full scale excavations have been undertaken in the region surrounding the

project area. Previous investigations there have largely been confined to small scale surveys and testing programs. Most of this has been confined to the major river courses and their major tributaries. The larger surveys of the area generally are concerned with reservoir construction and river channelization. Most of the attention of the earlier researchers was confined to the large prehistoric riverine settlements, and much of our knowledge of these periods is limited to these large sites. The upland areas have received far less attention, most of the work there having been limited areal surveys of lignite and other energy related project lands.

The following regional research problems are in part following the Louisiana State Archeological Plan as it was available in draft in 1981 (Louisiana State Historic Preservation Office 1981).

The Paleo-Indian era in the region surrounding the facility is poorly understood. Much of the area literature concerning the period is based on work done far to the west. The period is generally represented by surface finds of single projectile points or small scatters. Therefore, the area's Late Pleistocene lifeway has been based on the inference that similar projectile points indicate a similar lifeway. Due to the limited nature of the Paleo-Indian data, only broad generalized questions can be addressed:

- How can we recognize large intact Late Pleistocene terrace deposits that may contain Paleo-Indian sites?
- Is there evidence of a pre-Clovis occupation as suspected in other regions of North America?
- Is there an observable cultural sequence within the Paleo-Indian tradition reflecting a change in subsistence/settlement strategies?
- Were the Paleo-Indian peoples of the area practicing a big-game hunting pattern or did they have a more wide ranging economy with a heavier dependence on floral resources?

In spite of extensive excavation of Archaic sites, the period is not clearly understood and knowledge of the fundamentals of Archaic subsistence patterns is still lacking (Haag 1978). General regional research questions concerning the Archaic include:

- What is the generalized Archaic subsistence/settlement pattern for this region?
- When did the ideological practice of mound building begin in the Archaic?
- Did the Archaic peoples of this region domesticate native plants?

- Are there diachronic differences in the subsistence/settlement strategy within the regional Archaic era and, if so, what stimuli do these changes reflect?

- Therefore, are there distinct flaking techniques, tool use, wear or tool types that are recognizably distinct from the Archaic to the Post-Archaic that can help in assigning a relative age to the small upland lithic scatters?

The Bellevue phase is believed to be the remains of a people practicing incipient agriculture and ceramic manufacture. The major regional research questions which can be addressed here are:

- Was there a shift in socio-political and settlement strategies with the introduction of agriculture?

- When was the ceramic technology introduced and from what sources?

In north Louisiana where the facility is located, Troyville probably followed the Bellevue developments. The importance of highly structured ideological practices such as burial mound construction and a reliance on agriculture characterize this period and provide directions for formulating research questions.

- Is Troyville the time/cultural framework within which the bow and arrow reached this region?

- What is the evidence that there is a greater dependence on agriculture during these times?

- Was there a subsistence/settlement strategy or ideological shift associated with greater dependence on agriculture?

Recall that the Coles Creek Period appears to have been a time of stability with a secure agricultural economy. The settlement pattern indicates small seasonal occupations with small temple mound centers. The major research questions of this period are:

- What is the nature of the centralized authority?

- When did the ideological shift to temple mounds occur and what are the origins of this shift?

The Caddo Culture represents a change in ideology and the sociopolitical structure over a wide area. It also represents an expansion of agriculture. Regional research questions for the Caddo Culture are:

- What is the origin of the Caddo Culture and what is its relationship to Coles Creek?

- Are Caddoan cultural remains evidence of a population invasion?

- What is the relationship of Caddo culture to Meso-America?
- Do modifications in the ideology and elite class status during the different Caddoan periods have a relationship to the subsis tence economy and, if so, what is the nature of this relationship?
- What is the extent of trade during Caddoan and what trade relationships did Caddoan peoples have with peoples outside the region?

Little interest has been given to the archeological potential for historic remains in northern Louisiana. Within the Red River alluvial valley, historic Native American Euroamerican contact is being explored at Los Adaes (Hiram Gregory, personal communication 1983). Because Bayou Dorcheat is associated with the salt trade from earliest historic times until the Civil War, it is possible that evidence of historic Caddoan and early Euroamerican commerce might remain in the facility area.

Bayou Dorcheat was a navigable stream and there may also be potential archeological data related to historic river commerce on the AAP, in terms of boat typology, construction techniques, and cargo contents.

To date, little attention has been paid to the archeological remains of early farms or communities in northern Louisiana. However, there is a growing national interest in vernacular architecture and rural or folk lifeways, and in the use of archeological remains to supplement historical studies of nineteenth and early twentieth century settlement patterns and social and economic systems.

3.0

AN ASSESSMENT OF ARCHEOLOGICAL RESOURCE PRESERVATION AND SURVEY ADEQUACY

3.1 ENVIRONMENTAL CONSTRAINTS TO SITE PRESERVATION

Approximately 52 percent (7824 acres) of the Louisiana AAP lies at or above 200 feet AMSL and consists of gently sloping to nearly level topography. These sediments (Montgomery and Prairie deposits), while having the highest potential for recovery of Paleo-Indian, Archaic, and historic remains, have little potential for site preservation. Factors limiting preservation are the continual erosion of the terrace deposits and modern land practices (silviculture). It is doubtful that any significant prehistoric sites are present there, and historic materials will be limited to the remains of subsurface features such as cisterns.

Approximately nine percent (1350 acres) of the facility lies below 160 feet AMSL. This includes 675 acres along the margins of Bayou Dorcheat, 600 acres along the margin of Clarke Bayou and Caney Branch, and 75 acres along Boone Creek. These low-lying and seasonally inundated floodplains have the highest potential for preservation of cultural remains due to continual sediment deposition. Although sedimentation in this area provides an excellent setting for preservation, however, the probability that prehistoric and/or historic sites are actually located there is extremely low due to the area's unsuitability for habitation. The exception is the floodplain of Bayou Dorcheat, which has a high potential for the discovery of steamboat or other remains associated with navigation along the waterway.

The approximately eight percent (1220 acres) of the AAP whose surface lies between 160 and 180 feet AMSL and can be found along the margins of Bayou Dorcheat, Boone Creek, Clarke Bayou, and Caney Creek. These Montgomery and Prairie sediments provide a prime locale for both the preservation and location of prehistoric cultural remains, particularly Archaic and possibly Paleo-Indian.

Approximately 31 percent (4600 acres) of the facility lies between 200 and 180 feet AMSL, and slopewash occurs at this elevation interval. These materials have created colluvial deposits on surfaces between 180 and 160 feet AMSL. It is anticipated that the colluvial materials may include buried, in situ cultural remains. Note that the lower portion of these colluvial deposits may also have been affected by modern sedimentation. Although silviculture occurs at this elevation interval, buried-possibly intact--remains may be located here.

3.2 HISTORIC AND RECENT LAND USE PATTERNS

Initial land clearing of the study area presumably began immediately following settlement in the early to mid-nineteenth century. Figure 3 1 illustrates cleared or cultivated areas as of 1939 and indicates that approximately 40 percent of the 14,974 acres (5989 acres) presently comprising the Louisiana AAP had been cleared by that time. Clearing is confined primarily to the upland or central portion of the plant in areas at or above 200 feet AMSL. Aerial photographs obtained from the plant files indicate extensive artificial terracing in the cleared areas. Clearing and agricultural activities (plowing) have disturbed at least the upper 12 inches of soil deposits, while terracing may have substantially disturbed or displaced soils as deep as 18 to 24 inches.

After acquisition by the Government in 1941, 350 additional acres were cleared and landscaped in preparation for construction of production facilities (Figure 3-1). Following construction of the facility, approximately 2398 acres (16 percent) had been landscaped, placed under construction, or been affected by ancillary activities (Table 3-1, Figure 3-2).

Today the facility includes 141 miles of paved and gravel roads, 107 miles of fire lanes (maintained by blading and discing), 64 miles of railroad lines and right-or-way, and 331 miles of roadside ditches and drainage channels. Approximately 1.6 miles of Boone Creek has been channelized. Thus, a total of approximately 2398 acres (16 percent) of the total facility (14,974 acres) have been disturbed and/or cleared in conjunction with facility construction. Table 3-1 lists the primary modern ground disturbances that might limit the present resource base on the facility. These ground disturbances are illustrated on Figure 3-2. The remaining 646 acres (four percent) not directly impacted by building construction are within areas occupied by facility roads, railroads, fire lanes, ditches, and drainage channels.

All wooded acreage (approximately 11,930 acres or 80 percent) of the facility is included in a silviculture program that was established in 1962 (Louisiana Army Ammunition Plant 1983). All cutting is by private firms, and the Corps of Engineers lets all cutting contracts. The facility is zoned into eight cutting compartments that are managed on a rotating basis. Trees are harvested with a chainsaw and shear-cutter (at ground level), and skidders are used to move cut logs in the forest. This activity may disturb the ground surface to an estimated depth of six to eight inches. Every eight to ten years all forested acres are subjected to thinning and other tree management practices. None of the compartments is clearcut. Planting is done by both manual and mechanical means. Mechanical planters plow to an estimated depth of 3.5 to 4 inches (Nuel C. Cox, personal communication 1984).

3.3 PREVIOUS CULTURAL RESOURCE INVESTIGATIONS: COVERAGE AND INTENSITY

A cultural resources survey of "selected locations" was conducted on the Louisiana AAP (Bennett 1984). The pedestrian survey of 350 wooded

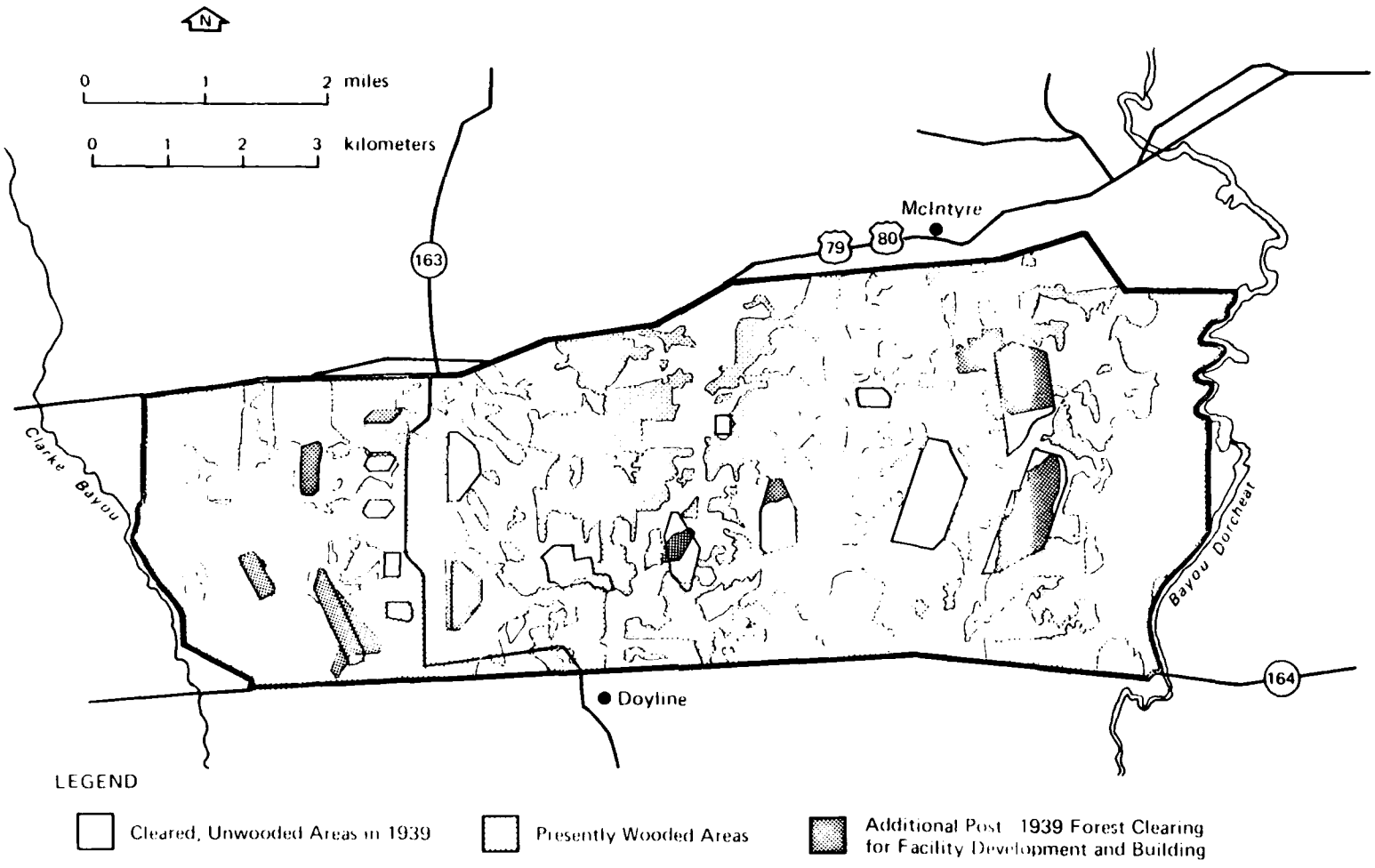


Figure 3-1. PROGRESSION OF LAND CLEARING ON THE LOUISIANA ARMY AMMUNITION PLANT

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE LOUISIANA AAP

GDA No[a]	Type of Disturbance[b]	Date Conducted (yr)	Reference[b]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area: UTM (Zone 15)[c] Northing	Easting	Legal Reference: Township	Range	Section	USGS Quad Sheet[d]	Coincidental Sites
1	Construction of areas for testing and disposal of excess explosives and scrap metal; 5150' of access roads	Post-1947	BP	53	1	6:10	(NE) 603000 (NW) 3602950 (SE) 3602500 (SW) 3602500	457150 456600 457150 456600	18N	11W	12	M1547	None
2	Construction of explosive storage igloos; 8200' access roads; 1941-42 land clearing of 50 acres for building construction	Pre-1947	BP	50	1.0-1.25	10:10	(NW) 3601350 (NE) 3601450 (SW) 3600800 (SE) 3600900	457000 457200 457300 457475	18N	11W	13	M1547	None
3	Construction of 18 warehouses with 299,600 sq. ft. and 12,600' access roads; storage for fiber containers, metal parts and bandoleers; 1941-42 land clearing of 95 acres for building construction	Pre-1947	BP	95	1.0-1.25	9:10	(NW) 3600950 (NE) 3601250 (SW) 3600000	457950 458050 458400	18N 18N	10W 11W	18, 19 13	M1547	None
4	Construction of explosive storage igloos; 8500' access roads; 1941-42 land clearing of 55 acres for building construction	Pre 1947	BP	55	1.25-1.5	10:10	(NW) 3602750 (NW) 3602825 (SW) 3602150 (SE) 3602150	457750 458050 457800 458000	18N	11W	12	M1547	None
5	Construction of explosive storage igloos; 1150' access road	Pre 1947	BP	15.5	1.25-1.5	10:10	(NW) 3601750 (NE) 3601750 (SW) 3601550 (SE) 3601550	458200 458450 458200 458450	18N	10W	18	M1547	None
6	Construction of 10 ware houses; 5700' access roads; 1941-42 land clearing of 30 acres for building construction	Pre 1947	BP	30	1	4:10	(NW) 3603250 (NE) 3603250 (SW) 3603075 (SE) 3603075	458700 459150 458600 458950	18N	10W	7	M1547	None

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE LOUISIANA AAP (cont'd)

GDA No[a]	Type of Disturbance[b]	Date Conducted (yr)	Reference[b]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area: UTM (Zone 15)[c] Northing	Easting	Legal Reference: Township	Range	Section	USGS Quad Sheet[d]	Coincidental Sites
7	Construction of fuze loadline and component assembly line facility; 4500' access road	Pre-1947	BP	25	1	4:10	(NW) 3602675 (NE) 3602675 (SW) 3602450 (SE) 3602450	458700 459000 458600 458950	18N	10W	7	M1547	None
8	Construction of assembly buildings and roads; 5400' access road	Pre-1947	BP	27	1	5:10	(NW) 3602050 (NE) 3602050 (SW) 3601850 (SE) 3601850	458650 459000 458600 459025	18N	10W	18	M1547	None
9	Construction of charge production line; 3900' access road	Pre-1947	BP	27	1	4:10	(NW) 3601400 (NE) 3601400 (SW) 3600550 (SE) 3600500	458850 459075 458900 459250	18N	10W	18	M1547	None
10	Construction of fuze production facility; 5200' access road	Pre-1947	BP	25	1	4:10	(NW) 3600775 (NE) 3600775 (SW) 3600550 (SE) 3600500	458900 459200 458900 459250	18N	10W	18	M1547	None
11	Construction of 60 buildings for a munitions loading facility; 8800' access roads	Pre-1947	BP	95	6-8	5:10	(NW) 3602950 (NE) 3602700 (SW) 3602050 (SE) 3602400	459650 460050 459650 460100	18N	10W	17	M1547	None
12	Construction of at least 50 buildings for mortar and 2.75" warhead loading; 115,000' access roads; 1941-42 land clearing of 100 acres for building construction	Pre 1947	BP	100	6-8	6:10	(NW) 3601325 (NE) 3601100 (SW) 3600450 (SE) 3600500	459750 460050 459750 460100	18N	10W	17 18	M1547	None
13	Excavation of leaching pits for explosive wastes; 1600' access road	Post 1947	BP	14	6-8	10:10	(NW) 3600650 (NE) 3600500 (SW) 3601350 (SE) 3601400	460400 460650 460350 460400	18N	10W	17 20	M1547	None
14	Construction of railroad classification yard; 9000' access road	Pre 1947	BP	64	4-6	10:10	(NW) 3602650 (NE) 3602700 (SW) 3601350 (SE) 3601400	460600 460900 460700 460950	18N	10W	8 17	M1547	None

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE LOUISIANA AAP (cont'd)

GDA No[a]	Type of Disturbance[b]	Date Conducted (yr)	Reference[b]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area: UTM (Zone 15)[c] Northing	Easting	Legal Reference: Township	Range	Section	USGS Quad Sheet[d]	Coincidental Sites
15	Construction of suspect truck inspection station; 1000' access road	Post-1947	BP	0.7	3-5	6:10	(NE) 3603250 (NW) 3603250 (SE) 3603250 (SW) 3603150	460350 460600 460350 460550	18N	10W	8	M1547	None
16	Construction of general maintenance and plant support sections	Pre-1947	BP	48	5-6	5:10	(NE) 3603100 (NW) 3603650 (SE) 3602900 (SW) 3603050	461050 461650 461250 461750	18N	10W	8 9	M1547	None
17	Construction of heavy-duty melt pour-lead line facility; 9700' access road	Pre-1947	BP	110	3-5	7:10	(NE) 3601500 (NW) 3601250 (SE) 3600850 (SW) 3600850	460950 461800 460950 461850	18N	10W	16 17	M1547	None
18	Construction of mine loading or air-dropped munitions facility; 9600' access roads; 1974-42 land clearing of 30 acres for building construction	Pre-1947	BP	91	3-5	6:10	(NE) 3601950 (NW) 3601500 (SE) 3600950 (SW) 3601600	462600 462900 462750 462450	18N	10W	16	M1547	None
19	Construction of conventional shell producing line; 5500' access roads	1953	BP	64	6 10	10:10	(NE) 3603500 (NW) 3603550 (SE) 3603200 (SW) 3603100	463100 463800 463800 463100	18N	10W	10	M1547	None
20	Construction of facility administration area; 12,300' access roads	Pre 1947	BP	92	0.8-1.0	8:10	(NE) 3603850 (NW) 3604150 (SE) 3603650 (SW) 3603550	460250 461150 460300 461500	18N	10W	5	M1547	None
21	Existing landfill area		BP	5.6	10	10:10	(NE) 3604650 (NW) 3604750 (SE) 3604550 (SW) 3604650	463050 463200 463100 463300	18N	10W	3	M1547	None
22	Existing landfill area		BP	13.4	10	10:10	(NE) 3604800 (NW) 3604800 (SE) 3604650 (SW) 3604650	463650 464050 463650 464050	18N	10W	3	M1547	None

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE LOUISIANA AAP (cont'd)

GDA No[a]	Type of Disturbance[b]	Date Conducted (yr)	Reference[b]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area: UTM (Zone 15)[c] Northing	UTM Easting	Legal Reference: Township	Range	Section	USGS Quad Sheet[d]	Coincidental Sites
23	Existing landfill area	---	BP	8.4	10	10:10	(NE) 3604800 (NW) 3604800 (SE) 3604650 (SW) 3604650	464200 464400 464200 464400	18N	10W	3	M1547	None
24	Construction of line loading facility; 13,000' access road; 1941-42 land clearing of 20 acres for building construction	Pre-1947	BP	100	6-8	3:10	(NE) 3602650 (NW) 3602650 (SE) 3601400 (SW) 3601900	463875 464000 463750 464200	18N	10W	10 15	M1547	None
25	Landfill area	Post-1947	BP	93	10	10:10	(NE) 3600600 (NW) 3600500 (SE) 3600100 (SW) 3600100	462450 464200 463450 464100	18N	10W	15 22	M1547	None
26	Construction of sewage treatment plant and pond	Pre-1947	BP	2.8	6-8	10:10	(NE) 3600900 (NW) 3600900 (SE) 3600750 (SW) 3600750	464050 464200 464050 464250	18N	10W	15	M1547	None
27	Construction of storage igloos; 30,500' access roads; dirt borrow from surroundings in FY1981 for 30" dirt cover on igloos	Pre-1947	BP NRMP ML	351	10	10:10	(NE) 3603050 (NW) 3602400 (SE) 3601400 (SW) 3601350	465900 466700 465300 466100	18N	10W	11, 12 12, 14	M1547	None
28	Explosives burning ground with 1700' access road	Post-1947	BP	17	0.5-0.7	3:10	(NE) 3602750 (NW) 3602750 (SE) 3602700 (SW) 3602700	464850 465000 464800 464950	18N	10W	11	M1547	None
29	Construction of 10 ware houses for Y-line related parts/materials and DIPEC storage; 6100' access roads	Pre 1947	BP	26	1	7:10	(NE) 3603550 (NW) 3603450 (SE) 3603250 (SW) 3603200	464950 465550 464950 465450	18N	10W	11	M1547	None
30	Construction of 8 buildings in Test Area No. 7; 850' access road	Post 1947	BP	7.8	1	4:10	(NE) 3604200 (NW) 3604200 (SE) 3603950 (SW) 3604000	464350 464500 464350 464500	18N	10W	3	M1547	None

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE LOUISIANA AAP (concl'd)

GDA No[a]	Type of Disturbance[b]	Date Conducted (yr)	Reference[b]	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area: UTM (Zone 15)[c] Northing	Easting	Legal Reference: Township	Range	Section	USGS Quad Sheet[d]	Coincidental Sites
31	Construction of igloo ammo storage; 59,300' access roads; 1941-42 land clearing of 400 acres for building construction; FY1981 dirt borrow from area for 30" dirt cover on igloos	Pre-1947	BP NRMP ML	630	10	10:10	(NE) 3604050 (NW) 3604050 (SE) 3601100 (SW) 3601400	466650 467500 466450 467450	18N	10W	1, 12 13	M1547	None
32	Texas Gas and Transmission Co. pipeline excavation and right-of-way	1955	BP	7.2	4	10:10	(NE) 3599950 (NW) 3602500 (SE) 3599900 (SW) 3602000	468150 468700 468750 468200	18N	9W	19	M1547	None
33	Facility fuel storage tank area	Post-1947	BP	5.7	1	10:10	(NE) 3603400 (NW) 3603450 (SE) 3603250 (SW) 3603300	461250 461350 461300 461400	18N	10W	8	M1547	None
34	Construction of an explosive storage area; 1300' access road and land clearing for construction	Post-1947	BP	8.0	1.0-1.25	5:10	(NE) 3601850 (NW) 3601850 (SE) 3601450 (SW) 3601450	456100 456250 456150 456275	18N	11W	14	M1547	None
35	Excavation of a borrow pit for fill dirt	1970's	RJT	35	12	10:10	(NE) 3601650 (NW) 3601650 (SE) 3601350 (SW) 3601300	460250 460600 460250 460600	18N	10W	17	M1547	None
36	Artificial channelization of Boone Creek	Pre 1947	ML USGS	6	5-6	10:10	(N) 3602900 (S) 3600800	464650 464500	18N	10W	10, 11 15	M1547	None

[a] GDA = Ground Disturbance Area; these are cross referenced to Figure 3 2.

[b] Blueprint (BP) No. 5099 on file at facility base planning office; LAAP Natural Resources Management Plan (NRMP) (1983); Mr. Cox (ML) LAAP Assistant Forester, personal communication 25 May 1983; Mr. R. J. Tweedy (RJT) LAAP Electric Engineer, personal communication 25 May 1983; USGS 15 min. 1947 Minden, LA (ML), quad sheet (unrevised).

[c] Structure coordinates are referenced by their corners.

[d] M1547 = USGS 15 min. 1947 Minden, LA, quad sheet (unrevised).

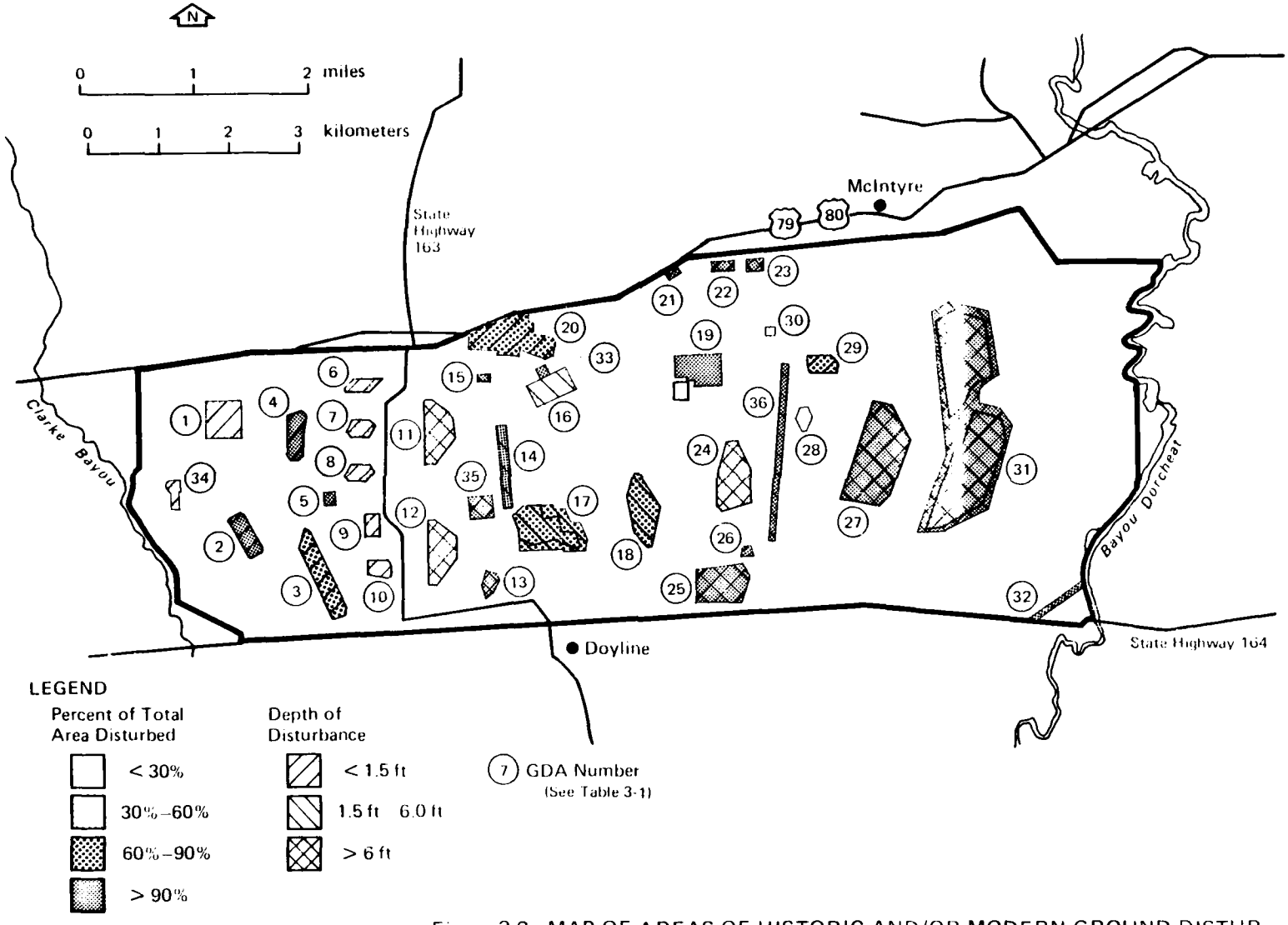


Figure 3-2. MAP OF AREAS OF HISTORIC AND/OR MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE ON THE LOUISIANA ARMY AMMUNITION PLANT

acres was undertaken without access to the results of a prior archival search, and no known sites were previously recorded. Cultural resources recorded as a result of this survey include the Vanorsdale cemetery, and several isolated artifacts, including flakes, fire-cracked rock, and a broken Gary point (see Appendix B). Site forms for these are on file with the appropriate Louisiana state agencies. It was concluded that the sparseness and degree of disturbance of the materials precluded their consideration for nomination to the National Register of Historic Places.

3.4 SUMMARY ASSESSMENT OF DATA ADEQUACY, GAPS

The facility topography can be described within three surface contour intervals: (1) areas above 200 feet AMSL; (2) areas between 160 and 200 feet AMSL; and (3) areas below 160 feet AMSL.

The areas above 200 feet AMSL have the highest potential for the location of Paleo-Indian, Archaic, and historic remains. Due to erosion and modern land use practices, however, this interval area is considered the least likely area for the preservation of significant cultural remains of any kind.

The lowest interval, below 160 feet AMSL, has the highest potential for site preservation because of sedimentation. However, due to its unsuitability for occupation, this area is regarded as having the lowest probability for prehistoric or historic habitation. An exception is the remains of historic use of the area for navigation-related activities.

The only area within the facility considered to have a high probability for both preservation and location of prehistoric and historic remains is within the interval of 160 to 200 feet AMSL. This area has been affected by colluviation, and alluviation on its lower limits, providing potential for buried cultural remains. This area also was an excellent locality for settlement, being located on the ecotone between uplands and stream margins with access to varied habitats.

4.0

POTENTIAL ARCHEOLOGICAL RESOURCES ON THE LOUISIANA ARMY AMMUNITION PLANT

Several isolated artifacts have been identified on the Louisiana AAP, as well as an historic cemetery (Bennett 1984). Further, potential sites have been identified from historic documents.

The Louisiana AAP potential sites are itemized on Table 4-1, their locational data are listed in Table A-1, and they are mapped in Figure A-1. Information regarding their location and approximate age was obtained from both early maps and archival sources pertinent to the facility vicinity and from Mr. Nuel C. Cox, AAP Assistant Forester. The potential sites are expected to consist of domestic refuse associated with structures (residences) once located within the Louisiana AAP boundaries. Small churches, stores, and schools were also present. Other features, such as wells, water holding tanks, brick chimney remnants, wire, and wooden animal pens, are also anticipated in association with these previous structure locations.

Archival sources indicate that Overton, settled in the 1820s and situated along the east bank of Bayou Dorcheat in Section 5, T18N, R9W, was located across the bayou from the present facility. It consisted of a small settlement and steamboat landing (Minden Lower Landing), and became the parish seat in 1836. Although unlikely, cultural remains associated with the settlement and landing may occur along the west bank of the bayou within the facility.

Archival sources have indicated that Allen Town, an early rural community settled in the 1820s, may have been located in the northern portion of Section 11, T18N, R11W, in Bossier Parish. Remains of this community are likely to be located in this area. Allen Town Cemetery, currently fenced and maintained by AAP personnel, is located in the area.

The 1914 Webster Parish Soil Map (Louisiana Agricultural Experiment Station, Bureau of Soils 1914) identifies 81 structures standing in the facility at that time (Figure A-1). These are associated with the small rural farming community, comprised typically of small homesteads of 40 to 160 acres, which once thrived throughout the general region.

Inspection of the Webster Parish Highway Map (Louisiana Highway Commission, Bureau of Public Roads 1937) reveals 86 structures standing in the facility, and also depicts one church (Figure A-1). Comparison of the two maps reveals that some structures have been removed between 1914

Table 4-1. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP

Site Number, Name[a]	Reference[b]	Description[c]	Research Value CR[d]
1	SM	Homestead	3
2	SM	Homestead	3
3	SM	Homestead	3
4	SM	Homestead	3
5	SM	Homestead	3
6	SM	Homestead	3
7	SM	Homestead	3
8	SM	Homestead	3
9	SM	Homestead	3
10	SM	Homestead	3
11	SM	Homestead	3
12	SM	Homestead	3
13	SM	Homestead	3
14	SM	Homestead	3
15	SM	Homestead	3
16	SM	Homestead	3
17	SM	Homestead	3
18	SM	Homestead	3
19	SM	Homestead	3
20	SM	Homestead	3
*21	SM	Homestead	3
22	SM	Homestead	3
23	SM	Homestead	3
24	SM	Homestead	3
25	SM	Homestead	3
*26	SM	Homestead	3
*27	SM	Homestead	3
28	SM	Homestead	3
29	SM	Homestead	3
30	SM	Homestead	3
31	SM	Homestead	3
32	SM	Homestead	3
33	SM	Homestead	3
34	SM	Homestead	3
35	SM	Homestead	3
36	SM	Homestead	3
37	SM	Homestead	3
38	SM	Homestead	3
39	SM	Homestead	3
40	SM	Homestead	3
41	SM	Homestead	3
42	SM	Homestead	3

Table 4-1. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (continued)

Site Number, Name[a]	Reference[b]	Description[c]	Research Value CR[d]
43	SM	Homestead	3
44	SM	Homestead	3
45	SM	Homestead	3
46	SM	Homestead	3
47	SM	Homestead	3
48	SM	Homestead	3
49	SM	Homestead	3
*50	SM	Homestead	3
51	SM	Homestead	3
*52	SM	Homestead	3
*53	SM	Homestead	3
*54	SM	Homestead	3
55	SM	Homestead	3
56	SM	Homestead	3
*57	SM	Homestead	3
58	SM	Homestead	3
*59	SM	Homestead	3
60	SM	Homestead	3
61	SM	Homestead	3
62	SM	Homestead	3
63	SM	Homestead	3
64	SM	Homestead	3
65	SM	Homestead	3
66	SM	Homestead	3
67	SM	Homestead	3
68	SM	Homestead	3
69	SM	Homestead	3
*70	SM	Homestead	3
*71	SM	Homestead	3
*72	SM	Homestead	3
73	SM	Homestead	3
74	SM	Homestead	3
75	SM	Homestead	3
76	SM	Homestead	3
77	SM	Homestead	3
78	SM	Homestead	3
79	SM	Homestead	3
80	SM	Homestead	3
81	SM	Homestead	3
82	HM	Homestead	3
83	HM	Homestead	3
84	HM	Homestead	3

Table 4-1. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (continued)

Site Number, Name[a]	Reference[b]	Description[c]	Research Value CR[d]
85	HM	Homestead	3
86	HM	Homestead	3
87	HM	Homestead	3
88	HM	Homestead	3
*89	HM	Homestead	3
90	HM	Homestead	3
91	HM	Homestead	3
92	HM	Homestead	3
93	HM	Homestead	3
94	HM	Homestead	3
95	HM	Homestead	3
96	HM	Homestead	3
97	HM	Homestead	3
98	HM	Homestead	3
99	HM	Homestead	3
100	HM	Homestead	3
*101	HM	Homestead	3
*102	HM	Homestead	3
*103	HM	Homestead	3
*104	HM	Homestead	3
*105	HM	Homestead	3
*106	HM	Homestead	3
107	HM	Homestead	3
108	HM	Homestead	3
*109	HM	Homestead	3
110	HM	Homestead	3
111	HM	Homestead	3
112	HM	Homestead	3
113	HM	Homestead	3
114	HM	Homestead	3
115	HM	Homestead	3
116	HM	Homestead	3
117	HM	Homestead	3
118	HM	Homestead	3
119	HM	Homestead	3
120	HM	Homestead	3
122	HM	Homestead	3
123	HM	Homestead	3
124	HM	Homestead	3
125	HM	Homestead	3
126	HM	Homestead	3
127	HM	Homestead	3

Table 4-1. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (continued)

Site Number, Name[a]	Reference[b]	Description[c]	Research Value CR[d]
128	HM	Homestead	3
129	HM	Homestead	3
130	HM	Homestead	3
131	HM	Homestead	3
133	HM	Homestead	3
134	HM	Homestead	3
135	HM	Homestead	3
136	HM	Homestead	3
137	HM	Homestead	3
138	HM	Homestead	3
*139	HM	Homestead	3
*140	HM	Homestead	3
*141	HM	Homestead	3
*142	HM	Homestead	3
143	HM	Homestead	3
144	HM	Homestead	3
145	HM	Homestead	3
146	HM	Homestead	3
147	HM	Homestead	3
148	HM	Homestead	3
*149	HM	Homestead	3
150	HM	Homestead	3
151	HM	Homestead	3
152	HM	Homestead	3
153	HM	Homestead	3
154	HM	Homestead	3
*155	HM	Homestead	3
*156	HM	Homestead	3
157	HM	Homestead	3
158	HM	Homestead	3
159	HM	Homestead	3
160	HM	Homestead	3
161	HM	Homestead	3
162	HM	Homestead	3
*163	HM	Homestead	3
164	HM	Homestead	3
*165	HM	Homestead	3
166	HM	Homestead	3
167	HM	Homestead	3
168	HM	Homestead	3
169	HM	Homestead	3
170	AP	Homestead	3

Table 4-1. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (concluded)

Site Number, Name[a]	Reference[b]	Description[c]	Research Value CR[d]
171	AP	Homestead	3
172	AP	Homestead	3
173	SM	Church	3
174	HM	Church	3
175	SM	Church	3
176	NRMP	Cemetery	3
177	M1547	Cemetery	3
178	M1547	Cemetery	3
179	M1547	Cemetery	3
180	M1547	Cemetery	3
181	M1547	Cemetery	3
182	M1547	Cemetery	3
183	M1547	Cemetery	3
184	M1547	Cemetery	3

a Sites have been given "potential site register numbers" only within the context of this overview and planning effort, and are numbered sequentially across the facility. Their locational data are provided in Table A-1, and they are illustrated in Figure A-1. An "*" indicates the site is within a Ground Disturbance Area (GDA: Figure 3-2).

b SM = The 1914 Webster Parish Soil Map, Louisiana Agricultural Experiment Station, Bureau of Soils 1914; HM = The Webster Parish Highway Map, Bureau of Public Roads 1937; AP = Louisiana AAP file 1940-1941 aerial photograph; NRMP = Natural Resources Management Plan, Louisiana AAP Thiokol/Louisiana Division, Shreveport, January, 1983; M1547 = USGS 1947 Minden, LA, 15 min. quad sheet (unrevised).

c Descriptions taken from the 1914 Webster Parish Soil Map, the 1937 Webster Parish Highway Map, and the 1940-1941 aerial photograph on file at the Louisiana AAP, environmental reports on file at the Louisiana AAP, and the USGS 1947 Minden 15 min. quad..

d The research value (RV) is a subjective summary assessment of the overall research value of the resource class. It is an evaluation of the class' quality of preservation, representation of activity diversity or uniqueness, and temporal distinctiveness or reflection of diachronic relationships. The CR is the confidence rating. These range from (1) judgement is more guess than science, and is likely not to be reliable, to (3) the judgement is most likely to be reliable.

and 1937 and that several new structures have been constructed between 1914 and 1937. Settlement density, however, remains relatively constant and occurs in the upland areas at or above 200 feet AMSL.

An AAP file 1940-1941 aerial photograph taken just prior to structure removal associated with government land acquisition reveals the same settlement pattern and density as depicted on the 1937 highway map. The aerials show, however, that three new structures were added between 1937 and 1940-1941.

Nine cemeteries (Figure A-1) have been located within the Webster Parish portion of the AAP. All are currently active, fenced, and well-maintained by facility maintenance personnel.

Early map coverage for the Bossier Parish portion of the AAP (approximately 2420 acres or 16 percent of the total AAP acreage) is unavailable. Given the relatively low-lying nature of this area, however, it is believed that historic settlement in this portion of the facility was minimal. The 1940-1941 aerial photograph depicts three small farm complexes in this area (Figure A-1).

5.0

AN ASSESSMENT OF THE SIGNIFICANCE OF THE ARCHEOLOGICAL RESOURCE BASE ON THE LOUISIANA ARMY AMMUNITION PLANT

5.1 THE SIGNIFICANT RESOURCE BASE

5.1.1 Prehistoric Cultural Resources

The presently known prehistoric resource base within the facility is sparse; however, areas of high potential exist for such site locations. Classification of these potential resources and their geomorphological/ topographic association is shown in Table 5-1. Each is discussed in the following sections.

Although Paleo-Indian people may have left their remains across the upland terraces of the facility landscape, only one area retains the potential for their recovery. This is the topographic unit that lies between 150 and 200 feet AMSL where colluvial wash from the Montgomery and Prairie terrace margins may have buried sites of this early period. Because no Paleo-Indian materials have been recovered with any contextual integrity from northern Louisiana, no thematic units can be defined nor can specific research objectives for these potential remains be usefully formulated or evaluated. At this time, any Paleo-Indian finds other than single projectile points are considered useful additions to the data base. Further, any site within the Paleo-Indian time frame that retains in situ remains and clear geomorphic associations will be significant. The likelihood of finding such remains within the facility is considered remote.

Archaic peoples are believed to have used the same topographic areas as Paleo-Indian peoples. However, the only portions of the facility likely to retain potentially significant remains of this period are the sediments between 150 and 200 feet AMSL. Although the Archaic life style is somewhat better documented that that of the preceeding Paleo-Indian period, it is difficult to formulate and/or evaluate research goals and potential for this unit. Generally, Archaic sites might be expected to include the remains of habitation or camp areas or might reflect both seasonal resource use and specialized activities, as suggested by the isolates recorded by Bennett (1984). Further evidence of these might include recovery of specific tool kits and the delineation of camp areas with hearths. The research value of potential Archaic sites is difficult to assess because the contents and contexts of Archaic sites are largely unknown. However, if Archaic habitation or specialized use areas can be identified and confidently dated, the value of these remains increases

Table 5-1. SUMMARY OF SIGNIFICANT ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP

Temporal Unit	Thematic Unit	Resource Type	Type Occurrence[a] Known Occurrences (no.)	Potential Occurrences (no.)	Other Likely Occurrences	Sociocultural Association	Landform Association	Physical Integrity	Research Value[b]	RV CR[c]	Sociocultural Value[d]	SCV CR[c]
Paleo-Indian	Not defined	Not defined	0	0	+	Native American	Terrace margins 160-200 ft. AMSL	Fair	NA	1	0	3
Archaic	Seasonal subsistence patterns	Habitation camp area; resource area (chipping station, game-plant processing, etc.)	0	0	+	Native American	Terrace margins 160-200 ft. AMSL	Fair	NA	1	0	3
Bellevue	Seasonal subsistence patterns	Habitation camp area; resource area (chipping station, game-plant processing, etc.)	0	0	+	Native American	Terrace margins 160-200 ft. AMSL	Fair	3	2	0	3
Troyville Period	Not defined	Hunting camps	0	0	+	Native American	Terrace margins 150-200 ft. AMSL, floodplains 140-160 ft. AMSL	Fair to good	3	2	0	3
Coles Creek Period	Not defined	Camps/small village	0	0	+	Native American	Floodplains of Bayou Dorcheat 140-160 ft. AMSL	Fair to good	3	2	0	3
Caddo I Period	Not defined	Farmstead/hamlet	0	0	+	Native American	Floodplain of Bayou Dorcheat 140-160 ft. AMSL	Fair to good	3	2	0	3
Caddo II, III	Not defined	Farmstead/hamlet	0	0	+	Native American	Terrace margins 150-200 ft. AMSL, floodplains 140-160 ft. AMSL	Fair to good	3	2	0	3
Caddo IV	Possibly relating to salt trade	Camp/farmstead; hamlet	0	0	+	Native American	Terrace margins 150-200 ft. AMSL, floodplains 140-160 ft. AMSL	Fair to good	3	2	0	3

Table 5-1. SUMMARY OF SIGNIFICANT ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (concluded)

Temporal Unit	Thematic Unit	Resource Type	Type Occurrence[a]: Known Occurrences (no.)	Type Occurrence[a]: Potential Occurrences (no.)	Type Occurrence[a]: Other Likely Occurrences	Sociocultural Association	Landform Association	Physical Integrity	Research Value[b]	RV CR[c]	Sociocultural Value[d]	SCV CR[c]
Caddo V	Possibly relating to salt trade	Camp/farmstead; hamlet	0	0	+	Native American	Terrace margins 150-200' AMSL, floodplains 140-160 ft. AMSL	Fair to good	3	2	0	3
Frontier	Exploration	Temporary camps	0	0	-	Euroamerican	Terraces	Poor	5	3	3	3
Historic (Homestead Claims, Civil War, Settlement, Farm and Lumber)	Steamboat/ river navigation	Boat or dock remains	0	0	+	Euroamerican, Black American	Floodplain on Bayou Dorcheat 140 160 ft. AMSL	Fair to good	3	2	3	2
	Homesteads	Farmsteads	0	175	++	Euroamerican, Black American	Upland areas at or above 200 ft. AMSL	Fair to poor	3	2	3	2
	Communities	Schools, churches, stores, cemeteries, roads	0	12	+	Euroamerican, Black American	West bank Bayou Dorcheat (Overton), east of Clarke Bayou (Allen Town)	Good (cemeteries) to poor	3	2	3	2
	Lumber industry, salt works	Logging roads, equipment, workers homes	0	0	+	Euroamerican, Black American	Anywhere	Fair to Poor	3	2	3	2

[a] The number of presently known or potential archeological resources of this type is specified here. In addition a judgement has been made as to the likelihood that other members of this resource occur within the facility, based on an analysis of the ethnohistoric or historic land use patterns and/or a review of the landform patterning of prehistoric materials. The probability of these additional occurrences has been noted as negative (-), positive (+), or highly positive (++).

[b] This is a subjective summary assessment of the overall research value (RV) of the resource class. It is an evaluation of the class' quality of preservation, representation of activity diversity or uniqueness, and temporal distinctiveness or reflection of diachronic relationships. It incorporates the need to avoid triviality, but to acquire what may be redundant data so as to discern patterns among those data. Based on these research values, the resource classes under discussion are ranked from 0 (no value) to 5 (highest value), including "NA" if such an evaluation is believed to be impossible given the available information.

[c] The Confidence Rating (CR) is a further evaluation of the perceived reliability of the research (RV) or sociocultural (SCV) values of the resource class. 1 = the judgement is more guess than science, and likely not to be reliable; 2 = the judgement is moderately reliable; 3 = the judgement is most likely reliable.

[d] This is a subjective summary assessment of the overall sociocultural value (SCV) of the resource class. It is an evaluation of the social, religious, or political importance of the resource to a contemporary community, from 0 (no value) to 5 (highest value).

significantly. The probability of finding significant Archaic remains within the facility is likely to be low.

Post-Archaic sites are the category of prehistoric remains believed most likely to be found within the facility acreage. However, many of these remains may be from resource areas and/or camp sites and lack diagnostic materials among the artifact assemblage. It is rare for Post-Archaic phase or period designations to be made for small sites such as those most likely to be found on the facility property. This is because these sites often lack pottery and/or include dart points in the tool kit, and the sites may not be confidently disassociated from Archaic contexts.

Post-Archaic remains that might be found within the facility are expected to occur in the contour interval between 160 and 200 feet. These remains would be derived from the surfaces of Montgomery and/or Prairie terrace deposits and be redeposited slope wash or be the remains of sites placed directly upon areas affected by slopewash. Sites within the lower elevations of this area might be inundated by modern alluvial sediment as well.

Post-Archaic remains might also be found beneath the modern alluvial deposits that reach from stream margins at 140 feet AMSL to the toe of the colluvial slopewash at 150 feet AMSL. These sites too might be expected to range through the entire Post-Archaic sequence.

Although much of the Post-Archaic assemblage might remain unidentifiable within specific temporal and/or cultural contexts, sites with ceramics should provide excellent opportunities for research and provide a significant resource base. Of particular interest is the potential for sites that contain clearly Troyville and/or Coles Creek pottery types, in contrast to sites with Caddoan ware. That many pottery types overlap in textbook typologies is well known throughout northern Louisiana, but little effort has been made to examine Post-Archaic archeological components that might be the remains of single campsite or discrete farmstead/hamlet settlements.

Although temporal definition within specific Caddoan assemblages is feasible, it is doubtful that the range of Caddoan remains will include Caddo IV and V material. These sites occur in smaller numbers than do those of earlier times; that is, there is almost no precedent for their identification near the facility area.

The confidence level for definition and identification of Post-Archaic remains is much greater than for earlier components. Confidence is increased because of the greater data base and attention that has been shown Post-Archaic remains in northern Louisiana. Despite this observation, the potential for locating significant sites of the Post-Archaic time frame is considered only of medium probability. This is based on the observation that only a small part of the facility lies in high potential areas. Further, these resources are likely to be buried and not identifiable by conventional survey techniques.

5.1.2 Historic Cultural Resources

Known historic sites as presently recorded on the facility consist of a cemetery. Potential historic site locations in the facility have been identified from archival sources and consist of the locations of a large number of now-removed structures dating from 1914 (Table 4-1). These sites represent the initial historic settlement of the area and reflect activities associated with homesteading and small-scale, generally subsistence-oriented agricultural practices. They may also reflect the activities of the lumber and/or salt industry in the area. Settlement and subsistence practices of this nature were widespread in the northwest Louisiana area during the late 1800s to early 1900s. The Louisiana State Historic Preservation Officer has commented that, "While perhaps not individually significant, considered as a whole, the archeological record from a representative sample of these sites has the potential for offering important new insights for this time in history in this particular area" (Robert DeBlieux, personal communication 1984).

Archival sources have indicated two early settlements within or adjacent to the AAP. These are Allen Town, located in Bossier Parish in the vicinity of Section 11, T18N, R11W, and Overton, located in Webster Parish along Bayou Dorcheat in Section 5, T18N, R9W. Both were settled in the early 1820s.

Given the topographic location of Allen Town, it appears likely that the area has been subjected to extensive plowing and silviculture activity and has probably been further impacted by construction of Interstate 20 and Highway 80. Thus, few undisturbed in situ cultural remains associated with the settlement probably have survived. However, if remains are present they may provide historically useful information about this rural community.

The Overton settlement endured in the unhealthy, frequently flooded bottoms of Bayou Dorcheat for a maximum period of approximately 26 years between 1820 and 1846. Given the proximity of the water table to the surface in this area, it seems unlikely that subterranean features such as basements or storage cellars would have been constructed. Further, it is likely that all structures associated with the settlement were raised on brick, rock, or wooden piers. It appears unlikely that historically important buried, in situ cultural material of the settlement would remain. However, if sites are present with integrity, they may have information about a relatively undocumented period of northeastern Louisiana history.

Nine cemeteries have been presently identified within the AAP. They are active, fenced, and well maintained by AAP maintenance personnel. Although cemeteries are generally considered ineligible for inclusion on the National Register of Historic Places, they are afforded protection under existing State statutes and often are important sources of historical information They also have high sociocultural value.

5.2 IDEAL GOALS AND OBJECTIVES

Given the assumption that significant (and presently unidentified) prehistoric and historic archeological resources may be located within the AAP, the following is an outline of a desirable program to manage these resources for the best preservation or use of their research and sociocultural values. An ideal facility archeological resource management program would encompass identification, evaluation, conservation, excavation and analysis, and interpretation activities. It would emphasize the conservation of significant resources, and their excavation or "use" only to mitigate any unavoidable destruction or damaging activities or in search of important information that is being collected and studied within a well designed research project.

As only one small (350-acre) archeological resource survey has been conducted on the Louisiana AAP (in "selected locations"), the first step in developing a management program is field identification of the sites predicted to be there. Such an identification program should begin with a more intensive and extensive review of oral and archival historic information, and a field check of potential sites. The focus of this preliminary review would be to evaluate the historical information base presently available without recourse to any historical archeology investigations and, through consultation with professional historians and people with personal ties to the pre-1941 occupants, evaluate the historic significance of any materials that might be left on the facility. This would complement the more extensive evaluations of natural resource distributions presented within this report as the basis of evaluating the distribution and potential significance of any prehistoric archeological resources there. One element of this first stage of investigations should also be some field reconnaissance to verify the validity of the topographic stratification of prehistoric site distributions suggested elsewhere in this report.

The second stage of the identification program would be the field inventory of the undisturbed portions of the facility to identify the surface evidence of any historic or prehistoric archeological sites. Such an identification project would include the pedestrian survey of the depot, with close-interval spacing of survey transects. Large-scale aerial photographs and detailed topographic maps should be used for field reference. Standard forms for recording the surface characteristics of identified prehistoric and historic resources should be completed as part of the inventory procedures and the area and methods of the survey should be well documented. The preferred survey policy for most contemporary projects is to make only minimal collections of artifacts off of site surfaces, retaining a representative sample including artifacts that are diagnostic of particular styles and/or technologies or are immediately vulnerable to non-professional collection or damage. Any collected materials should be fully described and appropriately curated.

In addition to a description of the surface evidence of these sites, the ideal inventory would include some kinds of subsurface investigation

(e.g., augering, test excavation, remote sensing) to evaluate the contents, extent, and integrity of the identified resources. Finally, this stage should include an identification of the important research or other values inherent in the inventoried sites, both as a basis for the development of future research designs as well as for the evaluation of management options should the resource be threatened with damage or destruction by non-archeological-research activities. For purposes of future research development, the identification and evaluation of the resources needs to be well documented and available to the research community. For future resource management purposes, it needs to be appropriately stated within the U. S. Department of the Interior's terminology and concepts of resource significance.

The prevailing professional approach to archeological resources for the past decade has been one of conservation (Lipe 1977:21). "Our goal...is to see that archaeological resources everywhere are identified, protected, and managed for maximum longevity." Thus, the ideal objective is to develop a "bank" of significant sites that may be investigated through a variety of techniques, including destructive excavation, only as part of well designed research projects that are scheduled within a regional research program that seeks to maintain the overall range of undisturbed sites for future use. A corollary to this is that the sites should be allowed to be investigated by scientists in a non-reactive situation (i.e., not threatened with immediate destruction of the resource). Such basic investigation of resources on the public lands should be conducted only within research designs that are appropriate to the contemporary regional or broader study questions. It should also be conducted only within a program that includes long-term protection of the information collected from the resources, and a commitment to the public dissemination of that information.

If an archeological site evaluated as being of research or sociocultural significance is going to be damaged or destroyed, the ideal objective would be to preserve its included materials and information values through a data recovery program. Such a program would be little different from the non-reactive investigations discussed above, but is likely to be conducted in conjunction with agency requirements for development. Again, an important element in such an emergency research program would be the adequate analysis, curation, and publication of the recovered information.

Thus, in summary, the ideal goals for the management of the Louisiana AAP archeological resources are to:

- Inventory and evaluate all the resources on the facility
- Conserve the significant sites, allowing their research use only within a regional research design
- Recover the contents and information from any significant resources threatened by damage or destruction
- Provide the public with the substance of the information values that are inherent within or collected from the facility's archeological resource base.

6.0 A RECOMMENDED ARCHEOLOGICAL MANAGEMENT PLAN FOR THE LOUISIANA ARMY AMMUNITION PLANT

6.1 FACILITY MASTER PLANS AND PROPOSED IMPACTS

There is no long-range planning document available for the Louisiana AAP; however, 19 ground disturbing projects and construction-related disturbances are planned within the next 20 years. Information about these projects is provided in Table 6-1 and these areas are depicted in Figure 6-1. Future construction scheduling information was provided by Mr. Jake Hortman, Louisiana AAP Facility Engineering Division. Facility expansion plans are discussed below chronologically, and recommended management options are made based on presently identified and potentially identifiable cultural resources.

The first scheduled action involves the construction of a chemical laboratory (LP-11, Figure 6-1) in 1985. No known or potential archeological resources are present in the proposed area.

Construction of a transportation building (LP-19, Figure 6-1) is scheduled for 1988 in the area of an existing truck inspection yard. No known or potential archeological sites have been identified within this area.

Planned expansion for the period 1992 and later includes expansion of Area T explosive testing and disposal area (LP-9, Figure 6-1), construction of an inert storage area (LP-10, Figure 6-1), construction of a van and rail holding area (LP-17, Figure 6-1), and expansion of Area L-2 and L-3 igloo storage area (LP-18, Figure 6-1).

The early Allen Town community is reported to have been very near the area to be impacted by Activity LP-9, the expansion of an explosive testing and disposal area. Historic remains in this area have been noted by the Louisiana State Historic Preservation Officer (SHPO) (Robert DeBlieux, personal communication 1984) as being potentially significant. Activity LP-10 will impact the locations of two now-removed pre-1937 structures. It is predicted that prehistoric resources are unlikely to occur in this part of the facility.

Activity LP-17 will impact the locations of three now-removed 1914-1937 structures. The potential for these structures to retain archeological integrity and perhaps be significant resources needs to be addressed

Table 6-1. A SUMMARY OF ON-GOING AND PLANNED ACTIVITIES THAT COULD AFFECT ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP

Activities						Associated Resources				Impacts		
Description[a]	Date[b]	Area[c]	Size (a.)	Estimated Depth Below Surface (ft.)	Ratio of Disturbed to Total Area	Resource Class	Resources Known or Predicted[d]	NRHP Status[e]	Other Value[f]	Direct[g]	Indirect[h]	Mitigation Options[i]
Proposed (LP#)												
1 Landfill	DU	-	94	8-12	10:10	Active cemetery (Allen Town Cemetery)	K1 L+	PSS	Yes	Destroy one known site	GD	Avoid cemetery; survey for pre historic sites
2 Landfill	DU	-	115	8-12	10:10	Possible prehis-toric sites	L+	INSF	No	Destroy	GD	On-the-ground survey for site presence
3 Landfill	DU	-	71	8-12	10:10	Possible prehis toric sites	L+	INSF	No	Destroy	GD	On-the-ground survey for site presence
4 Landfill	DU	-	26	8-12	10:10	None	None	NA	No	NA	GD	NR
5 Landfill	DU	-	12	8-12	10:10	None	None	NA	No	NA	GD	NR
6 Landfill	DU	-	160	8-12	10:10	Anglo-American homesteads	K8	None	No	Destroy	GD	NR
7 Landfill	DU	-	21	8-12	10:10	Possible prehis-toric sites	L+	INSF	No	Destroy	GD	On-the-ground survey for site presence
8 Landfill	DU	-	64	8 12	10:10	Possible prehis-toric sites	L+	INSF	No	Destroy	GD	On-the ground survey for site presence
9 Expansion of explosive testing and disposal area	1992-1993	T	37	1.0 1.5	4:10	Possible Anglo American home stead sites	L+	None	No	Destroy	ED	NR

Table 6-1. A SUMMARY OF ON-GOING AND PLANNED ACTIVITIES THAT COULD AFFECT ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (continued)

	Activities						Associated Resources				Impacts		
	Description[a]	Date[b]	Area[c]	Size (a.)	Estimated Depth Below Surface (ft.)	Ratio of Disturbed to Total Area	Resource Class	Resources Known or Predicted[d]	NRHP Status[e]	Other Value[f]	Direct[g]	Indirect[h]	Mitigation Options[i]
Proposed													
10	Construction of inert storage area	Post-1992	-	149	2-3	8:10	Anglo-American stead	K2	None	No	Destroy	FE	NR
11	Construction of chemical lab	1985	-	3.6	2	10:10	None	None	NA	No	NA	FE	NR
12	Expansion of pelleting operation	NDS	-	5.3	1	10:10	None	None	NA	No	NA	FE	NR
13	Construction of shipping building	NDS	-	11	2	10:10	None	None	NA	No	NA	FE	NR
14	Relocation of pistol range	NDS	-	3	0.5	3:10	Anglo-American homesteads	K2	None	No	Destroy two known sites	FE	NR
15	Construction of building for metal parts production	NDS	-	122	1.5	7:10	None	None	None	No	NA	FE	NR
16	Reserved for future facilities/no project assigned	NDS	Z	216	3-5	5:10	None	None	None	No	NA	FE	NR
17	Construction of van and rail holding area	Post-1992	-	280	6-8	6:10	Anglo-American homesteads	K3	None	No	Destroy	FE	NR

Table 6-1. A SUMMARY OF ON-GOING AND PLANNED ACTIVITIES THAT COULD AFFECT ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (concluded)

	Activities						Associated Resources				Impacts		
	Description[a]	Date[b]	Area[c]	Size (a.)	Estimated Depth Below Surface (ft.)	Ratio of Disturbed to Total Area	Resource Class	Resources Known or Predicted[d]	NRHP Status[e]	Other Value[f]	Direct[g]	Indirect[h]	Mitigation Options[i]
18	Construction of 378 explosive storage	Post-1992	L-2, L-3	521	4-6	10:10	Anglo-American homesteads; prehistoric sites	K10(home) L+(prehis)	INSF	No	Destroy	FE	On-the-ground survey for site presence
19	Construction of transportation building	1988	-	6	1	5:10	None	None	INSF	No	NA	FE	NR

[a]All numbers are preceded by "PL", indicating that these are planned activities; these are cross-referenced to Figure 6-1.

[b]DU = Development of these landfills not anticipated; NDS = No date yet scheduled for construction. Proposed construction schedules provided by Mr. Jake Hortman of the Louisiana AAP.

[c]The areas in which most of the planned activities will take place are unknown at this time; letters for known areas of future planned activity are taken from the Blueprint (5099) on file at the facility base planning office.

[d]The number of known (K) or Potential (P) archeological resources located within the proposed activity area are indicated, as well as the positive (+) chance that presently unknown resources are likely (L) to be present.

[e]The following codes have been used to identify resource status in terms of the National Register of Historic Places (NRHP); PSS = Protected by state statutues but generally not considered eligible for the NRHP; INSF = insufficient information with which to make a judgement.

[f]These codes indicate whether or not an archeological resource has an value other than HRHP eligibility which might affect DARCOM management decisions. NO = no other value, YES = other value present. In this case, the resource has value to surviving family members.

[g]NA = Not applicable for this particular planned activity in this particular area.

[h]GD = Garbage disposal; ED = Expansion of disposal areas; FE = Facility expansion.

[i]NR = No recommendation.

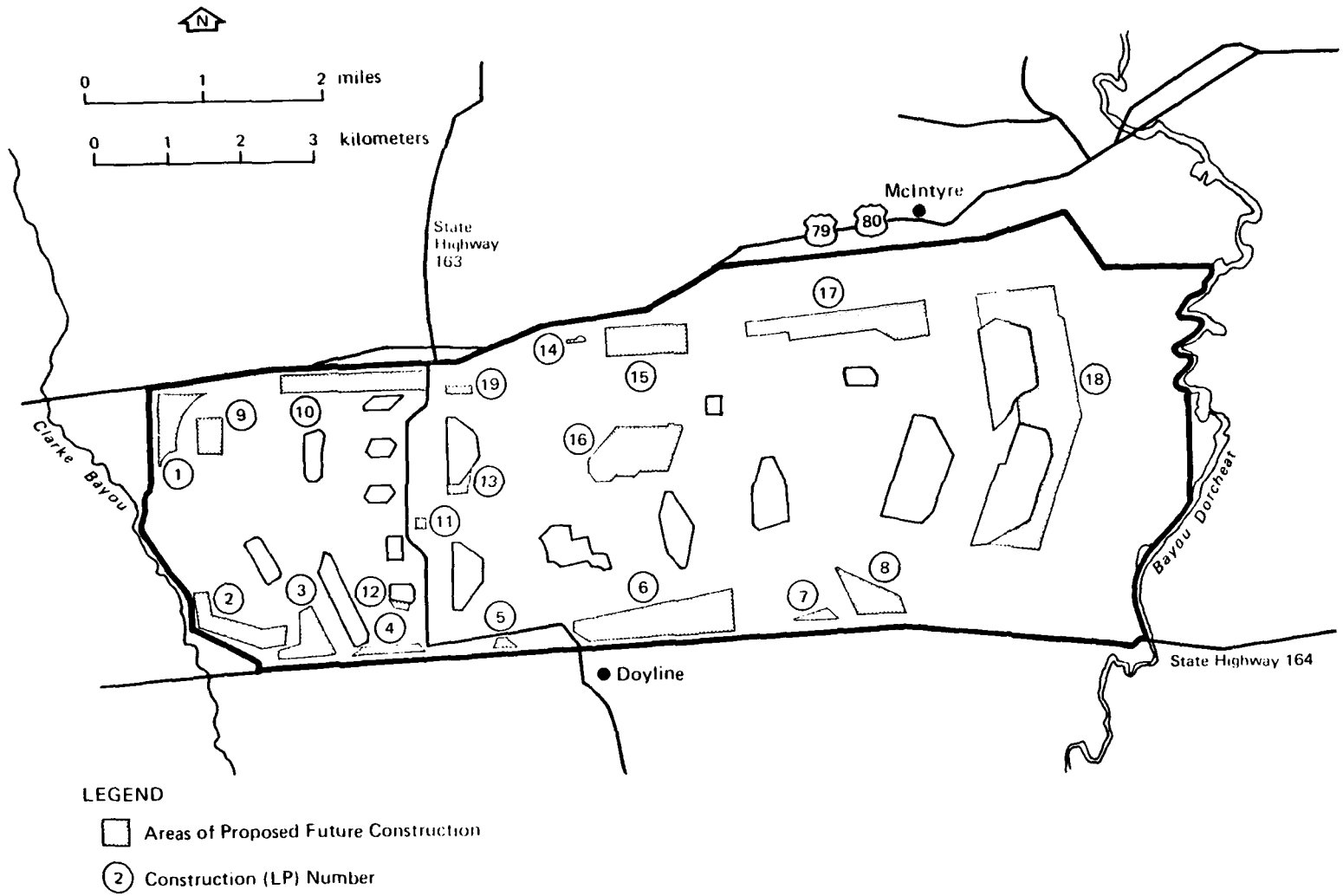


Figure 6 1. MAP OF ON-GOING AND PLANNED ACTIVITIES ON THE LOUISIANA AAP THAT COULD AFFECT ARCHEOLOGICAL RESOURCES

in consultation with the SHPO. It is predicted that prehistoric resources are unlikely to occur in this area. The eastern portion of expansion LP-18 (Figure 6-1) lies between 180 and 200 feet AMSL and overlooks the Bayou Dorcheat floodplain. This area has a high potential for retaining prehistoric archeological sites. Twelve to fifteen potential historic archeological sites have been identified within the proposed LP-18 project area, and they need archival and field evaluation. Intensive archeological inventory and evaluation of the 250-acre area of the proposed expansion is recommended prior to project implementation. Development of this review and management program should be developed in consultation with the Louisiana SHPO.

Four (LP-1,2,3, and 7) of the eight proposed landfills will require additional consideration prior to construction. Activity LP 1 as presently planned will impact the Allen Town Cemetery. In addition to this impact, part of the area overlooks the Clarke Bayou floodplain and may contain prehistoric remains. The cemetery, although not considered eligible for inclusion on the National Register of Historic Places, is protected by state statutes and should be avoided. Approximately 40 acres beyond the cemetery and adjacent to Clarke Bayou should be surveyed to identify any significant prehistoric or historic cultural remains prior to project implementation.

Landfills LP-2 and LP-3 are within the Clarke Bayou and Caney Branch floodplains and lie at 180 feet AMSL. These areas have been identified as having the potential to yield prehistoric archeological remains. These areas should be be surveyed and any identified resources evaluated and protected prior to project implementation.

Landfill LP-7 lies within the unchannelized portion of Boone Creek between the 155 and 180 foot contour intervals. It is in an area of high potential for prehistoric remains and should be surveyed for cultural resources prior to project implementation.

In addition, the facility silviculture program is continuous and affects the entire base, but tree thinning activities only disturb the upper portion of the soil profile (see Section 3.2). Thus, deeply buried sites are not likely to be encountered or identified as a result of this activity. Further, it is likely that most, if not all, of the upper profile has already been disturbed by previous ground disturbing activities.

6.2 APPROPRIATE ARCHEOLOGICAL MANAGEMENT GOALS WITHIN THE LOUISIANA AAP'S MASTER PLAN

6.2.1 General Facility Planning

Army Regulations 420-40, drafted pursuant to the National Historic Preservation Act and 36 CFR 800 (Section 1.1), require that each DARCOM installation have a Historic Preservation Plan or have documentation on file indicating that there are no installation resources appropriate to such management planning. At present, there is no such negative declaration for the Louisiana AAP and some 184 potential archeological sites have been identified within the facility area. Therefore, the present

report is organized so as to provide a basis for such a plan to be developed and implemented on the facility.

The Department of the Army AR 420-40 regulations prescribe Army policy, procedures, and responsiblilities for compliance with the National Historic Preservation Act of 1966, as amended; for the maintenance of state-of-the-art standards for preservation, personnel and projects; and for accomplishment of the historic preservation program (Figure 6-2). The Historic Preservation Plan has the following objectives:

- Provision of historic and archeological data for the installation's information systems
- An outline of priorities for acquiring additional informaton to determine if there may be additional projects not yet located or identified
- Establishment of a procedure for the evaluation of historic properties
- Provision of guidelines for the management of historic properties
- Implementation of a legally acceptable compliance procedure with the Advisory Council for Historic Preservation (ACHP) and the State Historic Preservation Office (SHPO)
- Integration of historic preservation requirements with the planning and execution of military undertakings such as training, construction, and real property or land use desicions
- Ranking of facility projects by their potential damage to historic properties
- Identification of funding, staffing, and milestones needed to implement the plan.

The identification and evaluation of historic and prehistoric resources on the AAP have been initiated by the completion of this over view and plan. This needs to be followed by a full identification and evaluation program as outlined in Section 5.2: more extensive oral and archival historic review; field surface and subsurface inventory of all undisturbed AAP lands as well as potential sites; and evaluations of resource significance in terms of U. S. Department of the Interior criteria. Some or all of this recommended work could be postponed until there is a specific ground-disturbing project that requires compliance with the National Historic Preservation Act (see Sections 1.1, 6.2.2), if development of a historic preservation plan more specific than this document is also to be postponed and if such scheduling has been accepted by the Louisiana State Historic Preservation Office (SHPO).

Under any schedule, until the determination has been made that identified prehistoric or historic sites are <u>not</u> significant they must be

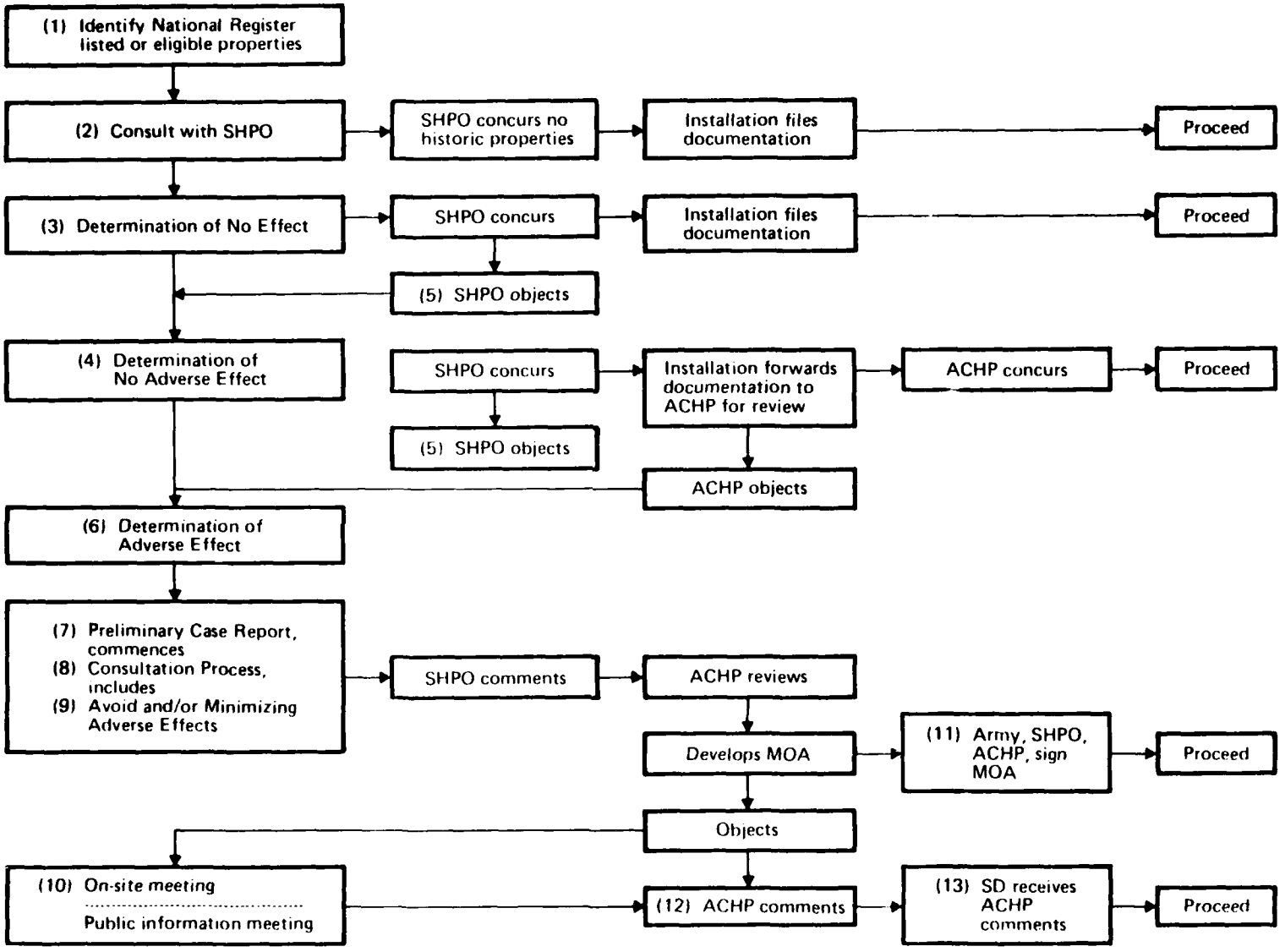


Figure 6-2. PROCEDURE FOR COMPLIANCE WITH REGULATIONS OF THE ADVISORY COUNCIL, IN ACCORDANCE WITH 36 CFR 800 (AR 420, Figure 1)

managed as if they were, for compliance with Section 110(a)(2) of the National Historic Preservation Act:

> (2) With the advice of the Secretary [of the Interior] and in cooperation with the State Historic Preservation Officer for the State involved, each Federal agency shall establish a program to locate, inventory, and nominate to the Secretary all properties under the agency's ownership or control by the agency, that appear to qualify for inclusion on the National Register in accordance with the regulations promulgated under Section 101(a)(2)(A) Each Federal agency shall exercise caution to assure than any such property that might qualify for inclusion is not inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly [underlining added].

As outlined in the previous discussion of ideal archeological management goals (Section 5.2), a recommended next stage in the assessment of the importance of the facility's historic archeological resources is an intensive review of archival material and evaluation of regional historic research objectives. The archival review might focus on information stored in the National Archives and Records Service, as well as a more intensive review of Bossier and Webster Parish land records, wills, and other pertinent documents and interviews of pre-1940 residents of AAP lands. This review and evaluation should include consultation with the Louisiana SHPO to identify and prioritize regional historic research questions to which the historic archeological information from identified sites might contribute. The goal of this research would be to define the historic significance that any of the identified sites might have if it had contextual integrity and was to be archeologically investigated. In addition the integrity of the historic resources should be assessed by field inspection.

As discussed in Section 5.2 and required by the National Historic Preservation Act (NHPA), the next step in the identification stage of archeological resource management should be field investigation to locate sites and determine their boundaries, contents, and integrity. NHPA Section 110(a)(2) requires that all federally owned or controlled lands be surveyed to identify all significant archeologial properties on them. A strict adherence to this would support the immediate intensive archeological inventory of all Louisiana AAP lands not previously surveyed or not clearly documented as having deep and extensive modern ground disturbance. The current prevailing federal policy about the implementation of this requirement is that it should be a "reasonable" program consistent with the overall schedules, budget, and multiple objectives of the land-managing agency. Given the planned construction activities itemized in Section 5.1 and the likelihood that there are significant prehistoric and historic archeological materials on the AAP, it is recommended that it would be most cost-effective to complete the archeological inventory of all undisturbed lands on the facility as soon as it is fiscally possible. Such a comprehensive inventory, however, could most effectively be initiated with a sample survey as described below.

The following data provide the assumptive basis for developing a sample survey strategy on the Louisiana AAP.

By landforms, the facility acreage consists of 14,974 acres, divided into contour elevation intervals as follows: 7824 acres (52 percent) are at or above 200 feet AMSL and are largely eroded; 4600 acres (31 percent) are between 180 and 200 feet AMSL and are slopewashed, with materials deposited between 160 and 180 feet AMSL; 1200 acres (eight percent) are between 160 and 180 feet AMSL and consist of areas along the margins of some creeks and bayous; and 1350 acres (nine percent) are below 160 feet AMSL, of which 675 acres are along Bayou Dorcheat, 600 along Clarke Bayou and Caney Branch, and 75 along Boone Creek.

In terms of archeological resource distribution, prehistoric site distribution would most likely occur between 160 and 180 feet AMSL. As colluvial deposits occur there, any cultural deposits present are probably buried. Most facility buildings occur above 200 feet AMSL, so at this elevation interval silviculture and plowing would be the likely impact activities; as Section 3.2 indicates, these disturbance activities affect a relatively shallow ground surface depth. Prehistoric sites of significance are likely located here. Historic sites would largely be distributed primarily at or above 200 feet AMSL. As indicated earlier, these sites fall largely within ground disturbance areas GDAs) or, additionally, along roads or behind existing buildings. Historic sites may also occur in silviculture areas.

Recommended survey strategy is as follows:

- Assuming that 155 of the 184 historic sites are located outside of identified GDAs and are likely to have intact archeological remains, field survey of 16 (10 percent) of the homestead or small farm sites is recommended. The potential locations of the Allen Town and Overton communities, and the areas of possible Bayou Dorcheat River use, should be field-checked. All nine cemeteries and the three church cites (all undisturbed) should be field reviewed and documented.

- All previously undisturbed portions (122 acres) of the facility that lie between 160 and 180 feet AMSL are recommended for field survey to identify potential prehistoric resources there. Such survey should include shovel tests or augering, and could be developed in reference to the facility's actual silvicultural schedule.

- Survey of a 10 percent sample of the undisturbed lands below 160 feet AMSL (135 acres) and above 180 feet AMSL (1242 acres) should be conducted to verify the utility of the topographic sampling strategy suggested in this report; again, the sampling strategy could be developed in reference to the facility's silvicultural schedule

Based on the historic and field inventory information, the significance of all identified sites should be evaluated following criteria set forth in 36 CFR 60.6 and in accordance with guidelines from the Louisiana SHPO. If sites are judged to be significant, a plan for their long-term management should be developed in the context of overall property management. Such management activities might include resource conservation in place, biannual field review of site condition, public interpretation of resource values, scientific investigation of the sites, and/or planned site destruction by military activities. If significant sites are identified, it is recommended that the DARCOM officer responsible for the Louisiana AAP operations provide the Louisiana SHPO with the opportunity to review and comment on the proposed management plan. If the evaluation is made that none of the sites on the AAP is significant, filing of a report to that effect with the SHPO would complete the facility's compliance requirements for preservation planning for those areas surveyed.

6.2.2 Project-Specific Resource Protection or Treatment Options

Approximately 16 percent of the Louisiana facility has been impacted by modern construction, and any future ground-disturbing activities in those areas is unlikely to need pre-construction review of their potential adverse impacts to significant archeological resources (the exception might be deep new excavation into previously undisturbed deposits beneath modern buildings or structures). However, new ground-disturbing construction on, or leasing of, AAP land would be a federal undertaking requiring compliance with Section 106 of the National Historic Preservation Act. Section 106 requires that DARCOM consult with the Louisiana SHPO and the federal Advisory Council on Historic Preservation about the effects of such an undertaking on significant archeological sites. Without a SHPO-accepted facility preservation plan, it is DARCOM's responsibility to either complete such an evaluation and consultation program for each new undertaking or to have on file documentation of the completion of adequate survey and evaluation so as to confirm the absence of or lack of significance of any archeological site that might be affected by the proposed activity.

Since the entire undisturbed portions of the AAP have not been subjected to intensive archeological survey, construction or ground disturbance in areas currently unsurveyed could impact archeological resources. Consequently, if such impacts were planned, survey, evaluation, and perhaps required mitigative data recovery (scientific archeological investigation of a significant site) could be necessary on a project-specific basis prior to initiating the ground-disturbing activity. Such evaluation and preservation programs require consultation with several federal agencies, and are frequently time-consuming and have the potential for causing construction delays. However, such a project-specific program can usually be expedited if the appropriate preservation planning has been completed and reviewed by the State Historic Preservation Officer.

The following project-specific management program is based on the planned ground-disturbing activities on the Louisiana AAP and their potential effects on the cultural resources likely to be affected.

- Construction of a chemical laboratory (LP-11) and a transportation building (LP-19) in areas without any known or presently identified potential archeological sites

- Expansion of an explosive testing and disposal area (LP-9) and a landfill (LP-1) in the vicinity of the nineteenth century Allen Town community; construction of an inert storage area (LP-10) in the area of two identified potential sites; construction of a van and rail holding area (LP-17) in the area of three identified potential sites; expansion of an igloo storage area (LP-18) in the area of some 15 identified historic archeological sites and on landforms predicted to retain prehistoric materials; construction of three other landfills (LP-2, -3, -7) in areas of similar prehistoric sensitivity.

- Continuation of a silviculture program

Construction expansion plans include impacts to approximately 497 acres of the facility landscapes that lie within areas believed to have a high probability for identification of (and adverse impacts to) significant sites (i.e., between 160 and 180 feet AMSL). Approximately 247 acres lie within proposed landfill projects. Actual development of these areas is not anticipated (Jake Hortman, personal communication 1983).

Approximately 250 acres lie within an area of proposed construction of explosive igloos. Construction is not anticipated until after 1992, and base informants indicate that this construction may never be implemented. Therefore, no specific plans are recommended at this time for survey or identification of potentially significant sites within the acres designated for future construction of these igloos.

Inventory of a sample of lands included within the facility silviculture program is recommended as a part of a general response to Section 110.

All of the project-specific management activities identified above should involve consultation with the State Historic Preservation Officer (SHPO) and with the federal Advisory Council of Historic Preservation (ACHP). If significant cultural resources are located in areas of projected disturbance and if these cultural resources are listed or are eligible to be listed on the National Register of Historic Places, then their significant values should be recovered and/or protected before ground disturbance can begin.

6.2.3 A Summary of Recommended Management Directions and Priorities for Effective Compliance and Program Development

It is recommended that a professional archeological inventory, including literature search and pedestrian survey, and evaluation project be completed on part of the undisturbed portions of the AAP's property following a sampling strategy, and that field assessments of at least a sample of the potential historic sites and predicted prehistoric sites be

completed. This is an appropriate response to the requirements of Section 110 of the National Historic Preservation Act, and is a cost-effective management activity considering the number of planned ground disturbing projects on the AAP.

A cultural resources management plan is needed for the Louisiana AAP. This is in response to on-going ground disturbance (silvicultural program), planned construction (landfills and explosive igloos), and for construction for which there is a short term planning and construction schedule.

This plan should place the facility in compliance with pertinent Federal mandates and regulations. It can be best be implemented by being supported by review and written statement of concurrence by the Louisiana State Historic Preservation Office and the Advisory Council on Historic Preservation. This plan would be facility specific, follow the guidance of AR 420-40 and other federal historic preservation regulations, and be addressed to both long-range preservation planning as well as to the evaluation of sprecific AAP activities on the facilities' presumed cultural resource base.

6.3 ESTIMATED SCOPE OF WORK AND COST LEVELS FOR PRESENTLY IDENTIFIABLE MANAGEMENT NEEDS

6.3.1 Rationale and Cost Estimates

Each of the management recommendations is presented here as a scope of work and an associated cost. The scope of work contains appropriate research topics to address, and the costs are in FY84 dollars.

The management recommendation is an archeological inventory of a sample of the undisturbed areas of the Louisiana AAP, a field check of potential sites, and preliminary archival work. The survey would cover 2577 acres (1242 acres [10 percent] above 180 feet AMSL, 1200 acres [10 percent] between 160 and 180 feet AMSL, and 135 acres [10 percent] below 160 feet AMSL), in areas not previously affected by modern ground disturbing activities (see Figure 3-1).

Such survey should be preceded by an archival and oral historical review project. Costs of professional archival expertise, travel (using expertise local to the research area), reference, telecommunications, data management, search fee, and report preparation costs generally average between $25 and $30 per work-hour across the country for archival research, and between $20 and $30 for reconnaissance survey. Archival work is estimated to require 200 hours, for an unloaded cost of between $4000 and $5000 (though this may be less if some of the information is available in the on-going AAP HABS report).

Archeological field inventory should be conducted by archeological professionals who meet the qualifications and performance guidelines of the U. S. Department of the Interior (1983) and the 36 CFR 66, and who hold a federal antiquities permit. The conduct of the inventory should

generally incorporate methods as outlined in Section 5.2 -- survey at close intervals, shovel tests or augering in heavily vegetated areas, recording of all cultural resource locations on standard field recording forms, and collection of only diagnostic items or items in danger of immediate loss. All cultural resources should be evaluated for their research and sociocultural significance, and recommendations should be made concerning their eligibility for the National Register of Historic Places and their appropriate management. Intensive survey of a sample of undisturbed AAP lands should be accompanied by field verification of the identified potential sites.

At a rate of 30 acres per work-day per person, at 30-meter-wide survey intervals, with shovel tests conducted at an interval of 30 meters (depending upon field conditions), field survey operations are estimated to require at least 688 hours for a four-person crew (120 acres/day÷21.5 days). These estimates are based on previously conducted surveys in northwest Louisiana. If a higher density of cultural resources is encountered, additional field time may be required. The assumption does not include extensive subsurface investigations, but does include the analysis of recorded information and preparation of site forms. Average hourly rates for this professional activity range between $20 and $25, bringing this activity to an estimated cost of between $13,760 and $17,200. Field review of the 16 potential historic sites (10 percent of 155) and the three church sites are estimated as follows: assuming that a four-person crew can document two sites per day, 304 hours (9.5 days) are estimated to be required and, at a cost of between $20 and $25 per hour, this activity is estimated to cost between $6080 and $7600. Further, the documentation of the nine cemeteries is estimated to require two persons working three days (48 work-hours) at a cost of between $20 and $25 per hour, for a total cost of $960 to $1200 for this activity.

In sum, costs for the archival, field checking, and pedestrian survey as recommended above are extimated to total between $24,800 and $31,000 in unloaded FY84 dollars.

7.0
SUMMARY

The Louisiana Army Ammunition Plant (AAP) is a facility of the U. S. Department of the Army DARCOM (Materiel Development and Readiness) Command, with responsibilities for the management of the prehistoric and historic archeological resources that are retained within installation lands. This report is a summary of the cultural and environmental history of the area that provides a context for the interpretation and evaluation of facility archeological resources. It also provides an assessment of the total archeological resource base likely to be found on installation lands, and recommendations for the future management of those resources within the overall context of DARCOM missions and public responsibilities.

The Louisiana AAP, situated in northwest Louisiana west of Minden, originally contained 15,868 acres but has been reduced to a total of 14,974 acres. It is a government-owned, contractor-operated facility under the jurisdiction of the Commander, U. S. Army Armament Material Readiness Command (ARRCOM, a DARCOM subcommand). The function of the facility is to load, assemble and pack ammunition items, as well as to manufacture metal ammunition pieces.

The facility is located in what is believed to be a Red River floodplain. Sediments are Montgomery and Prairie terrace deposits that date to the Middle Pleistocene. These are dissected by four modern streams: Bayou Dorcheat, Boone Creek, Caney Creek, and Clarke Bayou. Colluvial slopes and modern alluvium (floodplains) are associated with these streams. Little change is believed to have occurred in the environment in this locality within the past 11,000 years. Flora in the area include pine, pine/hardwood, and bottomland species. Faunal resources are abundant.

The constraints to archeological site preservation within the AAP can best be described in relationship to land surfaces that lie among three contour intervals: (1) above 200 feet AMSL; (2) between 200 to 160 feet AMSL; and (3) below 160 feet AMSL. Modern land use practices have greatly affected the facility land surfaces. These include historic farming and timbering, construction and facility maintenance, and an on-going silviculture program.

Surfaces in the area are suitable to lengthy human habitation and may have included prehistoric Paleo-Indian, Archaic, and Post-Archaic peoples. The earliest Post-Archaic populations appear to have been associated with Lower Mississippi Valley cultures and later with Caddoan. Both

historic Caddo and Choctaw are documented in northwestern Louisiana. Historic settlement did not begin until after the AD 1830s. A pattern of small farms and villages was established and persisted until the facility properties were purchased by the U. S. Government in 1941.

There has been one small cultural resources survey on the facility. Scattered prehistoric (Late Archaic?) resources and one cemetery were recorded; however, there are no known sites on or determined to be eligible for inclusion on the National Register of Historic Places. It is likely, however, that there are remains of the historic occupation of the area that may have integrity and be archeologically significant.

An assessment of current information concerning the potential for cultural resources within the facility indicates that although the potential for the earliest cultural remains is in landforms whose surface is above 200 feet AMSL, it is probable that land use practices have destroyed any significant prehistoric sites located there. Landforms whose surface elevation is between 200 and 160 feet AMSL may retain both Archaic and Post-Archaic remains; however, these are most probably buried by colluvium. Landforms whose surface elevation is below 160 feet AMSL may also retain buried prehistoric remains, probably from the later part of the prehistoric cultural sequence, and/or remains of historic boats in the Dorcheat Bayou floodplain. Remains of historic cellars, cisterns, or other foundation structures and associated artifacts, possibly associated with the 1820s historic community of Allen Town, may be found throughout the installation at all elevations, subject only to the adverse effects of post-1941 military activities. Historic cemeteries are exist on the facility, and are fenced and maintained by facility personnel.

Continuing land disturbance activities on the facility include an on-going silviculture program that affects the entire wooded portion of the facility (that is all of the acreage not used by facility building and ancillary activities). Additional disturbance may result from any future construction activities.

Because significant cultural resources may be located on the Louisiana AAP, and because DARCOM has mandated responsibilities for the identification, evaluation, and protection of public land resources, the development of an installation cultural resources management program is recommended. This would be focused on a Historic Preservation Plan developed following the guidance of Army Regulations 420-40. The Plan should outline the management of the Louisiana AAP's prehistoric and historic archeological, architectural, and engineering resources, and have the concurrence of the Louisiana State Historic Preservation Officer and the Advisory Council on Historic Preservation.

To bring the Louisiana AAP into general compliance with the National Historic Preservation Act and AR 420-40, the management recommendation is three-fold: preliminary archival research, field review of the potential sites, and archeological inventory of a sample of the undisturbed areas of the facility. The estimated costs associated with these activities range between $24,800 and $31,000 in unloaded FY84 dollars.

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APPENDIX A
RESOURCE LOCATIONAL DATA

Table A-1. LOCATIONAL DATA, POTENTIAL ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP

Site Number[a]	UTM[b]			Legal Reference[c]			USGS Quad Map[d]	CR[e]
	Northing	Easting	Ref.	Township	Range	Section		
1				18N	10W	7	M1547	3
2				18N	10W	6	M1547	3
3				18N	10W	6	M1547	3
4				18N	10W	5	M1547	3
5				18N	10W	8	M1547	3
6				18N	10W	17	M1547	3
7				18N	10W	20	M1547	3
8				18N	10W	20	M1547	3
9				18N	10W	20	M1547	3
10				18N	10W	20	M1547	3
11				18N	10W	20	M1547	3
12				18N	10W	21	M1547	3
13				18N	10W	21	M1547	3
14				18N	10W	21	M1547	3
15				18N	10W	21	M1547	3
16				18N	10W	21	M1547	3
17				18N	10W	21	M1547	3
18				18N	10W	21	M1547	3
19				18N	10W	16	M1547	3
20				18N	10W	16	M1547	3
21*				18N	10W	8	M1547	2
22				18N	10W	8	M1547	3
23				18N	10W	8	M1547	3
24				18N	10W	8	M1547	3
25				18N	10W	8	M1547	3
26				18N	10W	5	M1547	2
27				18N	10W	5	M1547	2
28				18N	10W	9	M1547	3
29				18N	10W	22	M1547	3
30				18N	10W	15	M1547	3
31				18N	10W	22	M1547	3
32				18N	10W	15	M1547	3
33				18N	10W	15	M1547	3
34				18N	10W	15	M1547	3
35				18N	10W	15	M1547	3
36				18N	10W	10	M1547	3
37				18N	10W	9	M1547	3
38				18N	10W	10	M1547	3
38				18N	10W	10	M1547	3
40				18N	10W	9	M1547	3
41				18N	10W	4	M1547	3
42				18N	10W	3	M1547	3

AD-A145 882 AN ARCHEOLOGICAL OVERVIEW AND MANAGEMENT PLAN FOR THE LOUISIANA ARMY AMMU..(U) WOODWARD-CLYDE CONSULTANTS WALNUT CREEK CA L HEARTFIELD ET AL. 06 AUG 84 2/2

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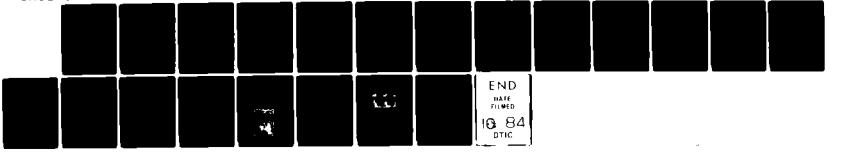

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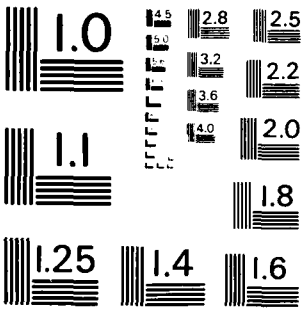


Table A-1. LOCATIONAL DATA, POTENTIAL ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (continued)

Site Number[a]	UTM[b] Northing	UTM[b] Easting	UTM[b] Ref.	Legal Reference[c] Township	Range	Section	USGS Quad Map[d]	CR[e]
43				18N	10W	3	M1547	3
44				18N	10W	3	M1547	3
45				18N	10W	2	M1547	3
46				18N	10W	1	M1547	3
47				18N	10W	11	M1547	3
48				18N	10W	12	M1547	3
49				18N	10W	12	M1547	3
50*				18N	10W	11	M1547	2
51				18N	10W	11	M1547	3
52*				18N	10W	11	M1547	2
53*				18N	10W	11	M1547	2
54*				18N	10W	11	M1547	2
55				18N	10W	14	M1547	3
56				18N	10W	14	M1547	3
57*				18N	10W	14	M1547	2
58				18N	10W	14	M1547	3
59*				18N	10W	14	M1547	2
60				18N	10W	14	M1547	3
61				18N	10W	14	M1547	3
62				18N	10W	14	M1547	3
63				18N	10W	14	M1547	3
64				18N	10W	24	M1547	3
65				18N	10W	14	M1547	3
66				18N	10W	13	M1547	3
67				18N	10W	13	M1547	3
68				18N	10W	13	M1547	3
69				18N	10W	13	M1547	3
70*				18N	10W	12	M1547	2
71*				18N	10W	12	M1547	2
72*				18N	10W	12	M1547	2
73				18N	10W	12	M1547	3
74				18N	9W	6	M1547	3
75				18N	9W	6	M1547	3
76				18N	9W	6	M1547	3
77				18N	9W	6	M1547	3
78				18N	9W	6	M1547	3
79				18N	9W	18	M1547	3
80				18N	10W	13	M1547	3
81				18N	9W	18	M1547	3
82				18N	10W	7	M1547	3
83				18N	10W	7	M1547	3
84				18N	10W	7	M1547	3

Table A-1. LOCATIONAL DATA, POTENTIAL ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (continued)

Site Number[a]	UTM[b]			Legal Reference[c]			USGS Quad Map[d]	CR[e]
	Northing	Easting	Ref.	Township	Range	Section		
85				18N	10W	7	M1547	3
86				18N	10W	5/8	M1547	3
87				18N	10W	5	M1547	2
88				18N	10W	7	M1547	3
89*				18N	10W	8	M1547	2
90				18N	10W	8	M1547	3
91				18N	10W	8	M1547	3
92				18N	10W	8	M1547	3
93				18N	10W	8	M1547	3
94				18N	10W	17	M1547	3
95				18N	10W	17	M1547	3
96				18N	10W	17	M1547	3
97				18N	10W	17	M1547	3
98				18N	10W	17	M1547	3
99				18N	10W	16	M1547	3
100				18N	10W	16	M1547	3
101*				18N	10W	17	M1547	2
102*				18N	10W	17	M1547	2
103*				18N	10W	16	M1547	2
104*				18N	10W	16	M1547	2
105*				18N	10W	17	M1547	2
106*				18N	10W	17	M1547	2
107				18N	10W	16	M1547	3
108				18N	10W	16	M1547	3
109*				18N	10W	16	M1547	2
110				18N	10W	16	M1547	3
111				18N	10W	10	M1547	3
112				18N	10W	5	M1547	3
113				18N	10W	4	M1547	3
114				18N	10W	9	M1547	3
115				18N	10W	10	M1547	3
116				18N	10W	9	M1547	3
117				18N	10W	10	M1547	3
118				18N	10W	22	M1547	3
119				18N	10W	14	M1547	3
120				18N	10W	14	M1547	3
121				18N	10W	14	M1547	3
122				18N	10W	14	M1547	3
123				18N	10W	14	M1547	3
124				18N	10W	14	M1547	3
125				18N	10W	14	M1547	3
126				18N	10W	11	M1547	3

Table A-1. LOCATIONAL DATA, POTENTIAL ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (continued)

Site Number[a]	UTM[b] Northing	UTM[b] Easting	UTM[b] Ref.	Legal Reference[c] Township	Range	Section	USGS Quad Map[d]	CR[e]
127				18N	10W	11	M1547	3
128				18N	10W	11	M1547	3
129				18N	10W	11	M1547	3
130				18N	10W	3	M1547	3
131				18N	10W	3	M1547	3
132				18N	10W	3	M1547	3
133				18N	10W	3	M1547	3
134				18N	10W	3	M1547	3
135				18N	10W	2	M1547	3
136				18N	10W	2	M1547	3
137				18N	10W	2	M1547	3
138				18N	10W	2	M1547	3
139*				18N	10W	11	M1547	2
140*				18N	10W	14	M1547	2
141*				18N	10W	14	M1547	2
142*				18N	10W	13	M1547	2
143				18N	10W	23	M1547	3
144				18N	10W	24	M1547	3
145				18N	10W	24	M1547	3
146				18N	9W	19	M1547	3
147				18N	10W	13	M1547	3
148				18N	10W	13	M1547	3
149*				18N	10W	13	M1547	2
150				18N	10W	13	M1547	3
151				18N	10W	13	M1547	3
152				18N	10W	12	M1547	3
153				18N	10W	12	M1547	3
154				18N	9W	7	M1547	3
155*				18N	10W	12	M1547	2
156*				18N	10W	12	M1547	2
157				18N	10W	12	M1547	3
158				18N	9W	7	M1547	3
159				18N	9W	7	M1547	3
160				18N	9W	7	M1547	3
161				18N	9W	6	M1547	3
162				18N	10W	1	M1547	3
163*				18N	10W	1	M1547	2
164				18N	10W	1	M1547	3
165*				18N	10W	1	M1547	2
167				18N	10W	1	M1547	3
168				18N	10W	1	M1547	3
169				18N	10W	2	M1547	3

Table A-1. LOCATIONAL DATA, POTENTIAL ARCHEOLOGICAL RESOURCES ON THE LOUISIANA AAP (concluded)

Site Number[a]	UTM[b] Northing	UTM[b] Easting	UTM[b] Ref.	Legal Reference[c] Township	Legal Reference[c] Range	Legal Reference[c] Section	USGS Quad Map[d]	CR[e]
170				18N	11W	11	M1547	3
171				18N	11W	11	M1547	3
172				18N	11W	12	M1547	3
173				18N	10W	4	M1547	3
174				18N	10W	23	M1547	3
175				18N	9W	6	M1547	3
176				18N	11W	11	M1547	3
177				18N	10W	17	M1547	3
178				18N	10W	15	M1547	3
179				18N	10W	10	M1547	3
180				18N	10W	3	M1547	3
181				18N	10W	11	M1547	3
182				18N	10W	14	M1547	3
183				18N	10W	13	M1547	3
184				18N	9W	6	M1547	3

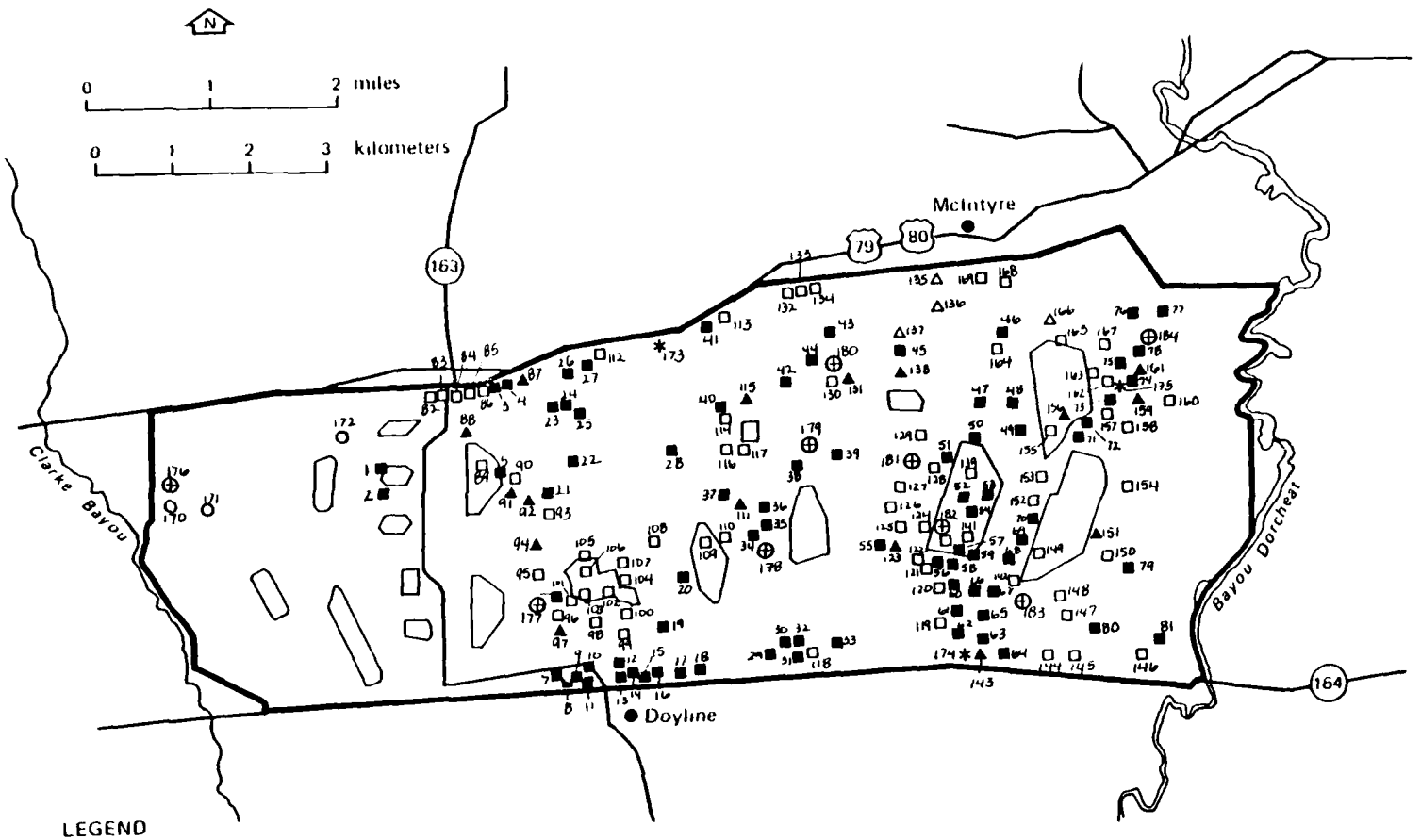
[a] Potential resource locations are mapped in Figure A-1. The "*" indicates these are within an area of identified ground disturbance (GDA area, Figure 3-2). The Confidence Rating of their potential integrity has, therefore, been rated at 2 with the exception of facility maintained cemeteries (ranked 3).

[b] UTM = Universal Transverse Mercator coordinates, Zone 15. If the area is less than 10 acres in extent, the coordinates record the approximate center of the site. If it is larger, they record the corners of a 3-or-more sided figure than encloses the site. The individual or institition that computed the UTM coordinates, listed here as "Ref.," include only Woodward-Clyde Consultants.

[c] Base meridian is the Louisiana Meridian.

[d] USGS 15 min. 1947 Minden, LA, quad sheet (unrevised). Compiled from 1939 aerial photographs.

[e] The Confidence Rating (CR) is an evaluation of the perceived reliability of the site locational data. 1 = the information is more guess than science; 2 = the judgement is moderately reliable; 3 = the information is most likely reliable.



LEGEND

- ■ Structures Present in 1914(82)
- □ Structures Present in 1937(68)
- ▲ Structures Present 1914 to 1937(16)
- △ Structures Added between 1937 to 1940(4)
- ○ 1940 Bossier Parish Structures (3)
- ✱ Churches (3)
- ⊕ Cemetries (9)

Figure A-1. MAP OF POTENTIAL ARCHEOLOGICAL RESOURCES ON THE LOUISIANA ARMY AMMUNITION PLANT

APPENDIX B

ARCHEOLOGICAL ASSESSMENT REPORT FOR LOUISIANA AAP

ARCHEOLOGICAL ASSESSEMENT REPORT NO. 42

INTENSIVE CULTURAL RESOURCES SURVEY OF SELECTED LOCATIONS IN THE LONGHORN ARMY AMMUNITION PLANT, KARNACK, TEXAS AND LOUISIANA ARMY AMMUNITION PLANT, MINDEN, LOUISIANA

by

W. J. Bennett, Jr.

Submitted
to the
U. S. Army Corps of Engineers
Fort Worth District
Fort Worth, Texas

Purchase Order
DACW63-84-M-0148

1984

INTENSIVE CULTURAL RESOURCES SURVEY
OF SELECTED LOCATIONS
IN THE
LONGHORN ARMY AMMUNITION PLANT, KARNACK, TEXAS
AND
LOUISIANA ARMY AMMUNITION PLAN, MINDEN, LOUISIANA

Purchase Order
DACW63-84-M-0148

INTRODUCTION

Project Authorization

Under the authority of and in compliance with the National Historic Preservation Act of 1966 (PL 89-665), the National Environmental Policy Act of 1969 (PL 91-190), Executive Order 11593 (The Protection and Enhancement of the Cultural Environment), the Archeological and Historic Preservation Act of 1974 (PL93-291), and other authorities, an intensive cultural resources survey was conducted at selected locations in the Longhorn and Louisiana Army Ammunition Plants. This work was commissioned by the U. S. Army Corps of Engineers, Fort Worth District, under Purchase Order DACW63-84-M-0148.

Project Area Locations and Descriptions

The Longhorn Army Ammunition Plant is located in Harrison County, Texas, near the town of Karnack (Figure 1). The areas examined in this effort consisted of approximately 350 wooded acres. The Louisiana Army Ammunition Plant is located in Webster Parish, Louisiana, near the town of Minden (Figure 2). The areas examined in this effort consisted of slightly more than 350 wooded acres.

Project Goals and Orientation

The primary goal of this effort was to conduct an intensive pedestrian survey of the project areas in an attempt to locate, identify, record, and form a preliminary assessment of those cultural resources which might be in these areas. This effort was to be confined to an intensive pedestrian survey with appropriate subsurface examination techniques.

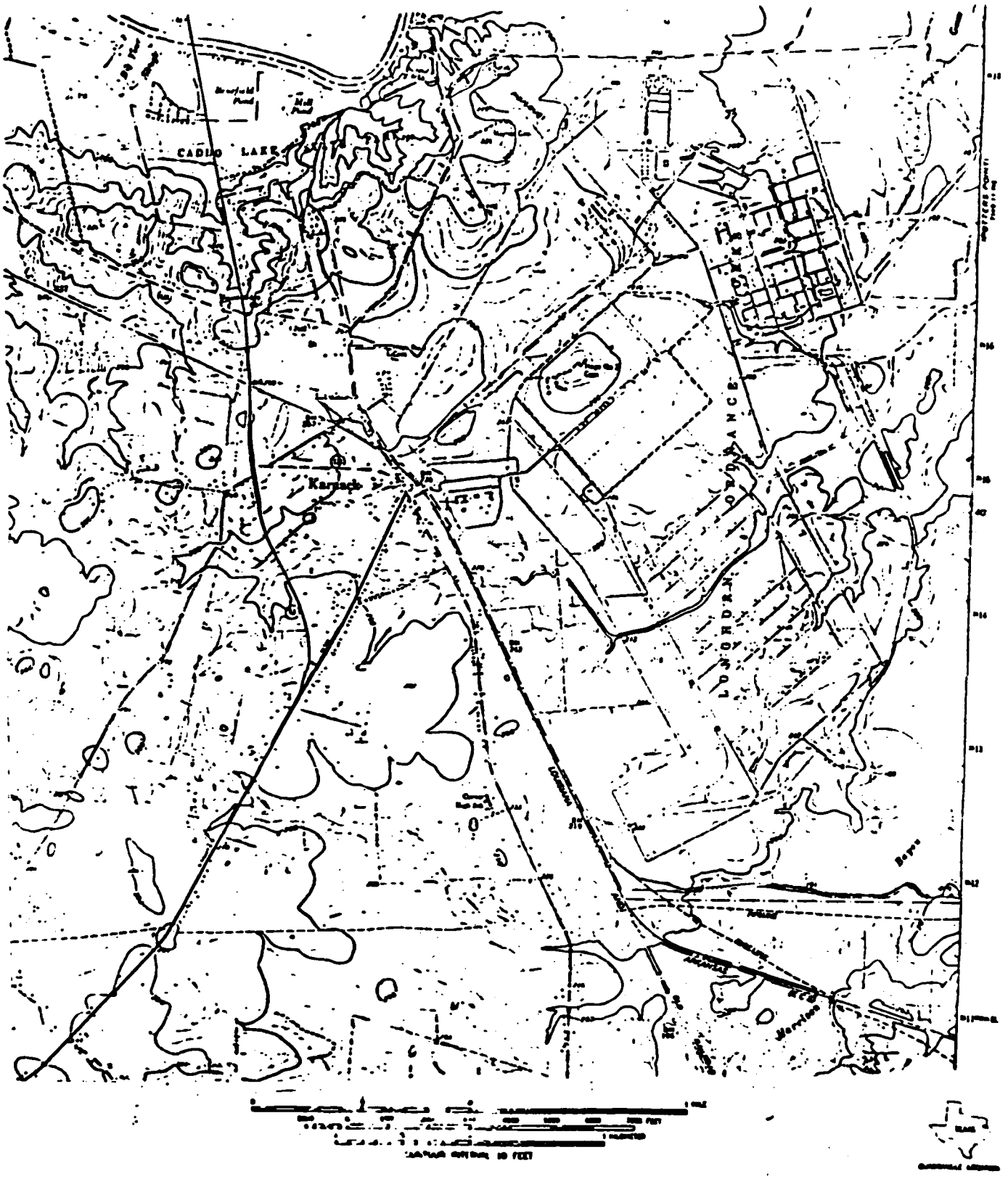


Figure 1. Longhorn Army Ammunition Plant Location. Project Area outlined in dashed line. (Map source - USGS Quadrangle Map, Karnack Sheet)

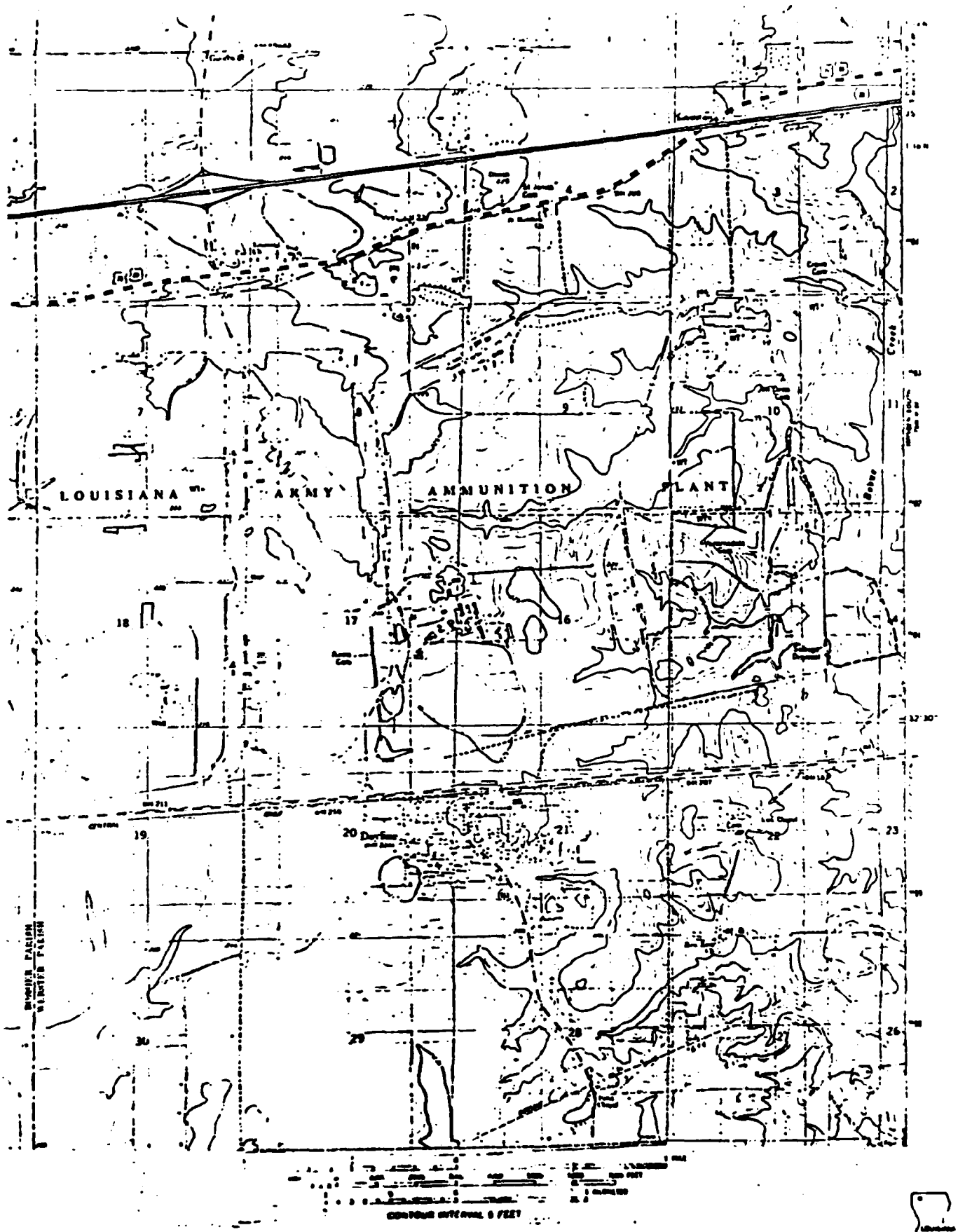


Figure 2. Louisiana Army Ammunition Plant Location. Project Area outlined in dashed line. (Map source - USGS Quadrangle Map, Doyline Sheet)

INVESTIGATIONS

Background Research

This effort was somewhat different from similar projects in that the background and literature research which usually preceeds field work had been undertaken as part of a separate procurement. The results of this study were not available at the time the pedestrian survey was undertaken. However, a records check by the Office of the State Archeologist of Louisiana and the Texas Historical Commission was undertaken. No cultural resources were on record for either of the locations.

Field Work: Longhorn Army Ammunition Plant

Field Conditions. The areas examined at the Longhorn Army Ammunition Plant were in a forested environment, primarily pine trees, with a heavy duff of pine needles and leaves covering the ground surface. The area has been extensively modified by activities undertaken in the construction and operation of the facility. Prior to the construction of the facility, the area had been in agriculture, row crops and pasture.

Strategy and Tactics. Field work was conducted by a 3 member team, W. J. Bennett, Jr., Mary Bennett, and John Miller, on November 1 and 2, 1983. The area examined was divided into 3 separate Survey Units (Figure 3). Each unit was walked using transects set at intervals of 20/25 m with shovel testing done at 20/25 m intervals along the transects. Shovel tests generally measured 30 cm in diameter and were 25 - 35 cm deep. Soil from these tests was shovel sorted but not screened. None of these tests were marked for later location.

An exception to this strategy was called for in Survey Unit 2. There, because of contaminated earth, shovel testing was limited to the southern half of the area, marked on Figure 3 with diagonal lines. The entire area, however, was walked systematically in the same manner as the other Survey Units.

In Survey Unit 3, which had been the site of a TNT production facility, numerous pathways had been cut. Because of the greatly increased surface visibility these paths were used to examine the area. Transects spaced at 25 m intervals were also walked across the length of the Unit.

Field Observations. In Survey Unit 1 the terrain was level to sharply sloping and contained one very large hill. The vegetation was that of a young pine forest which had been subjected to a controlled burning in the last 2 years. The soil profile was consistently a light brown to yellow silt to a depth of over 30 cm. Occasionally orange or dark brown concretions appeared in the profiles. No water sources were confirmed for

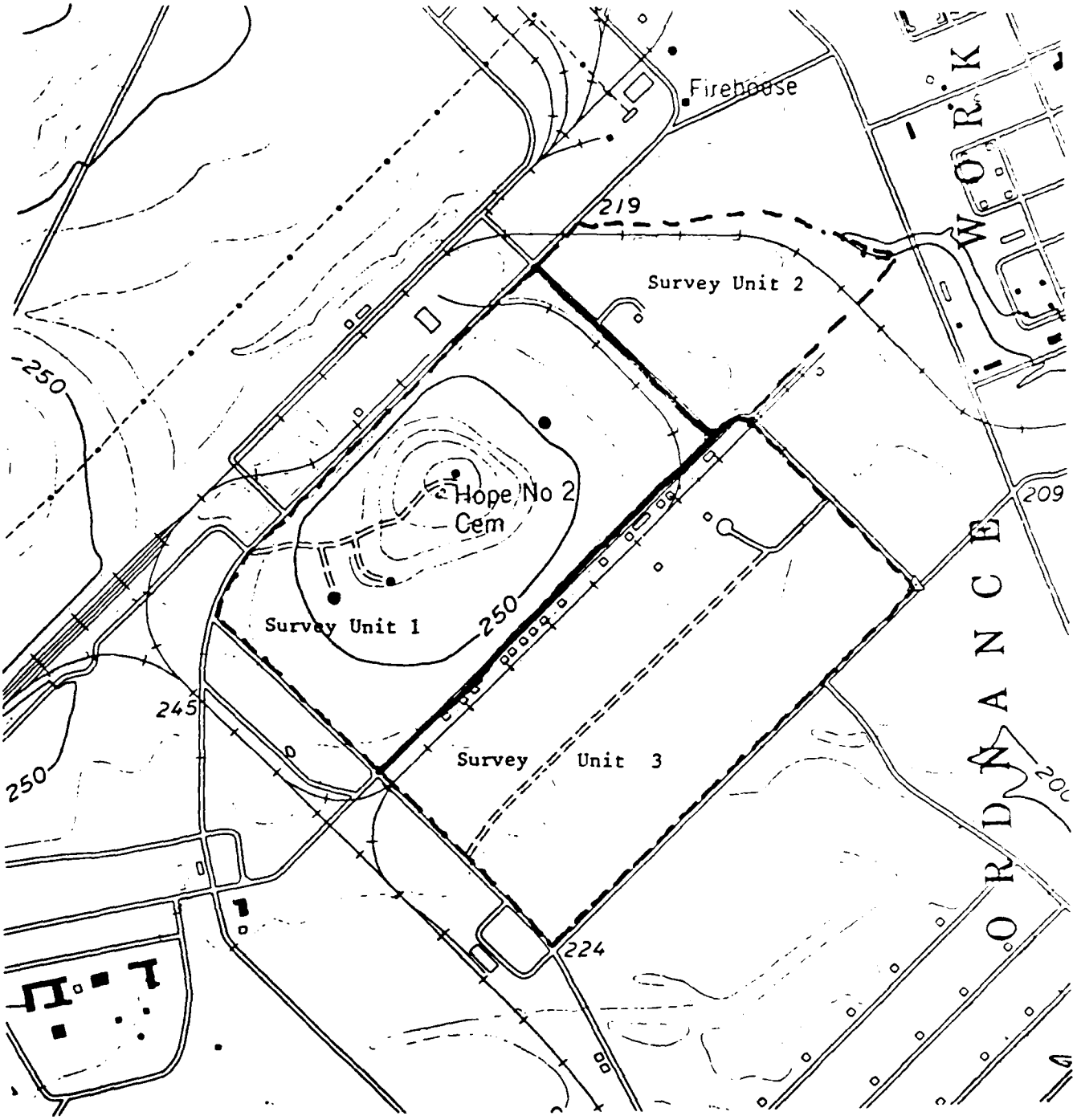


Figure 3. Project Area: Longhorn Army Ammunition Plant (Scale 1 : 12,000 approximate)

the unit but one moist area surrounded by ferns indicated a possible spring. Surface visibility was very poor. Portions of this unit had been substantially modified, first by agricultural terracing and later by the installation of several water towers, marked by dots in Figure 3, and their attendant pipelines. Large areas along the slope of the hill had been ditched to allow an increased, controlled run-off of overflow from the water towers. Erosion gullies were numerous.

Survey Unit 1 contained a small cemetery known as the Hope No. 2 cemetery (Figure 3). It contains 4 graves, each with headstone and footstone. The headstones were made of limestone and bore the Gates of Heaven motif along with names and dates of birth and death. The inscriptions read A. P. Hope, Born Oct 25, 1841, Died October 11, 1909; Julia Atelia, wife of A. P. Hope, Born May 16, 1852, Died at home, Harrison Co Tex, June 26, 1907, Aged 55 yrs; Rebecca J. Barrett, Born Mar 23, 1832, Died June 22, 1916; Mary Francis Johnston, Born Sept 7, 1843, Died Jan 22, 1919.

The exterior measures approximately 6 x 9 m and is surrounded by a metal fence. Several small cedar shrubs are placed around and within the fence and jonquills or iris are growing by the footstones.

There was apparently a house structure nearby, presumably on the top of the hill where the water tower now stands. However, a thorough search of that area using transects set at 5 m intervals, discovered only a single sherd of whiteware, a fragment from the base of a saucer or plate, found to the north of the tower. Whatever sort of structure or structures may once have been present are now entirely gone. No other cultural resources were located in this unit. The whiteware fragment was not collected.

Survey Unit 2 is located in an area that has been drastically modified. During the height of the TNT production at Longhorn this was the site of several settling ponds or basins which accepted the run-off from the TNT production facility. The northern or back portion of the area is marked with signs warning against excavation. Numerous old timbers and concrete slabs and footings are scattered through the area. It was also covered by pine trees and had been subjected to a controled burn in the past 2 years. The soil profile here was the same as we encountered in Survey Unit 1. Surface visibility was very poor. The area is bordered on the north by a large creek which was flowing at the time of the survey. It looked as if the banks of the creek had been modified by the creation of some small levees. This area was carefully examined for prehistoric materials but with negative results. No cultural resources were located in Survey Unit 2.

Survey Unit 3 is the site of the TNT production area. Apparently most of the structures related to this facility have been torn down and the rubble removed. The western half of the area contains large amounts of broken concrete and some timbers as well as the remains of ditches and pipelines. Some large cracked and broken concrete slabs were encountered along the western edge of this Survey Unit. The standing buildings shown along the

western edge of the Unit were changing rooms and emergency facilities. This area is also covered in pine trees with very poor surface visibility except in those areas which had been recently cleared. These cleared areas seemed to be connected with the EPA monitoring effort which has placed numerous test wells in the area. Old blue and yellow hydrants from the production era are still in the area and mark the old drainage system, the main portions of which parallels the road and is illustrated by the dotted line in Figure 3. There is one small stand of hardwoods in the eastern corner of the unit. Other than the debris and modifications associated with the production facility no cultural resources were located in this unit.

Field Work: Louisiana Army Ammunition Plant

Field Conditions. At the time of the investigations the project area was largely covered with mature vegetation; primarily pine woods with some interspersed hardwoods with thick understory. Portions of the project area had been substantially modified prior to this undertaking. The ground surface was obscured over much of the project area by a heavy pine needle and leaf duff. However, some areas of recent clearing facilitated investigations.

Strategy and Tactics. The initial phase of field work was undertaken on November 3 and 4, 1983, by a 3 member team consisting of John Miller, Thomas Cheatum, and Robert Bennett. After the draft report for this work was submitted the Fort Worth District obtained a copy of a draft copy of an archeological overview prepared for this facility by Woodward-Clyde Consultants. This draft indicated that at one time (pre-1914) there were two standing structures in the project area. Initial field examination did not discover any evidence for these structures. However, at the urging of the Fort Worth District, a second trip was made to the area to search specifically for these structures. This was made on February 9, 1984, by Robert Bennett.

The project area was divided into 5 Survey Units (Figure 4) and was examined by walking transects spaced 20/25 m apart with shovel testing conducted at intervals of 20/25 m where the ground surface was obscured by vegetation. This strategy was not used in Survey Unit 3 on which a production unit had exploded and the area subsequently bulldozed. This area was subjected to only a reconnaissance level examination.

Field Observations. Survey Unit 1 was primarily in a pine forest with some hardwoods and very thick understory. The terrain was relatively flat to gently undulating with numerous praire mounds present. The soil as revealed in the shovel tests was primarily a whitish sand with little soil development. No water sources were observed. The only cultural material observed was the Vanornsdale cemetery marked on the USGS quadrangle map (Doyline sheet). The cemetery is bordered by a chain-link fence and is approximately 13 m square. It contains 8 graves with both headstones and

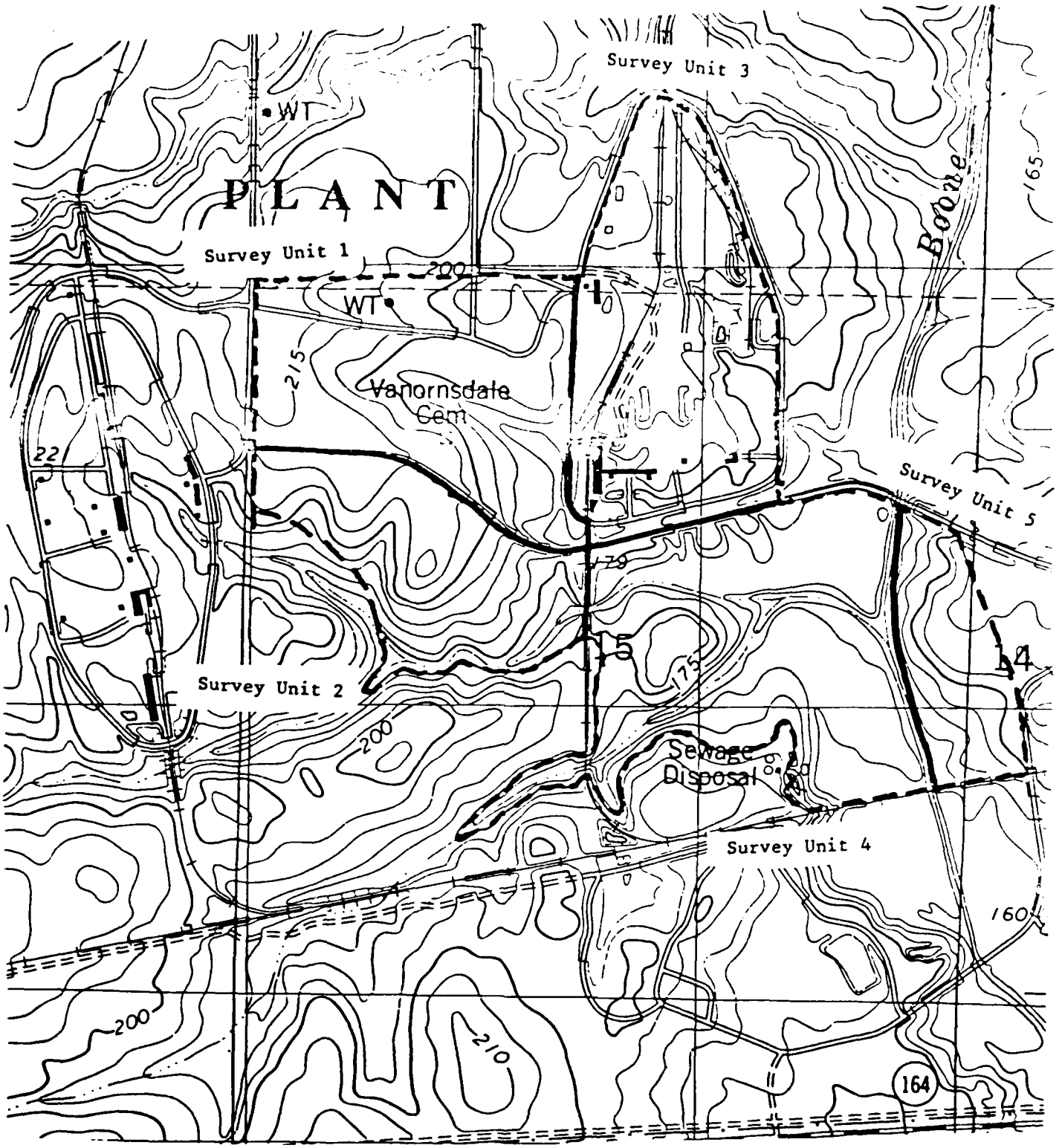


Figure 4. Project Area: Louisiana Army Ammunition Plant (Scale 1 : 12,000 approximate)

footstones, 3 graves with only headstones, and 1 marked with only a footstone. All but one headstone are about 50 cm high. The largest, about 1.25 m high, is inscribed as follows; GRONISON V., VANORSDEL, DIED AUG. 17, 1918, 8 MO. 20 DAYS, AND WIFE, CLARA JACKSON, DIED OCT. 20, 1917, AGE 59 YR., 6 MO. 4 DAYS, They are not dead, but sleepeth. There are two large oak trees in the cemetery.

The pre-1914 structures referenced above were located in this Survey Unit, north of the cemetery. This area was carefully re-examined using transects spaced at approximately 10 m intervals with shovel tests spaced at about 10-15 m intervals. The results of this effort were negative. No cultural materials were observed and no ornamental flowers, trees, or shrubs were noted. However, in the northeastern section of this Survey Unit there is a small rise with large oak trees on it. It is assumed that, if they were still standing at the time of the construction of the Louisiana Army Ammunition Plant, they were removed at that time.

Survey Unit 2 was primarily in a pine forest with some hardwoods. The terrain sloped slightly toward the south and included an eroded and irregular terrace-like feature. The soil was again primarily a whitish sand with little soil development but in places it overlay a red clay. A small creek was present along the south edge of the unit. It had been ditched near the east end of the unit. No cultural resources were observed in Survey Unit 2.

Survey Unit 3 was covered in pine trees and grass. This area was totally altered for the construction of a land mine plant which subsequently exploded during production in 1968. The entire area has been cratered and bulldozed. Because of this extensive modification this area was examined only at the reconnaissance level.

Survey Unit 4 was in a forested area composed of pines and hardwoods with cypress in the bottoms near Boone Creek. The terrain was composed primarily of low bottoms with a prominent rise between 2 small creeks. The soils in the area consisted of a light gray silty clay and the more usual whitish sand with a poorly developed horizon. Some pea gravel was observed in the lower portions of the sandy profiles. The shovel tests in this Survey Unit revealed no buried strata nor did they suggest that such existed in this area.

The area contained 2 small creeks which flowed together into Boone Creek. These creeks had been ditched and spoil was piled adjacaent to their channels. The prominent rise between the 2 creeks had been badly disturbed by earlier logging activity. Cultural resources observed consisted of a single chert flake and 1 fire-cracked rock found in an armadillo burrow (Figure 5). This is recorded as site X16WE-D (spot find). Extensive shovel testing failed to locate any other materials or other evidence of prehistoric activity. The flake and fire-cracked rock were not collected. The site was marked with a permanent marker consisting of a 25cm long

Figure 5. X16WE-D. View is to the north.

Figure 6. 16WE 58. View is to the east.

aluminum tent peg driven into the ground at a spot indicated on the site form. Further site location information is included on the enclosed State of Louisiana Site Record Form.

Survey Unit 5 was planted in pine trees and some harvesting had been done in the northwestern portion of the unit. Understory in the unit was heavy to moderate. Some areas of improved visibility were provided by old logging roads. The terrain sloped slightly to the west. Soil in the area was again the whitish sand with a very slightly developed horizon. Boone Creek, modified by extensive ditching, ran through the unit. A single site, site 16WE 58, was located in Survey Unit 5 (Figure 5). This consisted of a thin scatter of lithic debris (2 chert flakes, 3 novaculite flakes, and a broken Gary point made of white novaculite) located in an eroded road bed. Only the Gary point (Figure 6) was collected. These artifacts were restricted to an eroded area about 10 m in diameter. This was located on a gently sloping terrace-like formation. The road bed in which the artifacts were located was situated below and to the south of a small knoll and east of Boone Creek. The area of the artifact concentration was shovel tested with negative results. The soil profiles revealed an upper layer of whitish sand with a very slight soil development overlying a red clay subsoil. A total of 10 shovel tests were placed in the immediate area and 5 shovel tests were placed along the top of the adjacent knoll. These tests were also negative. The profiles in these tests were essentially the same as described above and gave no indication that slope-wash had buried any earlier soil horizons. The area was examined on two separate occasions during the first phase of field work. It was not possible to determine if, or how far, these artifacts may have been displaced. A permanent marker, a 25 cm long aluminum tent peg, was placed at this site at a location shown on the site form. Further site location information is given on the enclosed State of Louisiana Site Record Form.

Curation

The single artifact collected, the Gary point, the notes, site forms, and photographs from this effort as well as a copy of this report have been placed on deposit with Northwestern State University, Natchitoches, Louisiana. Site forms have been filed with the appropriate state agencies.

Figure 7. Gary point from 16WE 58.

RESULTS

The only cultural resources located at the Longhorn Army Ammunition Plant, Texas, were the Hope No. 2 cemetery and the TNT facility. It is our judgement that, in itself, the cemetery is not eligible for inclusion on the National Register of Historic Places. However, it is possible that future studies on the many such similar sites in the area may develop a thematic context for eligibility. At this time it is recommended that this be preserved in place and no further investigations are recommended at this time. The TNT facility is not of sufficient age to be considered an historic site. Further, since it seems to have been systematically demolished and left behind an extremely polluted mess we are very doubtful if the archeological record at this site would be of any particular value for future research.

Two small scatters of lithic debris were encountered at the Louisiana Army Ammunition Plant, Louisiana. It is our judgement that X16WE-D be considered an isolated find and 16WE 58 be considered a site, perhaps a special extraction or upland hunting camp dating to the Late Archaic period. The novaculite Gary point suggests a possible connection with the Poverty Point culture but this is by no means certain. The sparseness of the cultural materials, the disturbed nature of their contexts and their lack of other associations would seem to preclude their consideration for nomination to the National Register of Historic Places.