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**"A PHASE I CULTURAL RESOURCES  
RECONNAISSANCE OF THE FEED MATERIALS  
PRODUCTION CENTER ALTERNATE WATER  
SUPPLY SYSTEM, FERNALD, HAMILTON  
COUNTY, OHIO" BY U.S. ARMY ENGINEER  
DISTRICT, LOUISVILLE, KY SEPTEMBER 1992  
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**REPORT**

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A PHASE I CULTURAL RESOURCES RECONNAISSANCE  
OF THE FEED MATERIALS PRODUCTION CENTER  
ALTERNATE WATER SUPPLY SYSTEM,  
FERNALD, HAMILTON COUNTY, OHIO

U.S. ARMY ENGINEER DISTRICT, LOUISVILLE  
P.O. BOX 59  
LOUISVILLE, KENTUCKY 40201-0059  
TELEPHONE (502) 582-5696

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SEPTEMBER 1992

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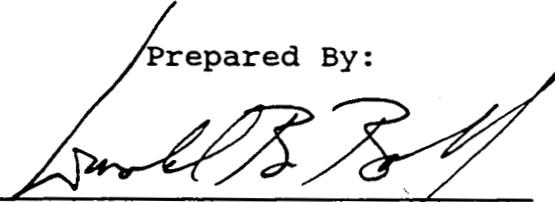
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A PHASE I CULTURAL RESOURCE RECONNAISSANCE  
OF THE FEED MATERIALS PRODUCTION CENTER  
ALTERNATE WATER SUPPLY SYSTEM,  
FERNALD, HAMILTON COUNTY, OHIO

Prepared For:  
U.S. Department of Energy  
Feed Materials Production Center  
Fernald Site Office  
P.O. Box 398705  
Cincinnati, Ohio 45239-8705

Prepared By:



Donald B. Ball, M.A., SOPA  
U.S. Army Engineer District, Louisville  
ATTN: CEORL-PD-R  
P.O. Box 59  
Louisville, Kentucky 40201-0059  
Telephone (502) 582-5696

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ABSTRACT

A pedestrian archaeological reconnaissance was conducted at the site of the Willey Road Extraction Well Field and associated pipeline route to the Village of Fernald, and along a section of a second pipeline route from a point immediately north of Willey Road, across the grounds of the Fernald Reservation, thence to the right (west) bank of the Great Miami River. The examination of these areas has served to clarify the impacts of this proposed construction on five previously reported sites. As discussed herein, no further work is recommended at sites 33HA482 and 33HA483 (the former a diffuse lithic scatter and the latter a mid- to late-19th century secondary refuse deposit). It has been demonstrated that this project will have no adverse effects on the integrity of a nearby early- to mid-19th century house site designated 33HA470. No other cultural resources were observed and the vast majority of the pipeline route will be located in previously disturbed terrain. Additionally, it is noted that the eastern terminus of the area examined near the right (west) bank of the Great Miami River will have no impact on sites 33HA400 or 33HA401.

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A PHASE I CULTURAL RESOURCES RECONNAISSANCE  
OF THE FEED MATERIALS PRODUCTION CENTER  
ALTERNATE WATER SUPPLY SYSTEM,  
FERNALD, HAMILTON COUNTY, OHIO

I. INTRODUCTION

The present study records the results of a pedestrian cultural resources reconnaissance of two spatially discrete but interrelated segments of an alternate water supply system to be constructed adjacent to and on the grounds of the Feed Materials Production Center, a U.S. Department of Energy Facility near the Village of Fernald in northern Hamilton County, (southwest) Ohio. The first unit of this undertaking will consist of a series of wells for the procurement of fresh water and an associated pipeline for delivering this water to industrial facilities located near Fernald. The second unit will consist of a series of wells near Fernald which will serve as collection points for contaminated ground water and a pipeline for transporting this water to the Feeds Materials Production Center for decontamination and, ultimately, to the Great Miami River. At this time, Department of Energy engineers have delineated all of the areas to be affected by the clean water extraction field and its pipeline, and the route of the pipeline which will transport contaminated water north of Willey Road, a local landmark. (The contaminated water extraction sites have not yet been identified and will be reported in an addenda to this study.)

As will be discussed in greater detail below, this study will present background information on area environment, cultural history, and previous area cultural resources studies. Additionally, data will be presented on the findings (and associated artifact typology) of this undertaking and related recommendations.

II. ENVIRONMENTAL SETTING

This section will present brief comments on various aspects of the project area's natural environment. Specifically, information on the following will be presented: geology and physiography; mineral resources; contemporary landuse; climate; soils; and flora and fauna. These subjects are discussed in much greater detail by Gordon (1969) and Lerch et al. (1982).

## GEOLOGY AND PHYSIOGRAPHY

The proposed well field and pipeline routes are variably located in the uplands and bottomlands situated near the right bank of the Great Miami River and adjacent to the Village of Fernald and the Feed Materials Production Center. Physiographically, the study area and the entirety of Hamilton County are located within the Till Plains Section (see Figure 1) of the Central Lowland Province (Fenneman 1916) which is underlain in the southwestern portion of Ohio by Ordovician rock. The Central Lowlands province is characterized by structural and sedimentary basins, domes, and arches which came into existence throughout Paleozoic time.

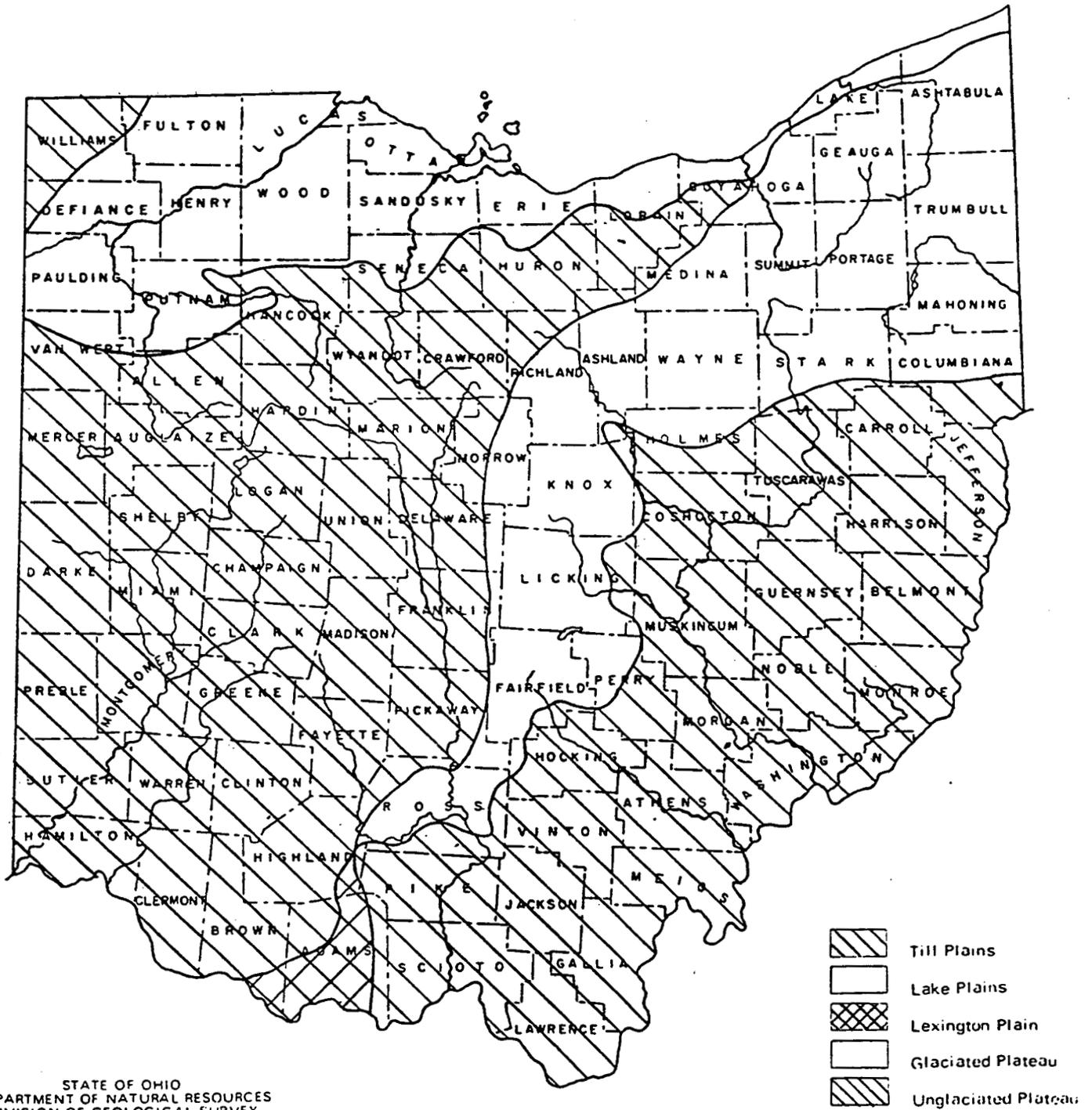
As noted by Lerch *et al.* (1982) in a study of Hamilton County, the Cincinnati geanticline, or "Cincinnati arch," is structurally significant in southwestern Ohio. Hamilton County is almost at the crest of this arch. The axis of the arch is only several miles east of the metropolitan area. The bedrock underlying the county is shale and fossiliferous limestone of Middle and Late Ordovician age, the oldest in Ohio. It outcrops on steep valley walls and at numerous waterfalls. In other areas it is overlain by glacial deposits that range in thickness to as much as 400 feet.

The county is part of an upland plain rising some 960 feet above sea level. All of the county drains into the Ohio River and its tributaries, mainly the Great Miami and Little Miami Rivers. The Ohio River crosses the area in a valley some 500 feet below the general level of the plain.

The main local physiographic features are gently rolling glacial uplands, steep hillsides along the major streams, extensive glacial river terraces and outwash plains, and flood plains. The maximum relief in the county is 507 feet. The altitude varies from about 962 feet, at the Mt. Airy water tower, which is at the intersection of Colerain Road and North Bend Road, to about 455 feet, at the mouth of the Great Miami River, which is near the southwestern corner of Ohio.

Near the larger streams the land is hilly, made so by numerous tributary stream valleys that vary greatly in length; some are 10 miles or more in length, and some are mere ravines. As a rule, there is little flat upland between these smaller valleys. Back a few miles from the larger streams, the tributary valleys are not so numerous and not so deep and there are broad, rolling uplands such as those at Mt. Healthy and Blue Ash.

Because of the almost horizontal attitude of the underlying bedrock, no local surface feature is outstanding. The most



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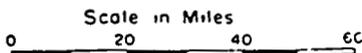


FIGURE 1.

PHYSIOGRAPHIC SECTIONS OF OHIO

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striking feature is the breadth of the Miami and Whitewater River Valleys considering the size of their streams. These valleys are broad, flatbottomed depressions flanked on either side by relatively steep bluffs rising 200 to 500 feet above the general level of the valley floor. The valley floors are low enough to be subject to floods and are covered by a thin veneer of recent alluvium. These broad valleys are the remnants of valleys that existed prior to Pleistocene glaciation and were partly filled with glacial drift. In some places the present stream follows the course of the ancient stream, but at a much higher elevation.

#### MINERAL RESOURCES

Sand and gravel deposits important for the construction industry are the predominant mineral resources extracted currently in the county. Principal deposits are along the Great Miami and Whitewater Rivers, in Mill Creek Valley, and along the Little Miami River, particularly east of Newtown. Although not presently extracted on a large scale, limestone, clay, building sand, and molding sand can be produced in limited areas of the county.

#### CONTEMPORARY LAND USE

By 1975, more than 55 percent of the county's total area of 265,152 acres was Urban land, and residential development was the dominant urban use. Of the land undeveloped by that year, more than 60 percent remained woodland because of the severity of topography. The urbanized area extends outward from the core of Cincinnati, along major transportation arteries. The central part of the county, running north to south through the Mill Creek Valley, is entirely urbanized.

The pattern of urban development in Hamilton County has been influenced greatly by the major streams. The streams were the major transportation routes as well as sources of water, and their flood plains and valley floors were easily developed by early technology. They determined the location of land transportation routes, which affected subsequent urban development.

Most of the farming in Hamilton County is west of the Great Miami River. Some row crops and specialty crops are grown in the Little Miami River Valley. In 1979, Hamilton county had 490 farms and 47,000 acres of farmland. The average farm size was 100 acres. The relative importance of the eight major farm commodities, by percent of cash receipts, was as follows: greenhouse and nursery products, 58 percent; vegetables, 8

percent; corn, 7 percent; dairy products, 6 percent; soybeans, 6 percent; cattle, 5 percent; other livestock, 3 percent; and fruit, 2 percent. In 1980, Hamilton County ranked sixth among Ohio counties for total cash receipts from greenhouses and nurseries.

#### CLIMATE

Hamilton County is cold in winter but quite hot in summer. Winter precipitation, frequently snow, results in a good accumulation of soil moisture by spring and minimizes drought during summer on most soils. Normal annual precipitation is adequate for all crops that are adapted to the temperature and length of growing season in the area.

In winter the average temperature is 33 degrees F at Cincinnati and 32 degrees at Fernbank, and the average daily minimum temperature is 24 degrees at Cincinnati and 23 degrees at Fernbank. The lowest temperature on record, which occurred at Cincinnati on January 28, 1963, is -20 degrees. In summer the average temperature is 74 degrees at Cincinnati and 71 degrees at Fernbank, and the average daily maximum temperature is about 85 degrees. The highest recorded temperature, which occurred at Cincinnati on July 29, 1952, and at Fernbank on June 28, 1971, is 101 degrees. The growing season (i.e., number of frost free days between spring and fall) ranges from a low of 157 days to a high of 204 days (Lerch et al. 1982:135).

The total annual precipitation is 40 inches. Of this, 21 inches, or 53 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 18 inches. The heaviest 1-day rainfall during the period of record was 4.73 inches at Cincinnati on March 9, 1964. Thunderstorms occur on about 45 days each year, and most occur in summer.

Average seasonal snowfall is about 17 inches. The greatest snow depth at any one time during the period of record was 16 inches at Cincinnati. On an average of 15 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 70 percent of the time possible in summer and 40 percent in winter. The prevailing wind is from the south-southwest. Average windspeed is highest, 11 miles per hour, in winter. Occasionally, tornadoes and severe thunderstorms strike the area. These storms usually are local

and of short duration. The pattern of damage caused by these storms is variable.

#### SOILS

Within the specific reconnaissance area near the Village of Fernald, two major soil associations have been reported (Lerch et al. 1980). Specially, the upland area containing the proposed well field and pipeline routes adjacent to Willey Road and Paddy's Run Road consists of Russell - Urban Land - Xenia Association soils described as "Deep, nearly level to strongly sloping, moderately well drained and well drained medium textured soils ... on uplands" (ibid.). A lesser amount of the examined area is located on floodplain topography on the right (west) bank of the Great Miami River. This area consists of Genessee - Stonelick - Urban Association soils. These soils have been described as "Deep, nearly level well drained medium textural and moderately coarse textured soils ... on floodplain" (ibid.)

#### FLORA AND FAUNA

As recorded by Gordon (1966; 1969), the reconnaissance area (and, indeed, the majority of Hamilton County) was covered by mixed mesophytic forests in the early historic period. Such forests were dominated by broad-leaved and deciduous species, but not exclusively so, with no single species comprising a very large fraction of the dominates. Segregates of the mixed mesophytic climax association in Ohio included oak-chestnut-tuliptree, oak-hickory-tuliptree, white oak-beech-maple, and hemlock-beech-chestnut-red oak.

Dense forests coupled with abundant sources of water provide a habitat for many types of animals. Modern woodland wildlife include woodcock, thrush, vireo, scarlet tanager, gray and fox squirrels, gray fox, white-tailed deer, cottontail rabbit, raccoon, and opossum. Wetland wildlife includes ducks, geese, rails, heron, shore birds, mink, muskrat, and beaver (Lerch et al. 1982:81). Prehistoric species would also have included elk, bear, bob cat, and turkey in addition to turtles and various aquatic species.

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## II. CULTURAL OVERVIEW

The present section will present a brief synthesis of the known culture history of the general environs of the reconnaissance area as extract from available regional literature. At this time, six major periods have been defined in the reaches of the Great Miami River Valley and the central portions of the Ohio River Valley: (1) Paleo-Indian; (2) Archaic; (3) Woodland; (4) Fort Ancient; (5) Ethnohistoric; and (6) Historic Euro-American (cf. Griffin 1967; Kellar 1983; Potter 1968; Swartz 1973; and Tomak 1983).

### PREHISTORIC OCCUPATION

The following discussion is intended to provide a descriptive frame of reference for the Fernald project area. This information is presented in chronological order beginning with the Paleo-Indian period and concludes with the well known Fort Ancient culture (Griffin 1943). The treatment of each cultural period is largely descriptive and provides information on characteristic or diagnostic artifacts.

Roughly dated from 12,000 to 8,000 B.C., the Paleo-Indian period (cf. MacDonald 1971; Mason 1962) is typically characterized by the presence of small numbers of certain distinctive fluted and unfluted projectile points styles such as Clovis, Cumberland, Quad, Meserve, and various Lanceolate forms (cf. Dorwin 1966; Dragoo 1965; 1976; Prufer and Baby 1963; Rolingson 1964; Seeman and Prufer 1982). Social structure in this period is typically interpreted as consisting of highly mobile, small nuclear families which engaged in hunting and gathering activities. Although rather limited numbers of temporally diagnostic projectile points dating to this period have been found in the Great Miami River Valley, nowhere are they recovered in abundance.

Generally divided for the sake of convenience into Early, Middle, and Late, the Archaic period dates from about 8,000 to 1,000 B.C. Typified by numerous sites ranging in size from little more than lithic scatters to large habitation areas, the known artifactual assemblages of this period reflect the broad spectrum of Archaic subsistence activities. Included among these items are a variety of serrated, beveled, barbed, and stemmed projectile points, drills, hide scrapers, hammer stones, and atlatl (spear thrower) weights (cf. Broyles 1971; Cambron and Hulse 1975; Chapman 1975; 1976; Coe 1964; Converse 1973; Lewis and Lewis 1961; Potter 1968; Webb 1974).

The Woodland period, dating from about 1,000 B.C. to 900 A.D., witnessed the development of agriculture, the introduction of the bow and arrow, general usage of pottery, and the spread of mortuary ceremonialism culminating in the construction of earthen and stone mounds as the repository of the socially high-ranking dead (cf. Potter 1968:24-54). Horticulture was generally based on the domestication of plants indigenous to the eastern United States such as gourd, sunflowers, marsh elder, and canary grass, although some forms, such as squash and corn, were ultimately derived from Meso-America (Struever and Vickery 1973). Occurring in a number of distinctive types, early ceramic forms primarily consisted of simple conchoidal base jars tempered with sand or crushed stone (typically limestone) and marked upon their exterior surface with cord or fabric impressions (cf. Clay 1963; Heimlich 1952). Perhaps the best known, if incompletely understood, Woodland manifestation within the Ohio Valley region is the Adena "culture" distributed through much of north-central Kentucky, southern Ohio, and some surrounding areas (cf. Webb and Baby 1957; Webb and Snow 1974).

Within the reaches of the central Ohio River valley, the late prehistoric period, dating from about 900 A.D. to some time before Euro-American settlement, is demarcated by the Fort Ancient "Culture." Characterized by a sedentary village life, the economy was oriented toward the farming of corn, beans, and squash with supplemental food sources derived from hunting and gathering activities. Fort Ancient ceramics were shell-tempered and frequently decorated with incised or cord-marked exteriors although many utilitarian vessels were plain surfaced. Tools and ornaments were variously fashioned from flint (chert), river cobbles, antler, shell, cannel coal, and (rarely) copper. Although the Fort Ancient people did not construct ceremonially oriented temple mounds in common with their contemporaneous Mississippian peers such as the occupants of the Angel Site in southwestern Indiana (Black 1967), the Tolu Site in Crittenden County, Kentucky (Webb and Funkhouser 1931), or the Kincaid Site in southern Illinois (Cole et al. 1951), occasional burials in stone-lined graves with pottery or bead mortuary furniture have been reported (cf. Griffin 1966; see also Griffin 1978).

#### ETHNOHISTORIC OCCUPATION

Available information suggests that the predominate Indian tribe to occupy southern Ohio during the mid- to late-18th century was the Shawnee (Callender 1978), although numerically smaller enclaves of Wyandot, Delaware, Ottawa, Chippewa, Potawatomi, Miami, and other groups may have been present (Bushman, ed. 1976:29; Hunter 1978). Along the length of the Great Miami River, several townsites are known in the area around and north of the site of present day Dayton, Ohio (cf. Buchman,

ed. 1976:29). Significantly, none of these settlements appear to have been situated in or near the area of the Great Miami River Valley occupied by the Fernald project area (cf. Figure 2). The various tribes inhabiting southern Ohio were effectively removed by the 1795 Treaty of Greenville (Figure 3).

#### HISTORIC SETTLEMENT

Historically and at present, the subject portion of Hamilton County remains rural in nature and continues to be devoted to agricultural usage. Far removed from the bustling activity of Cincinnati and the Ohio River, the project environs host the Village of Fernald, a small "whistle stop" community situated immediately east of the north-south oriented Chesapeake and Ohio Railroad. Platted in 1911 (following construction of the railroad in 1907), the Village of Fernald contains the following structures or properties of historical note:

Railroad Depot - single story, board and batten frame construction, built ca. 1907 (Structure no. Ham-2689-47);

Willey-Brown Company Flour Mill - multistory frame construction, built ca. 1911 (Structure no. Ham-2688-47);

Dwellings - variously of cement block, frame, and stucco construction, and standing 1, 1 1/2, and 2 stories high, estimated construction dates of ca. 1900 to 1911 (Structure nos. Ham-2690-47; Ham-2684-47; Ham-3977-47; Ham-3978-47; Ham-3979-47; Ham-3980-47; Ham-2685-47; Ham-2686-47; and Ham-2687-47);

Greasley-Wilkings Cemetery - situated immediately north of New Haven Road, this cemetery contains ca. 21 markers dating to the mid-19th century (Property no. Ham-2683-47);

Scott Cemetery - situated immediately south of New Haven Road, this small cemetery contains eight markers dating ca. 1843-1861 (Property no. N/A).

#### PREVIOUS AREA RESEARCH

The environs of Hamilton County, Ohio, have long been recognized as containing numerous and significant remains reflecting prehistoric occupation and land use. Reference to a number of these earlier studies appear in Morgan and Rodabaugh (1947) and in the more recently prepared compendium of cultural resource studies authored by Murphy (1987). Of particular note for purposes of the present effort is the report entitled

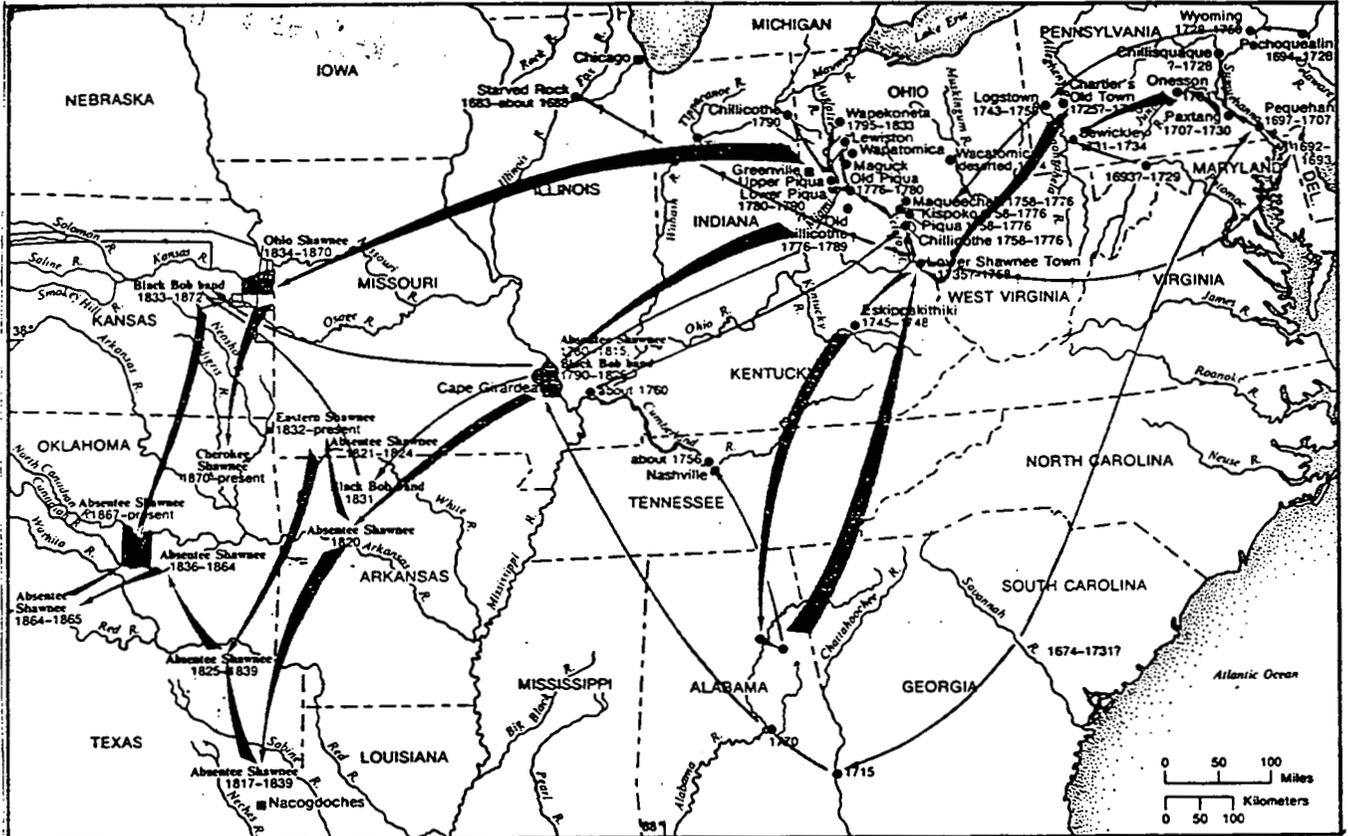
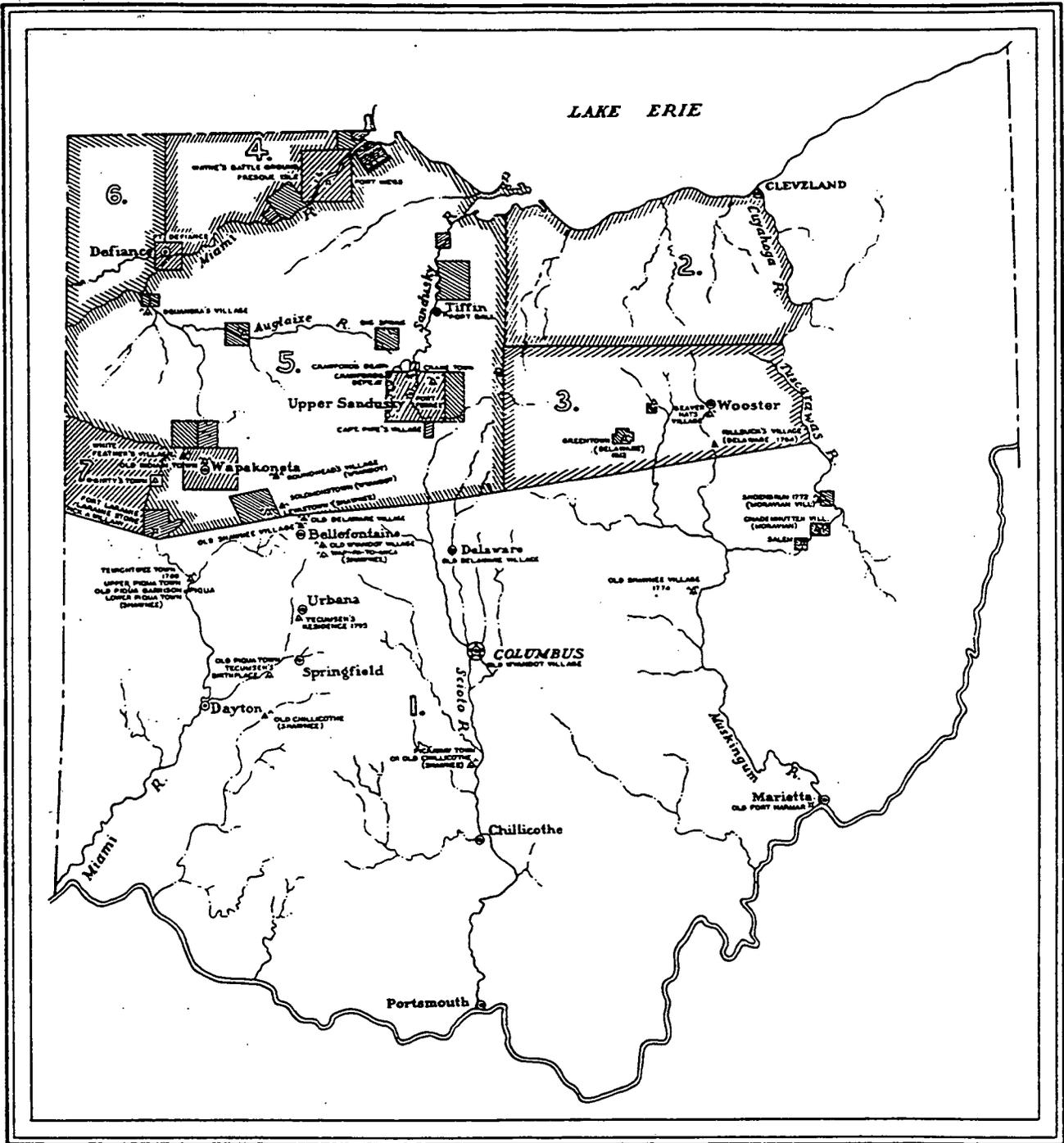


Fig. 2. Shawnee Locations and Movements  
(Source: Callender 1978:623)



1. Nearly two-thirds of the state of Ohio, 17,000,000 acres, was ceded to the United States in the Treaty of Green Ville in 1795 by the Wyandot, Delawares, Shawnee, Ottawa, Chippewa, Potawatomi, Miami and other Indian groups.
2. The Connecticut Western Reserve occupied the region bordered by Lake Erie, Pennsylvania, 41° North Latitude and the present eastern line of Seneca and Sandusky counties. During and shortly after the War for Independence, all states having territorial claims west of the Ohio relinquished them to the United States except for the Western Reserve and the Virginia military district. In the provisions of the Ordinance of 1787, the United States established territorial government for this region. Indian portions of the Reserve lying east of the Tuscarawas and Cuyahoga were ceded by treaty in 1795. The remainder of this area was relinquished in a treaty signed at Fort Industry, in northwest Ohio, on July 4, 1805.
3. Indian title to a large tract of land adjacent to and south of the Western Reserve was also ceded to the United States on July 4, 1805

4. The Ottawa, Chippewa, Wyandot, and Potawatomi ceded 345,000 acres of land in Ohio, along with 5,592,160 acres in the present state of Michigan, at Detroit on November 17, 1807. The Indians reserved two small tracts, including Presque Isle, which were held until the treaty with James Gardiner, August 30, 1831.
5. and 6. Over 4,500,000 acres in Ohio were ceded to the United States by the Delaware, Wyandot, Seneca, Shawnee, Potawatomi, Ottawa and Chippewa in a treaty concluded September 29, 1817. Smaller sections in Indiana and Michigan were also relinquished at this time.
7. At St. Marys, on October 6, 1818, the Miami ceded to the United States 297,600 acres in Ohio and a much larger adjoining area in Indiana. This act left the indians in Ohio confined to a few small reservations in northwestern Ohio. The last of these, held by the Wyandot, was given up in 1842.

Fig. 3. Historic Ohio Indian Settlements and Landholdings  
(Source: BUCHMAN, ed. 1976:29)

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"Archaeological Sampling in the New Haven Trough, Hamilton County, Ohio" by Thomas Gatus and Robert Genheimer (1985), information furnished by Ms. Julie Quinlan of the Ohio Historic Preservation Office, Columbus, Ohio (letter dated September 3, 1991), and data on file with the Department of Energy at Fernald, Ohio. These latter sources indicate the presence of a number of recorded sites within the vicinity of the study area. These sites include (but are not limited to):

33HA400	33HA465	33HA488
33HA401	33HA467	33HA489
33HA403	33HA470	33HA490
33HA404	33HA471	33HA491
33HA407	33HA472	33HA493
33HA457	33HA474	33HA498
33HA460	33HA482	33HA509
33HA461	33HA483	33HA510
33HA462	33HA484	
33HA464	33HA487	

In correspondence dated September 3, 1991, from Ms. Julie Quinlan to Mr. Behram Schroff of the Fernald Site Office of the Department of Energy, specific information has been requested concerning the impacts of the proposed wellfield and pipeline project on sites 33HA470, 33HA482, and 33HA483. Although these sites will be address below in greater detail in Section V (Reconnaissance Methods and Findings), it is noted here in passing that sites 33HA482 and 33HA483 will likely be impacted by construction related activities; site 33HA470 will not be affected by construction.

The following recorded historic structures are situated near the subject wellfield and pipeline route:

1. Abner Atherton House (c. 1845)
2. Blue Rock Street Bridge (c. 1914)
3. Clinton D. Buell House (c. 1830)
4. Rainbow Arch Bridge (c. 1931)\*
5. A. Reed Stone House (c. 1830)
6. Joseph Sater Farm (c. 1876)
7. William Sater Farm (c. 1831)
8. Joab Whipple House (c. 1840)
9. Daniel Wilkins Farm (c. 1845)
10. Israel B. Willey House (c. 1910)
11. Vaughan-Francis House (c. 1814)\*\*
12. Thomas Select School (c. 1810)\*\*
13. Shaw Farm (c. 1804)\*\*

\* Determined eligible for inclusion in the National Register of Historic Places (NRHP).

\*\* Listed on NRHP.

Of these properties, only the Rainbow Arch Bridge, a steel reinforced concrete structure, is adjacent to the project area. This structure will not be disturbed by the pipeline route.

#### RESEARCH DESIGN

In view of the generally restrictive corridor created by the project's pipeline route (the predominate feature of the proposed undertaking), the research design inherent in the present study consisted of straight forward inventory to: (1) document previously unrecorded sites; and (2) determine the degree/extent of impacts on previously documented sites. As will be discussed in Section V, no previously unrecorded sites were discovered; the impacts on previously recorded sites will be discussed in the same section.

#### IV. ARTIFACT TYPOLOGY

All cultural materials observed/recovered in the course of the present study were historic in origin. The present typology simultaneously emphasizes those items of chronological value while de-emphasizing materials of known or surmised function but nonetheless lacking temporal significance. The organizational format of the basic descriptive data has drawn upon the work of South (1977:95-96; 1978), as adapted to the domain of Ohio Valley historical archaeology by Ball (1984a; 1984b), to provide, insofar as possible, a body of information amenable to inter-site comparisons with data derived from other regional historic site assemblages. As will be discussed in greater detail below, an integral part of this analysis has been the segregation of the examined materials into generalized functionally-related clusters. Utilizing this approach, the following artifact groups have been identified in the context of the recovered assemblage: Kitchen, Architecture, and Faunal. As will be discussed in Section V, materials were collected only from site 33HA483.

#### KITCHEN GROUP

Kitchen-related items occurred in the form of a variety of refined and coarse ceramic types and a small quantity of utility glassware.

#### Refined Ceramics

Porcelain. Sherds classifiable as porcelain display a highly vitreous (dense) white profile consisting of a hard-fired, high

kaolin content clay burned in a reducing atmosphere (Binns 1953:12, 20, 26, 122). The only recovered porcelain sherd displayed a portion of a red decalcomania decoration suggestive of ca. 1900 or later production (cf. Worthy 1982).

Earthenware (Whiteware). Of the several varieties of earthenware ceramics recovered during the reconnaissance effort, common whiteware/ironstone (i.e., those sherds devoid of additional colored decoration such as transferprinting or painting) were the most frequently encountered (N=102). Introduced ca. 1820, these wares were produced in large quantity until well after 1900 with a general mean production date of 1860 (Noel Hume 1976:130-131; Price 1979:11; 1981:26; Smith 1983:171; South 1977:211). Due to the widely recognized difficulty of separating whiteware from ironstone ceramics (cf. Price 1979:11-12; 1981:26-27; South 1974:248, 252), all plain white sherds were classified as whiteware.

Handpainted Floral Designs. Such ceramics are known to date (with pearlware glazing) from as early as ca. 1795 (Noel Hume 1976:179). Although a variety of designs (primarily floral but including animal, bird, and insect motifs) and colors (cobalt blue only, earthen hues, and brighter hues) are encountered on these wares (Price 1979:20-21), the whiteware glazed examples recovered from site 33HA483 probably date to the period ca. 1830-1870 (Price 1979:21, 315; 1981:42; Smith 1983:171).

Though edgeware ceramics are known to have been produced with both pearlware (ca. 1780-1830) and whiteware (ca. 1830-1860) glazes, only whiteware glazed examples (N=4) were recovered from the examined site. As described by Price (1979):

Edge decoration consists of a painted band around the rim of the vessel. The rim generally has a molded decoration over which the colored band is applied, shell-edge being the most common .... Other kinds of molded decorations occurring on the vessel rims ... include plumes, a series of raised dots, feathers, fish scales, and combinations of the above. The molded-rim decoration may also occur, particularly the shell-edge, with no color band. Relatively dark cobalt blue is the most common color found, although green also occurs in smaller amounts, and one example of pink [faded red?] has been recovered (Price 1979:17).

The entirety of the site 33HA483 sample was banded in cobalt blue. As a matter of clarification, comment may be made regarding the appearance of "late" edgeware banding. In the context of east coast late 18th/early 19th century archaeology, Noel Hume has noted concerning edgeware plates with blue or green painted rims that:

The early examples (c. 1780-95) are generally well painted, the brushwork being drawn inward to create a feathering edge ... but later, as the market swamped the craftsman, it was common to sweep the brush laterally around the edge to produce a mere stripe. Such debasement is usually found on examples dating later than 1800 or 1805, though it does occur earlier--just as better examples were made later (Noel Hume 1976:131).

Taken at face value, this statement suggests that all or most white-ware glazed edgeware examples, by virtue of dating well beyond the initial 1800-1805 period of debasement, should exhibit a single, broad brush applied stripe. To the contrary, Price (1979:18), in her study of 19th century historic ceramics from southeastern Missouri, states that "In the collections the decorations seem to change little through time; however, the shell-edge is perhaps not as well executed on specimens recovered from the later sites and features" (Price 1979:18). These comments appear to suggest a commonplace resurgence of expedient production methods during the period in which whiteware glazing was used in conjunction with this decorative treatment. Rather than conclude from these superficially contradictory statements that the general quality of edgeware improved merely because a new glaze was adopted by the industry, it is more reasonable to suggest that beginning ca. 1800-1805 certain potters, to gain an economic advantage over their competitors and/or greater market share, allocated all or most of their production to the "debased" style. For this reason, all of the site 33HA483 sample (numerically restricted as it may be) has been dated to ca. 1830-1860 with a mean production date of 1845 (Price 1979:18, 31; 1981:42; Smith 1983:171).

From the time of their introduction, transferprinted wares were produced and sold in tremendous quantity with both pearlware (ca. 1795-1830) and whiteware (ca. 1830-1860) glaze. The entirety of the site 33HA483 sample (N=15) is whiteware glazed. Although the majority of these sherds (on the basis of coloration and generally crisp lines in the design elements) appear to date to the mid-19th century (and have been assigned a working mean production date of 1845; cf. Price 1979:19, 31; 1981:42; Smith 1983:171), a lesser number may in fact have been produced some time after that era; indeed, full place settings (service for 12) of blue transferprinted dinner-ware are still (1984) sold by Sears, Roebuck and Company--certainly a tribute to the continuing appeal of these wares. Regardless, as a consequence of time limitations, it has not been possible to further research the specific (and often highly fragmented) designs present on the available sherd sample (cf. Coysh 1974; Hanson and Hsu 1971; Williams 1979; 1981a; 1981b; 1981c).

Consisting "... of a series of differently colored concentric bands applied to the vessel body" (Price 1797:18), the entirety of the minimal (N=7) annular ware sample from site 33HA483 was whiteware glazed and dates to ca. 1830-1870+ with a working mean production date of 1850 (Price 1979:42; Smith 1983:171). Although studies in Georgia (Otto 1977) and Tennessee (Smith 1977) have related such wares to social status and noted the apparent predominate use of these ceramics by slaves, the limited occurrence of annual wares in an obviously non-slave context would suggest that for whatever reason they simply were not popular in the southwestern Ohio region.

A limited number (N=8) of whiteware glazed spatterware (also called sponge decorated) sherds were recovered from site 33HA483. These fragments occurred in both blue-on-white (N=5) and red and blue-on-white (N=3). These wares have been tentatively dated from ca. 1835 to 1870 by Price (1981:42). For the purposes of this analysis, a working mean date of 1852.5 has been assigned to these Fragments.

Coarse Ceramics

Stoneware. Utilized extensively throughout much of the 19th century for mugs, bowls, jugs, etc., stoneware ceramics were widely produced by numerous regional potters in the context of both small and large scale pottery operations (cf. Cogswell 1983; Faulkner 1982; Smith and Rogers 1979; Webb 1971). With the availability of glass canning jars in the late 19th century, such wares rapidly fell into general disuse. The entirety of the small sample (N=6) of stoneware recovered from site 33HA483 was salt-glazed gray.

Redware. In common with the above-discussed stoneware sherds, redware ceramics were widely used in the form of utilitarian vessels during most (if not all) of the 19th century. The sample (N=60) of these porous, soft-fired wares recovered from site 33HA483 uniformly exhibited coloration ranging from brown to brown-black. Most were lead glazed.

Glassware - Jars/Bottles

Among the sample of recovered glassware (N=23) from site 33HA483, blue-green sherds (N=20) were most common. Such fragments were likely the remnants of canning jars, bitters bottles, or other commonplace containers. Although three of these sherds exhibited portions of raised letter logos, none were legible. A single bottle neck lip of "black" (opaque dark green) glass may be derived from an early 19th century bottle.

Of the minority glass colors noted, the amethyst sherds are of particular chronological note. Such glass was produced with a small quantity of manganese dioxide to enhance the clarity of the

bottles molded from it. A side effect of this additive was a reaction with ultra-violet light to cause the chemical structure of the glass to change from clear to a light or dark purple-tint with the passage of time (Frank 1982:59, 142). Production of this type of glass began in 1880 with the importation of the required manganese dioxide from Germany and continued until the advent of World War I (1914) when this chemical could no longer be obtained (Kendrick 1963:57); on the basis of these figures, a mean production date of 1897 may be calculated.

#### ARCHITECTURE GROUP

Window (Flat) Glass. Window glass sherds (N=18) were the most frequently encountered architectural-related materials. The entirety of this sample had been fabricated from green-tint glass and ranged in thickness from 1.0mm to 2.1mm. Although there appears to have been a general tendency in the Ohio Valley for window glass to increase from ca. 1.0 to 3.0 millimeters in thickness during the period 1800-1870 (Ball 1983), the nature (secondary refuse; cf. Schiffer 1972) of the site 33HA483 assemblage generally negated efforts at dating these fragments.

Nails. A surprisingly small number of nails (N=2) were recovered from site 33HA483. Machine cut nails manufactured during the period ca. 1790-1825 were typified by machine cut shanks and handformed "rose" heads; nails produced from ca. 1815 through the late 1830s are characterized by irregularly shaped machine-formed heads and somewhat rounded upper shanks (Nelson 1968; see also Mercer 1976:4-10 and H.R.B. Smith 1975). During the following years, cut nails with regularly shaped (usually convex) heads and rounded upper shanks were routinely produced as late as the 1870s (Fontana 1965:91) and beyond. Although wire nails were manufactured in the United States during the 1850s (Condit 1968:44), they were not generally produced in either sizes or quantities used for general construction purposes until well into the third quarter of the 19th century. While wire nails had largely replaced earlier forms by the 1890s, cut nails continue to be produced until the present day for specific purposes such as boat construction and use in masonry walls (Nelson 1968). Although both of the 33HA486 nails were of the cut shank variety, they were too badly rusted to further identify. It is suggested, however, that in keeping with many of the ceramic fragments, these examples likely dated to the middle portion of the 19th century.

A small quantity of soft fired brick fragments (N=5) and red-clay drainage pipe sherds (N=5) were also recovered. None of these materials bore any form of maker's marks and are presumed to date anywhere from the second half of the 19th century into the early 20th century.

## FAUNAL GROUP

This functional group was limited to a possible pig tooth, two fragments of mussel shell, and a piece of crinoid stem. Although the crinoid stem may be a manuport (any thereby cultural), it may likewise be a naturally occurring piece at this site. The smallness of the sample precludes any meaningful discussion.

## V. RECONNAISSANCE METHODS AND FINDINGS

The reconnaissance level investigations described herein were conducted during the periods May 14-16, 1991, and June 3-6, 1991. Specifically, the present comments address two spatially separated but interrelated projects proposed for construction by the U.S. Department of Energy. The first project, Well Field No. 1, consists of an alternate water supply system to be situated northwest of the Village of Fernald; this undertaking will result in the placement of several water wells (and related piping) in as yet undesignated portions of an agricultural field situated immediately northeast of the junction of Willey Road and Crosby Road. Specifically, this field measures ca. 700 feet (213.36 meters) East-West by ca. 1,200 feet (365.76 meters) North-South and contains approximately 19.28 acres (7.80 hectares). Additionally this portion of the work to be undertaken also includes ca. 1.63 miles (2.62 kilometers) of water pipeline which will run eastward from the above discussed agricultural field along the northern edge of Willey Road, thence toward the Village of Fernald.

The second project, Well Field No. 2, is a nearby but spatially discrete pipeline which will connect another well field near the Village of Fernald with a processing station on the grounds of the Department of Energy Fernald Reservation and a water exit structure on the right (west) bank of the Great Miami River. The examined route of this waterline is shown in Figure 4. Approximately 12,100 feet (3,688 meters) or 2.29 miles (3.69 kilometers) of this proposed pipeline route was examined. It is specifically noted that the site of the related wells had not yet been determined at the time the fieldwork discussed herein was conducted. The examination of these wells is scheduled to be conducted in the Fall of 1992 and will be reported in a subsequent, addenda study. Specific site locational information appears in Appendix A.



## FIELD METHODS

Well Field No. 1. This 19.28 acre (7.80 hectare) parcel was examined in two stages. The southern two-thirds of the tract was inspected on May 14, 1991, whereas the northern one-third was inspected on June 3, 1991. The entirety of this field was under active cultivation (corn) and visibility was excellent at ca. 90 to 100 percent between the rows. On both occasions, the field had recently been rained upon and surface dust was minimal. This field was examined by means of pedestrian transects oriented north-south (i.e., parallel to the parcel's long axis) and spaced a maximum of 10 meters (ca. 33 feet) apart. Because of the high degree of surface visibility, no shovel tests were excavated in this area.

Well Field No. 1 Pipeline Route. Fieldwork along this proposed pipeline corridor was conducted on May 15, 1991, and June 4, 1991. The entirety of the water pipeline right-of-way heading east of the well field along the northern edge of Willey Road, thence south-east along the toe of a generally elevated railroad berm, thence south along the western edge of Paddy's Run Road across several residential yards and cultivated fields to the area of two industrial facilities was also examined on foot. With the exception of the front yard areas of two former house sites located along the Willey Road portion of this unit of pipeline, no evidence of cultural resources was observed. These areas were typified by cultivation (the fields adjacent to Willey Road and the southern terminus of the pipeline route along Paddy's Run Road) or prior disturbance (the toe of the railroad berm and the yard areas along Paddy's Run Road).

Single test pits measuring 0.5 by 0.5 meter were excavated along the portion of the pipeline route which traversed the two former yard areas immediately north of Willey Road. The unit excavated in the southeastern corner of the westernmost yard produced a recent crushed brown glass beer bottle ca. 4 inches below ground surface and three sherds of banded annularware ceramics (dating ca. 1830-1870) about 10 inches below ground surface. Soil coloration from the surface to ca. 12 inches was uniformly dark brown; a light brown-yellow culturally sterile soil was encountered below 12 inches. The single test pit excavated in the southeastern corner of the easternmost yard yielded large amounts of crushed limestone (gravel) to a depth of ca. 4 inches, suggesting a roadway or parking area; culturally sterile light brown-yellow soil was encountered below 4 inches.

Well Field No. 2. As discussed above, the precise location of this portion of the overall well field and pipeline installation project had not been determined at the time the initial phases of fieldwork were conducted in May and June of 1991. Subsequent to

the preparation of this report, however, plans and specifications have been developed which have delineated both the general area and degree of impacts for this well field. Situated several hundred feet northwest of the center of the Village of Fernald, this area (and related pipelines to the southern shoulder of Willey Road) will be examined in the Fall of 1992 and reported in an addenda study.

Well Field No. 2 Pipeline Route. Field work on this portion of the project area was conducted on May 16, 1991, and June 5-6, 1991. Work on this pipeline route began with the excavation of six 0.5 by 0.5 meter test pits along the first 200 linear feet (61 meters) of the route north of Willey Road. This segment of the pipeline will traverse a cow pasture which afforded minimal (ca. 10 percent) surface visibility. Excluding minor amounts of obviously recent debris in the first four to five inches of soil, no cultural resources were encountered. From a point near the existing powerline right-of-way, thence southwest along the route of a former farm access road which crossed an unnamed tributary to Paddy's Run Creek and continued to an elbow turn, thence west-northwest along the existing gravel surfaced perimeter road to a point ca. 200 feet beyond the junction of West Perimeter Road, survey conditions consisted of either disturbed soil conditions or, alternately, segments of pipeline route scheduled to be excavated in the bed of existing roadways. No shovel testing was conducted in this segment of the pipeline route. A total of ten 0.5 by 0.5 meter test pits were dug along the portion of the pipeline route paralleling the southern edge of the access road adjacent to the existing borrow area. Approximately 250 feet (76 meters) in length; this area produced only minor amounts of obviously recent debris.

Field examination and discussions with Mr. Tom Crawford (facility engineer) indicated that the proposed pipeline route from a point near the southeast corner of the Storm Water Retention Basin West Chamber, thence turning northward and running along the western edge of the Storm Water Retention Basin East Chamber, thence northward across the facility's main entrance road and an irregular but roughly triangular road medium parcel, thence northwest along the northeastern edge of the water treatment plant access road to a point several hundred feet from an existing water treatment plant had been extensively disturbed by prior earthmoving, construction, and road building efforts. No test excavations were undertaken in these disturbed areas. From the point east of the water treatment plant where the pipeline heads north to the facility boundary, a total of 10 test pits (each 0.5 by 0.5 meter) were excavated across a field with heavy grass cover. This field offered virtually zero percent surface visibility. No cultural materials were recovered from these pits.

Just beyond the property boundary, two 0.5 by 0.5 meter test pits were excavated along the portion of the pipeline route traversing the northern edge of the second terrace landform. Although these units revealed no cultural materials, it was observed that this tract had apparently served as a portion of a turn-of-the-century farmstead as verified by a standing (but non-functional) cast iron hand-operated water pump. The base of this pump was marked "F.E. MYERS & BRO./ASHLAND, O."; the handle was marked "PAT. JAN. 10, 1912". While several limestone fragments, a single broken (but unembossed) brick, and one fragment each of embossed whiteware and clear flat (window) glass were observed on the surface, there was no clear evidence that any structure(s) had previously occupied this area. The route situated between the property boundary and the drop-off to the first terrace contained several trees utilized as shade by cattle grazing in this field. As a consequence of intensive bovine traffic, the surface visibility of this area ranged from ca. 25 to 100 percent.

The route of the pipeline from the second terrace escarpment to the right (west) bank of the Great Miami River was also examined by pedestrian inspection. The entirety of both the floodplain and first terrace were under active cultivation and offered variably 75 to 95 percent surface visibility. The first and second terrace escarpments were both heavily vegetated and steep (ca. 35 to 45 degrees); although these areas were walked, no test pits were excavated on these slopes. With the exception of a limited number of historic materials (e.g., whiteware, stoneware, and bottle glass sherds) along the route as it crossed the wide floodplain, no evidence of cultural resources was encountered. These sporadically occurring materials were interpreted as isolated field scatterings of miscellaneous debris and none were retained for further analysis.

As editorial proofing of the typed draft of the present study had just been completed, a copy of a letter dated 28 July 1992 from Ms. Martha J. Raymond (Ohio Historic Presentation Office, Columbus, Ohio) to Mr. R. E. Tiller (Department of Energy, Fernald Environmental Management Project, Cincinnati, Ohio) was relayed to the Louisville District of the U. S. Army Corps of Engineers. Specifically, the subject letter sought clarification concerning the possibility of adverse impacts on sites 33HA400 and/or 33HA401 by the final stages of the treated (decontaminated) water outfall pipeline to be constructed between Highway 128 and the right (west) bank of the Great Miami River. Available information (i.e., copies of the site survey forms for these sites on file with the Ohio Historic Preservation Office) indicates that the southernmost terminus of this site complex is situated immediately north of an east-west oriented gravel-surfaced access road running from Highway 128 to the river's edge. The site area adjacent to and immediately north of the access road is presently occupied by a small amusement park

displaying limited surface visibility and covered by dense lawn or other vegetation. Conversely, at the time of the field reconnaissance (May and June 1991), the field situated to the south of the access road was under active cultivation with surface visibility in excess of 90 percent. It is expressly noted that the proposed 100 foot (30.5 meter) wide construction corridor between the highway and the river was examined by means of four (4) east-west oriented pedestrian transects and no evidence of either prehistoric or early (pre-1943) cultural resources was observed with the exception of sporadic, widely dispersed historic debris (e.g., glass bottle sherds or stoneware fragments). No concentrations of material were noted and the observed remains were interpreted as inconsequential field scatter likely resulting from agricultural activities over an extended period of time or miscellaneous items discarded by visitors to the adjacent amusement park.

The outfall area on the bank of the Miami River was examined for a distance of 100 feet upstream and 100 feet downstream. This inspection revealed that a number of tons of concrete rubble had been dumped over the eroding riverbank. Although numerous examples of recent debris (beverage cans, beer bottles, scraps of plastic, and an old tire) were noted, the examination of spots of bare earth, animal burrows, and the profiles of two access roads cut into the crest of the extant riverbank revealed no evidence of either pre-historic or early historic land use.

#### SITE IMPACTS

Well Field No. 1. Two previously reported sites were known within the area encompassed by Well Field No. 1. Initially recorded in 1985 by Messrs. Thomas Gatus and Robert Genheimer, sites 33HA482 and 33HA483 are both potentially subject to varying degrees of disturbance from the proposed construction on this property. No other cultural resources are known within the confines of this tract.

Site 33HA482 was classified by its discoverers as temporally unassigned pre-historic site. Under conditions of 91 to 100 percent (recently plowed) surface visibility in concert with 12 meter interval pedestrian transects, the following materials were recovered: 2 unmodified flakes, 1 marginally modified flake, 1 secondary stage biface, 1 unidentified projectile point, and 1 1881 Indian head cent. Although the area of the site was estimated at 1,800 square meters, it was noted that this figure was inexact. Gatus and Genheimer further note that "... this site is typical of small sparsely occupied sites in the New Haven Trough. Of the few lithic artifacts recovered, most or all, were probably used in procuring or processing faunal or floral resources" (site survey form, page 9).

Under comparable surface visibility conditions and 10 meter interval pedestrian transects, this site was not relocated in 1991. On the basis of available information, five artifacts distributed over ca. 1,800 square meters would equate to a density of only one artifact per 360 square meters. It is concluded herein that a site exhibiting such a light artifact density represents an ephemeral lithic scatter created by extremely brief utilization. No further work is recommended at this site.

Site 33HA483 was also initially discovered in 1985 by Gatus and Genheimer and examined at that time under conditions of 91 to 100 percent surface visibility by means of 12 meter interval pedestrian transects. The original surface collection recovered from this site was limited to a total of 14 artifacts consisting of: 1 orange paste earthenware sherd with brown glaze exterior; 2 blue transfer print whiteware sherds; 2 blue edgeware whiteware sherds; 2 unidentified whiteware sherds with decorative motifs; 4 undecorated whiteware/ironstone body sherds; 1 undecorated ironstone rim sherd; and 2 window (flat) glass sherds. It was further noted that this site covered 1,963 square meters and displayed no evidence of structural remains (information from site survey form).

Subsequent re-examination of this site (field methods described above) yielded a considerably larger and more diverse artifactual sample. As much of the pertinent information concerning this assemblage is presented herein in tabular form, the present comments will be oriented toward summarizing the nature and content of this historic era site. Specific quantitative data on the 1991 assemblage appears in Table 1. The utilization of these data in concert with South's (1977; 1978) artifact patterning approach as adapted by Ball (1984a; 1984b) to the domain of 19th century Ohio Valley historic archaeology has facilitated the functional identification of this site as an open refuse deposit (Table 2) reflective of the secondary deposition (cf. Schiffer 1972) of household debris and characterized by a high frequency of Kitchen Group artifacts.

Though somewhat restricted by sample size, efforts at dating the 33HA483 assemblage followed two divergent avenues of approach, South's Mean Dating Formula (South 1977; 1978) and the application of a preliminary Flat Glass Dating Formula proposed for the Ohio Valley (Ball 1983). These methods produced a mean date of 1856.7 (Table 3) and a Flat glass date of 1818 (Table 4). On the basis of its diffuse nature and irregular boundary, it is not unreasonable to suggest that this deposit may well represent an accretion of debris over an extended number of years (i.e., circa half a century) rather than a single depositional episode.

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TABLE 1. HISTORIC ARTIFACTS - SITE 33HA483

<u>ARTIFACT</u>	<u>NUMBER</u>
<u>KITCHEN GROUP</u>	
<u>Porcelain</u>	
White Glaze w/Red Decalomania Decoration	1
<u>Whiteware (Earthenware)</u>	
Whiteware/Ironstone Body Sherds	83
Whiteware/Ironstone Rims	14
Whiteware/Ironstone Cup Handles	2
Whiteware/Ironstone w/Hallmark Remnant*	3
Handpainted Floral Designs	7
Edgeware - Blue (All Rims)	14
Transferprint - Blue	11
Transferprint - Brown	4
Annular Ware/Mocha Ware (All)	7
Spatterware (Blue-on-White)	5
Spatterware (Red and Blue-on-White)	3
<u>Coarseware</u>	
Stoneware - Salt Glazed Gray (All)	6
Redware (All) **	60
Yellowware	5
<u>GLASSWARE - JARS/BOTTLES</u>	
Blue-Green ***	20
Amethyst	2
"Black" Glass (Opaque Dark Green) - Lip of Bottle Neck	1

TABLE 1 (CONTINUED)

ARTIFACT	NUMBER
ARCHITECTURE GROUP	
Window Glass - Green-Tint (All)	18
Cut ("Square") Nails	2
Brick Fragments	5
Red Clay Drainage Pipe Sherds	5
FAUNAL GROUP	
Pig Tooth (?)	1
Mussel Shell Fragments	2
Crinoid Stem	1
TOTAL ( <u>Including</u> Faunal Group)	282

\* All hallmarks embossed and fragmentary; one possibly English.

\*\* Majority are lead glazed; colors range from brown to brown-black

\*\*\* Three sherds show remnants of raised letter logos; none complete or identifiable. One small (ca. 1.25 cm X 1.25 cm) bottle/vile base shows pontil scar. Three fluted (moulded) body sherds.

TABLE 2. SITE 33HA483 ARTIFACT PATTERNING

ARTIFACT GROUP	SEALED REFUSE PATTERN (%) *	33HA483 PATTERN (%)	OPEN REFUSE PATTERN (%) *
Kitchen	75.33+/-13.69	89.21	90.32+/-6.21
Architecture	20.24+/-11.65	10.79	6.71+/-5.18
Furniture	0.24+/- 0.37	--	0.04+/-0.11
Arms	0.03+/- 0.05	--	0.45+/-0.93
Clothing	0.71+/- 1.03	--	0.30+/-0.38
Personal	0.66+/- 1.53	--	0.08+/-0.24
Activities	2.78+/- 2.17	--	2.10+/-1.81

\* Data extracted from Ball (1984a:50; 1984b). Plus/minus figures represent one standard deviation.

Note: Artifact patterning figures exclude all faunal remains.

TABLE 3. SITE 33HA483 MEAN DATE

ITEM	DATE RANGE*	MEDIAN DATE	N=	PRODUCT
<u>Porcelain</u>				
White Glaze w/Red Decalomania	ca. 1900	1900	1	1,900
<u>Whiteware</u>				
Whiteware/Ironstone (All)	1820-1900+	1860+	102	189,720
Handpainted Floral Designs	1830-1870	1850	7	12,950
Edgeware - Blue	1830-1860	1845	14	25,830
Transferprint (All)	1830-1860+	1845	15	27,675
Annular/Mocha Ware (All)	1830-1870+	1850	7	12,950
Spatterware (All)	1835-1870	1852.5	8	14,820
<u>Glassware - Jars/Bottles</u>				
Amethyst Glass	1880-1914	1897	<u>2</u>	<u>3,794</u>
TOTALS			156	289,639
Mean Date = $\frac{289,639}{156} = 1856.6602 = \underline{1856.7}$				

\* Date ranges from sources cited in body of text.

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TABLE 4. SITE 33HA483 FLAT GLASS DATE

GLASS TYPE	THICKNESS (MILLIMETERS)	X	N	=	PRODUCT
Green-tint	1.0		1		1.0
	1.2		6		7.2
	1.3		2		2.6
	1.5		2		3.0
	1.6		1		1.6
	1.8		2		3.6
	1.9		1		1.9
	2.0		1		2.0
	2.1		2		4.2
				18	

Mean Thickness (M) =  $\frac{27.1}{18} = 1.5055 = 1.51\text{mm}$

Flat Glass Mean Date =  $\frac{M - 1.00 \text{ mm}}{0.0286} + 1800$   
=  $\frac{1.51 - 1.00 \text{ mm}}{0.0286} + 1800$   
=  $\frac{0.51 \text{ mm}}{0.0286} + 1800$   
= 17.83 + 1800  
= 1817.83 (i.e., ca. 1818)

As demonstrated, this assemblage is reflective of domestic secondary deposition as exemplified by its high frequency of Kitchen Group artifacts (Tables 2 and 5-A). Within this artifact group, the site likewise yield high frequencies of whiteware and coarseware sherds in comparison to a lesser amount of glass jar and bottle sherds (Table 5-B). The limited occurrence (a single sherd) of porcelain in contrast to presumably less expensive whitewares would strongly suggest that these remains represent the domestic residuum of a less than affluent farm family (Table 5-C). A composite interpretation of Tables 5-D and 5-E would further suggest that the respectable occurrence of coarsewares reflects extensive use of these utilitarian ceramics for routine food preparation and/or storage prior to the general availability of glass containers following the Civil War. This contention is further supported by the above discussed 1856.7 mean date for the assemblage at large.

Site 33HA470, also initially reported in 1985 by Gatus and Genheimer, was noted as being located ca. 50 meters (164 feet) north of Willey Road. As the survey route discussed in this report was restricted to the shoulder of the roadway and the immediately adjacent edge of a cultivated field, it is sufficient to note that any and all impacts resulting from the construction of the proposed pipeline will avoid this site by a wide margin. No evidence of this site was observed in the examined route.

Other Sites. Excluding sporadic secondarily deposited materials or scattered field refuse, no additional cultural materials beyond those noted above were observed. It is specifically noted that the majority of the proposed pipeline route follows a variety of previously disturbed features (including ditches, roadways, and the toe of a railroad berm) and no additional known (e.g., sites 33HA400 and 33HA401) or observed cultural features will be disturbed.

## VI. CONCLUSIONS AND RECOMMENDATIONS

The conduct of a pedestrian cultural resources reconnaissance, in concert with information on area historic properties furnished by the Ohio Historic Preservation office, along the routes of two water pipelines proposed for construction by the Feed Materials Production Center near Fernald, (Hamilton County) Ohio, has served to document the nature of remains likely to be encountered in the project vicinity generally and within the construction corridor specifically. As discussed above (Section V), this study addresses both the field to be used as the site of several wells designed to extract clean water and an associated pipeline to the Village of Fernald, and a portion of a second pipeline (designed to transport contaminated water) onto

TABLE 5. SITE 33HA483 KITCHEN ARTIFACT PATTERNING

ARTIFACT (SUB) GROUP	N =	% =
<u>A. Manifest Artifact Pattern</u>		
Kitchen	248	89.21
Architecture	30	10.79
Furniture	--	--
Arms	--	--
Clothing	--	--
Personal	--	--
Activities	--	--
	<hr/>	<hr/>
	278	100.00%
 <u>B. Kitchen Artifact Patterning</u>		
Porcelain	1	0.40
Whitewares (All)	153	61.69
Coarsewares (All)	71	28.63
Jars/Bottles	<hr/> 23	<hr/> 9.28
	248	100.00%
 <u>C. Refined Ware Comparisons</u>		
Porcelain	1	0.65
Whiteware/Ironstone (All)	<hr/> 153	<hr/> 99.35
	154	100.00%

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TABLE 5 (CONTINUED)

ARTIFACT (SUB)GROUP	N=	%=
<u>D. Refined/Coarse Ware Comparison</u>		
Refined (All) *	154	68.4
Coarse (All) **	<u>71</u>	<u>31.6</u>
	225	100.0%
<u>E. Ceramic/Glass Comparison</u>		
Ceramics (All)	225	90.7
Glassware - Jars/Bottles (All)	<u>23</u>	<u>9.3</u>
	248	100.0%

\* Includes all porcelain and earthenware sherds.

\*\* Includes all stoneware, redware, and yellowware sherds.

the grounds of the Feed Materials Production Center, thence to the Great Miami River. For purposes of clarification, it is expressly noted that the locations of the wells to be installed to extract contaminated ground water and the route of the pipeline to link these wells with the waterline to be constructed north of nearby Willey Road will be examined at a future date. This portion of the overall project will be specifically examined in an addenda report to this study.

Two known sites exist within the field to be used for extracting clean water. The smaller of these sites, 33HA482, is a small, ephemeral lithic scatter which was not relocated by the present reconnaissance effort despite ca. 95+ percent surface visibility and 10 meter interval pedestrian transects. The second and larger site, 33HA483, has been demonstrated to represent a mid-to-late 19th century secondary refuse deposit of limited research potential. The balance of this aspect of the project (the associated pipeline route to Fernald) will transect existing road rights-of-way, ditches, and previously disturbed yard areas. One previously known vicinity site, 33HA470, is situated ca. 50 meters (150+ feet) north of this pipeline.

The second examined unit of the project (the pipeline for transporting contaminated water) beginning immediately north of Willey Road and terminating on the right (west) bank of the Great Miami River will transect either previously disturbed areas (roadbeds, ditches, landscaped terrain) or presently cultivated fields displaying no evidence of cultural resources excluding sporadic fragments of historic era glass and ceramic sherds. No previously known sites exist in this portion of the construction corridor. Construction in this area will not adversely affect either site 33HA400 or site 33HA401.

No further cultural resources studies are recommended in conjunction with this Federal undertaking. In the event previously unknown resources are encountered, construction activity should cease immediately and the Ohio State Historic Preservation Officer (Ohio Historic Preservation Office) should be promptly notified to allow for appropriate evaluation.

#### ACKNOWLEDGEMENTS

The present report was prepared by Mr. Donald B. Ball (Archaeologist, SOPA) based upon fieldwork conducted by the author during the periods May 14-16, 1991, and June 3-6, 1991. A special note of appreciation is due Messrs. Behram Schroff and Tom Crawford (Project Engineer) of the Feed Materials Production Center for their assistance and encouragement during this aspect of the field investigations. A copy of the author's Curriculum Vitea follows as Appendix B.

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APPENDIX A

SITE LOCATIONAL DATA AND MAP\*

\* In conformity with Corps of Engineers regulations, specific site locational data and related mapping have been deleted from copies of this report intended for public distribution.

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SITE LOCATIONAL DATA

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SITE	U.T.M. COORDINATES *			ELEVATION (METERS)*	QUADRANGLE**
	ZONE	EASTING	NORTHING		
33HA400	16	701560	4352590	165	Shandon, Ohio
		701760	4352510		
		701180	4351880		
		700940	4351940		
33HA401	16	701920	4352850	165	Shandon, Ohio
33HA470	16	697630	4350910	183	Shandon, Ohio
33HA482	16	697270	4351020	188	Shandon, Ohio
33HA483	16	697230	4350880	188	Shandon, Ohio

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\* Information copied from site forms on file with Ohio Historic Preservation Office, Columbus, Ohio.

\*\* All sites situated in Crosby Township.

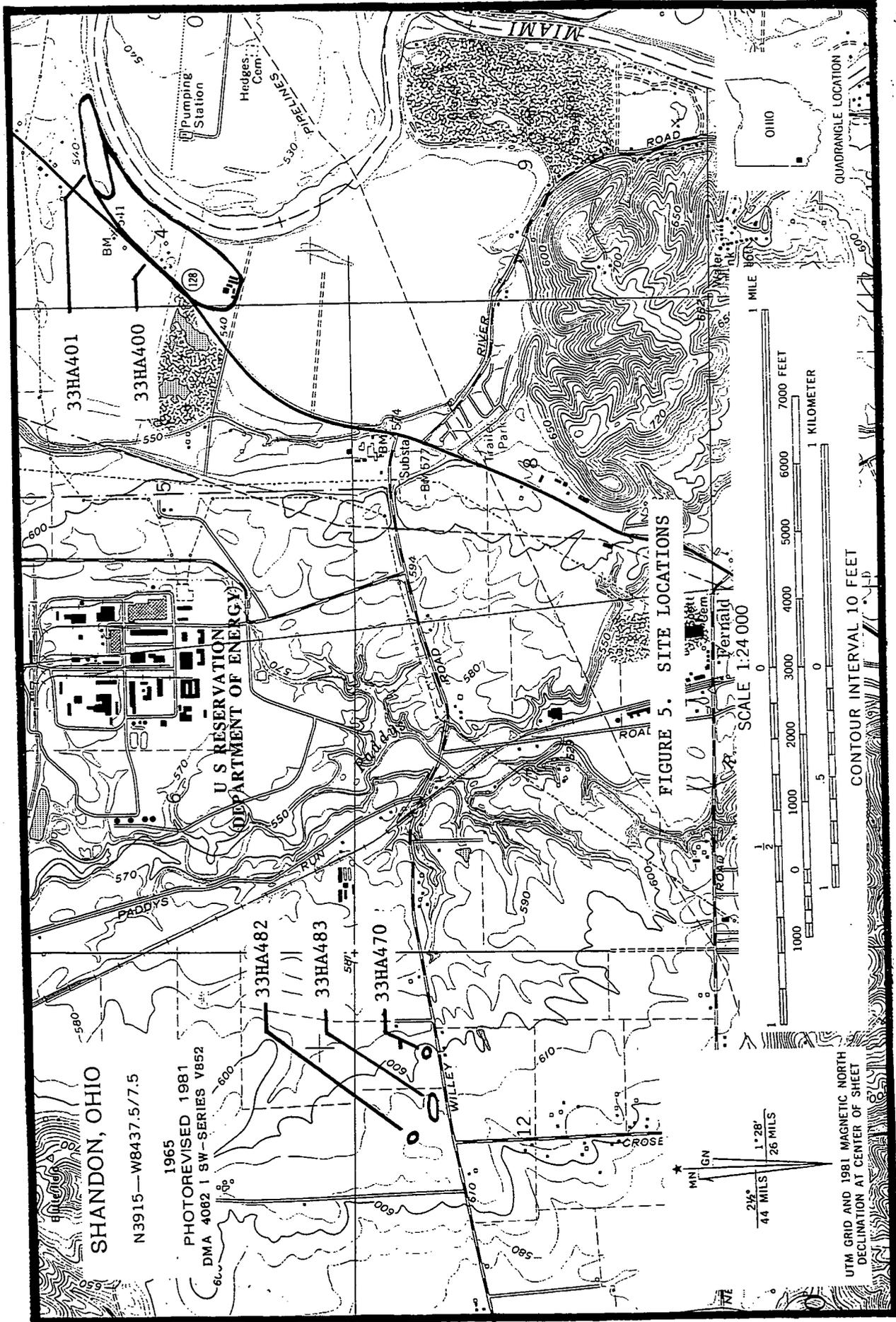
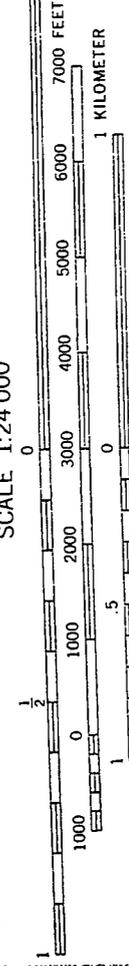


FIGURE 5. SITE LOCATIONS

SCALE 1:24 000



CONTOUR INTERVAL 10 FEET

SHANDON, OHIO

N3915—W8437.5/7.5

1965 PHOTOREVISED 1981 DMA 4082 I SW-SERIES V852

MIN GN

2 1/4" 44 MILS 1.28' 26 MILS

UTM GRID AND 1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

APPENDIX B

CURRICULUM VITAE OF

DONALD B. BALL

Biographical Information

Name: Donald Bruce Ball

Date of Birth: [REDACTED]

Place of Birth: [REDACTED]

Business Address: U.S. Army Corps of Engineers  
ATTN: CEORL-PD-R  
P. O. Box 59  
Louisville, Kentucky 40201-0059

Office Telephone: (502) 582-5696/6475  
(FTS) 352-5696/6475

Home Address: [REDACTED]

Home Telephone: [REDACTED]

Social Security Number: [REDACTED]

Educational Background

[REDACTED] Academic Diploma, Colonial High School, Orlando (Orange County), Florida.

B.S. [REDACTED] History (American and European emphasis), Middle Tennessee University, Murfreesboro, Tennessee.

M.A. March 1977, Anthropology (Archaeology emphasis), University of Tennessee, Knoxville, Tennessee.

Thesis Title: A Survey of Traditional Architecture and Related Material Folk Culture Patterns in the Normandy Reservoir, Coffee County, Tennessee (281 pages).

Thesis Committee: Dr. Major C. R. McCollough (Chairman), Dr. Charles H. Faulkner, and Dr. Ira E. Harrison.

Formal Teaching Experience

Instructor in American History and English, Flintville High School, (Mr. Joe Vann, Principal), Flintville (Lincoln County), Tennessee (January 1970 through May 1970).

Military Service

Entered U. S. Army 18 June 1970. Basic and advanced infantry training at Fort Jackson, South Carolina. Served 13 months (November 1970–December 1971) in Berlin, Germany, with A Company, 2nd Battalion, 6th U. S. Infantry. Promoted to Sergeant (E-5) 8 December 1971. Discharged from active service 21 December 1971. Recipient of National Defense Service Medal, Army of Occupation Medal, and Good Conduct Medal. Honorable discharge effective 1 June 1976.

Research Interests

- (A) Prehistoric Archaeology of the Southeastern United States
- (B) Material Folk Culture
- (C) 19th Century Rural Historic Archaeology

Professional References

- |  |   |
|--|---|
| <p>(1) Dr. William M. Bass<br/>(Professor and Head)<br/>Department of Anthropology<br/>252 South Stadium Hall<br/>University of Tennessee<br/>Knoxville, Tennessee 37916<br/>Phone: 615-974-4408</p> | <p>(2) Dr. Charles H. Faulkner<br/>(Professor of Anthropology)<br/>Department of Anthropology<br/>252 South Stadium Hall<br/>University of Tennessee<br/>Knoxville, Tennessee 37916<br/>Phone: 615-974-4408</p> |
| <p>(3) Dr. Joseph E. Granger (SOPA)<br/>Department of Anthropology<br/>University of Louisville<br/>Louisville, Kentucky 40292<br/>Phone: 502-588-6724</p>   | <p>(4) Dr. Major C. R. McCollough (SOPA)<br/>Tennessee Valley Authority<br/>TVA Haney Building<br/>311 Broad Street<br/>Chattanooga, Tennessee 37401<br/>Phone: 615-755-2151</p>                                |

Research and Administrative Experience

Excavation in proposed Normandy Reservoir, Coffee County, Tennessee—  
Dr. Charles H. Faulkner, Department of Anthropology, University of  
Tennessee, Knoxville, Tennessee (June 1972 through August 1972).

Archaeological survey in proposed Columbia Reservoir, Maury and Marshall  
Counties, Tennessee—Dr. D. Bruce Dickson, Department of Anthropology,  
University of Tennessee, Knoxville, Tennessee (September 1972 through  
November 1972).

Graduate Research Assistant/Laboratory Supervisor for Normandy Reservoir  
Archaeological Project—Dr. Charles H. Faulkner, Department of  
Anthropology, University of Tennessee, Knoxville, Tennessee (January 1973  
through May 1973; September 1973 through March 1974).

Research and Administrative Experience (Continued)

- Excavation in proposed Normandy Reservoir, Coffee County, Tennessee—  
Drs. Charles H. Faulkner and Major C. R. McCollough, Department of  
Anthropology, University of Tennessee, Knoxville, Tennessee (June 1973  
through August 1973).
- Co-field Supervisor (with Anthony P. Cavender), Normandy Reservoir Folk  
Architecture Survey, Coffee County, Tennessee—Dr. Norbert F. Riedl,  
Department of Anthropology, University of Tennessee, Knoxville, Tennessee  
(June 1973 through July 1974).
- Excavation along route of proposed Soquoyah-Franklin Transmission Line, Coffee  
County, Tennessee—Dr. Gerald F. Schroedl, Department of Anthropology,  
University of Tennessee, Knoxville, Tennessee (November 1973).
- Documentation and relocation of L. B. Williams log dwelling (Tellico  
Reservoir), Monroe County, Tennessee—project conducted by Dr. Norbert F.  
Riedl, Department of Anthropology, University of Tennessee, Knoxville,  
Tennessee, for Blount Mansion Association, Knoxville, Tennessee (February  
1974 through March 1974).
- Survey Assistant, archaeological survey along route of proposed Cookeville-  
Algood 201 (sewer) Facilities Planning Area, Putnam County, Tennessee—  
Dr. Major C. R. McCollough, Department of Anthropology, University of  
Tennessee, Knoxville, Tennessee (June 1976).
- Survey Assistant, archaeological survey along route of proposed Morristown-  
Russellville and Tazewell-New Tazewell 201 (sewer) Facilities Planning  
Areas, Hamblen and Claiborne Counties, Tennessee—Dr. Major C. R.  
McCollough, Department of Anthropology, University of Tennessee,  
Knoxville, Tennessee (July 1976).
- Survey Director, archaeological and historical sites survey of proposed Pigeon  
Forge 201 (sewer) Wastewaters System Improvements Planning Area, Sevier  
County, Tennessee—Dr. Major C. R. McCollough, Department of Anthropology,  
University of Tennessee, Knoxville, Tennessee (July 1976).
- Field Director, archaeological reconnaissance, survey, and salvage excavations  
in proposed Salt Lick Recreation Area (Cordell Hull Reservoir), Jackson  
County, Tennessee—Drs. Major C. R. McCollough and Charles H. Faulkner,  
Department of Anthropology, University of Tennessee, Knoxville, Tennessee  
(July 1976-September 1976).

Research and Administrative Experience (Continued)

Excavation in proposed Blair's Bend Industrial Park, Loudon County, Tennessee—  
Dr. Alfred K. Guthe, Frank H. McClung Museum, University of Tennessee,  
Knoxville, Tennessee (August 1976 through December 1976).

Archaeological Consultant, archaeological and historical sites survey of  
proposed Energy Expo area, Knoxville, Knox County, Tennessee—conducted  
for Knoxville Community Development Corporation (September 1976 through  
October 1976).

Chairman, Cultural Resource Committee, Department of Anthropology, University  
of Tennessee, Knoxville, Tennessee—budget preparation and coordination of  
student supervised/staffed Environmental Impact Archaeological Surveys  
(October 1976 through April 1977).

Archaeological Consultant, archaeological and historical sites survey of  
proposed 11th Avenue extension, Dayton, Rhea County, Tennessee—conducted  
for Community Development Department, City of Dayton, Tennessee (October  
1976 through November 1976).

Survey Assistant, archaeological survey of proposed Tenna-Tech, Inc., coal  
washing and barge loading facilities, Old Washington Community, Rhea  
County, Tennessee—project directed by Mr. W. Douglas Prescott, Department  
of Anthropology, University of Tennessee, Knoxville, Tennessee (November  
1976).

Survey Assistant, archaeological survey of proposed community park site for  
public facilities improvement program, Caryville, Campbell County,  
Tennessee—project directed by Ms. Nancy Emig Chapman for Davis and  
Associates Architects and Engineers, Knoxville, Tennessee (November 1976).

Adjunct Assistant Research Professor, Institute of Archaeology (Dr. Jeffrey L.  
Brown, Director), Department of Sociology and Anthropology, University of  
Tennessee, Chattanooga (March 1977 through December 1977).

Archaeological Consultant, archaeological and historical sites survey of  
proposed Fuqua Energy, Inc. coal processing facilities, Jasper, Marion  
County, Tennessee (April 1977).

Laboratory Assistant, Owl Hollow Archaeological Project—Mr. James E. Cobb  
(Supervisor)/Dr. Charles H. Faulkner (Principal Investigator), Department  
of Anthropology, University of Tennessee, Knoxville, Tennessee (June 1977  
through July 1977).

Survey Director, Archaeological survey of portion of proposed 201 (sewer)  
facilities planning area, Knoxville/Knox County, Tennessee—Dr. Charles H.  
Faulkner (Principal Investigator), Department of Anthropology, University  
of Tennessee, Knoxville, Tennessee (June 1977 through August 1977).

Research and Administrative Experience (Continued)

Survey Assistant, archaeological field reconnaissance of Appalachian corridor "S", Grainger County, Tennessee—Mr. James E. Cobb (Survey Director), Department of Anthropology, University of Tennessee, Knoxville, Tennessee (July 1977).

Excavator and Laboratory Assistant, archaeological test excavations of proposed Dayton Mining Company (Tenna-Tech) Inc., coal processing and barge loading facilities, Old Washington Community, Rhea County, Tennessee—Mr. W. Douglas Prescott (Supervisor)/Dr. Walter E. Klippel (Principal Investigator), Department of Anthropology, University of Tennessee, Knoxville, Tennessee (July 1977 through August 1977).

Archaeological Consultant, archaeological survey of proposed Dixie Oil Company drill site in Daniel Boone National Forest, Whitley City, McCreary County, Kentucky; conducted for Dixie Oil Company, Sunbright, Tennessee (August 1977).

Survey Assistant, archaeological survey of State Route 68 Relocation, Tellico Plains, Monroe County, Tennessee—Mr. Lloyd N. Chapman (Survey Director), Department of Anthropology, University of Tennessee, Knoxville, Tennessee (August 1977).

Archaeologist (GS-07), preparation of archaeological survey report of Taylorsville Lake, Spencer, Nelson, and Anderson Counties, Kentucky—Mr. Frank J. Christ (Chief, Environmental Analysis Section), Planning Division, U. S. Army Corps of Engineers, Louisville District, Louisville, Kentucky (September 1977 through December 1977).

Staff Archaeologist (GS-09), duties as assigned—Mr. Frank J. Christ (Chief, Environmental Analysis Section), Planning Division, U. S. Army Corps of Engineers, Louisville District, Louisville, Kentucky (December 1977 through January 1979).

Staff Archaeologist (GS-11), duties as assigned—Mr. Robert W. Woodyard (Chief, Environmental Analysis Branch), Planning Division, U. S. Army Corps of Engineers, Louisville District, Louisville, Kentucky (January 1979 to present).

Member, Kentucky State Historic Preservation Officer's Task Force on Archaeology—agency representative for U. S. Army Corps of Engineers, Louisville District (May 1979 to present).

Archaeological Consultant, archaeological reconnaissance and survey of the amended LaGrange 201 (sewer) Facilities Planning Area, Oldham County, Kentucky—conducted for Rankin-Presnell Associates, LaGrange, Kentucky (January 1982).

Research and Administrative Experience (Continued)

Archaeological Analysis, historic archaeological investigations of the Linville Site (15BK12), Bracken County, Kentucky—Dr. Joseph E. Granger (Principal Investigator), Granger Associates, Inc., Louisville, Kentucky (May 1982 through June 1982).

Co-organizer (with Mr. Philip J. DiBlasi), First Annual Symposium on Ohio Valley Urban and Historic Archaeology, 26 March 1983, Bingham Humanities Building, University of Louisville, Louisville, Kentucky.

Membership Committee, Society for Historical Archaeology—membership coordinator for state of Kentucky (April 1983 to present).

Co-editor (with Mr. Philip J. DiBlasi), Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology, Archaeology Program, Department of Anthropology, University of Louisville, Louisville, Kentucky (issued annually; 1983-present).

Co-organizer (with Messrs. Philip J. DiBlasi and Gary D. Ellis), Second Annual Symposium on Ohio Valley Urban and Historic Archaeology, 24 March 1984, Indiana State Museum, Indianapolis, Indiana.

Co-organizer (with Messrs. Philip J. DiBlasi and Alan C. Tonetti), Third Annual Symposium on Ohio Valley Urban and Historic Archaeology, 23-24 March 1985, Ohio Historical Center, Columbus, Ohio.

Co-organizer (with Messrs. Philip J. DiBlasi and Robert J. Fryman), Fourth Annual Symposium on Ohio Valley Urban and Historic Archaeology, 22-23 March 1986, Historical Society of Western Pennsylvania, Pittsburgh, Pennsylvania.

Co-organizer (with Messrs. Philip J. DiBlasi and Kit W. Wesler), Fifth Annual Symposium on Ohio Valley Urban and Historic Archaeology, 20-21 March 1987, Executive Inn RiverFront, Paducah, Kentucky.

Professional Accreditation

Member, Society of Professional Archeologists (December 1983-present).

Certified in following areas:

Field Research (effective December 1983)

Historical Archeology (effective May 1987)

Member, Kentucky Organization of Professional Archaeologists (1986-present).

Professional Organizations

Alabama Archaeological Society  
Kentucky Academy of Science  
Missouri Archaeological Society  
Society for American Archaeology  
Society for Historical Archaeology  
Southeastern Archaeological Conference  
Tennessee Anthropological Association  
Tennessee Folklore Society

Papers Presented

"Observations on the Late Archaic in South-Central Tennessee". Presented at Seminar-Discussion on "The Archaic-Woodland Transition in Tennessee" at 27th Annual Meeting of the Tennessee Archaeological Society, University of Tennessee, Knoxville, Tennessee, 13 October 1974.

"Traditional Folk Housing of the Normandy Reservoir Area". Presented at Symposium on Southern Appalachian Folk Culture at 2nd Annual Meeting of the Tennessee Anthropological Association, Tullahoma, Tennessee, 5 March 1977.

"Suggestions for the Improvement of Reconnaissance Level Historic Sites Reporting Standards". Presented at 1st Annual Symposium on Ohio Valley Urban and Historic Archaeology, University of Louisville, Louisville, Kentucky, 26 March 1983.

"Approaches Toward the Dating of 19th Century Ohio Valley Flat Glass". Presented at 1st Annual Symposium on Ohio Valley Urban and Historic Archaeology, University of Louisville, Louisville, Kentucky, 26 March 1983.

"Historic Artifact Patterning in the Ohio Valley". Presented at 2nd Annual Symposium on Ohio Valley Urban and Historic Archaeology, Indiana State Museum, Indianapolis, Indiana, 24 March 1984.

"Riverboat Landings in the Central Ohio Valley: An Archaeological Perspective" (co-authored by Charles E. Parrish). Presented at 3rd Annual Symposium on Ohio Valley Urban and Historic Archaeology, Ohio Historical Center, Columbus, Ohio, 24 March 1985.

"Horse Creek, Tennessee: The Image and Definition of an Appalachian Community". Keynote address presented at opening of Horse Creek Photograph/Oral History Exhibit at Anne Hogan Byrd Chapel, Tusculum College, Greeneville, Tennessee, 24 June 1986 (project sponsored by Tennessee Humanities Council, Nashville).

Papers Presented (Continued)

"Explorations in Small Site Historic Archaeology: Examples from William H. Harsha Lake, Clermont County, Ohio". Presented at 5th Annual Symposium on Ohio Valley Urban and Historic Archaeology, Executive Inn RiverFront, Paducah, Kentucky, 20 March 1987.

Publications

Contributing Editor, Tennessee Archaeological Society Newsletter, July 1972 through September 1975.

Ball, Donald B.

1971 (Review of) The Naked Ape (1967) by Desmond Morris, Tennessee Archaeological Society Newsletter 16 (#4, July-August):20-21.

1972 Additional Aboriginal Mauls. Tennessee Archaeologist 28(1):32-34.

1972 A Stone-Box Funerary Blade. Tennessee Archaeological Society Newsletter 17(#12; December):119.

Ball, Donald and Linda Ball

1972 The Sisson Site, Cannon County, Tennessee. Southeastern Indian Antiquities Survey Journal 1:97-109.

Ball, Donald B. and Ralph Periut

1972 A Northern Coffee County, Tennessee, Multiple Component Site. Southeastern Indian Antiquities Survey Journal 1:120-135.

Ball, Donald B.

1973 Florida Indians and Spanish Occupation. Tribute Press, Chattanooga (pamphlet; 24 pp.).

Hood, Victor P. and Donald B. Ball

1974 Rejoinder to Rich and Jolly's "A Catlinite Pendant from East Tennessee". Tennessee Archaeologist 30(2):132-137.

Ball, Donald B.

1975 Social Activities Associated with Two Rural Cemeteries in Coffee County, Tennessee. Tennessee Folklore Society Bulletin 41(3):93-98.

1976 Notes on Certain Aspects of the Traditional Material Culture of the Normandy Reservoir, Coffee County, Tennessee. Tennessee Anthropological Association Newsletter 1(#2; March-April):6-8.

Publications (Continued)

- Ball, Donald B., Victor P. Hood, and E. Raymond Evans  
1976 The Long Island Mounds, Marion County, Tennessee—Jackson County, Alabama. Tennessee Anthropologist 1(1):13-47.
- Riedl, Norbert F., Donald B. Ball, and Anthony P. Cavender  
1976 A Survey of Traditional Architecture and Related Material Folk Culture Patterns in the Normandy Reservoir, Coffee County, Tennessee. Report of Investigations No. 17, Department of Anthropology, University of Tennessee, Knoxville, Tennessee (xv + 261 pp.).
- Ball, Donald B.  
1976 (Review of) Alabama Folk Houses (1975) by Eugene M. Wilson. Tennessee Folklore Society Bulletin 42(3):145.
- 1976 A Bibliography of Tennessee Anthropology, Including Cherokee, Chickasaw, and Melungeon Studies. Miscellaneous Paper No. 1, Tennessee Anthropological Association, Knoxville (56 pp.; issued sans date).
- 1976 The "Spoke Gun" and "Match Gun": Examples of Two Southern Folk Toys. Tennessee Folklore Society Bulletin 42(4):181-183.
- 1977 Traditional Folk Housing of the Normandy Reservoir Area (Abstract). Tennessee Anthropological Association Newsletter 2(#2; March-April):3-4.
- 1977 Untitled comments on archaeology, history, and folk architecture of downtown Knoxville, Tennessee. In: Final Environmental Impact Statement: Knoxville International Energy Exposition, pp. 302-305. U. S. Travel Service, U. S. Department of Commerce, Washington.
- 1977 Observations on the Form and Function of Middle Tennessee Gravehouses. Tennessee Anthropologist 2(1):29-62.
- 1977 (Review of) Historic Sites Reconnaissance of the Oak Ridge Reservation, Oak Ridge, Tennessee (1977) by George F. Fielder, Jr., Steven R. Ahler, and Benjamin Barrington. Tennessee Folklore Society Bulletin 43(3):158-159.
- 1977 (Review of) Kentucky Folk Architecture (1976) by William Lynwood Montell and Michael Lynn Morse. Tennessee Anthropological Association Newsletter 2(#5; September-October):11-12.

Publications (Continued)

- 1977      Wooden Gravemarkers: Neglected Items of Material Culture. Tennessee Folklore Society Bulletin 43(4):167-185.
- 1978      Archeology. Paragraphs 2.101 to 2.107 in: Final Updated Environmental Impact Statement: Taylorsville Lake, Salt River Basin, Kentucky, Section 2, pp. 25-27. U. S. Army Engineer District, Louisville, Kentucky (appears sans author's name).
- 1978      Summary Report of Archeological Survey: Taylorsville Lake, Salt River Basin, Spencer, Nelson, and Anderson Counties, Kentucky. U. S. Army Engineer District, Louisville, Kentucky (xvii + 537 pp.).
- 1978      Notes on the Slang and Folk Speech of Knoxville, Knox County, Tennessee. Tennessee Folklore Society Bulletin 44(3):134-142.
- 1978      (Review of) Log Structures in Warren County, Kentucky (1977) by Lyn Allison Yeager. Tennessee Folklore Society Bulletin 44(4):210-211.
- 1978      A Middle Tennessee Grooved Maul. Kentucky Archaeological Association Bulletin 12:17-20.
- 1979      (Review of) The Log Architecture of Ohio (1977) by Donald A. Hutslar. Tennessee Folklore Society Bulletin 45(2):86-87.
- Ball, Donald B. and Brent W. Smith  
 1979      (Review of) Archaeological Bibliography for Eastern North America (1977) compiled by Roger W. Moeller and John Reid. American Antiquity 44(3):627 (Preprinted in SEAC [Southeastern Archaeological Conference) Newsletter 21[#1-2; January and April 1979]:5-6).
- Ball, Donald B.  
 1979      (Review of) A Guide to Rural Houses of Alabama (1975) by Eugene M. Wilson. Tennessee Anthropological Association Newsletter 4(#5; September-October):6-7.
- 1979      (Review of) Louisiana House Types: A Field Guide (1971) by Milton B. Newton, Jr. Tennessee Folklore Society Bulletin 45(4):181.
- 1979      (Review of) Mississippi Piney Woods: A Photographic Study of Folk Architecture (1976) by Patti Carr Black. Tennessee Folklore Society Bulletin 45(4):181-182.

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VITAE

DONALD B. BALL

Publications (Continued)

Ball, Donald B.

- 1979 (Review of) Echoes of a Log Cabin (1976) by Ethel Herring. Tennessee Folklore Society Bulletin 45(4):182.
- 1979 Archaeological Reconnaissance, Survey and Salvage Excavations in the Salt Lick Recreation Area, Jackson County, Tennessee. U. S. Army Engineer District, Nashville, Tennessee (x + 148 pp.; distributed 1981).
- 1980 Cultural Resources. In: Interim Report for Water Resources Development, Miami River, Little Miami River, and Mill Creek Basins, Southwest Ohio ("Draft" Edition). Volume 1 ("Main Report and Environmental Impact Statement"), pp. 65-66 (para. 4.19-4.21), and Volume 2 ("Appendices"), pp. A-13-A-14. U. S. Army Corps of Engineers, Louisville District, Louisville, Kentucky (appears sans author's name).
- 1980 (Review of) Koster: Americans in Search of their Prehistoric Past (1979) by Stuart Struever and Felicia Antonelli Holton. Florida Anthropologist 33(2):75-78.
- 1980 (Review of) Survey of Historic Sites in Kentucky: Ballard County (1978) by Philip M. Cochran, Anthony O. James, et al. Tennessee Anthropological Association Newsletter 5(#4; July-August):6-10.
- 1980 Salvage Excavation of a Burial from the Bunnell Kame (33QN7), Caesar Creek Lake, Clinton County, Ohio. U. S. Army Engineer District, Louisville, Kentucky (ii + 18 pp + vitae).
- 1980 (Review of) Texas Log Buildings: A Folk Architecture (1978) by Terry G. Jordan. Tennessee Folklore Society Bulletin 46(3):83-85.
- 1980 Radiocarbon Dates from Two Woodland Sites in Jackson County, Tennessee. Tennessee Anthropological Association Newsletter 5(#5; September-October):1-5.
- 1980 (Review of) A Survey of Historic Pottery Making in Tennessee (1979) by Samuel D. Smith and Stephen T. Rogers. Tennessee Folklore Society Bulletin 46(4):140-141.
- 1980 Cultural Resources Assessment. In: Holes Creek Interim Report No. 2: Water Resources Development, Southwest Ohio - Appendix, Volume 2: pp. A-19 to A-20, B-33. U. S. Army Corps of Engineers, Louisville District, Louisville, Kentucky (appears sans author's name).

Publications (Continued)

- Ball, Donald B. (compiler)  
 1981 Cultural Resource Elements: Archaeological Resources, and Exhibit 64. In: Final Environmental Impact Statement: Rockport Generating Station, Spencer County, Indiana, pp. 54-56, A-138 to A-143. U. S. Army Engineer District, Louisville, Kentucky.
- Ball, Donald B.  
 1981 Note on the Occurrence of the "Wonder Puzzle" in Kentucky. Tennessee Folklore Society Bulletin 47(3):121-123.
- 1981 Archaeological Sites in the Jefferson County Riverport Industrial Park (table). In: Final Environmental Impact Statement: Louisville and Jefferson County, Kentucky, Riverport Authority Port and Industrial Park, pp. 6-7. U. S. Army Engineer District, Louisville, Kentucky (appears sans author's name).
- 1981 Summary of Archaeological Findings. In: Local Flood Protection Project - Bonpas Creek, Illinois: Draft Detailed Project Report, page VI-1, U. S. Army Engineer District, Louisville, Kentucky (appears sans author's name).
- 1982 Archaeological Sites in the Northern Kentucky Riverport and Industrial Park, Campbell County, Kentucky (table). In: Northern Kentucky Riverport Authority Draft Environmental Impact Statement, Technical Appendix - p. 131. U. S. Army Corps of Engineers, Louisville District, Louisville, Kentucky (appears sans author's name).
- 1982 A Shoreline Archaeological Reconnaissance of the Defense Fuel Supply Center Site (33HA429), Cincinnati, Hamilton County, Ohio. U. S. Army Engineer District, Louisville, Kentucky (ii + 13 pp.).
- 1982 Excavations at the Linville Site (15BK12) - A 19th Century Stone House in Bracken County, Kentucky. Kentucky Archaeology Newsletter 2(4):5.
- 1982 (Review of) The Shaker Mills on Shawnee Run: Historical Archaeology at Shakertown at Pleasant Hill, Mercer County, Kentucky (1981) by Donald E. Janzen. Kentucky Archaeology Newsletter 2(4):6.
- 1983 (Review of) Texas Graveyards: A Cultural Legacy (1982) by Terry G. Jordan. Tennessee Anthropological Association Newsletter 8 (#1; January-February):7-8.

Publications (Continued)

- Ball, Donald B. and Charles E. Parrish  
1983 The Louisville District RP3 Program: A Cultural Resource Management Pilot Study. Kentucky Archaeology Newsletter 3(1):3.
- Ball, Donald B. and Philip J. DiBlasi (editors)  
1983 Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology, Volume I, Archaeological Survey, University of Louisville, Louisville, Kentucky (iv + 179 pp.).
- Ball, Donald B. and Philip J. DiBlasi  
1983 Editors' Preface. Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology 1:iii-iv. Louisville, Kentucky.
- Ball, Donald B.  
1983 Suggestions for the Improvement of Reconnaissance Level Historic Sites Reporting Standards. Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology 1:107-110. Louisville, Kentucky (preprinted in Tennessee Anthropological Association Newsletter, 8 [#4; July-August 1983]:1-5).
- 1983 Approaches Toward the Dating of 19th Century Ohio Valley Flat Glass. Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology 1:129-137. Louisville, Kentucky.
- 1984 Comments on the Bureau of Indian Affairs Tribal Recognition Project. Tennessee Anthropological Association Newsletter 9 (#3; May-June):1-15.
- Ball, Donald B. and Philip J. DiBlasi (editors)  
1984 Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology, Volume II, Archaeological Survey, University of Louisville, Louisville, Kentucky (vi + 147 pp.).
- Ball, Donald B. and Philip J. DiBlasi  
1984 Editors' Preface. Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology 2:iv-vi, Louisville, Kentucky.

Publications (Continued)

Ball, Donald B.

- 1984 Historic Artifact Patterning in the Ohio Valley. Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology 2:24-36, Louisville, Kentucky.
- 1984 A Mid-19th Century Secondary Refuse Deposit at the Benjamin F. Gardner Site (15MG11), Magoffin County, Kentucky. Proceedings of the Symposium on Ohio Valley Urban and Historic Archaeology 2:111-126, Louisville, Kentucky.
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